ROUTEWARE®

AN INTEGRATED TECHNOLOGY SOLUTIONS PROVIDER

Focused Exclusively on the Waste Industry for Over 20 Years

Response to Invitation to Submit Competitive Bids:

HGACBuy

Fleet Services Equipment

Invitation No. #FL03-21

www.routeware.com

16525 SW 72nd Ave.
Portland, OR 97224
www.routeware.com

(503) 906-8500 – Corporate Offices
(877) 906-8550 – Toll Free
(503) 906-8544 – Fax

November 11, 2020

Neal Witty, Senior Specifications Coordinator
Houston-Galveston Area Council of Governments
3555 Timmons, Suite 120
Houston, TX 77027

Dear Mr. Witty,

This document represents Routeware's response to the Houston-Galveston Area Council of Governments (H-GAC) invitation to submit competitive bids FL03-21 for Fleet Services Equipment, through the HGACBuy Cooperative Purchasing Program. Routeware is submitting products and services in category G. GPS Tracking and Other Monitoring Solutions.

Tracey Mason will be the primary point of contact for information related to our bid:

> Tracey Mason, Sales Enablement Manager
> Routeware, Inc., 16525 SW 72nd Ave., Portland, OR 97224
> Contact Info: (503) 906-8564; tmason@routeware.com

We have had a mutually successful relationship with the H-GAC since 2016. In that time, we have successfully implemented fleet automation technology in over 20 of your End Users' operations. This partnership has proven extremely beneficial to the H-GAC, Routeware, and your End Users. We look forward to continuing this great success.

Routeware has established itself as the waste industry's foremost leader in automation and technology. We have placed thousands of units with municipal haulers during the past 20 years. We are proud to offer an all-in-one commercial-off-the-shelf software package for the solid waste industry. Routeware has provided the industry's most trusted route management solution since 1999. We have a proven record of performance, integrity, and ethics, demonstrated by our many long-term partnerships. Through organic growth and strategic acquisitions of EasyRoute and Core Computing Solutions, we have assembled the solid waste industry's best all-in-one route management solution.

We provide clean and reliable data in real time on metrics that are most important to waste haulers. If more visibility, accountability, and control are important to your End Users, then Routeware should be at the forefront of their technological partners.

We are genuinely interested in serving your End Users. Please do not hesitate to contact us with any questions you have.

Sincerely,

Tom Malone
CEO, Routeware
tmalone@routeware.com

Executive Summary

Successful Fleet Automation Expertise and Experience

Implementing a fleet automation solution that will properly meet the needs of our customers' operations, along with the right interfacing capabilities to work effectively with their ever-evolving needs, requires the expertise of a proven solutions provider like Routeware.

Routeware's on-board computer system and back office software is a solution designed specifically for refuse collection route and service management. This solution helps haulers understand their fleet operations and driver activities in detail, and they help drivers act efficiently and effectively in the moment, without losing valuable time. Planning solid waste routes is far different and often more challenging than other industries. We find that many of our Municipal customers benefit from route optimization and need a robust and battle-tested solution like EasyRoute. Our EasyRoute product was able to save the City of Virginia Beach $2.25 million in the first year through a 24% reduction in trucks and operators. The City also saw an additional $1.1 million in annual collection cost savings, all while keeping residents on their same collection days.

Our experience and the features of our products uniquely position Routeware as the right partner for our clients to provide real-time electronic service confirmation, reporting, routing, monitoring, and data recovery. We are confident that our clients' investment in our turn-key, cloud-based program will reap rewards for them and their residents.

How Routeware Compares

All route management systems claim to be the best, but how do they stack up?

	Our Competitors	ROUTEWARE
Accuracy Auto-pickup functionality is not only touchless but provides increased accuracy and flexibility through the use of actuators, RFID, and/or scales to mark off a stop.	✗	✓
Reporting A data-driven approach with various easy-to-use reporting options that provide actionable data you can use to fully optimize fleet operations.	?	✓
Support Starts with onsite implementation, training, and go-live and continues with reliable and effective 24-7 support and a streamlined, efficient RMA process.	✗	✓
Safe and Efficient Reduces driver interactions with the system (e.g., via auto-photograph on "Skip"), saving time and valuable resources while also ensuring a safer fleet.	?	✓
Reliability A system that just works, with decades of experience and thousands of trucks using smart-truck features every day, without missed deadlines or deliverables.	✗	✓

By choosing Routeware, our clients will get the best-of-class fleet automation solution and the peace of mind that their fleet autmation solution will work as promised. In our 20 years of service to customers, ***we have never had a failed implementation.*** Routeware provides its solution to over 350 public and private entities in over 30 states and within Canada and the United Kingdom. Our largest customers have thousands of vehicles.

Routeware invests heavily in product development. As a result, we deliver product enhancements and new features approximately twice per year. We maintain a position of thought leadership in the industry and our planned initiatives reflect our customers' requirements.

Routeware proposes a commercial-off-the-shelf solution to our Municipal customers, which includes on-board and back-office software solutions, all hardware — including tablet computers and peripheral equipment —and comprehensive services that include installation, training, customer support, executive oversight and leadership, and best practices usage analysis and consultation.

Focused on Our Customers

What sets Routeware apart from other firms is the close connection we maintain with our customers. Routeware listens to customers so their operations always receive the highest possible returns.

Routeware has been laser-focused on the waste industry since our founding in 1999. Our mission is to automate the collection, transportation, and disposal of trash. We have since expanded our focus to various fleet types and municipal divisions needing fleet automation. Using our products, haulers become stronger and more efficient and can improve every aspect of their operation.

"One of the primary reasons we got Routeware was to reduce overhead, reduce time on the road, and to be able to maximize the productivity from our drivers, and that's absolutely happened. We've used the Routeware system so much that I've lost count of how many times we've had great experiences with it."

- Recology/CleanScapes

Seamlessness of Third-Party Integrations

Over our two decades in this space, Routeware has perfected the ability to work within any technology ecosystem. During this time, we have honed our craft at building integrations with other systems. Knowing that one integration/interface is not the same as the next one, Routeware's Product Management team takes extra care to listen and understand each of our customer's specific requirements. Routeware gathers as many details as possible in the initial phases, then runs through a thorough testing process before the roll-out. To date, we have completed hundreds of different integrations for our customers. Routeware has more interfaces than any other vendor in our space. In an ever-growing and evolving technology landscape, it is absolutely critical that our customers choose a vendor with the experience and ability to create seamless integrations with your mission critical applications. Routeware has the both the experience and ability needed to meet these goals.

We also offer additional features for waste-specific systems that we think are worth mentioning or amplifying:

1. **Single-source provider:** We make it practical and economical to make Routeware a single source for virtually every fleet tracking and fleet automation need. Routeware may be the only vendor in the waste industry that offers basic AVL (automatic vehicle locator) tracking devices, AVL devices with smart-truck attachments, and a choice of ruggedized touchscreen tablets with smart-truck features. Because this is all offered through the Routeware Global brand, there are no additional contracts required other than one signed with Routeware. We have clients using only our Basic solution on their entire fleet, others using smart-truck features on every vehicle, and some that deploy a mix — with the Basic solution used for auxiliary trucks and our Premium solution for specific vehicles. We offer the flexibility for our customers to choose exactly what best suits their needs, truck by truck.
2. **Ease of use:** Routeware's solution is an easy-to-use all-in-one system with intuitive functionality. Drivers and back office staff will benefit from the efficiencies gained from our system.
3. **Target setting:** Routeware is the only vendor that helps customers set multi-metric targets for each route and/or driver and measure results against these targets.
4. **Reliability:** No other vendor can match Routeware's reputation for getting installations right the first time, on time, every time.
5. **Driver coaching:** Routeware has the only waste-industry product that will produce route-by-route, driver-by-driver coaching reports that identify inefficient uses of time from clock-in to clock-out, while also promoting logging and billing of extra services.
6. **Route opportunity rankings:** Routeware has the only waste-industry product that will rank routes and/or drivers by potential additional profit that could be generated by implementing training and/or coaching**.**
7. **Color-coded stops displayed on in-cab tablet:** Routeware can color-code stops based on certain customer characteristics. For example: Coding delinquent accounts as red can alert the driver to avoid pick-up. Other colors can indicate VIP customers, ADA customers, new customers, or any other customizable indicators the End User should need.

8. **Nested geofences:** Routeware can nest geofences within geofences. For example: Concentric polygons or circles can be nested within a landfill to log when trucks go in and out.
9. **Time-clock interfaces:** Routeware is the only vendor in the waste industry with an interface to ADP and other time-clock services so we can help customers measure driver behavior and productivity from clock-in to clock-out.
10. **Geo-coded container "locking":** Drivers can set the exact geocode for a container so that directions take the driver right to the container, not to the front door of the location.
11. **IFTA reporting:** Our system can automatically generate International Fuel Tax Agreement (IFTA) reports
12. **End-to-end quality management:** To our knowledge**,** Routeware is the only vendor that will manage the provisioning of tablets, cellular service, software, mounts, cradles, cables, and peripheral equipment including fork sensors, cameras, radio-frequency identification (RFID) readers, etc., so that customers only need to make one call for all troubleshooting.
13. **We can serve other departments:** As the Lexington-Fayette Urban County Government in Lexington, Kentucky, has found, our products work well in other departments including Streets and Roads, Water Service, and Parks and Recreation.

As our customers' needs grow, Routeware will grow with them. We have been smartly growing through our strategic Routeware Global brand of companies. Routeware Global has multiple offerings from Routeware, Core Computing Solutions, and Webaspx/EasyRoute. Each division of Routeware Global has its own esteemed track record for solving some of the most complex challenges faced by Public Service operations. Together, they offer the industry's most reliable and effective commercial-off-the-shelf, all-in-one solution for solid waste. We proudly offer our waste customers one-stop shopping for all levels of back-office, billing, container management, route management, OBC, smart trucks, route optimization, and service verification.

Automating through technology is one of the most profitable but difficult things our customers take on. Thus, implementations need to be done right the first time and on-time. Routeware has established itself as the waste industry's leader in automation and technology. We have placed thousands of units with municipal haulers over the past 20 years. Routeware has vast experience with many municipalities across North America. Routeware is the only provider in the space offering tablets that simulatneously support pictures and video via external cameras as well as scales, fork movement sensors and RFID.

Routeware offers best-in-class customer service. Customers can take advantage of 24/7 online and phone support. In addition, Routeware prefers to travel onsite to train back-office staff and drivers in person. Over the past 18 months, Routeware has made numerous product acquisitions that will help our customers' operations. Routeware continues to build and enhance our suite of products to help cities and municipalities throughout the US and Canada. Routeware continues to invest in new personnel so that we are in a better position to support our customers.

First Section:

- Form A – Offeror Identification & Signatory
- Form B – Historically Underutilized Business Enterprises
- Form C – Response Checklist
- Form W-9 – Request for Taxpayer Identification Number and Certification
- Form CIQ – Conflict of Interest Questionnaire
- Form 1295 – Certificate of Interested Parties
- House Bill HB 89 Verification Form
- References
- Service Organization Document

Form A – Offeror Identification & Signatory

A separate PDF of this form will also be uploaded to H-GAC in the Zip file.

FORM-A: OFFEROR IDENTIFICATION & AUTHORIZED SIGNATORY
(DO NOT handwrite this Form. Information must be typed in.)

Invitation No.: FL03-21

Invitation Title: Fleet Services Equipment

Offeror Company: Routeware, Inc.
(Legal name of business which will appear on contract, if awarded)

Offeror Status: ☑ **Manufacturer** ☐ **Dealer/Distributor** ☐ **Other**

Response Type(1): ☑ **Single Offeror Acting Alone Or As Lead** ☐ **Multiple Offerors Acting**

Contract Signatory(2): Tom Malone **Title:** CEO

Mailing Address(3): 16525 SW 72nd Ave. | Portland | OR 97224
Street/PO Box | City | State & Zip

Physical Address: Same as mailing
Street | City | State & Zip

Phone: 503-906-8500 **Fax:** **503-906-8544**

Email Address: tmalone@routeware.com

Federal Tax ID No.: 93-1314649 **Web Page URL:** www.routeware.com

(1) If Joint Offering, all parties must submit a signed Form A. A contract will be offered to each.
(2) Person who will sign final contract documents if an award is made.
(3) Address to which final contract documents would be sent for signature.

Member Contact Information

Contact Person (4): Tracey Mason **Title:** Sales Enablement Manager

Mailing Address: Same as above
Street/PO Box | City | State & Zip

Physical Address: Same as above
Street | City | State & Zip

Toll Free Phone: 877-906-8545 **Fax:** 503-906-8544

Email Address: tmason@routeware.com

(4) Person who End Users will contact for product information and to get pricing quotes.

The Signatory below, on behalf of Offeror:

- Acknowledges having thoroughly reviewed the Invitation;
- Attests to having the authority to sign this response and commit Offeror to honor all requirements;
- Makes, under penalty of perjury, all required Offeror Certifications as detailed in General Terms;
- Certifies that all information provided in this Response is true and correct.

Signature (2): **Title:** CEO

Printed Name: Tom Malone **Date:** 11/10/2020

Form B – Historically Underutilized Business Enterprises

A separate PDF of this form will also be uploaded to H-GAC in the Zip file.

FORM-B:HISTORICALLY UNDERUTILIZED BUSINESS ENTERPRISES **Invitation No.:** **FL03-21**

Title: Fleet Services Equipment

Offeror: Routeware, Inc.

HUB Status Of Offeror

☐ Offeror is a HUB, as detailed below. ☑ Offeror is not a HUB.

Designation(s): ☐ HUB ☐ DBE ☐ MBE ☐ WBE ☐ Other

*Certifying/Listing Authority(s):

*** Note:** The terms "Certified" and "Listed" as used in conjunction with HUB programs relate to the process of HUB qualification review. Jurisdictions usually require that companies claiming HUB status be reviewed and confirmed as meeting certain minimum requirements to claim that status, and that the review and confirmation process be carried out by certain designated entities.

Members of HGACBuy are subject to various requirements relative to purchasing goods and services from Historically Underutilized Business Enterprises (HUBs)(See Note 1). These requirements are promulgated by federal and state governmental authorities, and include measureable criteria such as "percentage of total dollars spent directed to HUBs", "number of HUB contractors used", "HUB subcontractors employed by primary contractors", etc. These requirements are generally formalized in goal oriented programs.

Offeror agrees to work with and assist HGACBuy members in meeting HUB targets and goals, as may be required by any rules, processes or programs they might have in place. Such assistance may include such things as compliance with reporting requirements, provision of documentation, consideration of Certified/Listed subcontractors, provision of documented evidence that an active participatory role for a HUB entity was considered in a procurement transaction, etc.

Accepted and Agreed By (Name): Tom Malone	
Title: CEO	Date: 11/10/2020

Subcontracts

On a separate sheet, list any subcontractors that would be employed in providing products or services related to this solicitation. Include the following information for each subcontractor:

a. Company Name
b. Address
c. Phone number
d. Applicable HUB designation/certification (DBE, MBE, etc.)
e. Type of work subcontractor has been certified to perform as a HUB. Firm must be certified in a North American Industry Classification System (NAISC) code applicable to the kind of work the firm would perform on the contract.

☐ Subcontractor List attached. ☑ No Subcontractors will be used.

Form C – Response Checklist

A separate PDF of this form will also be uploaded to H-GAC in the Zip file.

FORM C - RESPONSE CHECKLIST		Invitation No.: FL03-21
	Title: Fleet Services Equipment	
	Offeror: Routeware, Inc.	
This Form is provided to help insure that all required response elements have been completed and included		
This Response Includes:		
1	All H-GAC forms (HGAC Forms Packet and those included in this table below), **completed, and signed where prompted**	TM
2	A copy of the complete submission, including all required H-GAC forms, and all required documents. The HGAC forms docment shall be unalterend except for the prompted data fields (name, pricing, etc.) and submitted in its original Excel format only (no PDF). Offeror shall not split the Forms document into its respective worksheets, but kept as a single document.	TM
3	A comprehensive list of applicable priced options on Form-E	TM
4	Per Section-B, for catalog line items, complete electroic copies of each catalog priced and its associated list price book/sheet	TM
5	A **signed** Form-A from all entities who are party to this submission and who should be offered a contract if this submission is successful.	TM
6	The required list of References.	TM
7	Details of "Service Organization", including locations, hours, personnel and parts/service availability	TM
8	Complete Warranty Documentation for all products offered.	TM
9	Completed Form-H (in HGAC Forms packet)	TM
10	W-9 Form, completed and signed for each party to the bid.	TM
11	CIQ Form, completed and signed for each party to the bid. The form and instructions for its use can be found at: https://www.ethics.state.tx.us/filinginfo/conflict_forms.htm .	TM
12	1295 Form, completed, signed for each party to the bid. The form and instructions for its use can be found at: https://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm .	TM
13	HB 89 Form for each party to the bid, completed and signed.	TM
14	Contractor Contact Information form for each party to the bid, completed and signed.	TM

Form W-9 – Request for Taxpayer ID Number and Certification

A separate PDF of this form will also be uploaded to H-GAC in the Zip file.

Form **W-9**
(Rev. October 2018)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

▶ Go to *www.irs.gov/FormW9* for instructions and the latest information.

Give Form to the requester. Do not send to the IRS.

Print or type. See Specific Instructions on page 3.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.
Routeware, Inc.

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only **one** of the following seven boxes.

☐ Individual/sole proprietor or single-member LLC ☑ C Corporation ☐ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶

Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is **not** disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.

☐ Other (see instructions) ▶

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any)

Exemption from FATCA reporting code (if any)

(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.) See instructions.
16525 SW 72nd Avenue Phone: 503-906-8589 Fax: 503-906-8544

Requester's name and address (optional)

6 City, state, and ZIP code
Portland, OR 97224 accountsreceivable@routeware.com

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number
☐☐☐ – ☐☐ – ☐☐☐☐

or

Employer identification number
9 3 – 1 3 1 4 6 4 9

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here Signature of U.S. person ▶ Shanna Peralta Date ▶ 1/23/2020

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to *www.irs.gov/FormW9*.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, *later.*

Cat. No. 10231X Form **W-9** (Rev. 10-2018)

Form CIQ – Conflict of Interest Questionnaire

A separate PDF of this form will also be uploaded to H-GAC in the Zip file.

CONFLICT OF INTEREST QUESTIONNAIRE

For vendor doing business with local governmental entity

FORM CIQ

This questionnaire reflects changes made to the law by H.B. 23, 84th Leg., Regular Session.

This questionnaire is being filed in accordance with Chapter 176, Local Government Code, by a vendor who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the vendor meets requirements under Section 176.006(a).

By law this questionnaire must be filed with the records administrator of the local governmental entity not later than the 7th business day after the date the vendor becomes aware of facts that require the statement to be filed. *See* Section 176.006(a-1), Local Government Code.

A vendor commits an offense if the vendor knowingly violates Section 176.006, Local Government Code. An offense under this section is a misdemeanor.

OFFICE USE ONLY

Date Received

1 **Name of vendor who has a business relationship with local governmental entity.**

Routeware, Inc.

2 ☐ **Check this box if you are filing an update to a previously filed questionnaire.** (The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than the 7th business day after the date on which you became aware that the originally filed questionnaire was incomplete or inaccurate.)

3 **Name of local government officer about whom the information is being disclosed.**

None

Name of Officer

4 **Describe each employment or other business relationship with the local government officer, or a family member of the officer, as described by Section 176.003(a)(2)(A). Also describe any family relationship with the local government officer. Complete subparts A and B for each employment or business relationship described. Attach additional pages to this Form CIQ as necessary.**

N/A

A. Is the local government officer or a family member of the officer receiving or likely to receive taxable income, other than investment income, from the vendor?

☐ Yes ☐ No

B. Is the vendor receiving or likely to receive taxable income, other than investment income, from or at the direction of the local government officer or a family member of the officer AND the taxable income is not received from the local governmental entity?

☐ Yes ☐ No

5 **Describe each employment or business relationship that the vendor named in Section 1 maintains with a corporation or other business entity with respect to which the local government officer serves as an officer or director, or holds an ownership interest of one percent or more.**

6 ☐ Check this box if the vendor has given the local government officer or a family member of the officer one or more gifts as described in Section 176.003(a)(2)(B), excluding gifts described in Section 176.003(a-1).

7

Signature of vendor doing business with the governmental entity

11/10/20

Date

Form provided by Texas Ethics Commission www.ethics.state.tx.us Revised 11/30/2015

Form 1295 – Certificate of Interested Parties

A separate PDF of this form will also be uploaded to H-GAC in the Zip file.

CERTIFICATE OF INTERESTED PARTIES

FORM 1295

1 of 1

Complete Nos. 1 - 4 and 6 if there are interested parties.
Complete Nos. 1, 2, 3, 5, and 6 if there are no interested parties.

OFFICE USE ONLY
CERTIFICATION OF FILING

Certificate Number:
2020-687695

Date Filed:
11/09/2020

Date Acknowledged:

1 Name of business entity filing form, and the city, state and country of the business entity's place of business.

Routeware, Inc.
PORTLAND, OR United States

2 Name of governmental entity or state agency that is a party to the contract for which the form is being filed.

Houston-Galveston Area Council

3 Provide the identification number used by the governmental entity or state agency to track or identify the contract, and provide a description of the services, goods, or other property to be provided under the contract.

HGAC RFP #FL03-21
Fleet Services Equipment

4 Name of Interested Party	City, State, Country (place of business)	Nature of interest (check applicable)	
		Controlling	Intermediary
Routeware, Inc.	Portland, OR United States	X	

5 Check only if there is NO Interested Party. ☐

6 UNSWORN DECLARATION

My name is Tom Malone, and my date of birth is _____.

My address is 16525 SW 72nd Ave. (street), Portland (city), OR (state), 97224 (zip code), USA (country).

I declare under penalty of perjury that the foregoing is true and correct.

Executed in Washington County, State of OR, on the 10 day of November (month), 2020 (year).

Signature of authorized agent of contracting business entity
(Declarant)

Forms provided by Texas Ethics Commission www.ethics.state.tx.us Version V1.1.3a6aaf7d

House Bill HB 89 Verification Form

A separate PDF of this form will also be uploaded to H-GAC in the Zip file.

House Bill 89 Verification Form

Prohibition on Contracts with Companies Boycotting Israel

The 85th Texas Legislature approved new legislation, effective Sept. 1, 2017, which amends Texas Local Government Code Section 1. Subtitle F, Title 10, Government Code by adding Chapter 2270 which states that a governmental entity may not enter into a contract with a company for goods or services unless the contract contains a written verification from the company that it:

1) does not boycott Israel; and
2) will not boycott Israel during the term of the contract

Pursuant to Section 2270.001, Texas Government Code:

1. "Boycott Israel" means refusing to deal with, terminating business activities with, or otherwise taking any action that is intended to penalize, inflict economic harm on, or limit commercial relations specifically with Israel, or with a person or entity doing business in Israel or in an Israeli-controlled territory, but does not include an action made for ordinary business purposes; and

2. "Company" means a for-profit sole proprietorship, organization, association, corporation, partnership, joint venture, limited partnership, limited liability partnership, or any limited liability company, including a wholly owned subsidiary, majority-owned subsidiary, parent company or affiliate of those entities or business associations that exist to make a profit.

I, (authorized official) Tom Malone, do hereby depose and verify the truthfulness and accuracy of the contents of the statements submitted on this certification under the provisions of Subtitle F, Title 10, Government Code Chapter 2270 and that the company named below:

1) does not boycott Israel currently; and
2) will not boycott Israel during the term of the contract; and
3) is not currently listed on the State of Texas Comptroller's Companies that Boycott Israel List located at https://comptroller.texas.gov/purchasing/publications/divestment.php

Routeware, Inc.
Company Name

Signature of Authorized Official

CEO — 11/10/20
Title of Authorized Official — Date

Form H – Marketing Plan

A separate PDF of this form will also be uploaded to H-GAC in the Zip file.

FORM-H: SERVICE AND MARKETING PLAN	FL03-21
Offeror:	**Routeware, Inc.**

Instructions: Reference Section-B

Routeware is both capable and willing to serve H-GAC members across the nation and we will promote this contract to the best of our ability, as we have done throughout our partnership with H-GAC.

Routeware sells primarily to the waste industry, and exclusively to fleet services. We know these markets very well. We are also well-known in the waste industry. We will use our resources to (1) promote the contract and (2) serve H-GAC Members, while adhering to H-GAC marketing and promotion guidelines and protocols. The resources we will use to promote and support H-GAC include:

Staff: Routeware, Core Computing Solutions, and EasyRoute have a sales and marketing team of over 20 people who have been trained on our selling and marketing our H-GAC partnership. They will continue to promote and discuss this valuable partnership with municipal prospects.

We also have solutions engineers and support staff who serve H-GAC Members already, and would continue to do so. They are trained on how best to support the H-GAC Members.

Events and Memberships: Routeware has had a booth at WasteExpo for 15 years—including a virtual booth at this year's online WasteExpo. Numerous times we have been asked by municipal prospects at WasteExpo if we have a method to bypass the RFP process in order to sell our product. Routeware has even written a draft RFP for municipal waste haulers as a way to ease their RFP process. We would promote H-GAC extensively at WasteExpo as we would reach a large number of municipal prospects in that one setting. We also attend smaller waste industry events, where we would also promote H-GAC.

Routeware would also use our membership in the Solid Waste Association of North America (SWANA) as a resource for marketing our partnership with H-GAC. Routeware is very active with SWANA and exhibits at many of their conferences nationwide. If awarded an H-GAC contract renewal, we would promote this partnership and resource at every event at which we exhibit.

We would also promote H-GAC via the Municipal Waste Management Association (MWMA), which is a sub-committee of the United States Conference of Mayors. A vendor in the waste industry must be invited by a municipality to become a member of the MWMA. Routeware has been a member for nearly 10 years.

Technology: Routeware is a technology company, and so technology is one of the most valuable resources we can offer to our partners. Our staff members aree adept at using technology in both sales and support. Routeware maintains a customer relationship management (CRM) system with contact information and data about all customers and prospects. This database is invaluable in our work promoting and supporting H-GAC. For example, we have the ability to send email campaigns to all municipal prospects we have to promote H-GAC and the ease of use of the program.

Digital Presence: Routeware maintains an updated website, LinkedIn page, and Twitter account, and we will consistently promote our partnership across all of these platforms.

*All activities listed above would be in compliance with HGAC marketing processes and protocols and would be in partnership with HGAC marketing staff.

References

Routeware has extensive experience installing our solution for municipalities and private haulers. Routeware's installations have spanned a broad range of haulers, from small 10-truck operations to large-scale operations with hundreds of vehicles. As a result, Routeware has adapted its system design, installation, training, and support methodologies to serve a wide variety of customers and use cases. Below are some of the haulers and municipalities Routeware currently services.

Lexington-Fayette Urban County Gov.

Deployed: 12/2009
Eddie Dean
200 East Main Street, Lexington, KY 40507
edean@lexingtonky.gov
(859) 280-8565
(859) 233-3304 (Fax)

City of Waco

Deployed: 12/2019
John Settlemyer
501 Schroeder Dr., Waco, TX 76702
johns@wacotx.gov
(254) 299-2602
(254) 750-8032 (Fax)

Municipality of Anchorage

Deployed: 8/2019
Evalu Filitaula
1111 E 56th Ave., Anchorage, AK 99518
evalu.filitaula@anchorageak.gov
(907) 343-6262
(907) 561-1357 (Fax)

City of Grand Rapids

Deployed: 9/2018
Robert Black
201 Market Ave. SW, Grand Rapids, MI 49503
rblack@grcity.us
(616) 456-4212
(616) 456-4607 (Fax)

City of Loveland

Deployed: 12/2018
Tyler Bandemer
2525 West First Street, Loveland, CO 80537
Tyler.bandemer@cityofloveland.org
(970) 962-2529
(970) 962-2902 (Fax)

City of Peoria

Deployed: 2/2020
Aaron Redd
8401 W. Monroe Street , Peoria, AZ 85345
aaron.redd@peoriaaz.gov
(623) 773-7812
(623)773-7043 (Fax)

Services provided to each of these customers: Route management and vehicle tracking and optimization software and hardware installation, service implementation, training, and ongoing support.

Service Organization Document

Facility location: 16525 SW 72nd Ave., Portland, OR 97224

Phone: (877) 906-8545

Service Manager: George May, Vice President of Operations

Procedure to be used by an End User requiring repairs: The customer first sends an email to rma@routeware.com with the serial number, hardware, and a description of the issue. Routeware then sends back an RMA form with the RMA number and shipping address. The device needing RMA support is sent to Routeware's RMA team by whom the issue will be resolved.

Typical turn-around time on repairs: Between two to 10 days.

Service Department days and hours of operation: Routeware support is available 24x7x365. In-office hours are Monday-Friday, 7:00 am to 5:00 pm. Pacific Time (PT)

Number of qualified / factory trained service personnel normally on hand: 14

Description of the parts inventory on hand: Routeware practices a standard inventory management procedure for the on-board computer hardware and accessories. A parts list is kept up to date based on spare inventory stored in our warehouse. When the inventory reaches the threshold we have set for reordering, an order is placed to our approved vendors to fill the inventory.

Training services, facilities and personnel available: Routeware provides 24x7x365 technical support. After-hours calls do not go to an answering service. Routeware has full-time, in-house technical support team members on call 24 hours a day. Routeware is knowledgeable of the times fleets typically start routes, and we understand that after-hours support is a natural and required aspect of working in fleet management. Routeware has a toll-free support number and a support email (support@routeware.com). Sending email to the support alias will automatically generate a support ticket and generate an auto-response to the customer. Routeware has a very strong technical support team. Our customers have lauded our team's responsiveness and knowledge of the product.

Second Section:

- Form D – Offered Items Pricing
- Form E – Published Options

Form D – Offered Items Pricing

The original Excel file with Form D (pricing) will be uploaded to HGAC in the Zip file.

Form E – Published Options

The original Excel file with Form E (pricing) will be uploaded to HGAC in the Zip file.

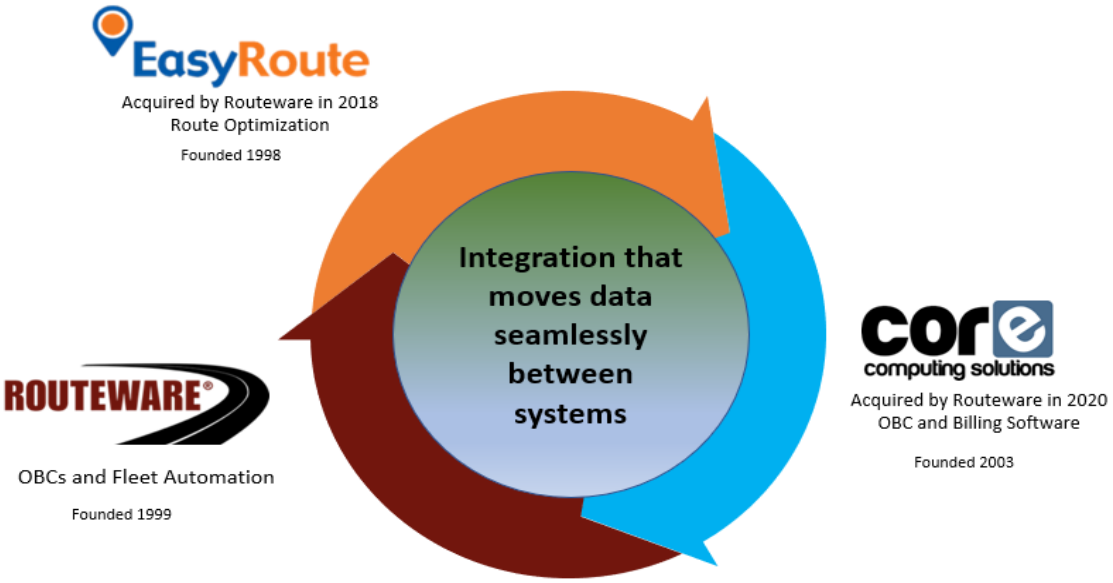
Third Section:

- Technical Specifications
- Warranty Documentation

Technical Specifications

Over 20 Years Exceeding Expectations in the Waste Industry

Routeware, Inc., headquartered in Portland, Oregon, has spent over 20 years refining our On-Board Computer System, other solutions, and customer support process to ensure we constantly exceed the expectations and meet the goals of our customers. In recent years we have acquired several complementary companies, expanding our solution resources to meet every need as it relates to billing, route management, fleet automation, and route optimization. With over 100 experts under the Routeware Global umbrella, we offer a breadth of knowledge to ensure optimal cutomer support and success. Routeware Global currently have our solutions installed or being used at over 600 customers in the US, Canada, and the UK.



About Core Computing Solutions

Core Computing Solutions, Inc. offers a comprehensive turn-key solution from a single vendor approach: EnCore Back Office and Web Portal. These platforms allow waste and recycling companies to create, bill, and manage customer accounts, build and manage recurring collection routes, dispatch on call services, perform real-time route and service management, weigh and track materials, track and allocate inventory, as well as report on every aspect of a company's financial and operational activity.

About EasyRoute

EasyRoute provides route optimization software for solid waste collection and street sweeping services. Using EasyRoute, private haulers and municipal governments can lower costs, improve performance, and reduce risk by designing more efficient routes that work in practice. EasyRoute is a wholly-owned subsidiary of Webaspx, the UK's leading provider of optimization technology for municipal services such as waste collection, street cleaning, and highway winter maintenance. The company has worked with over 300 municipalities and environmental service companies across the United States and the United Kingdom.

Routeware maintains constant communication with our customers. Our project teams hold weekly calls (or bi-weekly, based on the customer's preference) leading up to project Go-Live and will continue those calls after Go-Live to keep an open dialogue on needs, issues, training, and upcoming releases and enhancements. Routeware maintains a secure "Client Zone" on our website, where customers can find training documentation, user guides, and release notes. Routeware also holds a yearly User Conference where our customers come together for training, to share best practices, to see new offerings, and to network with others in their industry.

A History of Successful Projects and References

Lexington, Kentucky

In 2009, the Lexington-Fayette Urban County Government (LFUCG) issued an RFP for waste hauling services, route optimization, interfacing to their 311 system and LFUCG systems, pre-trip and post-trip vehicle inspections, integration to their landfill scale system, and their human resources system. The initial contract was for 125 waste hauling vehicles in residential, commercial, and roll-off. Lexington chose Routeware and has recouped all of their expenditures for this system. The efficiencies provided by the Routeware solution allowed Lexington to eliminate 10 vehicles from their fleet.

> **Lexington paid for the entire Routeware system via cost savings, was able to eliminate 10 trucks, and has expanded use of Routeware into two additional divisions.**

Based on the successful implementation of Routeware's system within the Waste Division, LFUCGexpanded their use of Routeware into multiple divisions, including the Water Quality division and the Streets and Roads division. Lexington continues to be a strong user of Routeware's system. Due to population growth in the Lexington area, they now have 153 waste vehicles with Routeware's on-board computers and over 193 public works vehicles with Routeware's GPS/AVL (global positioning system/automatic vehicle locator) and work-order-based solution.

Recology

Recology is a large private waste hauler with its headquarters in San Francisco, and operations in California, Oregon, and Washington. Recology has been a Routeware customer since 2008 and has 1,800 waste vehicles. Routeware is installed at several Recology locations including the City of San Francisco and San Mateo County.

Kimble Disposal in Ohio

Kimble completed a 334-unit Routeware deployment in 2018. Routeware uninstalled the incumbent Fleetmind system which was replaced with Routeware's Windows and Android devices.

The City of Seattle, Washington and CleanScapes

The City of Seattle issued an RFP for waste hauling services for the Seattle metropolitan area in 2010. Routeware partnered with CleanScapes in a joint response. The City awarded half of its business to CleanScapes (the other half to Waste Management), which deployed Routeware technology. CleanScapes now has over 200 units in service. In 2013, at a Municipal Waste Management Association (MWMA) Conference, a presentation was being made by the Solid Waste Director of the City of Seattle. The director indicated that the City was very impressed with CleanScapes and the quality of data and service they received via the Routeware solution.

"We absolutely love it. It makes our time more efficient; We can get things done. It helps us look at the drivers so we can plan the day, and it keeps us on top of what they are doing. It's our line of communication to the drivers all day long."

- Recology

Customer Testimonial: Action Environmental

Quoted in Waste360, May 2019

"There are a number of benefits derived from Routeware including but not limited to:

- "Billing Extras: using tablet-based cameras to capture extra volume which is then interfaced into our customer service and billing system for billing extras to our customers
- "Electronic Route Sheets: having sequenced route sheets available to our drivers on the tablet has helped improve operational efficiency
- "Metrics: Routeware provides additional operating metrics, such as Idle Time, to provide Dispatch greater insight into managing the fleet."

"What sets Routeware apart …is the flawless operation of its products …but most notably with its top-notch support department."

Brian Giambagno
Chief Financial Officer
Action Environmental

Action Environmental installed Routeware's solution in 2015. They currently have 233 units in operation and continue to expand their usage

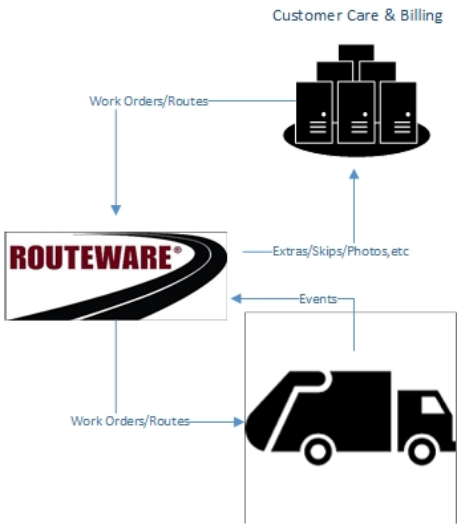
"Most industry-specific solutions usually get you to the same result. Companies may choose a certain solution because it fits the needs of the business just a little better than another. What sets Routeware apart from the numerous other providers in the business is the attentiveness of its customer service team, the product knowledge of its sales team, the flawless operation of its products due to its development team, the mutual trust and respect we have with its leadership and executive team, but most notably with its top-notch support department. I've dealt with many support teams in the past and have found that a product is only as good as the support you receive, which I feel many companies suffer with. What few problems (mostly questions) we've had with Routeware, the friendly staff has resolved and answered better than any."

Greg O'Brien
Director of IT
Action Environmental

On-Premise or Cloud Hosting Options to Meet Our Customers' Needs

Routeware can deliver its product as on-premises offering that can be run by the customer. Alternatively, Routeware can host and operate the service for the customer.

Routeware's hosted service runs in the Amazon Cloud. Routeware servers hosted in the Amazon Web Services cloud are grouped into a Virtual Private Cloud, or VPC. These servers are logically isolated for security and privacy. This structure allows Routeware to create rules that govern how these servers can be accessed. Routeware has a VPN connection to the Amazon VPC, which allows secure communication for accessing the servers. The customer would be provided a URL that can be accessed by users anywhere there is an internet connection. Additional details regarding Amazon's security protocols may be found here: https://aws.amazon.com/security/



General System Overview

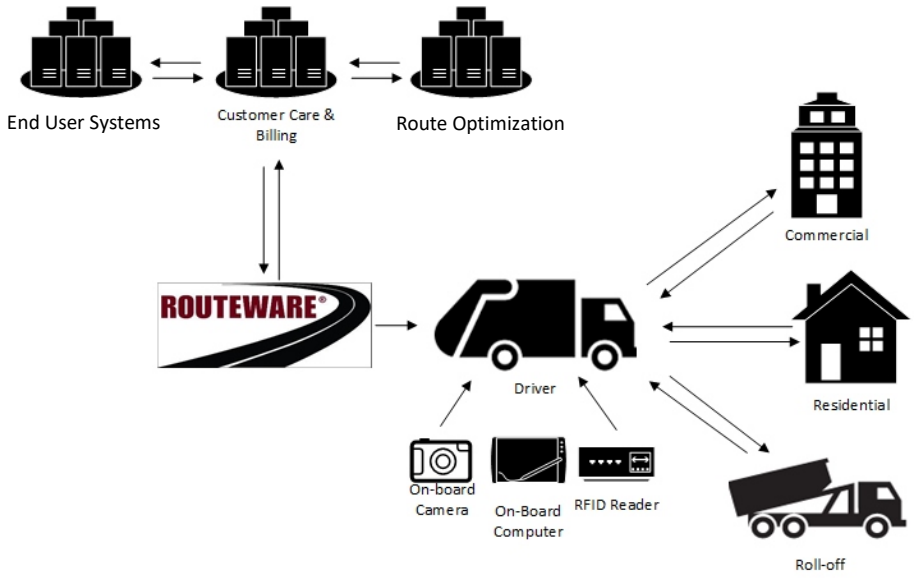
Collection Route & Driver Information

The Routeware system easily permits a Route Supervisor and/or Dispatcher to load routes, change them, and move them from truck to truck in real-time, easily throughout the day. Routeware captures and reports data while helping the driver run a route. Information processed includes (but is not limited to):

- RFID reading and service verification
- Scales integration
- Camera integration
- Deviation detection (via report and dashboard alert)
- Turn by turn directions
- Time on route
- Miles driven
- Seatbelt alert
- Fork sensors that detect fork lifts

Our system also utilizes instant messaging functionality for communication between Drivers and Dispatchers/Supervisors that is compliant with no-texting laws.

The on-board touchscreen computer connects with various sensors like RFID readers, cameras, fork actuators and more. These devices provide service verification and tracking of extras, turn-by-turn GPS directions, visual evidence tracking, and instant messaging. All of this data is transmitted in near real-time to the back office system, Routeware Control Center (RCC), which can be connected to the customer's CRM/billing system to ensure all extras are tracked and properly billed to the customer.



Container Pickup Overview

Overview of the Routeware Solution

An Easy-to-Use On-Board Computer System Featuring Intuitive Functionality

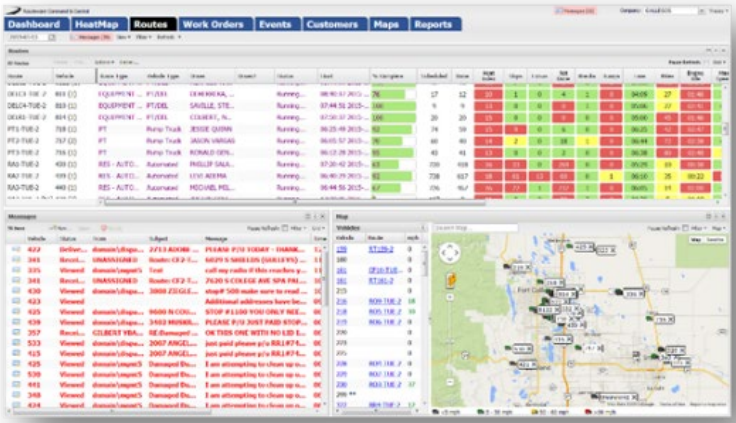
Routeware's system of on-board computer tablets, GPS/AVL systems and a unifying back office product meets the requirements of the most demanding solid waste and recycling operations.

In the truck:

- **Routeware Premium System** — The Routeware Premium System includes the Routeware On-Board Computer System and Routeware's highly reliable on-board computer and driver interface software. Routeware's on-board systems support numerous "**smart-truck**" peripherals such as RFID readers, cameras for picture recording, on-board video service, scale readers, fork movement sensors, and more.

- **Routeware Basic** — A telematics service that includes a small tracking device without a touchscreen in a truck, to which smart truck peripherals may or may not be attached.

In the back office:



- **Routeware Control Center (RCC) –**— A back office web-based application that includes a "HeatMap" that presents real-time dashboards and alerts to management to verify that routes, drivers, and vehicles are operating within their specified performance parameters. RCC can also be used to dispatch real-time work orders to vehicles, track route progress, analyze route performance, and provide real-time information for customer service agents. RCC is a 100% web-based application that utilizes a Microsoft SQL Server database. RCC can be installed onsite, or hosted in our cloud environment with Amazon, the leader in cloud hosting services. Unlike many vendors who offer different grades of service, Routeware monitors Routeware Premium, Routeware Basic, and Basic PLUS all via the **Routeware Control Center (RCC)**.

The Routeware On-Board Computer System

The Routeware on-board touchscreen computer system can be an Android tablet or a Microsoft Windows tablet such as the **Tab Active Pro**. The Routeware On-Board Computer System is built around real-time receipt, storage, and transmission of live route information. The base installation includes the on-board computer, wire harness, and integrated cellular modem.

Each tablet goes through rigorous testing and certification to verify it can handle the everyday wear and tear that occurs in waste and recycling vehicles. Our certification includes testing the tablets on our in-house developed "shake" table, drop testing the devices from various heights, freezing and instant thawing the devices, and water testing the devices. We offer devices of different sizes, ruggedness, and operating systems because work flows and conditions vary by line of business (roll-off, commercial, residential). Routeware offers the option to choose between different on-board computer devices that vary by size and operating system.

The Routeware On-Board Computer System Functionality

ON-BOARD COMPUTER SYSTEM

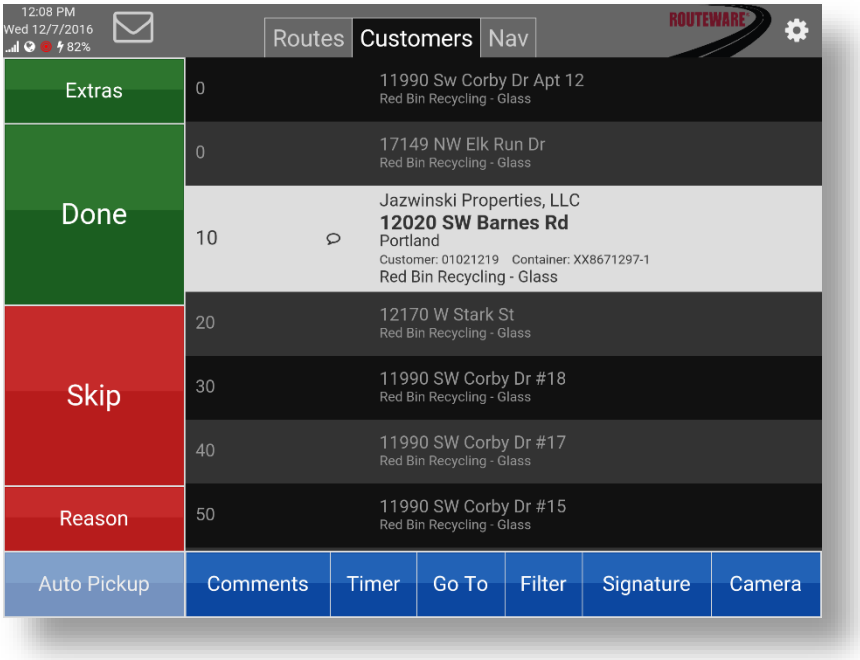
The Routeware On-Board Computer System provides ease of use for drivers and allows them to automate and improve efficiencies in their daily operations. The Routeware On-Board Computer System receives routes from the Routeware Control Center (RCC) via the Verizon cellular data network or other data networks such as AT&T and Sprint. The system stores the routes and all related event data (for example: pickups, skips, timers) in a SQL Server Express database. The system collects GPS location data every 15 seconds and transmits event data and GPS data to RCC every two minutes. Should the cellular connection be lost, the Routeware On-Board Computer System buffers all route event data, and GPS information on the unit's solid-state drive. When the cellular connection is re-established, all stored data is transmitted automatically and immediately.

The Routeware On-Board Computer System provides a user interface that displays the customer's pickup information in an easy-to-understand, driver-friendly format. There are two main interfaces: (1) regularly scheduled routes such as residential, commercial, and recycling routes, and (2) work-order-based routes such as roll-off and bulky pickups.

Associated with the customer pickup list are: customer name and address, customer number, container type, size, and ID, pickup sequence number, and customer notes. In addition to viewing the customer information on the customer tab, the driver can also view the customer location on a map in the Nav (Navigation) tab of the user interface.

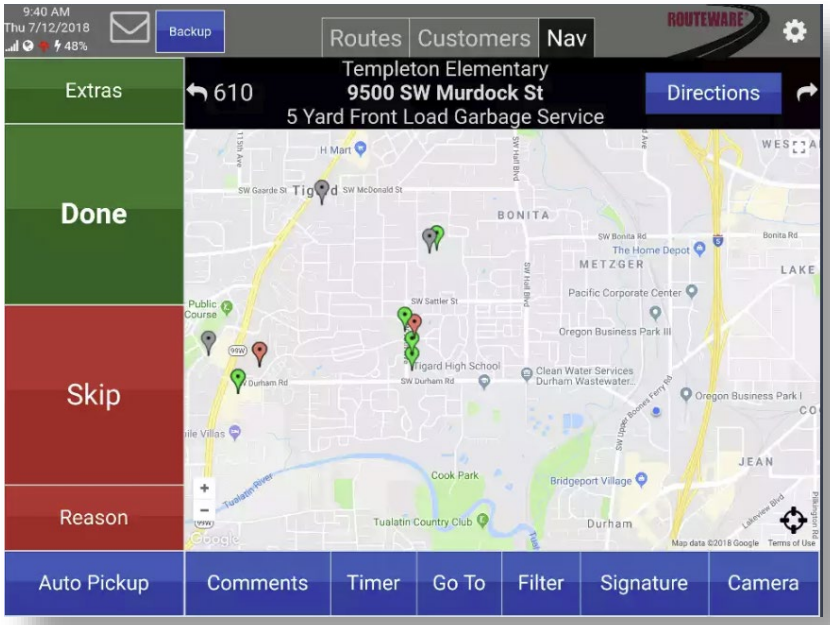
The pickups are displayed in customer sequence as the route progresses. After each completed stop, the screen automatically advances to the next sequenced stop. The unit can also be set in Auto Pickup mode, where the pickup is automatically recorded without driver input if the Routeware On-Board Computer System detects:

- The vehicle has stopped
- The vehicle performs a lift
- The lift is within the geo-halo of the next customer pickup



REGULARLY SCHEDULED ROUTE SCREEN WITH DRIVER NOTE

The Routeware On-Board Computer System includes mapping functionality. The map auto-zoom is based on the distance between the truck location and its next pickup location, which appears as a jumping dot on the map. Other pickups are depicted on the map as ● gray dots (uncompleted stop), ● green dots (completed stop), and ● red dots (skipped stop). The address of the next pickup appears in the black header above the map. The truck appears as a blue dot on the map.

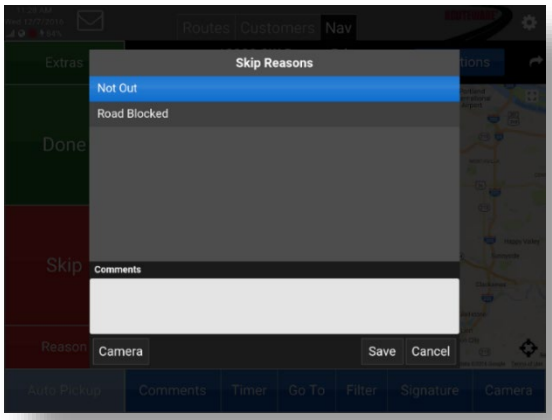


MAPPING SCREEN

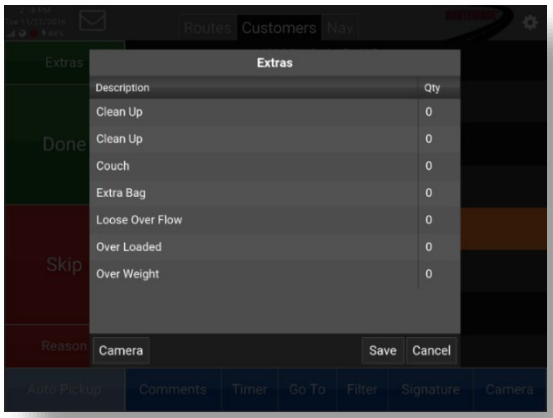
The Routeware On-Board Computer System tracks both missed pickups and containers that were not set out. The user interface on the system has a large, red “Skip” button that the driver simply presses to indicate an inability to service the container. Users can assign a default reason associated with this button (typically “Not Out” or “Blocked”).

Alternatively, the driver can choose a skip reason from a list defined by you. This user-configurable list can vary per line of business (for example: commercial, residential, roll-off).

An optional feature is the digital camera, which can be used for service verification, allowing the driver to take a picture of any skip or extra event. Routeware offers tethered and fixed, mounted cameras.



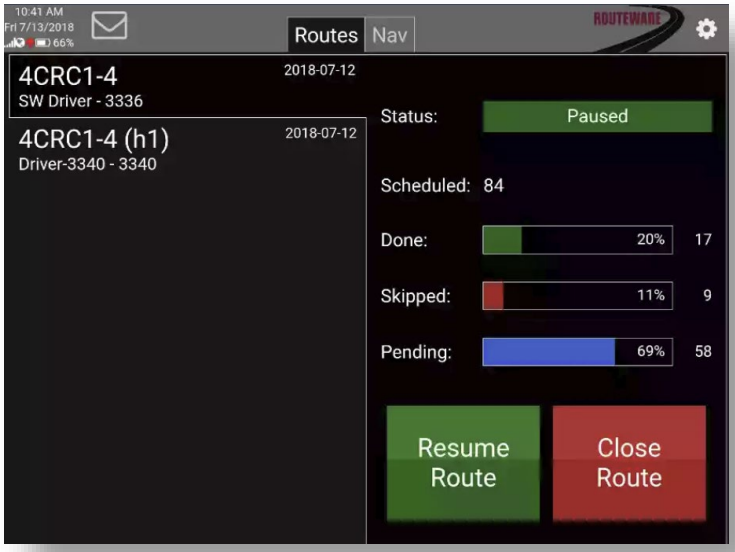
SKIP SCREEN



EXTRAS SCREEN

These can record photographic evidence (extras, skips) to be sent to the office. Date, time, and customer addresses are captured on the photos and are sent to the office in real time.

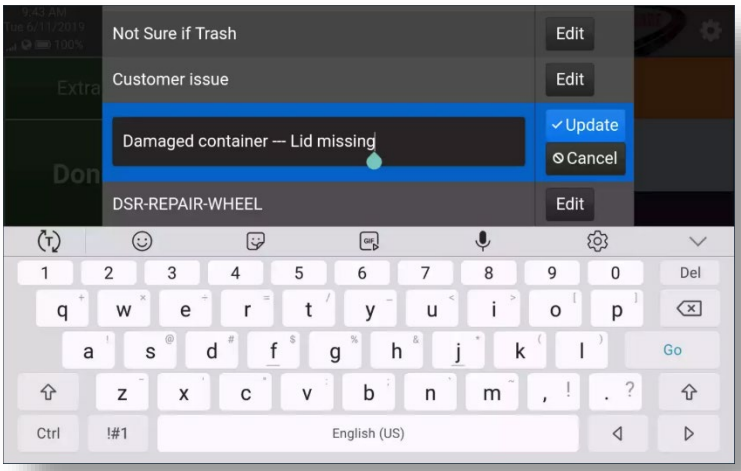
The Status screen on the Routeware On-Board Computer System shows how many stops have been skipped, completed, or missed (where missed is defined to be a customer stop in which the driver did not record a Done or a Skip). RCC has reports that show Skips and Misses by route.



ROUTE STATUS SCREEN

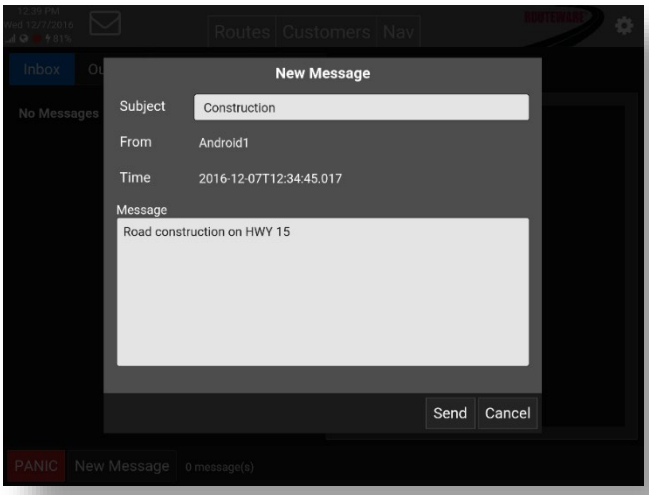
The Routeware On-Board Computer System features two kinds of comments, both of which are in compliance with no-texting laws while the vehicle is in motion:

1) **<u>Comments Associated With a Customer Pickup.</u>** The system allows the driver to enter a typed comment via an on-screen keyboard, as well as choose from several user-defined comments that the End User can pre-set. This is useful to note specific customer conditions, such as a damaged container, and the comment remains attached to the customer record when it is transmitted to the office in real-time.



DRIVER ENTRY OF CUSTOMER COMMENTS

2) **<u>Driver Messaging</u>.** Driver Messaging is designed to replace cellular calls and two-way radios by giving the dispatcher and the driver an easy way to communicate with one another. These quick text messages can be sent from RCC to the On-Board Computer System, and vice versa. Drivers can choose from a series of pre-set messages, then use the on-screen keyboard to complete it, or type a new message.



DRIVER MESSAGES SCREEN

More About the Routeware On-Board Computer System

The system is built around real-time receipt, storage, and transmission of live route information. The base installation includes the on-board computer, wire harness, and cellular modem equipped with a dual-band cellular/GPS antenna for optimal data transfer.

Routeware's mobile devices use a touchscreen interface and push-button controls. The devices may be permanently attached to the dashboard and are ruggedized for harsh road and weather. Turn-by-turn directions can be provided visually and audibly, depending on the driver's preference.

The on-board devices can relay sensor information to the office. The mobile device offers customizable fields for extras, skips, misses, timers, landfill stops, comments, and numerous other activities.

The on-board device records all metrics listed, as well as others listed later in this document. Reports and dashboards can be rendered in Excel, CSV, and PDF formats, and can also be converted to Word format.

Drivers can verify that a route has been uploaded to their mobile device. Routeware's On-Board Computer System allows drivers to perform pre-trip checklists. Through the mobile touchscreen, the driver has the ability to add extras by selecting the type of extra, the quantity, and other comments from pre-defined, drop-down lists. This information is transmitted through Routeware's system to the End User's billing system for rating and billing purposes. The Routeware system can link charge codes to the extras the driver has entered before passing the data to the billing system.

Scale Integration

Routeware offers two optional scale integrations:

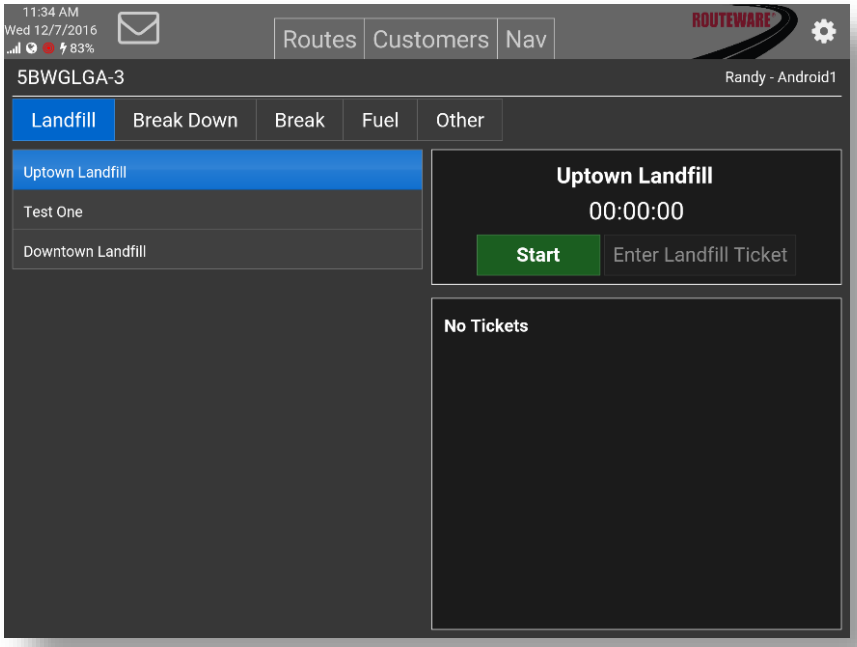
1) **Fork Scales on Commercial Front Load Trucks.** In this application, the on-board computer has a serial cable connection to the scale meter provided by the scale vendor. Routeware currently connects with Cleral, Vulcan, Loadman, and AirWeigh for this use. Routeware is able to capture the weight of each lift and report that back to the RCC server and the back office dispatchers.

2) **Body Scales.** These are scale sensors built in to the truck that measure the overall vehicle weight. These are tied in to the Routeware on-board computer via a serial cable. The Routeware integration will capture these events and be able to report them to back office dispatchers.

Landfill Ticket

Using the Routeware on-board computer, the driver can enter landfill ticket data, which is reported back to RCC. We capture the following fields:

- Date
- Time in, time out
- Vehicle number
- Driver
- Net weight
- Landfill Visited
- Type of material
- Route number



LANDFILL TICKET SCREEN

Routeware's Camera Capabilities

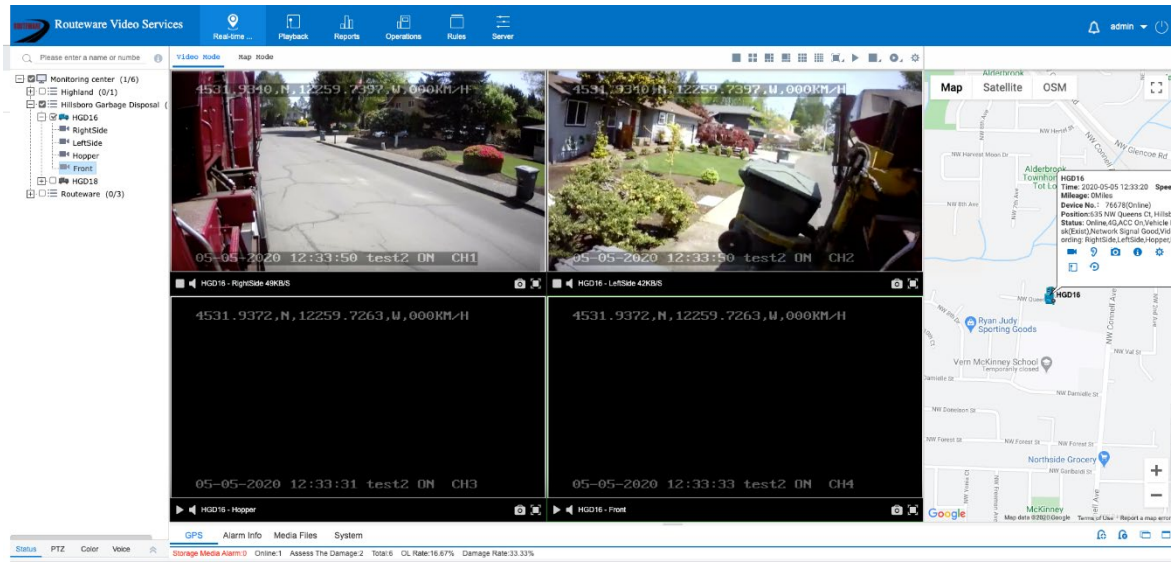
Routeware supports and interfaces with external digital cameras, allowing the driver to document situations onsite in picture or video format. The pictures are saved with a timestamp, customer name and location (latitude and longitude). Pictures are transmitted to RCC, where they can be displayed or emailed to customers. They are stored in RCC along with the customer pickup record, so a customer service representative can pull up that customer account and see any pictures associated with a specific pickup event.

LOWLIGHT PICTURE SITUATION

There are many types of cameras offered by Routeware. One is a fixed camera mounted outside of the vehicle, typically aligned with the actuator arms. Another is a tethered camera, which allows the driver to aim and shoot a photo without moving the truck, typically used on roll-off or rear-load vehicles. The images are sent with the standard data packet that we send every two minutes and are stored as JPEG files.

Video Capability for Added Safety and Peace of Mind

Routeware offers a comprehensive in-vehicle video service that does not require an additional cellular data plan or even additional cameras. Users can utilize the same cameras that are used for pictures and customize what information (all events, G-force only, etc.) is recorded and can be viewed by any back-office personnel. The system can be expanded to include up to a total of eight high-definition cameras.



VIDEO SERVICE

RFID Solution

Routeware provides an RFID reader through Routeware's On-Board Computer System. Routeware has extensive experience with RFID technology and associated reporting. This includes implementing RFID systems for multiple customers in the U.S. and Canada that have resulted in millions of successful RFID scans.

How it works:

1) RFID tags are affixed by the End User to all carts and containers serviced by the End User.
2) RFID readers are placed in the trucks as part of the Routeware On-Board Computer System.
3) The RFID reader scans the tag's ID number (range is over 30 feet), finds the appropriate customer record in the On-Board Computer System, and automatically records the pickup on behalf of the driver. (Note: Routeware filters out all RFID information that does not specifically match the customer container list).
4) The database associates RFID chips with the customers' containers and pickups are automatically recorded on behalf of the driver.
5) All RFID event information is captured on the on-board terminal and transmitted to the back-office system in real-time.

If the cart does not have an RFID tag, the driver can make a visual determination of the correct address and select that address from the on-board computer. If the cart is at the wrong location, the driver can assign that cart to another address.

The Routeware on-board device allows drivers to log events and comments in real-time. The system allows the driver to select a lost cart event and choose the specific cart type. The lost cart alert will be tied to the customer account and will transmit back to RCC for processing and replacement work orders. Route supervisors and cart management personnel can run daily reports of the lost cart comments to make operational improvements.

RCC provides comprehensive and detailed reports and dashboards. Routeware can design specific reports to identify lost carts. This information (customer name, customer #, RFID #, etc.) can be returned via an export to the End User's billing system on a daily basis to identify and schedule replacement needs.

Routeware's On-Board Computer System will scan the RFID tag of each cart and identify the customer. The driver can optionally use an on-board camera to take a picture of the damaged cart. If no camera is available or the RFID tag is not read, the driver can enter comments in the on-board computer related to cart condition. The picture is saved with a timestamp, customer name and address, and GPS coordinates. The photo and/or comments are transmitted back to RCC.

About Routeware Control Center

Routeware Control Center (RCC) provides easy-to-use tools necessary for route supervisors and dispatchers to update, adjust, and check routes in real time. The RCC HeatMap, driver idle time, speed, work order, and much more are all available at the click of a button presented in an easy-to-use visual interface.

Routes may be adjusted in real time in the RCC interface. Throughout the day, the route supervisor or dispatcher can update, adjust, and check the near real-time status of, or deviations from, routes. Thresholds are set by End User personnel. Our system allows the route supervisor to see traffic in real time and to issue commands to the driver via the on-board computer. The system also allows the route supervisor or dispatcher to add or remove stops.

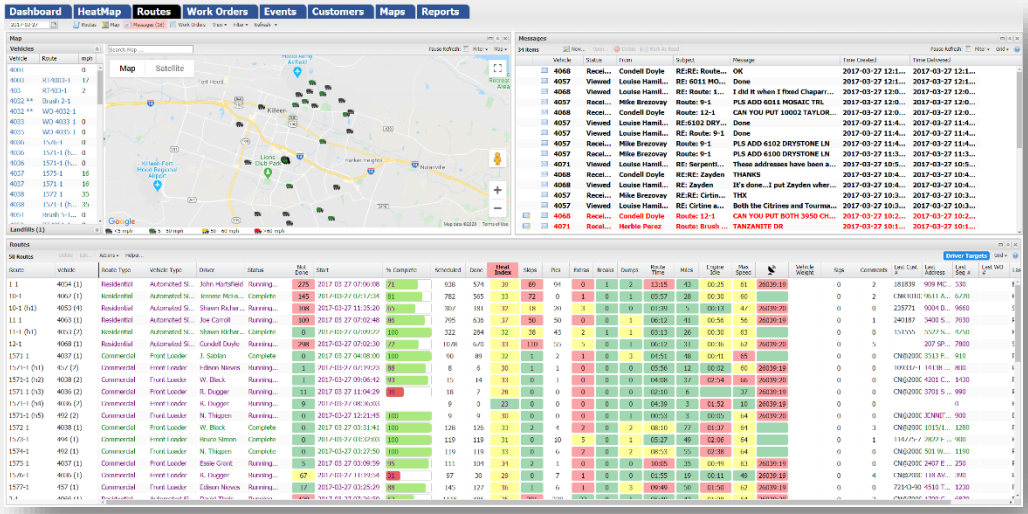
RCC has seven primary software tabs that provide many functionalities including the ability to look up an account, the scheduled route, status of service, customer service history, and much more. The RCC tabs include “Routes,” “HeatMap,” “Work Orders,” “Events,” “Customers,” “Maps,” and “Reports.” There are features in each tab that aid a dispatcher or customer service representative in answering customer questions or in assisting drivers with their routes. The RCC tabs are described in further detail below.

Routes Tab

The Routes tab is used to schedule routes, send routes to trucks, and manage the routes for all route-based operations, such as Commercial, Residential Recycling, and Residential Trash. The Routes tab has three panels: Routes, Messages, and Map. Each panel can be moved, resized, or hidden. **The Routes panel** has various columns with all pertinent data related to routes, such as Route Type, Vehicle, Driver, Status, Percentage Complete, and Route Time. From the Routes panel, pickups can be created and reassigned from one truck to another, called a Helper Route (for example, if a truck breaks down and its route needs to be reassigned).

The route data can be viewed in several different formats, by sorting and filtering. The Routes panel also provides alerts to the dispatcher about potential issues, such as a route with too many skips, idle time, or speeding.

The **Messages panel** provides a text messaging system so the dispatcher and drivers can communicate in real time with each other. The dispatcher also can broadcast a message to all drivers. The **Map panel** shows the current location of every vehicle, as shown in the figure on the next page.

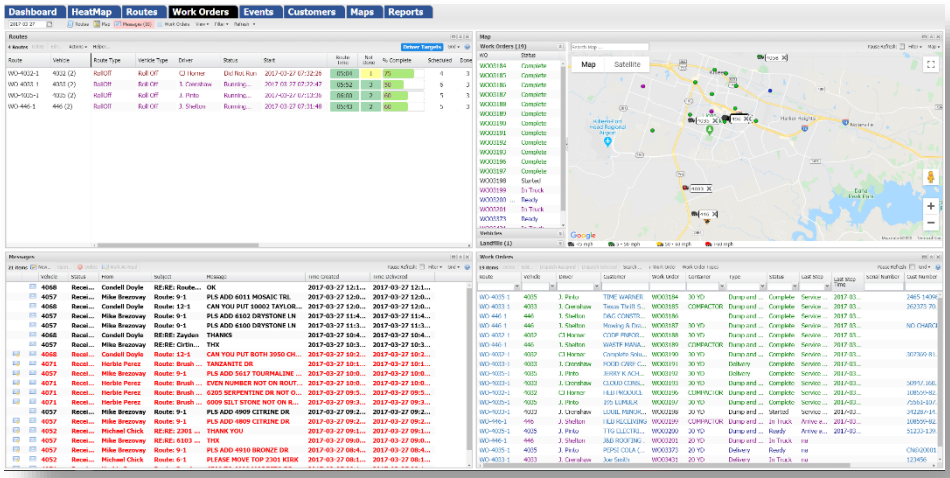


THE ROUTES TAB

Work Orders Tab

The primary purpose of the Work Orders tab is to schedule and dispatch work orders for roll-off trucks The Work Orders tab has four panels: Routes, Map, Messages, and Work Orders. Each panel can be moved, resized, or hidden.

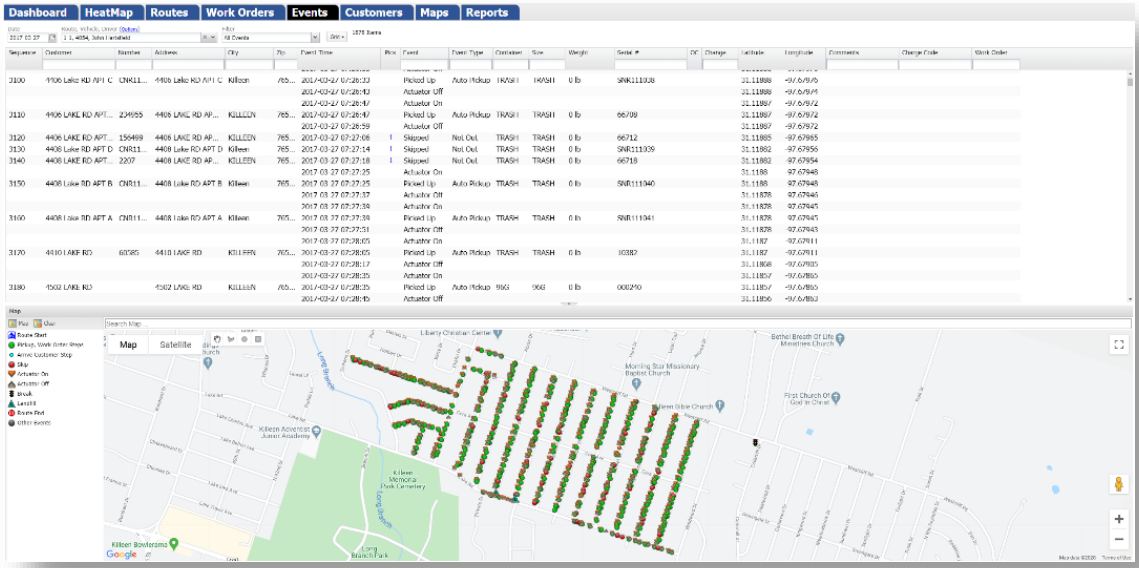
The **Work Orders panel** shows work orders for the selected date. Work orders are color-coded to indicate their status, such as Created, Assigned, Ready, In-Truck, Completed, Skipped, or Missed. The work orders can be sorted in various ways with the headers, such as by Status, Vehicle Number, or Work Order Number. Using this screen, the dispatcher can send individual work orders to one truck or to several at once. The dispatcher can also view the work orders by truck in a matrix in the Work Orders tab. All panels in the Routes and Work Orders tabs can be resized and reorganized to fit the user's preferred view, as shown in the figure below.



THE WORK ORDERS TAB

Events Tab

The Events tab shows all service events and pickup details for a given route. It shows Route Start, Route Completion, Pickups, Extras, Skips, Landfill Trips, and numerous other events. Each event can be shown on the map, along with a time/day stamp.

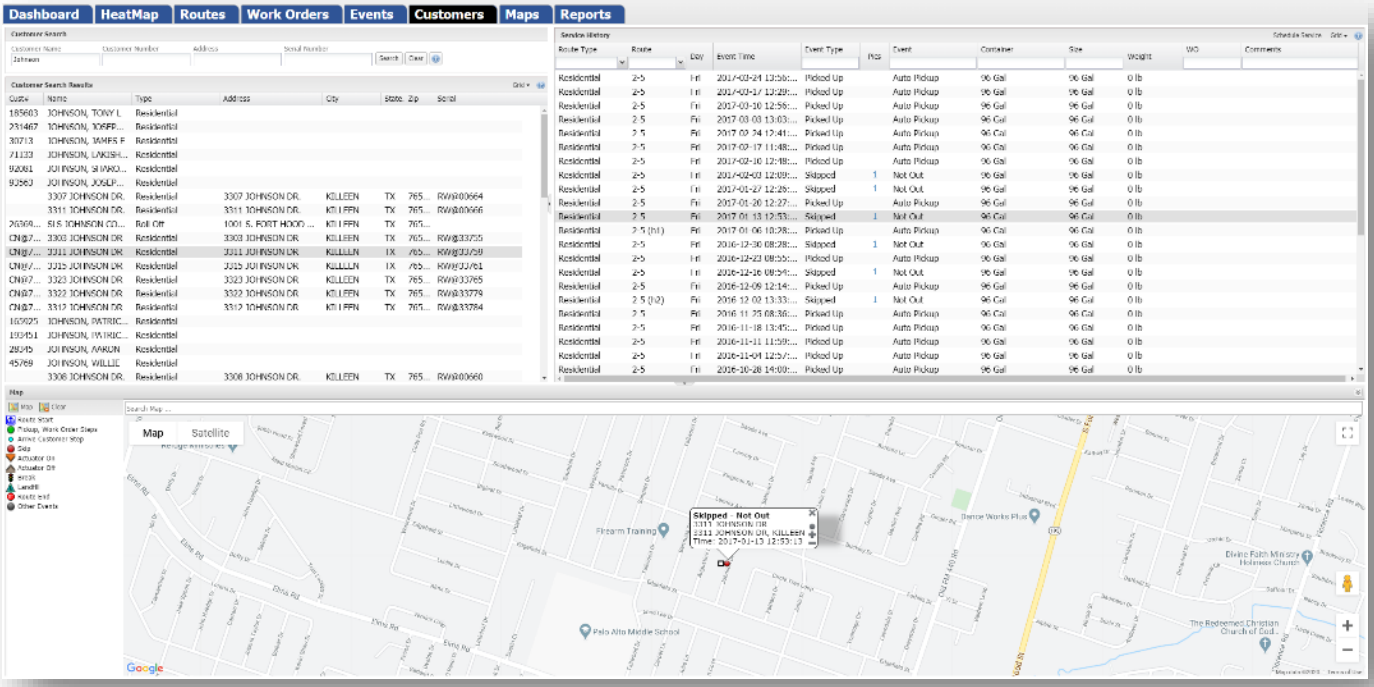


THE EVENTS TAB

Customers Tab

The Customers tab is used to view all service history for customers. The **Customer Search panel** includes the entry criteria for entering a customer name, number, or address and the search results. The **Service Details panel** shows the services that the customer has, such as residential trash, residential recycling, and residential yard waste. The **Service History panel** shows the service history for that customer's service. The **Map panel** shows a map of the customer's service events. Using the Customers Tab, the customer service representative can easily and quickly look up any account upon receiving a call from a customer. The customer service history detail includes all pickups, skips, extras, comments the driver recorded on the pickup, and any pictures taken.

It includes the time stamp and date of each event. Customers have told Routeware that they have reduced their customer service time on the phone by 90% using the Routeware system.



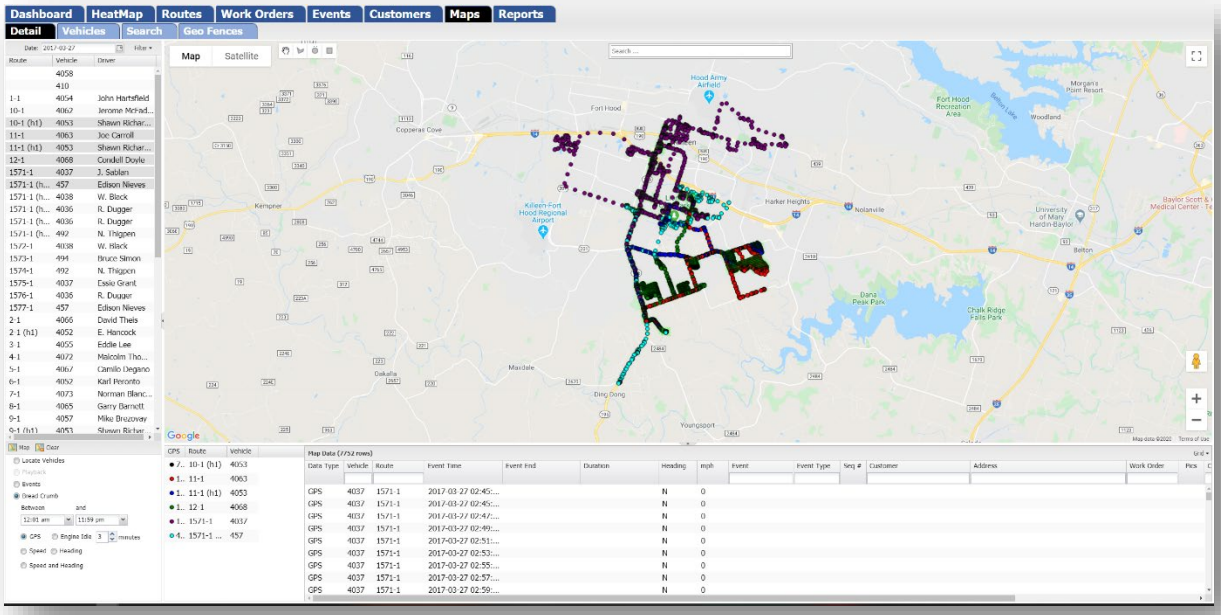
THE CUSTOMERS TAB

Maps Tab

The Maps tab is used to visually inspect virtually every activity, pickup, skip or driver action. Route playback, geofencing, and "breadcrumb trails" of the routes can be viewed. Users can select a single vehicle or a subset of the fleet to compare routes, and to aid with route balancing. The user can also compare the scheduled route to the actual way the route was run. The mapping functionality includes options such as:

- Compare scheduled route to actual route on map
- Compare two or more different routes to observe overlap between them
- Show speed in the breadcrumb trail
- Show pickup events on the breadcrumb trail
- Show route playback

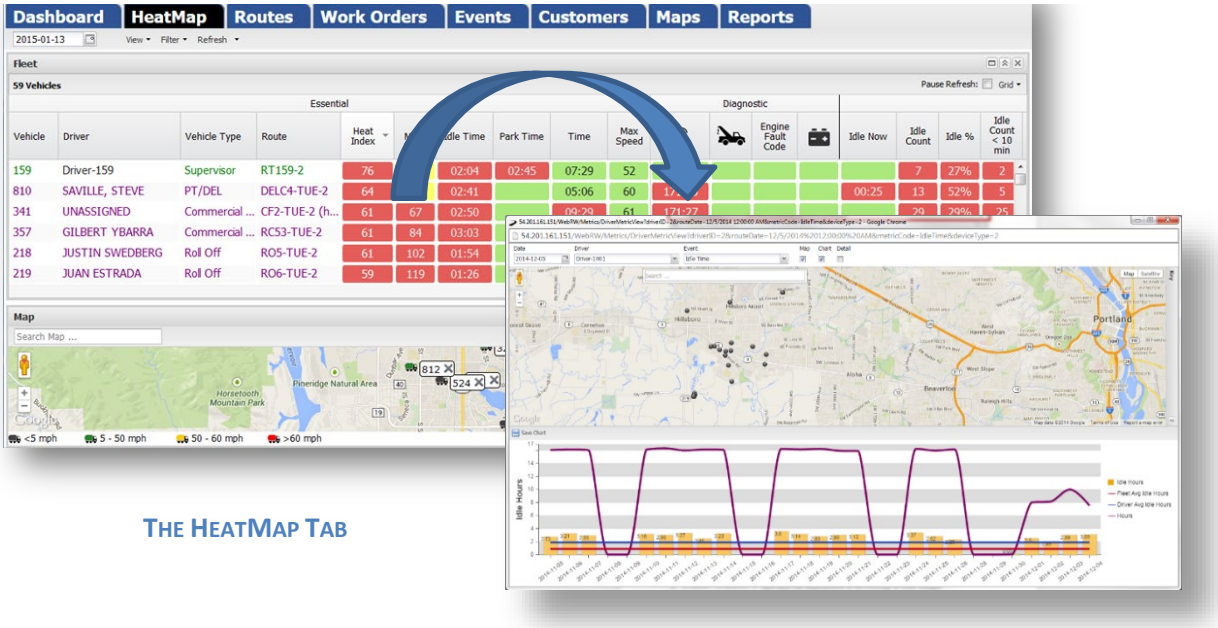
The Maps tab can also show current location of all vehicles, can search a given location and time to determine if any vehicles were present, which is very helpful with customer complaints. The Maps tab is also used to create geofences.


Dashboard
HeatMap
Routes
Work Orders
Events
Customers
Maps
Reports
Detail
Vehicles
Search
Geo Fences
Map
Satellite

THE MAPS TAB

HeatMap Tab

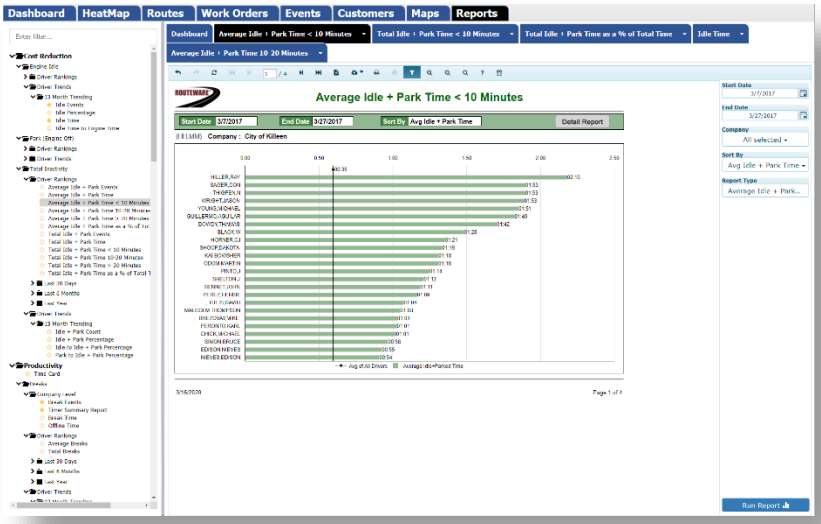
The HeatMap tab allows a supervisor, manager, or executive to see, at a glance, the progress and issues within their entire fleet in real time. With over 35 color-coded notifications, our customers are armed with the information they need to reduce costs, improve efficiency, and improve driver behavior. Click on any colored notification cell and a pop-up will offer even more business intelligence and 30-day trend data. This feature leads to more effective decision-making, training, and coaching.



THE HEATMAP TAB

Reports Tab

With nearly 500 report views from which to gain trending, metric, and comparison fleet information, Routeware arms the Customer with unmatched business intelligence. All reports can be customized to fit your needs and can be filtered by route type, frequency, date range, location, and line of business. Reports can be exported to Excel, CSV, PDF, and Word to aid in operational monitoring and review.



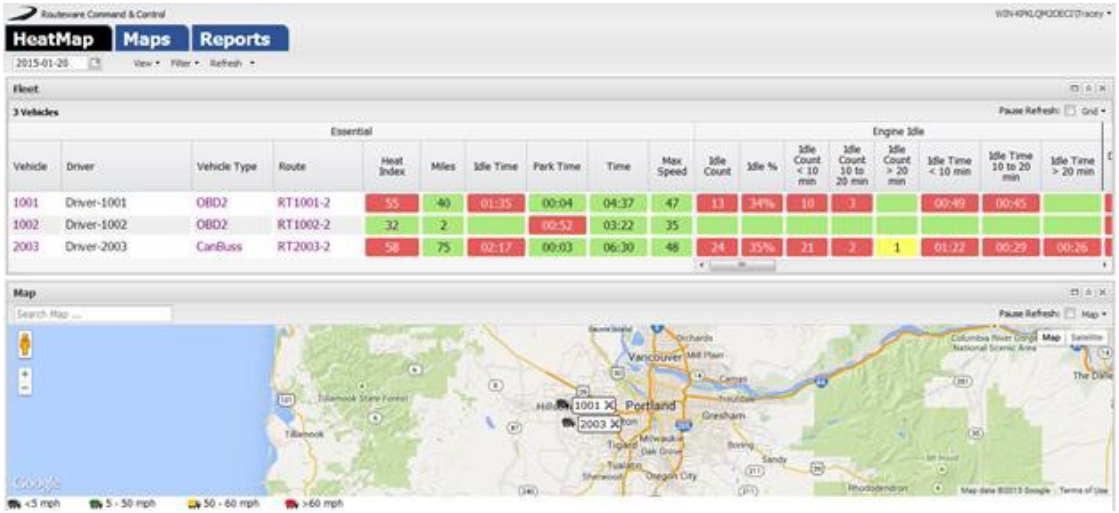
THE REPORTS TAB

AVL/GPS Solution

Routeware Basic is an affordable starting point for municipalities who want real-time GPS tracking *and* state-of-the-art reports but do not require a touchscreen or extensive interaction with their drivers. Basic service features almost instantaneous start-up, is easy to use, and serves as a stepping stone to more advanced features as customers' needs grow. Built within RCC, Routeware Basic can easily integrate *with* and upgrade *to* Premium.

Routeware Basic:

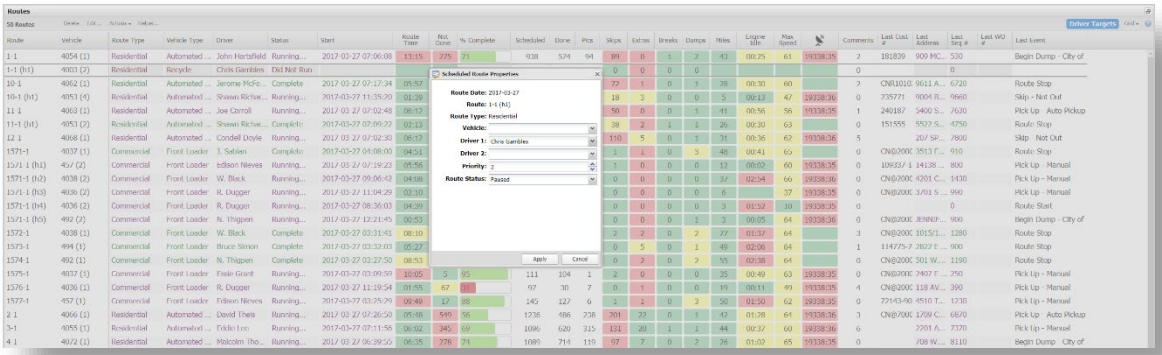
- Is a flexible platform that offers an affordable entry into fleet technology.
- Enables municipalities to right-size the deployment of technology to their budget.
- Offers a growth path to full on-board computing (via Routeware Premium).
- Works in conjunction with Routeware Premium and is fully scalable within RCC.
- Offers fast delivery, installation, and start-up.
- Provides constant real-time visibility to vehicles via Notifications panel (Miles, Idle, Speed, Time, etc.).
- Contains full breadcrumb trail capabilities.
- Allows for trend reporting via our custom reporting tools.
- Allows for seamless driver reassignment with no impact on operations.
- Optional smart-truck feature support for Power Takeoff (PTO) and fork sensors **(Basic PLUS)**.



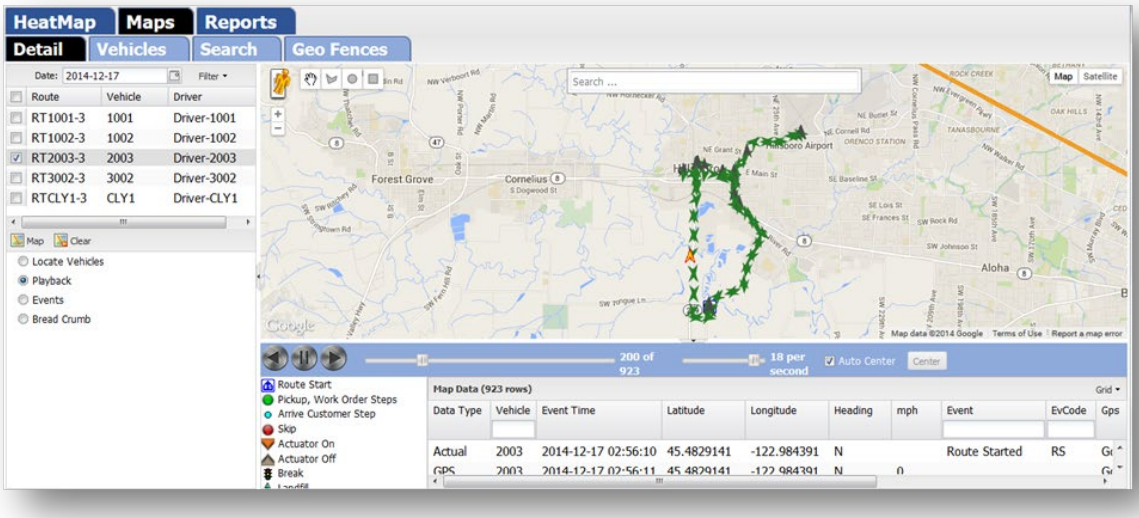
THE HEATMAP SHOWING BASIC AVL/GPS

Routeware Basic provides a solution for municipalities that might need to see and track the location of their vehicles in real time, but that are not ready for smart-truck features and technology. Via a small "plug-and-play" in-vehicle device, Routeware Basic uses GPS to track vehicle location, speed, and heading. This information is then transmitted back to the office in real time. Employees can observe the position of each vehicle in the fleet with mapping tools that include animated route playback and full breadcrumb trail visibility.

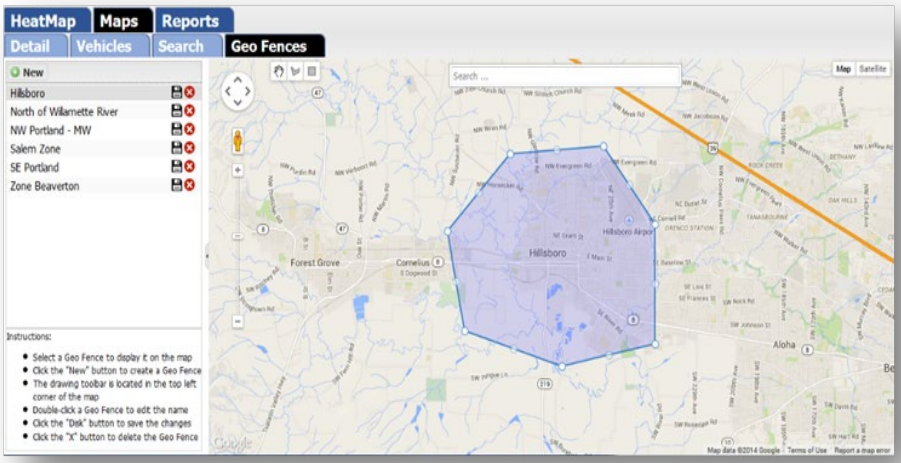
Additional Screenshots



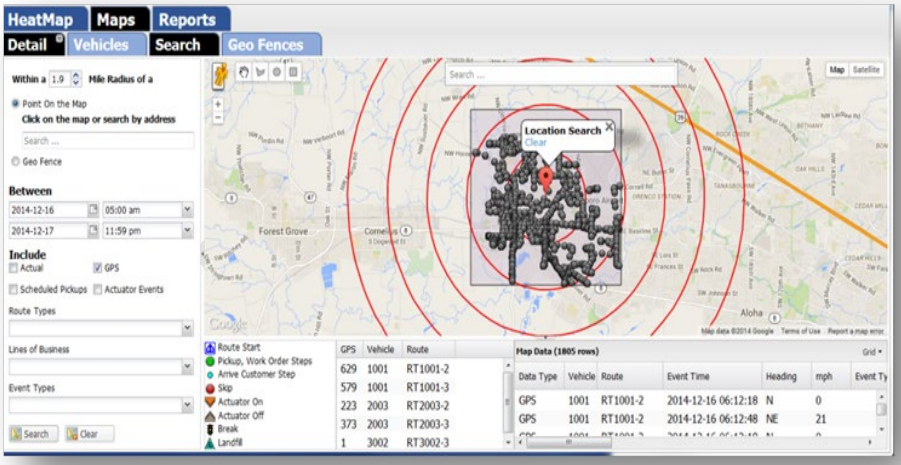
EASY DRIVER REASSIGNMENT



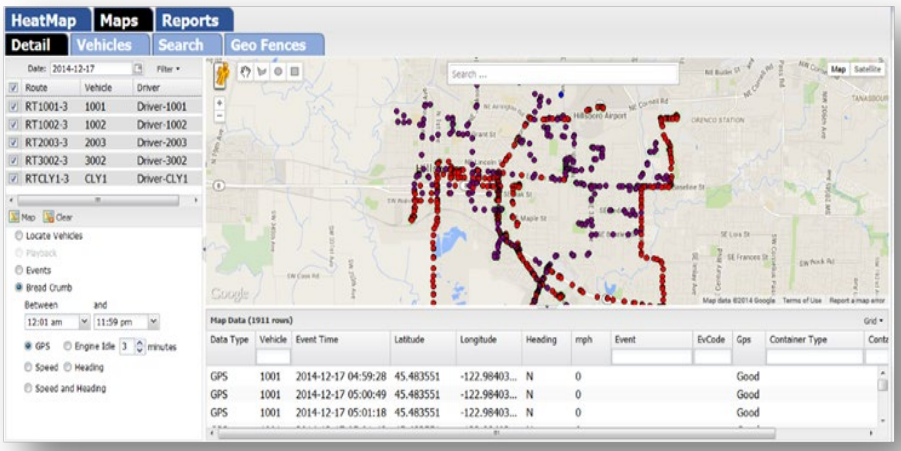
ROUTE PLAYBACK CAPABILITIES



GEOFENCING



VEHICLE SEARCH CAPABILITIES



BREADCRUMB TRAIL CAPABILITIES

Metric Visibility

Below is a partial list of additional metrics that Routeware's Premium solution captures in real time within the HeatMap tab and the Routes tab.

Premium HeatMap Metrics		Routes Tab Metrics
Vehicle	Go Backs	Route
Driver	Time to First Action	Vehicle
Vehicle Type	Time to Route End	Route Type
Route	Idle Now	Roll off
Heat Index	Idle Count	Vehicle Type
Miles	Idle %	Driver
Idle Time	Idle Count < 10 min	Driver2
Time	Idle Count 10 to 20 min	Status
Max Speed	Idle Count > 20 min	Start
Time to Clock In	Idle Time < 10 min	Scheduled Ready Time
Time to Clock Out	Idle Time 10 to 20 min	% Complete
Service Time	Idle Time > 20 min	Actuator On
Wasted Time	Odometer	% Complete Actuator
Wasted %	Speed Time > 55	Scheduled
RFID	Speed % > 55	Done
% Complete	Speed Time > 65	Heat Index
Skips	Speed % > 65	Skips
Extras	Speed Time > 70	Extras
Not Done	Speed % > 70	Not Done
Scheduled	Break Time	Breaks
On Hold Pickups	Landfill Time	Dumps
Pickups / Hour	Fuel Time	Time
Helper Pickups	Last Data	Miles
Basic HeatMap Metrics		Engine Idle
Park Time	Park Time > 20 min	Max Speed
Idle + Park Time	Idle to Park + Park	Last Data
Engine Time	Idle + Park %	Vehicle Weight
Drive Time to Engine Time	Idle + Park Count	Pics
Idle Time to Engine Time	Idle + Park < 10 min	Comments
Miles/Engine Hour	Idle + Park 10 to 20 min	Last Cust #
Park Now	Idle + Park > 20 min	Last Address
Park Count	RPM Alert	Last Seq #
Park Count < 10 min	Decel Alert	Last WO #
Park Count 10 to 20 min	Accel Alert	Last Event
Park Count > 20 min	Tow Alert	
Park %	Engine Fault Code	
Park Time < 10 min	Battery Alert	
Park Time 10 to 20 min	VIN	

Route Balancing and Route Optimization Options

It has become clear to Routeware that many haulers seek some level of route balancing and route management that may not require full-fledged route optimization. With this in mind, Routeware has developed two levels of route balancing and optimization designed to meet the precise needs of each of our customers without overwhelming them with functionality they might not need.

Level 1 — Routeware Route Balancing and Management:

With Level 1 optimization the user can manually manipulate a route on a map or in list format while taking into account the below inputs:

- GPS coordinates of a new customer
- GPS coordinates of all customers on one or multiple routes
- GPS coordinates of events, such as Done and Skip
- GPS coordinates of the container
- Breadcrumb trail of a vehicle including timestamp
- Route service day

This level of optimization requires a deep knowledge of the routes and external factors so that routes are not overburdened or underperforming.

Level 2 — EasyRoute:

With a Level 2 optimization, the user can have routes ***automatically*** created based on more advanced constraints and business logic, to include;

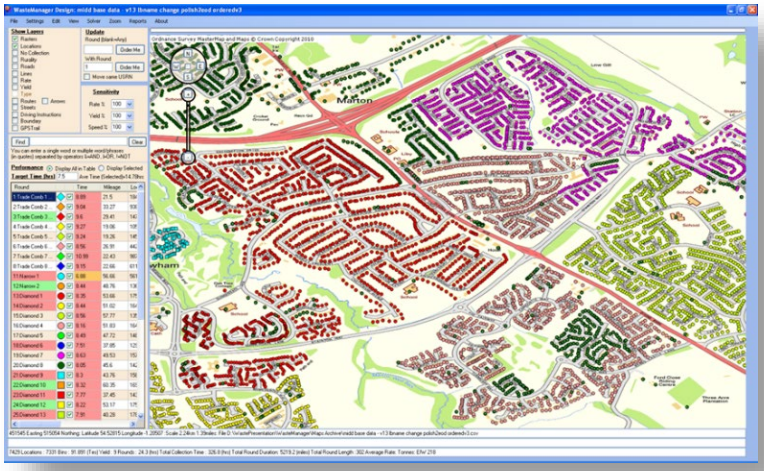
- Business targets and objectives
- Drivers: shift hours, breaks, capabilities, etc.
- Vehicle constraints: capacity, type (e.g., automated side loader, frontloader, rear loader), speeds, allowed materials, etc.
- Collection requirements: time windows, access restrictions, frequency, size, etc.
- Transfer stations/landfills: locations, hours of operation, minimum/maximum allowed tons, allowed materials, and cost
- Commercial truck road network
- Optimal route for a new customer to be added

This level of optimization allows Cities to have parameters for a variety of scenarios preloaded into the system so you can see how different routing decisions impact the entire fleet. The system also looks at available routes, considers constraints, and automatically assigns collections to the most optimal routes, in the most efficient sequence. Multi-vehicle routing problems can be properly addressed so that the user can create and maintain efficient and well-balanced routes.

Both a Level 1 and Level 2 optimization accomplish the below tasks:

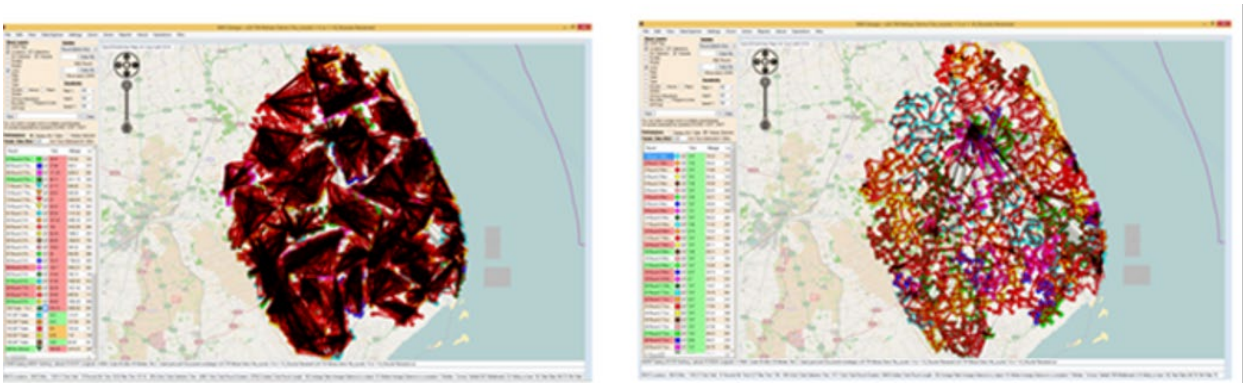
- Identify route overlap
- Identify stops requiring excessive travel
- Re-sequence stops
- Add or remove customers from a route
- Move customers from one route to another
- Identify optimal route for a new customer to be added
- Route playback
- Add off-route pickups

EasyRoute

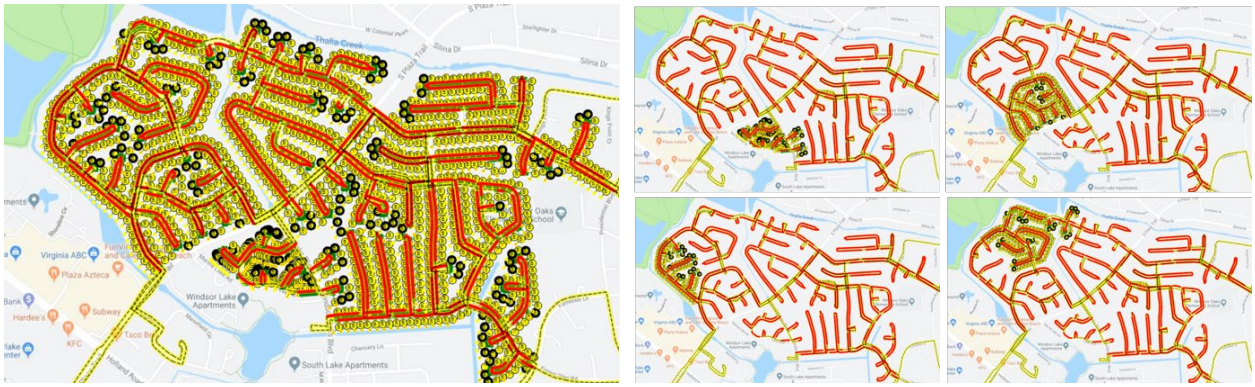


The most powerful deployment of optimization technology occurs when the tools are put in the hands of the people who understand the service they are providing. EasyRoute was built from Day One for use by frontline waste operations professionals, not geographic information system (GIS) or information technology (IT) specialists. This approach has proven itself with the fastest deployment times and quickest return on investment (ROI) of any solution on the market today.

Simply put, EasyRoute provides the fastest, most powerful, route optimization solution available. Benchmark testing has proven that no other provider is even close (seconds vs hours). This speed is a key reason why EasyRoute has the highest long-term success rate of any provider. Users need immediate feedback to understand the impact of changes made. EasyRoute is the only solution available that can instantly re-sequence routes the same way a driver would, by clearing routes a section at a time, all while providing updated performance metrics such as time, mileage, bins, etc.



100,000+ COLLECTIONS BALANCED AND SEQUENCED IN UNDER 30 SECONDS



SAMPLE OF ROUTE BEING BROKEN DOWN INTO SEQUENCED SECTIONS

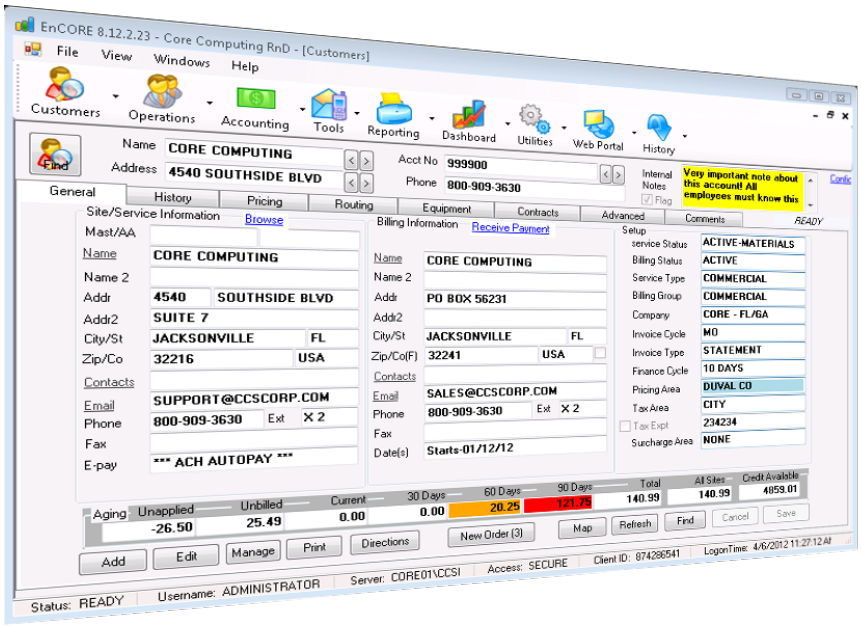
Core Computing Solutions: EnCORE Financial and Operational Software System

The Industry Standard for Waste & Recycling Software

Increasing fuel cost. Shifting regulation. Mounting Competition. As a business in the waste and recycling industry, your success depends on how well you can manage your limited resources while quickly adapting to marketplace changes. With EnCORE, your organization gains a competitive edge by streamlining operations, consolidating software systems and leveraging the most advanced and proven technologies available so you can focus on what you know best - running your business.

What is EnCORE?

EnCORE is a comprehensive enterprise-class suite of software built on one centralized Microsoft SQL Server database. With EnCORE every aspect of your business is managed in one system... no more spreadsheets, no more separate scale, fleet, dispatch, production, onboard, customer web portals or sales applications to manage. EnCORE does it all in ONE comprehensive solution.



EnCORE Core Office Application

The Core Office Application is the nerve center of it all. From this unified interface all aspects of your Financial & Operational actives are performed. This includes Customer Service, Billing, Collections, Dispatch, Scale Ticketing, Productivity and Financial Reporting. Every aspect of your organization is at your fingertips in one user-friendly easy-to-use interface. Enhance your organization's customer service experience, reduce billing times, streamline operations and increase efficiency all in the convenience of a Microsoft Certified Product.

EnCORE Customer Web Portal

Empower your customers through the deployment of our self-service Web Portal. Customers can reprint bills, make one-time and recurring payments via credit card and ACH, enroll in electronic paperless delivery, request services, view payment history and much more.

Deployments

Success from Start to Finish and Beyond

Routeware's project management methodology has been refined over the 20 years we have served the waste industry. Our estimate of the workflow for implementations is presented on the following pages. Members of both the Engineering and Operations team work with the End User during this project.

Phase 1: Project Deployment Planning

Upon execution of a contract between Routeware and the End User, the project will enter the Project Deployment Planning phase. This phase is expected to last 30–45 days. A key part to the success of this phase is to determine the appropriate staff and roles for the deployment project team. It is expected that the End User will provide an overall project manager, IT support, and operations staff to the deployment project phase.

In the Project Deployment Planning phase, there will be a weekly deployment project meeting with the End User. Minutes will be written by Routeware for each project meeting, and shared with the project team. The minutes will also track and document all action items, risks, and issues.

It is expected that any changes to the project plan would be approved by Routeware and the End User in the weekly project management meetings (followed by written documentation). The Project Deployment Planning phase will also include the design and development of the interfaces between Routeware and the End User's applications.

Phase 2: Onsite Installation

Onsite Installation will follow the completion of the Project Deployment Planning phase. This phase is expected to last multiple days or weeks (depending on vehicle count). The Routeware project manager will be onsite during this period and will coordinate installing, training, and running live routes in the vehicles.

Phase 3: Post-Installation Management

Following the Onsite Installation phase, Routeware will conduct weekly conference calls with the End User, as your team comes up to speed on the project.

The detailed narrative of these three phases can be found below.

General Information Form

The Routeware project team will provide our Go-Live information form at the kick-off meeting. This form must be completed by the End User and returned. The form includes the following information needed for a successful launch:

- Users
- Vehicles
- Contact Information
- List of Landfills/Transfer Stations
- Shipping Address
- Routeware Contact Information

Customer Site Visit

If needed, the Routeware team will visit the End User in accordance with the Project Schedule and will conduct a site audit at each planned installation location.

The Routeware Team will assess:

- Dispatch procedures
- Site (office/yard)
- Vehicles (photos)

Additionally, the Routeware site visit team will review the project with all key staff. The major project milestones will be reviewed, along with a detailed discussion of any potential issues that might affect either the timing or completion of those milestones. End User staff will leave the site visit meetings with a clear understanding of their responsibilities and roles.

Interface (Route Data & Event Data)

Routeware will complete the interface of Routes and Event Data between Routeware and the End User's route management system (RMS).

Routeware Server Provision

Routeware will set up the server (the End User's or Routeware Amazon Web Services cloud).

Routeware RCC and OBC Configuration

Routeware will configure RCC and the on-board computer with the End User's list of skips, extras, timers, landfills, transfer stations, roll-off work-order steps, and other important data elements that are unique to the Customer.

Pre-Installation Training

Routeware will design pre-installation training specifically for the End User. This training will be an overview intended to determine the onsite training program. If needed, we can set up multiple one-hour pre-installation training sessions via online video conferencing. The End User will assign staff to attend training sessions.

Training sessions will be set per the Project Schedule. Each participant will receive an information packet. Additional training will be completed onsite during the Go-Live phase. Based upon End User needs, the training may include train the trainer, classroom training, and/or one-on-one training.

Installation

Onsite truck installation will be completed per the Project Schedule. Installs will take place when trucks are available, which may involve afternoon or evening hours and weekends. We will develop a detailed truck installation schedule for each location.

Go-Live

Routeware personnel will be onsite during the Go-Live process. Our Go-Live process entails:

- Driver training
- Back office training
- Confirming data is returning as expected
- Project signoff

Implementation Phases & Roles and Responsibilities

Task	Completion	Assignment
Project Kick-off Meeting with Customer Team	Four weeks prior to Install	
Discuss Deployment Plan		Routeware / Customer Team
Discuss Site Visit		Routeware / Customer Team
Schedule Weekly Project Meetings		Routeware / Customer Team
Provide Server Specifications (if hosted onsite)		Routeware / Customer IT
Fill out Informational Go-Live Spreadsheet		Customer Team
Review Truck Installation/Training Terms per Contract		Routeware / Customer Team
Set Project Schedule		Routeware / Customer Team
Modem Requirements (if customer responsible)	Four weeks prior to Install	
Define Coverage Requirements		Routeware / Customer Team
Discuss Carrier Service		Routeware / Customer IT
Obtain Quote and Setup Contract		Customer IT
Modem ESN Numbers Provided to Customer		Routeware
Provide ESN Numbers to Service Provider		Customer IT
Activate Modems and Provide Static IP Address		Carrier / Customer IT
Configure and Test Modems		Routeware
Modem Requirements (if RW responsible)		
Configure and Test Modems		Routeware
Site Visit (if required)	Three weeks prior to Install	
Confirm Time/Date and Location		Routeware / Customer Team
Site Visit Results		Routeware
Server (if hosted onsite)	Two weeks prior to Install	
Purchase Server		Customer IT
Install Server		Customer IT
Configure Server		Routeware / Customer IT
Assign IP Address for virtual private network (VPN) Access		Customer IT
Server Testing with Modems via Cell		Routeware

Task	Completion	Assignment
Server (if hosted in the cloud)		
Make Cloud Arrangements		Routeware
Configure and Install RCC		Routeware
Provide URLs and Allow Firewall Access		Routeware / Customer IT
Test and quality assurance (QA)		Routeware
Route Management System (RMS) Interface	Three weeks prior to Install	
Define RMS Import/Export Interface		Routeware
Receive Routes from Customer		Customer Operations
Create RMS Program Interface		Routeware
Custom Development		Routeware
Run Routes in Test Environment		Routeware
Final Test and QA		Routeware
Routeware Control Center	Two weeks prior to Install	
Perform Customer Configuration		Routeware
Users, Vehicles, Routes		Routeware
Landfills, Timers, Extras, Skips, Messages		Routeware
Provide RCC URL and Passwords to Routeware Champion		Routeware
Test and QA		Routeware
Hardware Preparation & Shipment	Two weeks prior to Install	
Routeware On-Board Computer System Unit Setup		Routeware
Modem Configuration		Routeware
Hardware QA and Burn-In		Routeware
Test and QA		Routeware
Pack and Ship Equipment		Routeware
Onsite Deployment	Installation	
Routeware On-Board Computer System Unit Setup Placement Approval		Routeware Installers/ Customer Operations
Truck Hardware Installation		Routeware Installers/ Customer Mechanics
Modem Testing		Routeware Installers/ Customer Mechanics
Mechanic Training		Routeware Installers/ Customer Mechanics

Task	Completion	Assignment
Validate RMS Import to Routeware		Routeware
Validate Communications to and from unit		Routeware Installers/ Customer Mechanics
Confirm URLs active at each workstation		Routeware/ Customer IT
Daily Field Report to Office		Routeware / Customer Management
Final QA Inspection		Routeware / Customer Operations

Routeware Support

Routeware's support team is located at our headquarters in Portland, Oregon. Routeware has a strong and expanding support team currently composed of a customer service manager, 10 Tier 1 support specialists, and four Tier 2 support specialists. Routeware provides 24x7x365 technical support. After-hours calls do not go to an answering service. Routeware has in-house technical support team members available 24 hours a day. Routeware has a toll-free 1-800 support number and a support email (support@routeware.com). Sending email to the support email will automatically generate a support ticket and generate an auto-response. We usually respond within minutes to one hour, following clear guidance about how we approach issues and when customers can expect solutions or answers.

Tier 1 Support Process:

- **Gather information about case including:**
    - Primary contact to work with
    - Description of issue or request
    - Truck(s), user(s), or site(s) affected
- **Create or update support case and provide case number**
- **Troubleshoot issue or define the required action/changes for request**
- **Resolve or escalate to appropriate Routeware team**
- **Follow up with primary contact**
- **Transfer or close case**

Tier 2 Support Process (escalated issues):

- **Contact customer and confirm status and details of case**
- **Depending on the type of issue or request:**
    - VPN in and attempt to resolve current issue
    - Review logs from issue occurrence for deeper analysis
    - Re-create issue and potential causes
    - Identify required configuration changes and downstream effects of change
    - Escalate request to customer's project manager or sales account manager
    - Submit new feature and enhancement request to Routeware's product manager
- **Resolve or escalate issue to customer service manager or engineering team**
- **Follow up with primary contact**
- **Transfer or close case**

Routeware has a very strong technical support team. Our customers have lauded our team's responsiveness and knowledge of the product.

Routeware uses a typical return materials authorization (RMA) process for hardware repairs. The End User reports an issue via our Technical Support, an RMA number is assigned, then the hardware is shipped to us. We will either repair it at our facility, or return it to our vendor for repair. We recommend that every customer has a few spare modems so you have a back-up unit should an RMA need to be created.

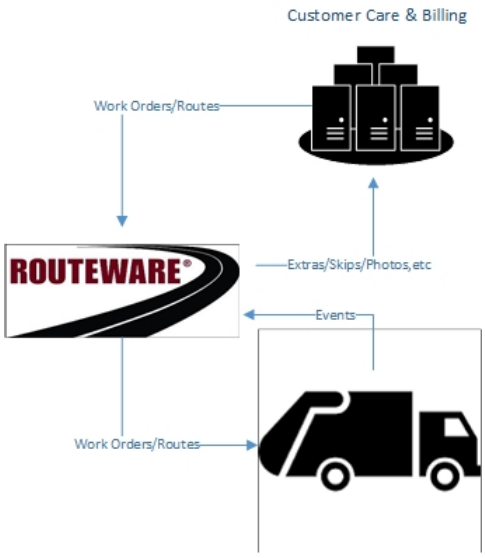
Software Upgrades

Routeware typically provides three optional system upgrades per year. These are provided to customers as part of their maintenance and support costs. System upgrades and patches can be pushed electronically to the vehicles from either a Routeware server or from the customer's RCC server. The vehicles are backwards compatible for at least one release. Meaning, if the back-office software is upgraded to release N, the trucks can run on release N or M (the previous release). Routeware is able to dial in to the trucks remotely via RDP to troubleshoot any issues in the trucks.

Cloud Hosting and Shared Servers

The Routeware system can be installed on a shared server provided that adequate resources are available to satisfy requirements. However, it is not recommended to install the Routeware system on a machine running Microsoft Exchange, or a Domain Controller, or where TCP or UDP ports required by Routeware are being used by other applications.

Routeware can deliver its product as an on-premises offering that can be run by the End User. Alternatively, Routeware can host and operate the service.



Routeware uses Amazon Web Services (AWS) and Amazon's Virtual Private Cloud (VPC). Nightly backups are taken of all data. Data can be provided to the End User either through a hard copy or a File Transfer Protocol (FTP). Routeware will configure the cloud hosting storage to meet the needs of the End User's current fleet. As the End User increases vehicle usage, additional space might be required. Routeware servers hosted in the AWS cloud are grouped into a VPC. These servers are logically isolated for security and privacy. This structure allows Routeware to create rules that govern how these servers can be accessed. Routeware has a VPN connection to the Amazon VPC, which allows secure communication for accessing the servers. The End User would be provided a URL that can be accessed by users anywhere there is an internet connection.

Additional details regarding Amazon's security protocols may be found here: https://aws.amazon.com/security/

Successful Integrations

Nearly every installation of Routeware software requires an interface to other software systems of some kind. Many of these interfaces have been pre-built as configurable interfaces while others are tailored to the precise requirements of individual customers. Routeware will work with the End User to determine what data should be exchanged between your systems and Routeware so that a data exchange can be tailored to your needs, which we assume will be defined after the award of contract. The nature of data exchanges that Routeware can support include:

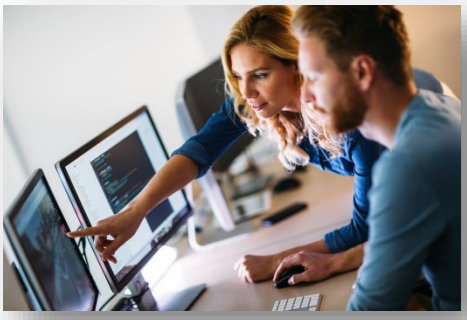
- **Method 1:** The exchange of data files that are generated, polled, and imported on a routine basis .
- **Method 2:** Service layer calls incorporating SOAP (simple object access protocol) and REST (representational state transfer) APIs (application programming interfaces) can be created for an additional fee at Routeware's posted hourly rates.

Routes may be adjusted in real-time in the Routeware Control Center (RCC) interface. Throughout the day, the Route Supervisor or Dispatcher can update, adjust, and check the near real-time status of, or deviations from, routes. Thresholds are set by End User-approved personnel. Our system allows the route supervisor to see traffic in real time and issue commands to the driver via the on-board computer. The system also allows the route supervisor or dispatcher to add or remove stops for the drivers.

Training Plan

Putting You in Charge of Your Success

Our solution is easy to use and intuitive. We will develop a training program with the customer during deployment, which can include train the trainer, onsite classroom training, onsite one-on-one training, web-based maintenance training, and/or onsite training after installation. We also provide extensive training at our annual User Conference. Documentation is provided on paper and electronically.



Routeware considers training to be one of the most important factors for user acceptance of the system, and overall project success. Just-in-time training as well as post-implementation training and support are important components in helping our customers achieve optimal return on investment from our solution. Formal training sessions typically start prior to Go-Live, with group training sessions prior to implementation. After implementation, our team will conduct scheduled onsite training to selected users/small groups to provide support and consistency. At Go-Live, the Routeware Project Manager will be onsite for an agreed amount of time for training on the back-office system. The customer will assign staff to attend these training sessions, which will be set per the Project Schedule. Each participant will receive an information packet.

Administrator Topics

Administrators of the system will receive individual user training of complete system functionality including:

- Route dispatching
- Helper route functionality
- Vehicle route user maintenance
- Using maps as research functionality
- Customer service history
- Reporting tools

Driver Training Topics

Drivers will receive, at a minimum, the following training:

- A group class session the morning of Go-Live, including:
    - How to use and set up auto-pickup
    - Messaging and comments
    - Done/Skip
    - Navigation
    - Start and end route
    - Work order functionality
- Check-ins with the drivers at the end of their routes each day
- Individual ride-along training as needed

There are typically onsite training sessions for each of the deployment phases. We expect Routeware personnel will be onsite for one week during each deployment phase, as staff and drivers require training during each deployment. Documentation is provided on paper and at the customer section of our website.

Routeware will provide all available training documentation in PDF format. Routeware Control Center (RCC) also has quick-view “Help” buttons throughout the application for quick access to related help documents, as well as a searchable “Help” section that contains all help documents in a single place. This documentation will assist in:

- Dispatching for all lines of business
- Dynamic dispatching
- Daily dispatching
- Sending helper routes
- Mapping
- Viewing scheduled stops
- Viewing all route events
- Viewing GPS
- Viewing route playback
- Vehicle tracking
- Viewing current and historical data
- Container locking/Geo Coordinates
- Customer Service and pickup verification
- Driver coaching module
- Reporting
- Configuring RCC layout and views

In addition, Routeware will provide thorough driver training with all necessary training materials complete with lines-of-business-specific driver manuals. Our training materials are available in PDF and PowerPoint formats. Tips and Tricks and training videos are also available from our Solutions Engineers.

Continuity of Operations/Disaster Recovery Plan

If a cloud-hosted solution is selected, Routeware will host the customer's data in the Amazon Cloud VPN. Amazon Web Services monitors electrical, mechanical, and life support systems and equipment so that any issues are immediately identified. Preventative maintenance is performed to maintain the continued operability of equipment.

Fire detection and suppression: Automatic fire detection and suppression equipment has been installed to reduce risk. The fire detection system utilizes smoke detection sensors in all data center environments, mechanical and electrical infrastructure spaces, chiller rooms and generator equipment rooms. These areas are protected by either wet-pipe, double-interlocked pre-action, or gaseous sprinkler systems.

Uninterrupted Power Supply: The data center electrical power systems are designed to be fully redundant and maintainable without impact to operations, 24 hours a day, and seven days a week. Uninterruptible Power Supply (UPS) units provide back-up power in the event of an electrical failure for critical and essential loads in the facility. Data centers use generators to provide back-up power for the entire facility.

Power Generator Management: In addition to discrete uninterruptible power supply (UPS) and onsite backup generation facilities, they are each fed via different grids from independent utilities to further reduce single points of failure. Availability zones are all redundantly connected to multiple tier-1 transit providers.

Climate Control: Climate control is required to maintain a constant operating temperature for servers and other hardware, which prevents overheating and reduces the possibility of service outages. Data centers are conditioned to maintain atmospheric conditions at optimal levels. Personnel and systems monitor and control temperature and humidity at appropriate levels.

Procedures for Off-Site Storage of Data: AWS Storage Gateway transparently backs up data off-site to Amazon S3 in the form of Amazon EBS snapshots. Amazon S3 redundantly stores these snapshots on multiple devices across multiple facilities, detecting and repairing any lost redundancy. The Amazon EBS snapshot provides a point-in-time backup that can be restored on-premises or used to instantiate new Amazon EBS volumes. Data is stored within a single region that you specify.

There is no cost to our customers for disaster recovery services for a cloud-hosted solution. If the End User wishes to host Routeware's solution onsite, the End User will be responsible for implementing all necessary safeguards and disaster recovery services. Any assistance from Routeware that is required by the End User to recover from a customer-premise disaster shall be charged to the customer on a time and material basis at posted rates.

Warranty Documentation

Hardware and Software Warranties. (a) Subject to the exceptions listed below in part (b), Company warrants (i) that the Hardware will be free from material defects in materials and workmanship and will operate in all material respects in accordance with its applicable Documentation (the "Hardware Warranty") for one year from the date of initial delivery (the "Hardware Warranty Period"); and (ii) that the Software will be free from material defects and workmanship and will operate in all material respects in substantial conformance with the Documentation (the "Software Warranty") for a period of ninety (90) days from the date of initial delivery (the "Software Warranty Period"). Customer may purchase renewals of the Hardware Warranty Period through extended service plans made available by Company in its discretion. Following the end of the Hardware Warranty Period, Company will have no further obligation to repair or support the applicable Hardware.

(b) Company's entire liability and Customer's exclusive remedy for any reported breach of the Hardware Warranty or Software Warranty will be repair or replacement of the defective Product. All claims must be received by Company promptly upon discovery of any defect, and in no event after expiration of the applicable Warranty Period. The foregoing Hardware and Software Warranties do not apply to any defect or failure to operate that is attributable to: (i) Customer's misuse or abuse of or failure to maintain the Product; (ii) Customer's failure to operate the Product in accordance with the Documentation; (iii) input errors, data conversion errors or other such errors, such as Customer's failure to sequence route stops independently or through a Company professional services agreement; (iv) any change made to the Product by Customer without Company's written approval; iv) any defect, limitation or incompatibility in any equipment or other component installed by Customer; (vi) any accident, catastrophe, act of God, or interruption or fluctuation in electrical power supplies; (vii) any material change in Customer's business or in the operating conditions under which the Product is used; (viii) translations; or (ix) Third-Party Products.

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