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CITY COUNCIL STUDY SESSION ITEM

SUBJECT

Bellevue Smart Mobility Plan. This effort was formerly known as the Intelligent Transportation Systems (ITS) Implementation Strategy Update.

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POLICY ISSUES

Council approved the ITS Master Plan Update consultant contract and the addition of a new Transportation Technology Partnerships Manager in November 2016. These two efforts, now renamed the Bellevue Smart Mobility Plan, are one of six main elements identified in the “Bellevue Smart” smart cities plan to provide a transportation system that “Moves people smarter, safer, faster, while providing more choices, better real-time information, lowering emissions and raising efficiencies”.

The 2016-2017 Council Vision Priorities identifies Transportation and Mobility as one of seven strategic target areas where state of the art intelligent transportation systems are employed to enhance mobility in Bellevue.

The Transportation Element of the Bellevue Comprehensive Plan supports the monitoring and implementation of emerging technologies related to autonomous vehicles and other technologies that improve mobility and safety (TR-38), as well as the employment of intelligent transportation systems (TR-48).

DIRECTION NEEDED FROM COUNCIL

ACTION



DIRECTION



INFORMATION ONLY



No formal action is required by the Council at this time. Tonight’s presentation will provide Council with an update on the development of the plan, including the projects and initiatives that will be highlighted as priorities for the City in the next five years.

BACKGROUND/ANALYSIS

Bellevue is in the process of advancing the Bellevue Smart Mobility Plan (formerly the ITS Master Plan Update), which includes the new Transportation Technology Partnerships program. At the August 7, 2017 Study Session, staff presented the vision statement and goals for the Smart Mobility Plan, as summarized below:

Vision

The following vision statement has been developed as a focal point for the Smart Mobility Plan:

Use innovation and partnerships to deploy emerging technologies that enhance the safety, sustainability, efficiency, and accessibility of Bellevue's transportation system.

Goals

The following goals were also presented for the plan:

1. Make Bellevue a nationally recognized leader in advanced transportation technologies.
2. Improve safety for all modes of travel in support of Bellevue's Vision Zero initiative.
3. Leverage Bellevue's ITS network and transportation technology partnerships to support the growth of the technology industry in Bellevue and overall economic opportunities.
4. Improve the efficiency of the roadway network to support regional mobility.
5. Expand and enhance the City's current ITS functions.
6. Create more mobility choices for commuters, residents and visitors.
7. Provide accurate and timely transportation information for more efficient travel choices.
8. Enhance sustainability by reducing vehicle emissions.
9. Pursue private and public sector funding partnerships in advancing Bellevue's Smart Mobility Implementation Strategy.

Building upon the vision and goals, the project team is in the process of developing a draft deployment plan with detailed descriptions of each project, its benefits, and estimated costs and resources for implementation. Initiatives are grouped into six common themes as described by the structure below:

1. **Traffic Management Initiatives:** Provide enhancements to the City's existing toolbox with a focus on implementing proactive and data-driven traffic management processes to optimize network capacity and improve efficiency of operation and maintenance activities.
2. **Real-time Traveler Information Initiatives:** Leverage both public and private sector resources to enhance the delivery of accurate, timely and relevant traffic data for an effective traveler information system.
3. **Data Management Initiatives:** Make use of the exponential growth in available transportation data by improving the processes related to data capture, management and analysis to improve safety and mobility within Bellevue.
4. **Electric Vehicle Initiatives:** Support a continued upward trend towards sustainability and clean transportation in Bellevue by supporting electric vehicles for public transit, shared mobility transportation, personal vehicles and the City of Bellevue fleet.
5. **Autonomous and Connected Vehicle Initiatives:** Explore autonomous and connected vehicle demonstration projects on public right-of-way to inform future larger scale deployments in the City and appeal to industry partners to participate in the City's technological advancements.

6. **Shared Mobility Initiatives:** Integrate shared mobility services in Bellevue as a means of providing more equitable, accessible, and cost-effective travel alternatives to single occupancy vehicles which contribute to more than 60 percent of Bellevue’s current commuter trips.

Within each initiative are a collection of interrelated projects with common objectives. This subset includes initiatives that the City can implement independently and others that require strategic partnerships. This project list was presented at the January 16 internal open house where City staff and the Transportation Commission were provided an opportunity to meet one-on-one with the project team members and learn more about the specific projects and initiatives. While the Bellevue Smart Mobility Plan is being finalized, many of the supporting infrastructure projects and opportunistic partnerships are already underway to lay the groundwork for subsequent projects in the next five years.

The following section highlights the top projects included in the Smart Mobility Plan’s six initiative groups, with notes indicating work that is already underway.

1. Traffic Management Initiatives:

A. Citywide CCTV Camera Expansion (Already Underway)

Deploy additional CCTV cameras for roadway monitoring at high-priority locations and to support expansion of the video analytics partnership. The full buildout would include high definition multi-directional cameras at each signalized intersection. This project will also increase the available network storage for recording purposes.

B. Citywide Communication System Upgrade (Already Underway)

Citywide communication system upgrade to improve network bandwidth, resiliency, redundancy, and security. These upgrades will provide a dependable communication backbone for other planned initiatives and will address recent capacity issues.

C. Weather Information and Pavement Monitoring System

Deploy roadway weather information and pavement monitoring system to support traffic management during inclement weather conditions. Examples include pavement/air temperature, water level, and precipitation sensors.

D. Portable CCTV Camera Systems

Acquire an inventory of portable CCTV cameras that can be deployed at construction sites to actively monitor impacts to traffic conditions.

E. Traffic Management Center (TMC) Video Wall Upgrade (Already Underway)

Replace and expand the existing TMC video wall infrastructure to improve traffic management operational efficiencies and situational awareness.

F. SCATS Adaptive Signal System Software Upgrade

Implement SCATS adaptive signal control system upgrade to increase available detection channels, traffic signal stages, Advanced Transportation Controller (ATC) compatibility, and

provide Signal, Phase, and Timing (SPaT) compatibility for future connected and autonomous vehicles.

G. Lighting Control and Management System (Already Underway)

Deploy a lighting control and monitoring system to conserve electricity use, improve safety through enhanced LED lighting, and provide a centralized platform to operate and maintain the citywide street lighting system. The system will provide operational efficiencies for managing light levels and detecting lighting failures.

H. Signal and Arterial Performance Measures (Already Underway)

Implement automated traffic signal and arterial performance measures to provide metrics on the operational efficiency of the Citywide traffic signal and arterial roadway system.

I. Computer Aided Dispatch (CAD)/Automated Vehicle Locator (AVL) and TMC Integration

Explore further integration of NORCOM CAD/AVL and GPS system data with the TMC operations platform to improve situational awareness and collaboration during emergency response efforts.

J. Centralized Transit Signal Priority System (Already Underway)

Implement a Center-to-Center (C2C) centralized Transit Signal Priority (TSP) system that integrates King County Metro transit data with the City's SCATS adaptive signal control system to improve TSP reliability.

2. Real-Time Traveler Information Initiatives:

A. Third Party Traffic Data Provider Partnerships

Initiate data partnerships with third-party data providers (i.e. Waze, Google, Inrix, Apple Maps) to improve Citywide mobility and safety by sharing more accurate, timely and reliable transportation data.

B. Trip Planner Mobile Application

Collaborate with regional agency partners and private sector companies to develop an easy-to-use mobile device trip planning/access application for commute trips, paratransit trips and other shared trips.

C. Real-Time Winter Road Conditions Map

Implement a public-facing real-time snow removal and de-icing operations map with GPS fleet integration to inform the public of locations that have been cleared and real-time location of snow and ice response assets.

D. Permanent Dynamic Message Signs (DMS)

Deploy permanent DMS to inform drivers of congestion, travel times, and general roadway conditions (e.g., weather related detours/closures, construction/maintenance activities) at key arterial decision point locations.

E. Off-street Parking Guidance System

Implement parking guidance system for off-street parking facilities, such as park and ride facilities and privately-operated parking garages, to reduce on-street traffic circulation and improve trip planning for commuters.

3. Data Management Initiatives:

A. Trusted Data Collaborative

Implement a Trusted Data Collaborative (TDC) that establishes protocols for data security and privacy for sensitive transportation datasets.

B. Open Data Portal

Implement an open data portal/warehouse with application programming interfaces (API) to enable the City's data to be shared, applied and integrated with external agencies, public/private sector users, and third-party applications.

C. Microsoft Video Analytics Partnership (Already Underway)

Continue ongoing partnership with Microsoft to develop video analytics technology for Vision Zero and expand use cases for traffic planning and operations purposes. Example use cases include video detection for adaptive signal control system and signal performance monitoring.

D. Interagency Data Sharing Platform

Implement bi-directional interagency data sharing platform. Information types may include construction, incident, congestion, traffic signal and emergency response data, as well as CCTV camera feeds.

E. Internal Data Sharing Platform

Establish an internal platform for the sharing of data across City departments. Examples include traffic counts, construction and incident information, CCTV camera feeds, and travel time information.

4. Electric Vehicle Initiatives:

A. Citywide Electric Vehicle (EV) Charging Infrastructure

Partner with PSE and others on Citywide EV charging infrastructure expansion and upgrades to support electric buses, shared vanpools and personal electric vehicles.

B. City of Bellevue All Electric Bus Routes (Already Underway)

Work with King County Metro and Sound Transit to implement all-electric bus and vanpool service in Bellevue to achieve a best-in-class sustainable form of public transportation equipped with anti-collision and autonomous driving capabilities.

C. City of Bellevue Electric Vehicle Fleet Upgrade

Lead by example and implement an all-electric light and medium duty vehicle fleet to reduce the overall City's environmental footprint and carbon emissions.

5. Autonomous and Connected Vehicle Initiatives:

A. Autonomous Shuttle Pilot

Pilot autonomous electric shuttle program in Bellevue. Initial implementation may involve partnership with key Bellevue employers to provide connections between employment and transportation centers (i.e. mobility hubs).

B. 3D Mapping

Partner with 3D mapping provider to collect Light Detection and Ranging (LIDAR) data that will be provided to autonomous vehicle manufacturers.

C. Connected Vehicle Communications

Support the deployment of low latency vehicle-to-infrastructure communications to enable connected and autonomous vehicle compatibility.

6. Shared Mobility Initiatives:

A. Flexible Vanpool Implementation (Already Underway)

Establish partnerships with the public and private sectors to implement a flexible – and eventually electric and autonomous – vanpool/rideshare service to support Bellevue’s commute trip reduction programs.

B. Shared Mobility Hub (Already Underway)

Implement shared-use mobility hubs at key park and ride facilities and transfer points to enhance accessibility and expand available mode choices. The mobility services available at the mobility hub could feature: extended transit and bus services, interactive kiosks with real-time travel information, employer shuttles, one-way and traditional car-sharing, demand responsive transportation (microtransit), transportation network companies (TNCs), and carpooling.

C. Multimodal Transportation Partnerships

Establish partnerships with public transit and private shared mobility providers to expand available mode choices and enhance first-and-last-mile transportation options in Bellevue.

D. Curb Management System and Monitoring

Create a network of safe pick-up and drop-off locations on Bellevue streets for vanpool and ride-share services. The system could include electronic monitoring of designated locations to support enforcement of proper use.

E. Innovation Triangle Technology Partnership

Collaborate with Kirkland and Redmond to implement a test bed partnership aimed at piloting new mobility emerging technologies.

Critical to advancing the successful implementation of these higher priority projects is the resourcing plan. The project team is evaluating department funding, staff resources, grant opportunities, potential outsourcing, and potential new resources to provide the necessary support to the Smart Mobility Plan.

In addition to the projects listed above, staff have also identified another 15 longer terms projects that are considered lower priorities based on our evaluation of projects against the goals of this plan. More detail on the additional 15 longer term projects can be found in Attachment A.

Next Steps

With a list of priority projects now defined, the project team is focused on finalizing the Smart Mobility Plan documentation by April 2018. Projects that are currently underway are anticipated to advance at a steady pace to allow Bellevue to keep up with the latest developments in technology and ensure forward compatibility with future advancements. In addition to completing the plan documentation and advancing active projects, the following activities will be occurring in the coming months:

- Develop budget and staffing resource plan: Cost and resource estimations are being prepared for all aspects of this plan. Our team will be evaluating how much of the plan can be implemented with the existing capital and levy programs. Additionally, the plan will address staff resources necessary to design, implement, operate and maintain elements of these projects and initiatives.
- Grant Research: There are a few grant opportunities that staff is aware of and hope to pursue in 2018. Our team will look for additional funding opportunities and partnerships that may be able to close the gap in the needed funding estimated through our budget efforts.
- Partnership Opportunities: Under the direction of our Transportation Technology Partnerships Manager, the project team will continue to seek and engage in opportunistic partnerships with both the public and private sectors to leverage available resources, technical contributions and funding opportunities to execute projects identified in the plan.

While Bellevue's Smart Mobility Plan will be finalized in April, it is envisioned that this document would be updated every few years to keep up with the advancement of technology and ensure relevance to Bellevue's transportation system.

OPTIONS

N/A

RECOMMENDATION

N/A

ATTACHMENTS

A. Smart Mobility Additional Projects List

AVAILABLE IN COUNCIL DOCUMENT LIBRARY

N/A