



**SUBJECT: Single source procurement - vacuum street sweeper**

**TO: Committee of the Whole**

**FROM: Roads, Parks and Forestry Department**

Report Number: RPF-12-18

Wards Affected: not applicable

File Numbers: 465-12

Date to Committee: July 9, 2018

Date to Council: July 16, 2018

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### **Recommendation:**

Authorize the single source purchase of one vacuum street sweeper from Cubex Ltd., 189 Garden Avenue, Brantford, Ontario N3S 0A7 at a purchase price of \$294,221.89.

### **Purpose:**

In order to comply with Procurement By-law 19-2014, section 14.8, Council approval is required for purchases with a value of \$100,000 or more. The purpose of this report is to seek approval to proceed with a single source purchase agreement for one Tier-4 Ravo 5 iSeries Vacuum Street Sweeper. The purchase will coincide with the disposal/auction of an existing street sweeper that has reached its optimum life cycle of eight years and has met replacement criteria through a condition assessment (operations & maintenance) by fleet services staff. The proposed Ravo unit is the only single engine pure vacuum purpose-built street sweeper available.

A Healthy and Greener City

- Environmental and Energy Leadership

An Engaging City

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### **Background and Discussion:**

Street sweeping falls under the road maintenance service within the roads, parks & forestry department and currently consists of a combination of internal equipment and operators, complemented with additional external contracted street sweeping crews.

The service is particularly valuable in the spring to remove winter debris, sand and salt. In addition to contributing to the appearance of a cleaner city, the sweepers also contribute significantly to reducing stormwater contamination and improving air quality. The level of service for street sweeping is:

- arterial and collector roads (curb & gutter) once per month from May to December.
- residential streets (curb & gutter) twice per year.
- downtown business area every three weeks. (sweeping to be completed before 9:00 a.m.)
- arterial and collector roads (no curb & gutter) as required.
- residential streets (no curb & gutter) as required.

Preventative maintenance is performed on the street sweepers during the off season.

## **Strategy/process**

### **Step 1 – Field (Operational) Tests of Sweepers**

Staff conducted trials in 2017 and tested the vacuum sweeper. Regenerative air sweepers have been used by the City for the past eight years. In consultation with the Manager of Roads and sweeping crews, a list of criteria and options were established to help make the replacement decision. Criteria included:

- environmental controls – PM10 particulate matter compliant
- type of chassis design (single engine purpose built vs. dual engine truck chassis with specialty body)
- street dirt collection systems and performance
- operator broom visibility to enhance effectiveness
- maneuverability of sweeper in various applications
- operator comfort and safety
- fuel consumption
- third broom capability to collect in difficult areas including underpasses, lay by lanes, medians and for emergency spill response
- stainless steel hopper body and useable hopper capacity
- gross vehicle weight rating and license required to operate

In consultation with the Manager of Roads, the Ravo iSeries scored the highest across the criteria. The Ravo street sweeper's strengths included excellent operator safety and operational flexibility, ergonomic comfort, maneuverability, fuel consumption, and visibility and quality dust control.

The alternative regenerative air sweeper performed well on dust control and collection performance but scored less on operator comfort, noise, operational flexibility, maneuverability, and third arm.

## Step 2 – Sweeper Maintenance

Fleet services reviewed the maintenance and service history of the existing regenerative street sweepers. As mentioned, these are sophisticated sweepers mounted on a truck chassis with a dual engine configuration. This configuration has resulted in maintenance time, service needs and costs consistent with the additional systems.

From a fleet maintenance perspective, staff support moving to a replacement that incorporates a simpler purpose-built sweeper chassis/body design. The single engine integrated body is expected to be beneficial in terms of parts and service requirements as well as technician training. The Ravo sweeper is a European design with experience and expertise building sweeper equipment for over 50 years. In addition, Ravo is available from a local supplier which helps ensure adequate support, warranty and parts availability. They have a growing number of municipal clients with a strong service history. Other municipalities report no major issues with parts availability and support, reliability of the unit has been good, lower servicing costs, improved end user satisfaction and lower fuel consumption.

## Step 3 - Fleet Planning and Asset Management

Fleet services staff further examined the sweeper categories by examining equipment specifications, sweeper performance and asset management considerations such as expected capital costs, available budget, life cycle, estimated maintenance costs, fuel efficiency and resale value. The result supported the Ravo iSeries vacuum sweeper as a suitable replacement, meeting the criteria specified.

## Step 4 – Cost Analysis

Pricing estimates provided by suppliers during the trial period indicated that only vacuum sweepers would be within or close to approved budget available from the city. For comparison, regenerative air sweepers could be as much as \$80,000 more per unit which would require additional capital to purchase the replacement unit. The mechanical (broom) sweeper would meet budget however would not meet operational performance and environmental controls noted in the criteria (step 1).

The iSeries Ravo unit is considered the best option as it is the only vacuum sweeper that uses a single engine purpose built chassis. Additionally, based on the lower speeds that this unit travels, the unit will qualify as a Road Building Machine (RBM) as categorized by the Ministry of Transportation. The result is a financial savings from being exempt from licensing requirements and road tax charges on diesel fuel. It is

estimated that this factor will provide operational savings of approximately \$15,000 over the life cycle of the asset.

### **Options considered**

There are three categories of street sweepers: mechanical (broom) sweepers, vacuum sweepers and regenerative air sweepers. Our current fleet of street sweepers contain only regenerative air sweepers and the externally hired contractor sweepers are predominantly vacuum type sweepers. Each type of sweeper is described below:

**Mechanical (broom) sweeper** – Considered a basic sweeper that collects debris through the mechanical movement of a rear rotary broom. The action of the sweeping broom sends the debris through a conveyor system into the containment hopper. This type of units can be outfitted with additional side mounted gutter brooms and a series of spray nozzles to help dust control. This type of sweeper has its best application for heavy collection such as in milling operations. Because of the design, collection performance and dust generation, mechanical sweepers are not widely accepted for municipal sweeping operations.

**Vacuum Sweeper** – This is the most common type of sweeper for regular municipal sweeping operations. These units are available from several different suppliers with slightly different configurations and capabilities. These sweepers generally incorporate a fan blower and vacuum pickup system located near the road surface. The pickup nozzle(s) vacuum the debris and material directed to it from the brooms but also collect fine particles directly from the road surface, cracks, crevices, and road imperfections providing a more complete cleaning with less dust.

The picked-up materials are transferred via a large suction tube to the containment hopper. The airflow once inside the hopper is directed against screens to allow the material to drop out of air suspension and into the hopper. Water spray nozzles are used at the brooms, pickup nozzle and inside the containment hopper to control dust and to lubricate the vacuum system to help prevent any clogging.

Depending on size and power requirements, units in this category are typically designed and built to be mounted on a conventional truck chassis and incorporate a dual engine design. However, the European engineered Ravo unit provides a compact purpose-built street sweeper that integrates the chassis, body and broom components. These units offer a single engine design that allows for increased flexibility, versatility, and competitive pricing meanwhile providing many of the quality aspects of the standard vacuum sweeper.

**Regenerative Air Sweeper** – This is considered to be a premium sweeper that incorporates both air and vacuum systems. These units have a larger pickup head that uses air pressure as well as a vacuum. The air flow in this sweeper works in a closed

loop system with the blower fan supplying a vacuum and positive pressure to the pickup head. The air stream carries the debris into an enclosed containment hopper where debris is removed and the filtered air is directed back through the blower fan in a continuous cycle. There is no air exhausted to the outside air which makes this sweeper the most air quality conscious alternative. Due to the power requirements and additional components required on this type of sweeper, they are designed and built on a truck chassis with a dual-engine and are the most expensive.

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### **Financial Matters:**

The 2017 approved capital budget included \$300,000 for a replacement street sweeper.

Preliminary negotiations have produced competitive results of \$294,221.89 (excluding HST) for the unit. This pricing includes the 3<sup>rd</sup> arm assembly, blind spot camera, arrow board and spare tires.

### **Total Financial Impact**

From an operating budget perspective, the Ravo 5 iSeries vacuum sweeper is expected to provide ongoing operational savings through fuel, licensing and service/repair costs.

### **Source of Funding**

The total cost of the replacement street sweeper is \$299,400 (net HST rebate) which is to be charged to capital order VR0102 and to be funded from the Corporate Vehicle Depreciation Reserve Fund.

### **Other Resource Impacts**

Not applicable.

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### **Connections:**

Green Fleet Strategy

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### **Conclusion:**

Based on the information and analysis above, fleet services in consultation with procurement services and road maintenance services conclude that the Ravi 5 iSeries Vacuum Street Sweeper available through Cubex Ltd, 189 Garden Avenue, Brantford,

ON N3S 0A7 is the only unit that is available in this market of its type that will meet city criteria and requirements as identified in this report.

Furthermore, fleet services believes that a single source procurement approval will result in competitive pricing for the capital cost. This will be enhanced with further operational cost savings during the operational life of the asset.

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Respectfully submitted,

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### **Report Approval:**

All reports are reviewed and/or approved by Department Director, Director of Finance and Director of Legal. Final approval is by the City Manager.