

## REQUESTS TO CONDUCT TRIALS AND PILOT PROJECTS ON CALGARY TRANSIT FLEET

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### EXECUTIVE SUMMARY

Calgary Transit is committed to continually improving the service provided to Calgarians in the most effective and efficient manner possible. Calgary Transit typically receives 15 to 20 requests each year to test or pilot various technologies related to the transit fleet. These opportunities range widely from fuel additives and new battery technologies to entire vehicles. A variety of reasons for these requests typically include technical testing, proof of concept, product endorsements and technical development.

The potential benefits of the implementation of untested technologies needs to be balanced with alignment to the City and Calgary Transit strategies and responsible management of the overall assets. Calgary Transit has a bus fleet asset base of \$490 Million and a Light Rail Vehicle asset base of \$1.1 Billion. Any trials conducted must be considered by evaluating potential savings or positive impacts as well as operational and infrastructure compatibility, asset management, sustainability, scalability and overall impact to Calgarians. As a government organization we must adhere to procurement legislation, trade agreements, and the City's procurement policies and procedures when establishing a trial.

This report defines the technical, commercial, financial, operational and procurement requirements for potential vendors or partners prior to the implementation of any form of fleet modification or trial.

Also specifically included in this report is an application submitted to Calgary Transit, which outlines the proposed scope of a pilot project to field test synthetic diesel fuel in transit buses.

### ADMINISTRATION RECOMMENDATION(S)

That the SPC on Transportation and Transit recommends that Council receives this report for information.

### RECOMMENDATION OF THE SPC ON TRANSPORTATION AND TRANSIT, DATED 2017 JULY 19:

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That the Administration Recommendation contained in Report TT2017-0577 be approved.

### PREVIOUS COUNCIL DIRECTION / POLICY

At the 2017 April 10 Combined Meeting of Council, report TT2017-0185 RouteAhead Update was approved with an amendment as follows:

3. Bring a scoping Report to Council no later than 2017 September outlining a potential pilot project to field test synthetic diesel fuel in Calgary Transit buses that includes cost, funding requirements, potential emissions benefits and the utilization of existing infrastructure.

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### BACKGROUND

Calgary Transit owns and operates 220 Light Rail Vehicles (LRVs) and 1,020 buses, a total asset base of \$1.59 Billion. Calgary Transit Fleet policy is to use fuels, additives, lubricants and technologies that are certified by our equipment suppliers and meet the warranty requirements of the provider. Changes to technologies, lubricants, fluids or fuels can potentially void warranties or adversely interact with existing components to negatively affect the overall performance of the fleet.

Calgary Transit has the responsibility to manage the bus and LRV fleet effectively and efficiently to deliver on service commitments and provide reliable transit service to customers. Effective fleet management entails timely maintenance, performance testing and the use of high-quality parts and materials to ensure service reliability. Efficient fleet management means that alternatives to current practices and technologies are carefully examined prior to implementation to determine if technical, operational or customer-related improvements can be made in a cost-effective manner with low risk of an adverse effect on fleet performance.

Calgary Transit currently receives 15 to 20 varied requests annually to test or provide endorsements for unproven fuels, additives, lubricants and other fleet products and technologies. Calgary Transit has limited resources to engage in trials, and must take a thoughtful and comprehensive approach when evaluating investments in trials. A variety of sources and organizations are engaged to determine the value of proposed trials based on relevant existing initiatives and test results. Any requests for trials of products are considered based on available data through relevant and reputable industry groups and partners (e.g. Canadian Urban Transit Association, Canadian Urban Transit Research and Innovation Consortium, Transport Canada, etc). It is Calgary Transit's practice to not initiate trials on similar endeavors occurring elsewhere in the transit industry, or if the basis of the trial is primarily for product endorsement.

Notwithstanding, Calgary Transit aims to continually improve the economic and environmental performance of fleet operations, and frequently investigates the costs, risks and value of new and innovative fleet technologies. Examples of previous fleet trials conducted include diesel-electric hybrid vehicles, clean diesel additives, and compressed natural gas vehicles.

### INVESTIGATION: ALTERNATIVES AND ANALYSIS

Recent requests for a trial highlighted the need for Calgary Transit to establish a protocol for the evaluation and engagement of product and technology trials. Requests for establishing trials of unproven fleet products and technologies should be evaluated based on technical, commercial, financial, and operational requirements. Environmental, economic and social benefits should be evaluated, in conjunction with the level of risk and impact to Calgary Transit core operations. Attachment 1 is an application template that has been created for requests for Calgary Transit fleet trials; it highlights the prerequisites for testing unproven fleet products and technologies on Calgary Transit fleet, and provides information on the resources required to support such ventures. These prerequisites are in place in order to manage the costs and risks to fleet and infrastructure, while balancing the potential for innovation and improved fleet performance and efficiency.

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Once a potential vendor provides the application template with their trial proposal, Calgary Transit will work in collaboration with them to assess and develop both parties' costs, insurance requirements and other shared impacts. These completed applications will be evaluated by Calgary Transit Fleet technical staff, and the potential benefits, resulting cost:benefit ratio and alignment with City and Calgary Transit objectives will also be assessed. Applications will receive a formal response within 60 days of submission. If the submission is successful, a formal presentation to Calgary Transit technical management will be required, and the City's Supply Management group will be engaged to determine the appropriate next steps in establishing a trial in accordance with procurement legislation, trade agreements, and the City's procurement policies and procedures.

Attachment 2 is an application from Candaxa Energy Inc which specifically outlines the scope of a requested pilot project to field test synthetic diesel fuel in transit buses. The technical review of this application has been completed based on the prerequisites and criteria in this report and the attachment, and the City's Supply Management group has been engaged to determine the appropriate next procurement steps. The information submitted by the applicant has not been verified or endorsed by Calgary Transit, and is the subject of further testing being proposed.

### **Stakeholder Engagement, Research and Communication**

Stakeholder engagement, research and communication will be dependent on each specific trial. Engagement may include (but not be limited to) the City's Supply Management group, vehicle and fuel suppliers, regulatory bodies, other transit operating agencies, and relevant public interest and industry groups.

### **Strategic Alignment**

The testing of new products on Calgary Transit fleet is consistent with the overall need to operate in an efficient and cost-effective manner, and the pre-testing requirements included provide a comprehensive evaluation framework to balance risk and cost with innovation and potential gains in efficiencies. Opportunities for trials and pilot projects need to be examined for alignment with long-term City and Calgary Transit plans and objectives, as well as potentially leveraging Calgary Transit resources to assist the overall Corporation and local economy.

### **Social, Environmental, Economic (External)**

Individual proposals will have differing potential effects to the Triple Bottom Line; however, all proposals will be evaluated for economic implications by assessing the costs and benefits of implementation of a trial as well as full scale deployment, both internally and externally. Priority will be given to proposals that can demonstrate significant environmental improvements to Calgary Transit operations. The content and framework of the fleet trial application template were designed for alignment with these principles.

### **Financial Capacity**

#### **Current and Future Operating Budget:**

This report has no direct effect on operating budgets, but the adoption of each specific trial will be assessed for these criteria on an individual basis.

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### **Current and Future Capital Budget:**

This report has no direct effect on capital budgets, but the adoption of each specific trial will be assessed for these criteria on an individual basis.

### **Risk Assessment**

Without a comprehensive technical evaluation framework and process, trials of untested fleet products and technologies could have significant negative impacts on Calgary Transit fleet, infrastructure and operational performance. Furthermore, all proposals for trials need to comply with procurement legislation, trade agreements, and the City's procurement policies and procedures, in order for the City to operate in a fair and transparent manner and receive the highest value for taxpayer funding.

### **REASON(S) FOR RECOMMENDATION(S):**

Administration is responsible for the appropriate stewardship of City assets and adherence to procurement policies. The framework outlined in this report evaluates and balances the potential benefits of the implementation of untested technologies with alignment to the City and Calgary Transit strategies and responsible management of the overall assets. This technical review has been completed on the application from Candaxa Energy Inc, and the initiative is moving to the next step in the procurement process with Supply Management.

### **ATTACHMENT(S)**

1. Application Template for Calgary Transit Fleet Trials
2. Calgary Transit Fleet Trial Application – Candaxa Renewable Diesel Trial