Cross-Departmental Planning for Autonomous and Connected Vehicle Technology

Recommendation:

That Administration prepare an unfunded operating budget service package for consideration by Council during the Fall Supplementary Operating Budget Adjustment deliberations to support the proposed work plan for planning for autonomous and connected vehicle technology.

Report Summary

This report outlines a work plan Administration could undertake to address new mobility in city building strategy and planning, and an estimate of the additional resources required to execute the work plan.

Previous Council/Committee Action

At the March 15, 2017 Urban Planning Committee, the following motion was passed:

2. That Administration return to the June 7, 2017, Urban Planning Committee meeting with details of additional City of Edmonton resourcing required to support the Automated Vehicle Test Track and Pilot.

3. That Administration return to the June 7, 2017, Urban Planning Committee meeting with a work plan and framework for addressing automated vehicle technology as a cross-departmental team, including Edmonton Economic Development Corporation as per the October 19, 2016, Urban Planning Committee Motion. This work plan will include a work stream on pilot projects, which would involve evaluation of automated vehicle test locations and partnerships.

4. That Administration bring a report with resource options focused on integrating a new mobility paradigm (such as Automated Vehicles, car-sharing, and ride-sharing) into city strategies to the June 7, 2017, Urban Planning Committee meeting.

Report

Phase one of the ACTIVE-AURORA project (September 2016) successfully established Edmonton as Canada's first Connected Vehicle testbed. Phase One has generated national interest, and additional partnership requests, which have driven phase two of the project (see Attachment 1). Phase two would build on the successful partnership between the University of Alberta, Alberta Transportation and the City of Edmonton to develop connected and automated vehicle applications and test facilities.

Workplan

In the first quarter of 2017, Administration led a two-day Design Lab focused on answering the question: "*How might we use automated vehicle technology to build a more effective transportation and land use system in Edmonton?*" The objectives of the lab were to develop a work plan to address automated vehicle technology in the City's strategies and plans, and to bring together a diverse group of Administration and key stakeholders to collaborate on a path forward.

The outcomes of the Design Lab directly informed a plan to advance work on new mobility via three streams: Transportation and Land Use Systems Plan, Economic Development Plan and Communications and Engagement Plan. Administration would lead the bulk of the initiatives identified through the Design Lab, which are contained within the Transportation and Land Use Systems Plan and Communications and Engagement Plan streams. Edmonton Economic Development Corporation would lead the Economic Development Plan.

Transportation and Land Use System Plan

The following work plan components are essential to planning a future transportation system within the new mobility paradigm. These elements would be reflected in higher-level planning documents like the Transportation Master Plan and the Municipal Development Plan.

- **Data Collection and Analysis** is key to new mobility and smart cities. With the emergence of new technology, new sources of data are being established. This data can be leveraged for more effective transportation systems planning through data-sharing partnerships. This ongoing work will include developing a framework for collecting new forms of transportation data that is informed by scenario planning and modelling requirements. The framework will need to address big data, data partnerships, and City-led surveys, for example. It will also integrate with Open City and the Analytics Centre of Excellence. After the framework is developed, data collection is intended to be ongoing.
- **Scenario Planning and Modelling** is essential because of the uncertainty about how new transportation technology will be deployed and integrated into the transportation system, and how this will impact land use patterns and travel behaviour. This work involves identifying the spectrum of possibilities for the future, defining some scenarios to represent the extreme possibilities, and then modelling scenarios within those extremes to determine impacts on measures such as greenhouse gas emissions, travel demand, and congestion. This process is key to evidence-based decision-making, and will allow for informed new mobility assumptions to be incorporated into future City plans and strategies. This work will inform the data collection framework.
- **New Mobility Policy Development** will set the foundation for the New Mobility work plan, confirm future city-building principles, and ensure that a shared vision is developed for mobility in Edmonton. This will include mapping and gap

analysis of policy issues, establishing a vision for new mobility in Edmonton, and defining a framework for new mobility strategies such as Smart Roads, Car-sharing, and Ride-sourcing, to be developed or updated as part of the next Transportation Master Plan.

- The **Pilot Project Program** will allow testing new technology and new services; provide public engagement opportunities; and inform regulations, policies, plans and strategies. The pilot program will include projects that Administration actively leads, such as phase two of the ACTIVE-AURORA project, which includes developing the automated vehicle test track and pilot as well as using the existing connected vehicle testbed in the evaluation of signal preemption and safety and security issues. The pilot program will also include initiatives led by partners, in which Administration will participate as needed. For example, Administration is currently coordinating with the following partners:
    - University of Alberta
    - Pacific Western Transportation
    - The Alberta Centre for Advanced Micro Nano Technology Products
    - The Alberta Motor Transport Association
    - Edmonton International Airport
    - Alberta Motor Association
    - Pogo Carshare

- **Public Transportation System Integration** will be important to advance the proposed approach in the Transit Strategy and ensure that new mobility is reflected throughout the public transportation system. This will include exploring partnerships to improve integration of private transportation services with the public transit system. There will be opportunities to incorporate new partnerships or new services into the Pilot Project Program. A framework for the future public transportation system in Edmonton would be incorporated into the scenario planning and modelling work, and ultimately used to inform updates to the Transportation Master Plan and Municipal Development Plan.
- **Ongoing Quarterly New Mobility Working Group Meetings** will be key to collaboration within Administration and with external stakeholders on this work, and ensuring a variety of perspectives are included. The Working Group would include representatives from many areas of Administration, including Edmonton Economic Development Corporation, as well as external organizations such as University of Alberta, the Province of Alberta, technology developers, land developers, fleet owners, and interest groups. The meetings would be used to update stakeholders on progress and gather their input to inform next steps in the work plan.

The **Economic Development Plan** will be key to harnessing the economic benefits of new transportation technology in the Edmonton region. This plan will be led by Edmonton Economic Development Corporation, with support from City Administration and members of the the larger Working Group: The Province of Alberta, Edmonton

International Airport, Alberta Centre for Advanced Micro Nano Technology Products, Alberta Motor Transport Association, and private industry, for example. This plan would include extensive research into new and emerging transportation technology industries, to gain an understanding of both the core industries, and the spin-off industries that tend to co-locate with the core industries. The plan will include recommendations for changes to policy and regulation to support these industries, as well as actions and tactics toward achieving a prosperous and sustainable transportation technology sector.

The **Communications and Engagement Plan** will consider the goals of socializing automated vehicle technology in the context of the public transportation system, and will work in the context of the other pieces of this work plan. For example, communications and engagement will leverage the pilot project program for public demonstrations, and public events may provide opportunities to collect data regarding public perceptions of the technology.

Estimated Resources

To lead and complete the above work plan across multiple departments over the next 2.5 years, two permanent Full Time Equivalents and one temporary Full Time Equivalent (2018-2020) are necessary.

One Senior Full Time Equivalent would lead the work and Chair the New Mobility Working Group, and would be supported by the temporary Full Time Equivalent. One additional permanent Full Time Equivalent would support ongoing implementation of the ACTIVE-AURORA project and integrating the results of the research and evaluation in City Operations.

The work plan on Transportation and Land Use Systems Planning will also require a budget of approximately $150,000 per year for 2018 and 2019 for consulting, facilitation, communications, advertising and public engagement.

ACTIVE-AURORA Automated Vehicle Test Track and Pilot

Resources are required immediately to support the continuation of the Automated Vehicle Test Track and Pilot on University of Alberta South Campus, which is being managed by the University of Alberta. Should Council wish to support this initiative the City would contribute resources to the project. The resources would be dedicated to purchasing or leasing one electric, automated shuttle. Cost to purchase or lease one shuttle, plus contingency for shipping and transport, is approximately $325,000.

Policy

The Way Ahead: Corporate Strategic Plan

- Diversify Edmonton's Economy
- Enhance Use of Public Transit & Active Modes of Transportation
- Preserve & Sustain Edmonton's Environment
- Transform Edmonton's Urban Form

The Way We Move: Transportation Master Plan

- Transportation and Land Use Integration
- Access and Mobility
- Sustainability
- Transportation Mode Shift

The Way We Prosper: Economic Development Plan

- Edmonton - A Confident and Progressive Global Image
- Edmonton - An Environment for Innovation

The Way We Green: Environmental Strategic Plan

- Market prices that are set and influenced by the City of Edmonton are reflective of externalities and aligned with the goals and objectives of *The Way We Green.*
- The City will integrate land use planning and transportation decisions to create an accessible, efficient and compact urban form.

The Way We Grow: Municipal Development Plan

- Sustainable Urban Form
- Integrated Land Use and Transportation

Budget/Financial Implications

This report outlines the resources needed to support the proposed work plan, and the ACTIVE-AURORA pilot project. These are:

	Ongoing Starting 2018	**One Time**
1 Senior Full Time Equivalent Sustainable Development	$143,000 / year	
1 Project Full Time Equivalent City Operations	$119,000 / year	
1 Project Full Time Equivalent Sustainable Development		$238,000 ($119,000 / year for 2018/2019)
Consulting, Facilitation, Communications, Advertising and Public Engagement		$300,000 ($150,000 / year for 2018/2019)
ACTIVE-AURORA Automated Vehicle Support		Up to $325,000 (2018 or as soon as possible)
TOTAL	**$262,000 / year**	**$863,000**

Should Council wish to move forward with pursuing this work plan, Administration could prepare an unfunded service package for consideration in the fall 2017 supplemental operating budget adjustment to be considered with other emerging priorities.

Metrics, Targets and Outcomes

Metrics	Targets	Outcomes
● Number of City-driven new mobility initiatives: 22 ● Number of externally-led new mobility initiatives with City participation: 2 ● Estimated Number of City plans and strategies integrating the lens of new transportation technology: 4	N/A	● The lens of new technology is incorporated in all applicable plans and strategies ● Edmonton is prepared to adapt to automated vehicle technology to support mode shift to transit and active transportation.

Justification of Recommendation:

The preparation of a service package for consideration during the Fall Supplementary Capital Operating Budget Adjustment would provide Council the opportunity to allocate resources required to support the proposed work plan for planning for autonomous and connected vehicle technology. Without the resources included in the Service Package, the City would not be able to support the testing of an automated shuttle and would have limited capacity to complete the work plan outlined in this report.

Attachment

1. ACTIVE-AURORA – Canada's First Connected Vehicle Test Bed Network

Others Reviewing this Report

- T. Burge, Chief Financial Officer and Deputy City Manager, Financial and Corporate Services
- A. Laughlin, Deputy City Manager, Integrated Infrastructure Services
- R. Smyth, Deputy City Manager, Citizen Services
- C. Campbell, Deputy City Manager, Communications and Engagement
- D. Jones, Deputy City Manager, City Operations