

December 1, 2021

To: Mayor and Members of City Council

From: Paula Boggs Muething, City Manager

**202102316**

Subject: SMART CITIES PLATFORM

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### **Reference Document #202100599**

The Council at its session on March 10, 2021, referred the following item for review and report:

MOTION, submitted by Councilmember Kearney, WE MOVE for the City Administration to prepare a report detailing all major and noteworthy projects, initiatives and activities that have been undertaken in the past 5-10 years to implement smart city technology solutions for parking, lighting, traffic engineering, and other relevant operations. WE FURTHER MOVE for this report to include an analysis of the feasibility of implementing technology similar to “Smart City Platform” provided by Fybr - a secure, end-to-end IoT solution that delivers real-time data on into actionable insights that allow communities to make proactive and informed decisions. (STATEMENT ATTACHED).

#### Introduction

A smart city is an urban area that uses different types of electronic methods and sensors to collect data. The data is used to manage assets, resources, and improve operational services across the city such as traffic and transportation systems, water supply networks, waste, crime detection, information systems, schools, libraries, hospitals, and other community services. Smart city platforms are described as a system of systems used to manage the various software and hardware that controls and operates the built infrastructure within the city’s departments. Smart city platforms include software and hardware that provide a common portal for visualizing and managing data and, most importantly, optimizing overall city operations.

Over the past ten years, the City has implemented construction projects to establish the backbone infrastructure needed for implementing a smart cities platform. To date, 25,000 feet of duct bank (a group of 4-4” conduits that provide pathways and protection for the fiber optic cables) is installed in the Central Business District downtown, over 200 traffic signal controllers are smart capable, over 30 dynamic message signs are established on City and County garages and lots for parking management in The Banks, 2,650 on-street single space smart meters (credit card and communication to handle mobile payments), 153 multi-space smart pay stations (covers 1,350 on-street parking spaces), and half a dozen dynamic message wayfinding/incident management boards have been installed on the roadways throughout the city limits.

## Analysis and Feasibility Strategy

Currently, the software and hardware that control and operate the built infrastructure (traffic signals, parking meters, streetlights, etc.) function largely in a standalone isolated manner, with little or no connectivity to other infrastructure. For example, variable message signs and traffic signals have different hardware and software that control their operations, all while being connected via City fiber optic cable (the backbone infrastructure).

While smart city platforms serve to unify data and information from the many siloed systems, the available smart city platforms are still in their early stages. No single platform offers a menu of options that handles all the various needs of the City's departments. The internet of things (IoT) software and hardware is a very crowded sector with multiple vendors targeting business specific segments. For example, some vendors handle utilities well, while others handle transportation well. These segments can include buildings, utilities, transportation, and more.

The feasibility of implementing a smart city platform is dependent on seamlessly combining data from multiple city departments and other sources. New technology developments are central to these efforts but require appropriate selection and implementation. Having a proper technology strategy in place before launching a major program is essential to avoid a massive proliferation of incompatible, non-interoperable solutions that constrain benefits and escalate ongoing support costs.

There are companies that can develop a custom set of tools to integrate and operate IoT solutions with software suites, data collection devices, and applications. The numerous departments across the City have various needs related to a smart city platform. For example, DOTE has needs related to traffic data (speeds, counts, origin-destination, traffic management center), permit data (fees, conflicts, close-out reporting), construction data (project coordination, invoicing, assets condition), street lighting and signals (maintenance, reporting, fees, and billing).

Currently, no single smart city platform will be able to offer all features for all the departments with open, interoperable software and hardware that interacts with and complements each other. The standard menu of options as they presently exist simply lack the specific functionality required by the public sector. Because of compatibility issues that currently exist, an RFQ is needed to determine who can do what to help the City the most.

## Summary

Over the past ten years, the City has constructed numerous standalone "smart" projects. However, due to the compatibility issues that currently exist, a request for qualifications (RFQ) is needed to determine how to help the City implement a smart city platform. To ensure a coordinated and comprehensive smart cities platform, a vetted technology strategy is necessary in coordination with all City departments and is recommended to be outlined in the RFQ which also needs to include elements for cybersecurity.

cc: John S. Brazina, Director, Transportation and Engineering