Request for Decision

Non-Competitive Purchase - Community Safety Department Station Location Study

Presented To:	Finance and Administration Committee
Presented:	Tuesday, Jan 19, 2021
Report Date	Wednesday, Dec 30, 2020
Type:	Managers' Reports

Resolution

THAT the City of Greater Sudbury approve the Non-Competitive purchase of consulting services from Operational Research in Health Limited (ORH Ltd.) to conduct a station location study, as outlined in the report entitled “Non-Competitive Purchase - Community Safety Department Station Location Study”, from the General Manager of Community Safety, presented at the Finance and Administration Committee meeting on January 19, 2021.

Signed By

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Digitally Signed Dec 30, 20

Financial Implications
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Digitally Signed Jan 4, 21

Recommended by the Department
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Recommended by the C.A.O.
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Relationship to the Strategic Plan / Health Impact Assessment

This report deals with operational matters.

Report Summary

This report seeks Council’s approval to make a non-competitive purchase for consulting services from Operational Research in Health Limited (ORH Ltd.) in order to conduct a station location study to determine the optimal number, distribution, and size of emergency services stations.

Financial Implications

This report recommends securing ORH Ltd. to conduct a station location study at a cost of $195,000, to be funded through the Station Revitalization Project approved in the 2020 Capital Budget.

Purpose

This report seeks Council's approval to make a non-competitive purchase for consulting services from Operational Research in Health Limited (ORH Ltd.) in order to conduct a station location study. The key objectives of these services is to determine the optimal number, distribution, and size of emergency services stations for the City of Greater Sudbury by using advanced modelling techniques.

Executive Summary

Identifying and evaluating optimal locations for emergency service stations is a complex process. ORH Ltd. is an international company that specializes in helping emergency services to optimize the number of fire and paramedic stations and their location in order to respond in the most effective and efficient way. They have been consulting in the emergency service industry for over 30 years including in Ontario with the Region of York, City of Guelph, County of Simcoe, and the District Municipality of Muskoka. ORH Ltd. utilizes modelling techniques to analyze the interactions between travel times (using past performance data) and current road networks, population levels, and demographics. Developing a predictive model incorporating municipal planning information such as projected growth, types of future development and community risk assessments, to inform the potential future volumes, locations, and types of emergency calls. This report recommends securing ORH Ltd. to conduct a station location study, at a cost of $195,000 CAD, to determine the optimal number, distribution and size of fire and paramedic stations. It is in the best interest of the City to purchase these services from ORH Ltd. for the following reasons:

- They use rigorous scientific analysis and advanced predictive modelling techniques to determine optimal emergency station configuration.
- They use a proven and sophisticated genetic algorithm to assess various station configurations including the simulation of future scenarios. (they can run countless simulations to produce the most effective and efficient station configurations, not just the optimal).
- They bring 30 years of highly regarded international experience specifically in optimizing emergency services stations.
- We have spoken to Ontario clients who are all satisfied with their work and who continue to do additional projects with them.

Background

In 2017, Council authorized the Long Term Financial Plan which included a more strategic approach to Asset Management Planning. The strategy was adopted to assist in the prioritization of infrastructure investments that minimize the risk of service interruption or increased cost due to asset failure while supporting the consistent delivery of expected service levels Fire and Paramedic Services require functional facilities that house staff, vehicles and equipment to support the delivery of emergency response. Community Safety Department (CSD) stations are largely in the latter stages of their anticipated 50 year life cycle. Specifically, 2 stations are under 30 years, 14 are between 30 and 50 years and 8 exceed 50 years of age.

The Community Safety Building Condition Assessment Summary Report presented to Council has identified that the majority of CSD facilities are in a poor state. To move forward with the Station Revitalization project the CSD urgently needs to hire a consultant to work with Community Safety staff to develop a phased plan that addresses the sustainability of emergency service stations.

An ORH Ltd. station location study would be the next in a series of reports provided to Council to address CSD stations. The Finance and Administration Committee was presented with a Facility Condition Index Report in October, 2019 and a Building Condition Assessment report in July, 2020. In the Building Condition Assessment report, it is estimated that between 2018 and 2027, the anticipated total portfolio expenditures are in the range of 36 million dollars. However, that would only bring the stations back to a state of good repair and does nothing to remedy the lack of space and functionality of the stations, which is equivalent to the 2018 replacement value estimate for CSD stations. In the Asset Management Status report presented to the Finance and Administration Committee on December 8, 2020, the emergency services buildings and facilities are the only ones listed as currently being in poor condition and projected to be in very poor condition by 2022.

Maintaining twenty-four (24) fire and paramedic stations within the current funding model is unsustainable and a plan is needed to identify and prioritize which stations should be renovated or re-built and assess their locations to ensure optimal service level prior to committing substantive investments into the 24 stations. A determination needs to be made on whether a station should be relocated in order to better service the area, re-built in the same or new location, and what size the rebuilt station should be to house the required response units. Additionally, the study will consider various options for consolidating stations to improve efficiencies, wherever possible.

ORH Ltd., an internationally renowned company, has helped many Ontario municipalities optimize the number and location of their emergency services stations through rigorous scientific analysis. In order to determine which options best achieve the objectives they use a proven and sophisticated genetic algorithm to assess various station configurations including the simulation of future scenarios. ORH's advanced modelling techniques are unique and help identify opportunities for improvement and uncover hidden capacity. They create a model of the current system and compare how the model works against the actual system performance in the current time period which validates their scenario modelling. York Region and Simcoe County both state that 'retrospective analysis showed results comparable to that which was predicted in ORH modelling'. ORH Ltd. also has a proprietary complex modelling software solution that aids in the appraisal of different planning options for long-term service delivery.

ORH Ltd. combines analysis, modelling and consultancy to solve complex emergency services planning issues. They provide an objective, independent assessment of options with clear supporting evidence. Below are some examples of their work in Canada and abroad.

- British Columbia Emergency Health Services (BCEHS) – Review of Metro Ambulance Service Delivery – BCEHS is the largest provider of emergency medical services in Canada. They used ORH's services to forecast ambulance demand levels for Metro Vancouver over five years and model different options for service delivery including

station locations, types of vehicles and staff deployment that to meet performance targets. BCEHS used their modelling results to develop a multi-year strategy which formed part of their Action Plan for improving their response times. "*We must continue to modernize our pre-hospital emergency services…to create a sustainable ambulance service for the province. This review gives us valuable information to achieve this goal."* Terry Lake, British Columbia Health Minister

- County of Simcoe Paramedic Services (CSPS) – Development of a 10-year master plan for stations and vehicle deployments – The County of Simcoe has a population of 305,000 and the CSPS covers 4,841 square kilometers with 17 stations. Using optimization and simulation modelling, ORH identified optimum locations and their resource capacity requirements against the future profile of demand. "*The final report ORH supplied to us is extremely valuable to our operational and strategic planning as well as our long term financial planning for facilities"* Andrew Robert, Director and Chief, County of Simcoe Paramedic Services.

- York Regional Police – Development of a 20-year facilities plan – ORH undertook intensive consultation and data analysis to gain an in-depth understanding of the service's operations in order to build up a profile of the current service and identify the drivers for location planning. ORH's location optimization model (OGRE) was used to identify the most appropriate configuration of stations. This was applied over a 20-year timescale in a phased manner to meet future planning requirements. ORH provided a robust, evidence-based, qualitative road map for the phased introduction of new patrol zones and stations. Incident coverage in the Region has improved from 90% within seven minutes to 90% within five minutes. Their expertise in location optimization and experience of demand forecasting provided the Region with confidence necessary to implement the recommended solutions.

- The City of Guelph Emergency Services – Optimal resource deployment of emergency services for paramedic and fire services – ORH developed a 10-year plan that encompassed both services with the aim of improving the equity of the service provision across the City and County. Using advance modelling techniques, ORH produced a three-stage phasing plan optimized the configuration of their stations and identified co-location opportunities. *"The current economic and fiscal realities require that Paramedic Services operate as efficiently and effectively as possible. The professional and sophisticated analysis and modelling completed by ORH provided some extremely valuable tools to assist in achieving those goals."* Stephen Dewar, Chief, Guelph Wellington Paramedic Service.

- The City of Goodyear (Arizona) Fire Department (GFD) – Planning station locations in a city with a rapidly increasing population – ORH projected demand to 2035 and determined optimal locations for stations. ORH analyzed the current incident profile, response performance, vehicle utilization, and travel times in order to build a model of GFD's behavior in incident response. ORH identified optimal station sites and simulation modelling quantified the response time and utilization impacts of potential changes. ORH then created a ten year phased plan for GFD based on the modeled impacts of each change which was approved by Council. *"ORH's station study will help to ensure*

that the short and long-term needs of the City are met through responsible planning." Paul Luizzi, Fire Chief, Goodyear Fire Department.

- London Fire Brigade (LFB) – Planning station locations while making substantial financial savings with minimal impact on response coverage – The City London has a population of 8,674,000 and spans 1,572 square kilometers. The LFB has 102 fire stations and responds to 105,000 incidents annually. Having discussed the coverage objectives and a range of operational constraints with the LFB, ORH optimized the deployment of apparatus and station locations using simulation modelling to examine risk coverage and response times. The LFB closed 10 stations and removed or redeployed 19 apparatus while maintaining LFB response time standards. *"We have been working with ORH for over ten years now – their team has continually provided new insights into the work of the Brigade. ORH consultants are also important in helping us develop new ideas and solutions to the problems and issues we face…"* Deputy Commissioner, London Fire and Emergency Planning Authority.

Competition

Emergency service consultants have historically based their station location recommendations on the personal knowledge and hands on experience of those who have worked in the field i.e. fire-fighters and emergency medical services (EMS) personnel. More recently, consultants have also been leveraging geographic information systems (GIS) to gather, manage, and analyze emergency service data. However, the use of GIS is somewhat limited due the fact the model considered when plotting station locations are usually static and encompass very few variables, usually confined to drive times and population densities. Accordingly, they lack the technical ability to use the modelling techniques required to produce an objective, independent assessment of options with clear supporting analysis.

ORH Ltd. combine both optimization and simulation modelling using a unique and powerful software tool to process and analyze data in ways that geographic information systems are unable to. OGRE, which stands for "Optimizing by Genetic Resource Evolution", uses a sophisticated, geographically based genetic algorithm to evaluate multiple options for facility locations. This enables millions of different configurations to be assessed within minutes. The modelling methods utilized by ORH Ltd. will allow greater analytical capability for "What if?" scenarios, i.e. if a station is closed, where do the remaining stations need to be located to ensure optimal emergency response? ORH Ltd. can produce a ranked list of options and evaluate preferred options using range cover models to provide robust statistical comparisons.

Upon a review of all possible consultants within Canada, ORH Ltd. is the only consultant that uses in-depth technical analysis and modelling using their proprietary software that will produce the quality report that is required.

Under the applicable trade agreement, Canadian Free Trade Agreement, the City can use limited tendering (single/sole source) under the following circumstance:

> Article 513: Limited Tendering, 1. (b) if the goods or service can be supplied by only a particular supplier and no reasonable alternative or substitute goods or services exist for

any of the following reason: (ii) the protection of patents, copyrights or other exclusive rights and (iii) due to absence of competition for technical reasons.

Recommendation

It is recommended that the General Manager of Community Safety be authorized to purchase consulting services from ORH Ltd. in the amount of $195,000 CAD, to conduct a station location study, funded through the Station Revitalization Project which Council approved as part of the 2020 Capital Budget. ORH Ltd. has the technical expertise and capacity to complete the station location study within an anticipated timeframe of 18 weeks. Staff believe that it is in the best interest of the City to single source this service in order to provide the requisite information to complete the next phase of the Station Revitalization Project and to provide quantitative data in support of time sensitive operational and fiscal decisions being contemplated in the Community Safety Department.

Resources Cited

City of Greater Sudbury Purchasing By-Law 2014-1
https://citylinks.greatersudbury.ca/?LinkServID=5B29B70D-0B5B-8BE7-EF7E908703E551C2

City of Greater Sudbury Finance and Administration Committee Meeting Minutes, July 7, 2020
https://agendasonline.greatersudbury.ca/index.cfm?pg=feed&action=file&attachment=30368.pdf

Operational Research in Health Limited
http://www.orhltd.com/emergency-service-planning/emergency-medical-services/

City of Greater Sudbury Finance and Administration Committee Meeting Minutes, October 24, 2017
https://agendasonline.greatersudbury.ca/index.cfm?pg=agenda&action=navigator&lang=en&id=1175