MEMORANDUM

TO: Mayor and Council

THROUGH: Steven Methvin, Deputy City Manager (480-350-8811)
Marilyn DeRosa, Engineering & Transportation Director (480-350-8896)

FROM: Shelly Seyler, Deputy Engineering and Transportation Director (480-350-8854)
Julian Dresang, Traffic Engineer (480-350-8025)

DATE: August 27, 2019

SUBJECT: Setting Speed Limits – Vision Zero

PURPOSE:
The purpose of this memo is to provide information about speed limits to the Council and request feedback on setting speed limits using the "safe systems" approach.

RECOMMENDATION OR DIRECTION REQUESTED:
Staff seeks feedback from the Council on setting speed limits using the "safe systems" approach.

CITY COUNCIL STRATEGIC PRIORITY:

- Safe & Secure Communities - 1.08: Achieve a reduction in the number of fatal and serious injury crashes to zero.

BACKGROUND INFORMATION:
On May 3, 2018 staff made a presentation to the City Council that recommended changes to posted speed limits on nine arterial street segments, nine collector/local street segments, and six "35 mph school zones" near high schools. The criteria that was used for those recommended changes was limited to:

- 35 mph school zones near high schools,
- Locations with inconsistency/discontinuity,
- Arterial midblock changes, and
- Recently completed streetscape projects.

Following that presentation, staff reached out to the effected schools and school districts to gather feedback on whether they would be supportive of converting the "35 MPH AT ALL TIMES" to "35 MPH WHEN LIGHTS FLASHING." The idea is that drivers would be more likely to comply with the regulations if the regulations better reflected times of the day that high volumes of students are present. All the schools and school districts that we contacted were supportive of the proposed changes.

Between May 2018 and June 2019, staff and the community were actively developing the Vision Zero Action Plan. In reviewing crash data, it became apparent that there would need to be strategies related to speeding in the action plan. It seemed prudent to delay any changes to City speed limits until that plan was finalized.

In Tempe, speeding related crashes account for 20 percent of all high-severity (fatal and serious injury) crashes. Traveling at "Speeds Too Fast for Conditions" is the second highest violation leading up to high-severity crashes, exceeded only by "Failure to Yield Right-of-Way." The most common crash types for speeding related high-severity crashes are Rear End (46%) and Single Vehicle (39%). Speed related high-severity crashes had previously been decreasing year-over-year from a high of 19 in 2012 to a low of 12 in 2015. Unfortunately, more recently the trend has been increasing rapidly, with 18 in 2016 and 29 in 2017. The age groups most likely to be involved in speeding related high-severity crashes are drivers 19 to 23 years in age.

There are two scientifically proven reasons why managing speed is important. As speeds increase (1) There is a greater chance of being injured, and (2) The injuries are likely to be more sever or fatal. At speeds of 10 to 15 miles per hour (mph), the crash risk is five percent and the fatality risk is two percent. At speeds of 40+ mph, the crash risk is 90 percent and the fatality risk is 85 percent.

CURRENT STATUS:
A recent U.S. Department of Transportation - Federal Highway Administration document titled "Methods and Practices for Setting Speed Limits: An Informational Report" identified four general approaches for setting speed limits:

1. Engineering Approach (85th percentile speed with minor adjustments)
2. Expert System Approach (computer programing)
3. Optimization (minimize the total societal costs of transport)
4. Safe Systems Approach (injury minimization)

The Engineering Approach is the most common method used in the United States and is what the City of Tempe has traditionally used. This has resulted in maximum arterial speed limits of 35 to 45 mph, maximum collector speed limits of 25 to 35 mph, and maximum local/neighborhood street speed limits of 25 mph.

The Safe Systems Approach is the method being used in most Vision Zero cities. A safe systems approach recognizes that humans are going to make mistakes and seeks to design a system that allows for these mistakes, rather than expecting perfect behavior to minimize death and injury. A safe systems approach aims to provide safe travel for all users by focusing on safe streets, **safe speeds**, safe vehicles and safe people.

Using this method, speed limits are set according to the crash types that are likely to occur, the impact forces that result, and the tolerance of the human body to withstand these forces. As a result, this method focuses on the type of users, particularly vulnerable users like pedestrians and bicyclists. For these reasons, Tempe's Vision Zero Action Plan identified two "safe systems" strategies related specifically to speeding:

1. Initiate a citywide speed limit evaluation with the safe systems approach to incorporate other critical factors, such as crash history and the safety of people walking and bicycling.
2. Improve driver compliance by converting "24 hour" 35 MPH high school zones to time-of-day with flashing warning lights.

The Tempe Police Department was very involved in developing these strategies and is supportive of these proposed changes to improve safety.

Speed limits using the Safe Systems method should look something like the following:

- Maximum arterial speed limits (low bike/pedestrian activity) = 40 mph
- Maximum arterial speed limits (medium bike/pedestrian activity) = 35 mph
- Maximum arterial speed limits (high bike/pedestrian activity) = 30 mph
- Maximum arterial speed limits (very high bike/pedestrian activity) = 25 mph
- Maximum arterial speed limits = 25 to 30 mph
- Maximum local/neighborhood speed limits = 20 to 25 mph

The resulting changes to posted speed limits on arterial streets in Tempe would then look something like the following:

- 40 mph = All arterial streets south of Southern Avenue, 48th Street, McClintock (north of Loop 202)
- 35 mph = "Nearly" all arterial streets north of and including Southern Avenue, Kyrene Road north of Baseline Road
- 30 mph = Arterial streets immediately in and around Arizona State University and Tempe Beach Park
- 25 mph = Mill Avenue between University Drive and Rio Salado Parkway

There is often a misconception that lowering speed limits will result in increased congestion. This shouldn't be the case because congestion is mainly a function of delay, not speed. Traffic signal timing is based on a progression speed that is equal to or slightly less than the posted speed limit. As a result, it is common for drivers that speed between signals to consistently get stopped at each signalized intersection along a corridor. Most recurring delay (congestion) occurs at intersections and is a function of demand exceeding capacity and inconsistent signal spacing. Most non-recurring delay is a result of crashes, work zones and other "blockage". Lowering speeds should result in less crashes, which reduces congestion. Also, low speed crashes are usually less severe and can be moved from the road more easily, which minimizes congestion. Tempe is already addressing work zone delay by limiting construction hours on the roadway to between 8:30am and 3:30pm. Lower speeds allow vehicles to safely maneuver around unexpected "blockages" like debris and disabled vehicles.

At the August 13 meeting, the Tempe Transportation Commission supported modifying speed limits using the "safe systems" methodology but recommended that the City Council change Apache Boulevard from 35 mph to 30 mph between Mill Avenue and Price Road/Loop 101.

NEXT STEPS:

- Receive Council feedback on setting speed limits using the "safe systems" approach.
- Staff will provide opportunities for residents to provide feedback.
- Staff will develop a Request for Council Action to amend the City Code.
- There will be two public hearings, as required for any modifications to the City Code.
- Staff will work with Neighborhood Services and Public Information Officers to educate residents of any changes.
- Staff will fabricate and install new speed limit signs.
- Staff will continue to educate residents.

FISCAL IMPACT or IMPACT TO CURRENT RESOURCES:

The costs would include removal of old signs, fabrication of new signs, installation of new signs, installation of flashing lights (at high school zones).

$ 187,000 Highway User Revenue Funds

Sufficient funding is available in the Capital Improvement Program and operating budget.

ATTACHMENTS:

1. PowerPoint