

## COUNCIL COMMUNICATION

 <p>CITY OF DES MOINES OFFICE OF THE CITY MANAGER</p>	Number: <b>18-624</b>	Meeting: <b>November 19, 2018</b>
	Agenda Item: <b>9</b>	Roll Call: <b>18-1895</b>
	Submitted by: <b>Steven L. Naber, P.E., City Engineer</b>	

### AGENDA HEADING:

Approving the Intelligent Transportation Systems (ITS) Master Plan as the framework for the City of Des Moines future traffic management and communication systems infrastructure.

### SYNOPSIS:

Recommend approval of the ITS Master Plan to provide the City's framework for efficient infrastructure for future traffic signal, traffic management, and fiber communication systems. ITS are the application of sensing, analysis, control and communications technologies to ground transportation to improve safety, mobility, and efficiency.

### FISCAL IMPACT:

Amount: Future capital and operating investments needed for traffic signal, traffic management, and fiber communications systems. Consists of eight (8) phases at a cost of approximately \$1.5 million per phase.

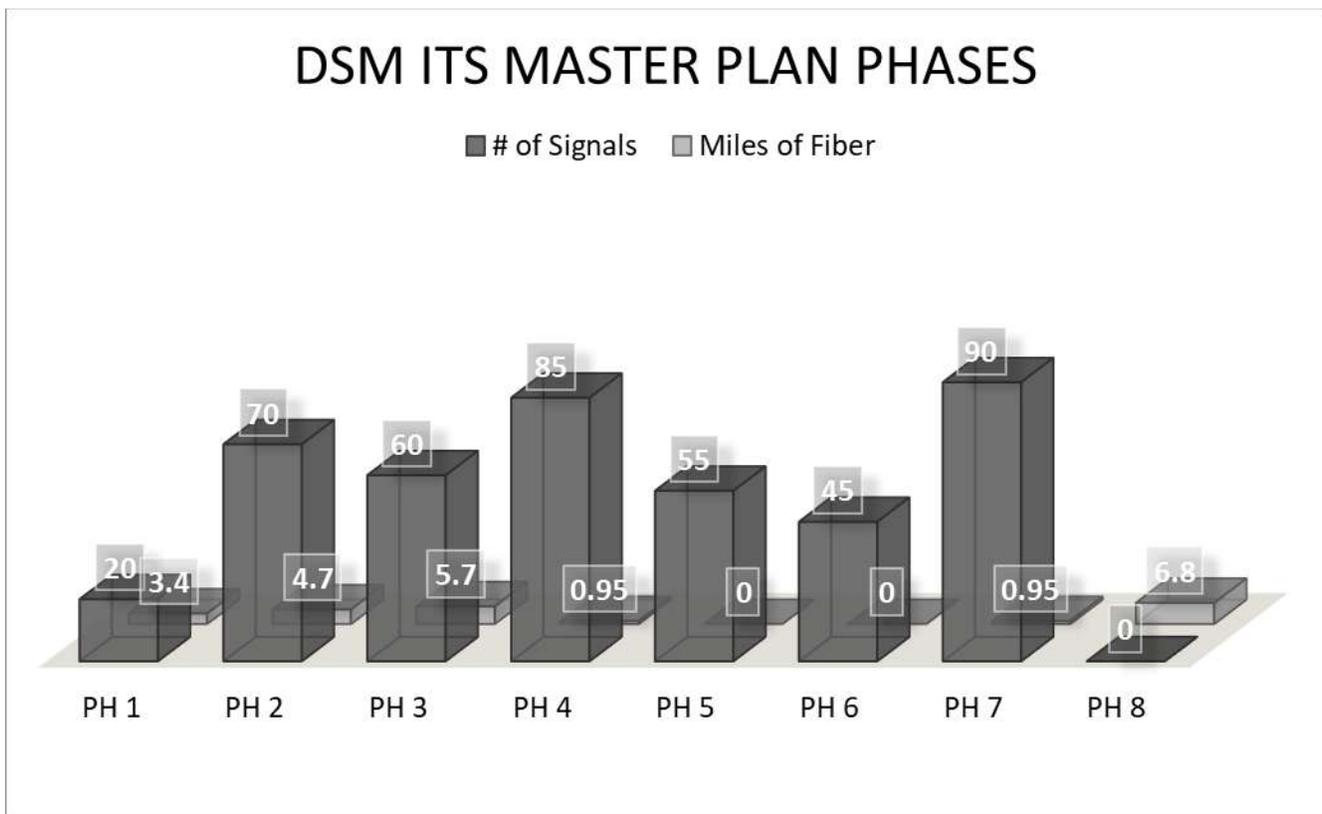
Funding Source: 2018-19/2023-24 CIP, TR097, Page 46, Street Improvements - Traffic System Operations Improvements.

### ADDITIONAL INFORMATION:

- On March 20, 2017, under Roll Call No. 17-0461, the City Council authorized a professional services agreement for the City's first ITS Master Plan.
- The ITS Master Plan addresses major components: signal system hardware and software, work order system, fiber communications infrastructure, video observation cameras, and dynamic message signs.
- The current ITS infrastructure for the City of Des Moines primarily consists of antiquated technologies, including traffic signal controllers using 1970s technology, video observation cameras that are often not operable, and a central management software that is outdated and will soon be unable to run on City computer systems due to operating system upgrades.

- Due to the limitation of the existing ITS, staff cannot efficiently monitor or adjust traffic signal operations during special events, unusual circumstances causing traffic to back up, or other situations when it would be advantageous to quickly make such adjustments.
- Updated signal software and hardware will allow for reliable travel times for drivers, reduced staff costs, and reduced citizen complaints about traffic signals.
- Updated Video Observation system will enable real-time monitoring for Events, Emergency Response, Flooding, construction detours and includes:
  - System that can be used by Police, Fire, and Public Works.
  - New Traveler Information (Dynamic Message Signs/Apps) that will provide real-time messages to drivers.
- The ITS Master Plan includes an inventory of existing ITS equipment, a needs assessment to determine the City's expectations for the system, concept design and cost estimates of the new systems, and an implementation plan including potential outside funding opportunities to supplement City funding.
- The plan identifies ITS technologies and staffing necessary to better operate the City's traffic signal system and accommodate the emerging technologies associated with Smart Cities including connected and autonomous vehicles, connected pedestrians and bicyclists, and emergency vehicle preemption systems. This plan provides the framework for a fiber communication system that will be able to handle the data needs associated with connected and autonomous vehicles.
- The ITS Master Plan is broken into eight (8) phases of approximately \$1.5 million per phase, with an estimated total cost of \$12.5 million.
- These eight (8) phases are prioritized on vehicle volumes, roadway capacity, annual crashes, truck/transit route needs, existing operational issues, and conditions of existing communications.
- At the end of the eight (8) phases the City will have:
  - 425 signals converted to the latest hardware and software technology.
  - A work order system to track work completed and inventory.
  - 52 total video observation cameras.
  - 10 new Dynamic Message Signs on regional mixed-use corridors.
  - 60 new traffic signal locations with battery backup.
  - 45 new system sensors for volume/speed monitoring and reporting.
  - Eight (8) new miles of fiber, 14.4-miles of fiber replaced.
  - 80% of signal cabinets with new Information Technology equipment.
  - A redundant fiber communication loop so that one (1) fiber cut does not take an entire corridor or several corridors off line until a fix can happen.
- The results and recommendations of this ITS Master Plan were presented to Council at a work session on October 22, 2018. A question was asked regarding what represents the base system needed to operate the signal system moving forward. Many of the items recommended in the plan are basic level of enhancements needed. These include:

- Traffic Signal Hardware - New traffic signal controllers and local controller software.
  - New Central Management System - New traffic signal system management software.
  - Communications Enhancements - Replacement of the multi-mode fiberoptic and copper twisted pair cables with installation of single mode fiberoptic cable to continue to build-out the communications network to facilitate improved real-time operations and monitoring, ability to trouble-shoot signals remotely, etc.
  - Expansion of IT switches at each signal cabinet location.
  - Work Order System - A Work Order System is a basic need for the Traffic Engineering Services Division. Staff cannot tell when a service ticket has been completed, which results in inefficient or dual response.
- The extra items would be the 10 new Dynamic Message Signs on regional mixed-use corridors, 60 new traffic signal locations with battery backup, and 45 new system sensors for volume and speed monitoring and reporting. These items equate to \$1.1 million, or 9%, of the total cost. Having these items allows for better management of traffic during special events and more reliable traffic signal operations on key corridors when there is a power outage.



**PREVIOUS COUNCIL ACTION(S):**

Date: March 20, 2017

Roll Call Number: [17-0461](#)

Action: [Approving](#) Professional Services Agreement with Iteris, Inc. for Intelligent Transportation Systems Master Plan Services, not to exceed \$283,177. ([Council Communication No. 17-308](#)) Moved by Hensley to adopt. Motion Carried 7-0.

**BOARD/COMMISSION ACTION(S):**

Board: Transportation Safety Committee

Date: September 11, 2018

Resolution Number: N/A

Action: Motion was made by Jim Windsor to support investments in new technology and infrastructure; seconded by Scott Bents. Motion passed 8-0.

**ANTICIPATED ACTIONS AND FUTURE COMMITMENTS: NONE**

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