



Procurement of Workcar

Date: May 8, 2018
To: TTC Board
From: Chief Operating Officer

Summary

The purpose of this report is to request the Board's approval to proceed with a single source order to Arva Industries (Arva) for design, fabrication, testing, assembly and commissioning support of a diesel-electric-battery tri-mode workcar locomotive for Line 3 Scarborough.

Based on Arva's extensive experience and knowledge of TTC workcars, this single source order is advantageous to the TTC on the basis of recognized expertise, justifiable urgency, maintenance of consistency in related work, similar work and significant financial advantage.

Recommendations

It is recommended that:

1. The Board approve a single source order to Arva Industries Inc. for design, fabrication, testing, assembly and commissioning of a diesel-electric-battery tri-mode workcar locomotive for Line 3 Scarborough for a total contract amount of \$6,766,871.66.

Financial Summary

Sufficient funds for this expenditure are included in the TTC's 2018 – 2027 Capital Budget and Plan for the Scarborough Subway Extension (SSE) Capital Budget (WO 6914) as approved by City of Toronto Council on February 12, 2018.

The Chief Financial Officer has reviewed this report and agrees with the financial impact information.

Equity/Accessibility Matters

This report has no equity or accessibility issues.

Decision History

The following links and table provide history and background related to the decision process for the SRT Life Extension Program.

Decision of Transit City Plan:

[https://www.ttc.ca/About the TTC/Commission reports and information/Commission meetings/2007/Mar 21 2007/Other/Toronto Transit City.pdf](https://www.ttc.ca/About%20the%20TTC/Commission%20reports%20and%20information/Commission%20meetings/2007/Mar%2021%202007/Other/Toronto%20Transit%20City.pdf)

Decision of revised Transit City Plan and maintain SRT service until the proposed Scarborough RT Line opening in 2016:

[https://www.ttc.ca/About the TTC/Commission reports and information/Commission meetings/2010/May 6 2010/Supplementary Reports/Transit City Implica.pdf](https://www.ttc.ca/About%20the%20TTC/Commission%20reports%20and%20information/Commission%20meetings/2010/May%206%202010/Supplementary%20Reports/Transit%20City%20Implica.pdf)

Decision of LFLRV Plan Changed to Scarborough Subway Extension (SSE) and maintain the SRT service until SSE opening in 2023:

[https://www.ttc.ca/About the TTC/Commission reports and information/Commission meetings/2014/June 24/Reports/Scarborough Subway Extension Update.pdf](https://www.ttc.ca/About%20the%20TTC/Commission%20reports%20and%20information/Commission%20meetings/2014/June%2024/Reports/Scarborough%20Subway%20Extension%20Update.pdf)

Scarborough Subway Extension to be in operation by Q2 2026:

<http://www.scarboroughsubwayextension.ca/fast-facts.html>

Issue Background

As a result of the decision to extend the life of Line 3 Scarborough beyond its 30-year design life, increased maintenance activity is anticipated in order to keep the infrastructure of this aging line in a state of good repair until it is decommissioned in 2026. A locomotive is required in order to support maintenance activities both as a supplement to and backup for the existing Line 3 Scarborough locomotive ST-1.

To comply with increasingly restrictive occupational health and environmental regulations, a low emissions power plant is desired to protect the health of TTC employees and customers as well as improve the environment in general. The proposed locomotive offers tri-mode ability (battery, diesel engine, and third rail electricity) offering the advantage of low emissions (battery/diesel hybrid) when travelling on the line and emissions free (battery only) operation when necessary in a work zone, tunnel or station. The batteries can be charged from the yard electrical system when the locomotive is parked removing the necessity of running the diesel to charge the batteries. The diesel is half the size of the engine typically used on a rail vehicle this size resulting in lower noise and exhaust emissions when it is necessary to run it. The battery system will also allow power tools to be operated without the diesel engine running resulting in an emission free, quieter jobsite with fewer noise complaints.

To get the full use from the 30-year life span of the locomotive it is specified to be convertible to the TTC subway gauge for use on the subway system when Line 3 Scarborough is decommissioned. Once the workcar is operational on the subway system the full capabilities of the tri-mode power plant can be used with the primary source of power being the third rail with the battery being used when no third rail power is available and the diesel being used as a backup power source.

Comments

This report seeks Board approval to proceed with a single source order to Arva Industries Inc. for design, fabrication, testing, assembly and commissioning of a diesel-electric-battery tri-mode workcar locomotive for Line 3 Scarborough. The following rationale is provided to support a single source order in accordance with the criteria outlined in TTC Materials & Procurement Guideline 1.42 Single Source approval process:

Recognized Expertise

Arva is a recognized expert in the rail industry and has extensive experience in the design and fabrication of rail maintenance work cars for North American transit properties such as PATCO, PATH and the TTC. Arva has extensive knowledge of the TTC subway and SRT track gauges, clearance envelopes, braking systems and system safety plan requirements. Having built or modified over 45 TTC work cars since 1992, recent projects include performing an extensive rebuild of the SRT locomotive ST-1 (with which the proposed tri-mode locomotive shares a common cab and frame design) and development and supply of an SRT snow thrower with SRT gauged flanged guide wheels and dual power rail cleaning brushes. Based on Arva's previous experience and knowledge, Arva would call for minimal TTC engineering support over what would be needed to get another supplier familiarized with the TTC's workcar requirements. Therefore, Arva is in a very good position to perform this work more effectively and at a lower cost.

Justifiable Urgency

Increased track maintenance will be required in order to maintain the aging infrastructure in a state of good repair on Line 3 until the Scarborough Subway Extension opens in 2026. The recent two month downtime of ST-1 while its transmission was rebuilt and the resulting impact on track maintenance activities illustrates the urgency in acquiring a second locomotive.

Maintain Consistency in Related Work

From their work on previous projects Arva is very familiar with the TTC standardized cab and controls layouts, automatic train protection equipment and safety requirements. This will allow them to provide an operator environment consistent with existing TTC work cars reducing operator and maintenance training requirements. Consistency in operating controls reduces chances of error, maintaining safety and reducing delays.

Similar Work

Arva has been the successful bidder on recent similar workcar contracts that were subject to competitive procurement such as the Track Vacuum Car (C32PZ15730), Vacuum Excavator Workcar (C31PW16794) and Dual Cab Electric Flatcar

(C31PW14835). These projects have many similarities in scope and complexity to the tri-mode locomotive. Based on the bid submittals for the above contracts, the TTC does not expect that any lower bids would be received if this requirement were sent out competitively.

Significant Financial Advantage

- Arva's St. Thomas, Ontario location is considered advantageous since it will allow easy review and inspection of the design and build of this new technology locomotive during construction while minimizing TTC travel and accommodation costs.
- Arva has received federal government funding to develop emissions free technology for industrial applications thus reducing engineering costs.
- Current dollar exchange rate makes US builders more expensive giving Arva cost advantages in both transportation fees and labour rates over US suppliers.

Based on the above reasons it is considered in the best interest of the TTC to award the single source order to Arva.

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Signature

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Attachments

n/a