




MEMORANDUM

TO: Mayor and Council Members

FROM: Rey Arellano, Assistant City Manager 

DATE: October 9, 2017

SUBJECT: City Council Resolution 20160324-009 – Fire Station Planning

On March 24, 2016 (Resolution 20160324-009), Council directed the City Manager to develop a comprehensive plan for building five fire stations in five identified areas of need. As part of this plan, the City Manager was directed to explore all feasible methods of financing, including bond funding, third-party financing, and issuing certificates of obligation. Finally, Council directed the City Manager to explore the feasibility of utilizing a GPS emergency vehicle preemption system.

Fire Station Design and Location

The new fire station design prototype is a five-bay combined Fire/EMS station that allows for expansion to house equipment and crews as needed. The design can also accommodate the temporary or permanent placement of a Battalion Chief or EMS Commander and the addition of a boat, motorcycles, brush trucks or other types of rescue apparatus.

The station location is determined by the annual Standard of Coverage (SOC) analysis conducted each calendar year. The Austin Fire Department's (AFD) goal is to have a unit on site 90% of the time within 8 minutes. When considering need, we also evaluate population, call volume, and the length of time the area was incorporated into the City of Austin (COA) full purpose jurisdiction. The potential fire station locations, ranked in order of need, are as follows:

1. **Travis County** – COA full purpose since 1985. 90% of time, first unit arrives within 11 minutes, 56 seconds.
2. **Loop 360** – Lost Creek MUD was annexed in December 2015. The areas north and south of the target location on the map have been COA full purpose since 2000. 90% of time, first unit arrives within 10 minutes, 45 seconds.
3. **Goodnight Ranch** – Several nearby neighborhoods have been COA full purpose since 2003. 90% of time, first unit arrives within 12 minutes, 39 seconds.
4. **Moore's Crossing** - This area has been in the COA full purpose jurisdiction since 2003. 90% of time, first unit arrives within 13 minutes, 4 seconds.

5. **Canyon Creek** – This area has limited residential development and is in COA full purpose jurisdiction, but some commercial sites were annexed in 1997. 90% of time, first unit arrives within 11 minutes, 12 seconds.

Funding Options for Fire Station Construction

Bond Funding

On the financial side, the five new fire stations may be funded through the bond process and/or through a third party financing model.

Staff initiated the 2018 bond development process in December 2016. In June 2017, staff presented the initial recommended starting point, as compiled and reviewed by a cross-departmental team of City staff, to the Council-appointed Bond Election Advisory Task Force (BEATF). No new facilities were included as part of staff's recommended starting point, as this bond was intended to focus on reinvesting in the City's existing infrastructure. However, the BEATF is in possession of the new fire station requests submitted by AFD and are currently reviewing those proposals in conjunction with the staff recommended starting point. Their work is slated to end in December 2017. As stated to Council in June 2017, following the completion of the Task Force's work, staff will provide the final recommendation to Council for review and revision.

Third Party Financing (Public-Private Partnerships) / Certificates of Obligation

In August 2017, City Council approved the final contract for the Planning and Development Center (PDC). The PDC will be built under the City's public-private partnership financing model as discussed with Council over the last few years. The successful use of this financing model for the PDC allows the City to evaluate the potential use of this model with other City facilities. It should be noted that this method is only applicable to facilities on land not owned by the City. Should Council provide the appropriate direction, staff is prepared to issue RFPs for new facilities and to provide a feasibility analysis back to Council for each station. Long-term debt (such as certificates of obligations) would be utilized for these contracts.

GPS Emergency Vehicle Preemption System

On June 23, 2016, the Council approved resolution 20160623-065 supporting the City's application for the Advance Transportation and Congestion Management Technologies Initiative sponsored by the US Department of Transportation. A next generation emergency vehicle preemption (EVP) system was included as an element of the grant application. The City was not successful in its applicant for the grant.

The following information is provided in response to the portion of Resolution 20160324-009 regarding EVP best practices in other cities, potential cost and funding options, and anticipated impact on response times.

Benefits of Emergency Vehicle Preemption

The Austin Transportation Department (ATD) identified current trends in the deployment and anticipated benefits of EVP. The current trend for new EVP systems is a shift away from the traditional optical based system similar to the one currently in use in the City of Austin. This type of system is based on line of sight with limitations as to how far in advance a signal may be

preempted to improve traffic flow for an approaching emergency vehicle. The industry trend appears to be shifting toward a global positioning system (GPS) in which each vehicle communicates with traffic signals through a radio signal. Although this type of system does not require direct line of site, the reliability may be limited due to obstructions (e.g., tall buildings) that block or hinder the radio signal from being transmitted from the vehicle to the signal system.

A central-based EVP system uses the GPS and route information for all emergency vehicles to strategically preempt traffic signals in advance of the emergency vehicle reaching a traffic signal. As part of the system, an interface would be developed to allow the computer aided dispatch (CAD) system to communicate vehicle location and preassigned response route directly with the signal system. Such a system would provide the ability to reduce traffic queues in advance of emergency vehicles reaching the signal, improving response times and safety for emergency vehicles as they travel through a signalized intersection.

Anticipated Impact on Response Times for Emergency Vehicles

NCHRP Report 500: A Guide for Reducing Collisions at Signalized Intersections, shows that EVP systems have reduced response times between 14% and 50%. In addition to a reduction in travel time, *NCHRP Report 500* indicated that in Minneapolis, there was a 70% reduction in emergency vehicles crashes after EVP was implemented.

The above performance information was based on cities before and after implementing an optical EVP system. A central-based EVP system using GPS and route information is expected to generate similar benefits (i.e., less delay at signals, reduced crash rates, and more emergency vehicles entering intersections on a green signal when responding to emergencies). Upgrading the City's optical system to a GPS-based system will improve emergency vehicle response performance. Staff has not identified cities that have upgraded from an optical to a central-based EVP system to be able to provide potential performance improvement comparisons.

Implementation Costs

ATD developed cost estimates for two scenarios:

1. Expansion of the existing optical EVP system from approximately 100 signals to 1000 signals: \$5.4 million
2. Development and deployment of central-based EVP system: \$3 million

In addition to a lower deployment cost, the maintenance cost of the central-based system is anticipated to be significantly less. The central system does not have any EVP field equipment to maintain. With an estimated annual failure rate for existing equipment being approximately 5%, the maintenance cost savings would be \$270,000/year once equipment is out of warranty.

A specific funding source for central EVP system has not been identified. Potential funding sources include either a future transportation bond, a future grant opportunity and/or operating budget. Staff has submitted an EVP project for consideration in the 2018 bond process and CAMPO's call for projects in early 2018. Funding levels/projects are still being evaluated for both funding opportunities.

Annual maintenance of the system would come from the operating budget of the Transportation Department, Fire Department, Austin/Travis County EMS, or a combination of the three.

cc: Elain Hart, Interim City Manager
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