



## AGENDA REPORT

**To:** Honorable Mayor and City Council Members

**From:** Warren Hutmacher, City Manager

**Date:** June 30, 2017

**Agenda:** July 24, 2017 WORK SESSION AGENDA: Future signal needs

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### Recommendation:

Staff recommends the following to improve the city's signal performance and address current issues:

- 1: Install a signal monitoring system.
- 2a: Upgrade detection citywide to provide improved performance
- 2b: Completely change over to updated controllers and software.
- 2c: Expand the signal contract to include expertise not currently available with our maintenance contract.
- 3: Develop a performance dashboard to report the state of transportation system operations.

### Issue:

- 1: Proactively monitor signals and timing for maintenance issues as well as opportunities for improvement.
- 2: Ensure every effort is made to provide the highest levels of equipment operability.
- 3: Provide open and transparent operation of the signal system to city management and the public.

### Basis for Recommendation:

During the May, 2016 Council Work Sessions, the Mayor and City Council were presented with the challenges and capabilities of the traffic signal and ITS Systems. Officials brought up several issues of concern including; detector false and non-calls, signal coordination, proactivity of response to signal issues, and clarification of how the signals operate. To address the concerns, staff makes the following recommendations:

**Recommendation 1:** Signal monitoring system provides a "check engine light" on the signal system. It will report on the health of the hardware and alert maintenance staff of concerns that need to be addressed. There are two vendors that offer a cabinet monitoring solution. The devices report on the overall health of the signal hardware outside of the signal system itself. This will allow better, more proactive response to malfunctioning devices. It will also monitor signal condition and report failures such as power outages, battery health of backups, door open, and cooling fan operation. The current system is limited to reporting signal in flash and communication failures. Both vendors also provide a redundant cellular link for a wireless backup communications option as well as a battery backup within the unit that will allow for reporting even in the event of a power outage.

Financial Impact:

\$375,000 to deploy to all 72 signals and 30 school flashers.

**Recommendation 2a:** Many of the city's intersections have been updated to more modern detection including pucks, video and radar, a large number are still operating on inductive loops and old detector cards. The City is currently upgrading detection on an as needed basis (repaving and road construction). If adopted, this investment would accelerate the process of detection upgrades. This recommendation would upgrade detection citywide to modern units that self-diagnose faults, count traffic, and in some cases provide pavement temperatures. The cabinets installed with ITS phase 4 are compatible with the latest detection (Sensys pucks, video detectors and radars.)

Financial Impact:

\$20,000-\$30,000/ intersection. \$800,000 to complete all intersections in FY 2018

**Recommendation 2b:** As ITS phase 4 was designed prior to the city assuming operational control of the McGinnis Ferry Road signals, they were not included in the project. This recommendation would finish change-over to updated controllers. The new controllers will allow for reporting by various devices. Additionally, the latest equipment is designed to be compatible with, and capable of integrating with the proposed connected and autonomous vehicle technologies.

Financial Impact:

\$46,500 for the remaining 15 controllers.

**Recommendation 2c:** Over the past seven years the city's traffic infrastructure has expanded to include traffic monitoring cameras, additional fiberoptic cable, networking equipment, and the Traffic Control Center (TCC). The signal contract has, however, remained roughly the same. This recommendation would expand the signal contract to include several different contractors to maintain not only the signals, but fiber optic cable, networking equipment, and the TCC hardware. While the current signal contractor outsources fiber work, they don't have the expertise to maintain networking equipment nor the TCC.

Financial Impact:

\$300,000 combined \$200,000 signal maintenance \$100,000 fiber, networking equipment, and the TCC hardware.

**Recommendation 3:** Working with communications and GIS this recommendation develops a dashboard, to display various performance measures and statistics such as travel times, volumes and signal performance. This additional information source will give city management, and if desired, the public access to real time data on the city's traffic operations. It will also allow for improved response measurement of signal and traffic improvements.