

Memo



Date: November 3rd, 2010
To: City Manager
From: Utility Services Manager
Subject: Residential Curbside Cart System Automation

Recommendation:

THAT Council receive, for information, the Report from the Utility Services Manager dated November 3, 2010 with respect to residential curbside cart automation and the Regional Board Report from the Regional District of Central Okanagan's Environmental Services dated July 15, 2010 with respect to completion of residential curbside waste collection Radio Frequency Identification System;

AND THAT Council approves the implementation of a residential curbside Radio Frequency Identification System for the six (6) years remaining on the curbside waste collection contract.

Purpose:

To have Council approve the implementation of the final phase of the residential curb side collection program that will use an automated identification system (RFID) for all curb side carts.

Background:

As part of the deployment of the residential curb side yard waste cart system, the City of Kelowna, the Regional District and the remaining member municipalities invested almost \$300,000 in a Radio Frequency Identification System (RFID). All carts deployed were equipped with RFID tags that can now be read and this information added to a central database of corresponding addresses for each cart. During the initial phase of the project however, onboard computers, software, data collection and data hosting services were not included. Acquiring and installing this equipment will complete the system and each time a cart is tipped in the Central Okanagan the following information will be recorded automatically:

- Which cart was tipped (Garbage, Recycling, or Yard Waste)
- Owner and address (the cart was assigned to)
- Date cart was tipped
- Time cart was tipped

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Each deployed RFID tag and associated cart have been registered to a particular household and owner. The RFID tags are read wirelessly by an RFID reader mounted to the collection truck and all data is stored within an onboard computer and immediately wirelessly transferred to a web-based server where it can be accessed by anyone that has access to a computer and is registered.

In addition, the system makes it simple for collection truck drivers to gather additional customer information that may result in further contact with the customer, or constitute an offence such as an illegal item in the cart, a cart in a bike lane or an overloaded cart. All of this data is tracked in real time and can be accessible by RDCO and member municipal staff as well as the contractor, which is invaluable for addressing enquiries from the public regarding curbside collection. The contractor would be fully responsible for equipping and maintaining all RFID system software and hardware and ensuring that the required data is provided in real-time.

A fully functional RFID system provides the equipment and data necessary:

- To implement any future user pay systems contemplated, where households could be charged based on how frequently their cart was tipped instead of a flat rate that applies to them whether they use the system three weeks a year or fifty two weeks a year. This type of system is much more equitable and has proven to result in significant waste reduction efforts and behaviour change in areas that have implemented it.
- To do targeted education with individual residents. Typically, most Waste Reduction Office residential solid waste education campaigns have been done through the media with the hope that the minority we are attempting to target will be reached. Unfortunately, this approach has been ineffective in addressing many recent issues including yard waste contamination and carts in bike lanes both of which required door-to-door education with individual residents to show improvement. However, in both examples we didn't have the data necessary to do targeted door-to-door education so we had to address entire streets with bike lanes and the entire region in the case of yard waste contamination when we really only needed to target a few hundred households.
- To record offences simply with the evidence required to enforce penalties related to the offence.
- To improving route efficiency, monitor truck speeds, and studying spatial trends in waste management behaviour.

Each member municipality needs to approve this recommendation in order to complete the regional RFID system. The costs to complete the RFID program are expected to be between \$1.50 to \$1.70 per household per year for the remaining six years of the collection contract. The per household cost assumes all households on curbside collection throughout the region will contribute. This cost will be covered by cost reductions that are occurring in the current recycling program. Between January and June, 2010 net costs of recycling processing are close to \$2.00 per household (\$100,000 total) less than budgeted and this trend is expected to continue.

Considerations not applicable to this report:

Legal/Statutory Authority N/A
Legal/statutory Procedural Requirements N/A
Existing Policy N/A
Financial/Budgetary Considerations N/A
Personnel Implications N/A
Technical Requirements N/A
External Agency/Public Comments N/A
Communications Considerations N/A
Alternate Recommendation N/A

Report prepared by:



Don Degen
Utility Services Manager

Approved for Inclusion:



Joe Creron Director Civic Operations



Agenda No: _____

Mtg Date: _____

Regional Board Report

TO: Regional Board

FROM: Environmental Services

DATE: July 15, 2010

SUBJECT: Completion of residential curbside waste collection RFID system

Recommendation:

THAT the Regional Board approves the completion of the residential curbside waste collection Radio-frequency identification (RFID) system at a cost of between \$1.50 and \$1.70 per household per year for the six years remaining on the curbside waste collection contract.

Rationale:

With an operational RFID system each time a cart is tipped in the Central Okanagan the following information will be recorded automatically:

- Which cart was tipped (Garbage, Recycling, or Yard Waste)
- Owner and address (the cart was assigned to)
- Date cart was tipped
- Time cart was tipped

In addition, the system makes it simple for collection truck drivers to gather the following additional information:

- If an offense was committed (Driver pushes a button on touch screen computer)
- Type of offense such as illegal item in cart, cart in bike lane, overloaded cart (Driver pushes a button on touch screen computer)
- Picture of offense (Driver pushes a button on touch screen computer)

All of this data is tracked in real time and can be accessible by RDCO and member municipal staff as well as the contractor, which is invaluable for addressing enquiries from the public regarding curbside collection.

In addition a fully functional RFID system provides the equipment and data necessary:

- to implement a user pay system where households would be charged based on how frequently their cart was tipped instead of a flat rate that applies to them whether they use the system three weeks a year or fifty two weeks a year. This type of system is much more equitable than our current system and has proven to result in significant waste reduction efforts and behavior change in areas that have implemented it.
- to do targeted education with individual residents. Typically, most Waste Reduction Office residential solid waste education campaigns have been done through the media with the hope that the minority we are attempting to target will be reached. Unfortunately, this approach has been ineffective in addressing many recent issues

including yard waste contamination and carts in bike lanes both of which required door-to-door education with individual residents to show improvement. However, in both examples we didn't have the data necessary to do targeted door-to-door education so we had to address entire streets with bike lanes and the entire region in the case of yard waste contamination when we really only needed to target a few hundred households.

- to record offenses simply with the evidence required to enforce penalties related to the offence.
- to improving route efficiency, monitor truck speeds, and studying spatial trends in waste management behavior.

Background:

The RFID system refers to the RFID tags that have been applied to each curbside cart for identification purposes. Each deployed RFID tag and associated cart have been registered to a particular household and owner. With a completed RFID system, each time a cart is tipped the RFID tag is read and the information described above is recorded. The RFID tags are read wirelessly by a RFID reader mounted to the collection truck and all data is stored within an onboard computer and immediately wirelessly transferred to a web-based server where it can be accessed by anyone that has access to a computer and is registered.

To date, the Regional District and its member municipalities have invested almost \$300,000 in the RFID system by purchasing and equipping all carts with RFID tags, purchasing RFID readers and creating a database of addresses and corresponding RFIDs for each cart during the initial cart deployment. However, onboard computers, software, and data collection and data hosting services were not included in the initial cart purchase or collection contract.

The contractor would be fully responsible for equipping and maintaining all RFID system software and hardware and ensuring that the required data (listed above) is provided in real-time.

Each member municipality would also need to approve this recommendation in order to complete the regional RFID system. The per household per year cost assumes all households on curbside collection throughout the region will contribute.

The \$1.50 to \$1.70 annual cost would apply through the remaining six years of the collection contract. However, given the improvements in the market for recyclables over the last 10 months, the cost of completing the RFID system will be more than offset by reductions in recycling program costs. Between January and June, 2010 net costs of recycling processing are close to \$2.00 per household (\$100,000 total) less than budgeted and this trend is expected to continue. However, it should be noted that tipping fees at the Glenmore Landfill are expected to occur in 2011, which will also have financial implications.

Peter Rotheisler
Manager, Waste Reduction

Chris Radford
Director, Environmental Services