

Source  
John Glascock

**TO:** CITY COUNCIL  
**FROM:** City Manager and Staff   
**DATE:** November 12, 2007  
**SUBJECT:** 25 mph 'Residential' Speed Limits

**Fiscal Impact**

- Yes
- No

**Other Info.**

**EXECUTIVE SUMMARY**

Staff has prepared for Council consideration a report regarding modifying residential speed limits to from 30 mph to 25 mph. Staff has attached a detailed report.

**DISCUSSION**

At the September 17<sup>th</sup>, 2007 meeting, Council directed staff to prepare a report regarding a change in the residential speed limit from 30 mph to 25 mph.

Following are key issues:

1. Roadway features such as curves, width and other characteristics influence speeds more than posted speed limits.
2. Signing alone does little to influence driver behavior.
3. Increased enforcement may influence driver behavior to some degree. Prosecution of speed limit infractions are difficult without clear and visible signing.
4. The term "residential" is nebulous. Modification of the ordinances would probably need to incorporate all unposted roadways and signing would be required on more streets to inform drivers of the expectation to travel at speeds below where they are currently operating.
5. There are approximately 1,700 'residential street segments depending on the definition of residential. It is estimated that approximately 1,000 new signs would be required to adequately sign 1/4 to 1/3 of the street segments. An additional 250 existing speed limit signs would need to be replaced. This would cost approximately \$255,000 and \$25,000/year to maintain.
6. An increase in expectation level from local residents for traffic calming is a likely outcome from lowering the speed limit to 25 mph.

7. 85<sup>th</sup> percentile speeds on projects where residents desire calming indicate drivers generally operate at between 33 and 37 mph (above the current 30 mph speed limit). Residents tend to be most concerned when the 85<sup>th</sup> percentile speed is found to be above 35 mph.

8. Most traffic on residential streets is local neighborhood traffic. Without clear signing and a public information awareness campaign, a negative reaction from local residents to receiving tickets on 'their' street can be expected. It is not possible to differentiate between resident and non-resident drivers of an area, nor would it seem to be effective if the goal is have everyone drive slower.

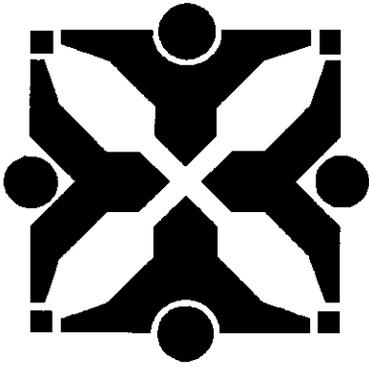
9. Municipalities throughout the U.S. examine the issue of establishing an arbitrarily low speed limit on a regular basis. Despite the weight of the evidence and 30+ years of research, traffic professionals have been generally unable to adequately and concisely explain the reasons why speed limits should be established near either the 85<sup>th</sup> percentile or near the average speed of traffic on a given road. The reason is to try to limit collisions across the entire roadway network.

10. Focusing on roadway design features and subdivision standards, such as has been done by the City over the last 10 years should decrease the likelihood of propagating future concerns.

These issues are discussed in the attached report. Supporting documentation is included in the report.

### **SUGGESTED COUNCIL ACTION**

After review of the Traffic Engineer's report and considering that funds are not available, staff recommends no changes to the residential speed limit.



**CITY OF COLUMBIA MISSOURI**

## **Residential Street Speed Limit Report**

Prepared by:  
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Traffic Engineer  
November 12, 2007

Background

At the September 17<sup>th</sup>, 2007 Council meeting, Council directed Staff to prepare a report regarding a change in the residential speed limit from 30 mph to 25 mph.

Summary:

Other communities have unposted speed limits of 25 mph. Enforcement of speed limits and roadway features such as curves, width and unbroken length are more important to influencing driver behavior than arbitrary speed limits or signing alone. The terms ‘neighborhood’ and ‘residential’ are nebulous, and the ordinances would need to be modified to reflect a change to all unposted speed limits. Establishing the unposted speed limit at 25 mph may create expectations that cannot be met with current resources. Given the evidence, changing the City’s ordinance will not result in significantly reducing speeds along residential streets without a major financial commitment by the City in terms of signing, enforcement and roadway modification. Cost for additional enforcement is unknown. If the change is to be effective, cost for roadway modifications are unknown, but expected to be greater than \$250,000 for additional calming. Cost for additional enforcement are also unknown. Cost for additional signing is expected to be less than calming and enforcement costs and is estimated at \$255,000.

General:

Ordinance 14-223 establishes speed limits for roadways within the City. The ordinance establishes the unposted speed limit as 30 mph in the following way:

14-223

(a) No person shall drive a vehicle on any street at a greater speed than is reasonable and approved under conditions then and there existing.

(b) No person shall, where no special hazard exists, drive a vehicle at a speed in excess of the following:

...

(3) *Thirty miles per hour*, night and day, on all streets not herein more particularly specified.

...

By this ordinance, unless otherwise signed, the speed limit on city streets is 30 mph. The ordinance does not specifically establish ‘residential’ street speed limits.

Generally, it is more difficult to prosecute a violation of an unposted speed limit violation than a posted violation. Without thorough research, the general sense from the prosecutor’s office is that it would be difficult to specifically target just ‘residential’ streets in the ordinance as the term is nebulous enough to make enforcement and prosecution questionable.

In 2002 at direction from Council, Staff examined the issue of reducing the speed limit on ‘residential’ streets. A survey of 30 cities with generally similar characteristics to that of Columbia was conducted. Two were found to have 35 mph unposted speed limits, nine were found to have 30 mph unposted speed limits and 19 were found to have 25 mph speed limits. In the interest of time, a follow up survey has not been conducted. It is anticipated that the general trend is probably the same as the 2002 survey.

The previous survey indicates that an unposted speed limit of 25 mph is a more common practice than Columbia's 30 mph.

A question was raised as to the difference between typical braking distances of 25 mph and 30 mph. The Policy for Geometric Design of Highways and Streets formula for braking distance is  $\text{distance} = \frac{\text{initial speed}^2}{30 * (\text{coefficient of friction} \pm \text{grade of the street})}$ . For a flat street, the distance to brake between a 25 mph vehicle and a 30 mph vehicle for the same reaction time is equal to 31 feet.

#### Discussion:

It has been demonstrated by studies that roadway conditions influence travel speed to a greater degree than posted speed limits (see FHWA-RD-98-154). The data suggests that arbitrarily reducing an unposted speed limit from 30 mph to 25 mph will do little to actually influence a change in driver behavior (such as reducing speeds).

The intent of this report is not that 'high speeds are good'. The main focus of traffic professionals as a whole is to provide a safe and efficient roadway network for all users. Facts regarding costs and anticipated challenges are presented so that an informed decision can be made by Council.

If a reduced speed limit for classic 'neighborhood' locations of 25 mph were to be pursued and is desired to be effective, some key items should be considered prior to moving forward.

To effectively reduce speeds in residential areas will require changing driving habits. Ways to influence driver behavior are advertisement of the change (installation of signs, public outreach, etc), enforcement and roadway modifications.

1. Signs – While signs alone have a limited impact on driver behavior, they are an essential element in clarifying to drivers the expectation of a slower speed than what would be comfortable along the roadway without the sign. Signs are also necessary for effective prosecution of violations. Signs tend to only be as effective as the level of enforcement presence.

An example of limitations of signs alone is at school zones. Due to years of public education visible signing and awareness programs, it should be expected that drivers would reduce vehicle speed in areas near schools. However, speeding in these areas continues to be a concern brought forward by the public. Though compliance is good at many locations, there remains a perception of higher expectations for school zones even with the additional efforts and public campaigns. Often public comment is that even more enforcement is expected and additional steps need to be taken to reduce speeds in school zones.

Drivers can be expected to continue traveling in the same manner on residential streets unless they are informed through frequent and visible speed limit signs along with stepped up enforcement.

Speed limit sign installation cost is approximately \$225 per sign in labor, fuel, post, sign and connection material. Labor includes determination of location, clerical work to contact Missouri One Call & utilities as well as actual installation. There are approximately 1,700 'residential' street segments in the City depending on the definition of "residential". Signs

would not be needed on all segments. However, they should be used on segments where roadway conditions would not indicate a physical need to drive at 25 mph. There should also be additional signing at entry and exit points to the City.

Assuming that signs were needed only on ¼ to 1/3 of the street segments and signs would be installed on both sides of the road, there would be approximately 1,000 new signs. An additional 250 existing speed limit signs would need to be replaced. Therefore, cost for installation of new signs that might help lead to an effective outcome would be approximately **\$255,000**. Replacement and maintenance costs should average approximately \$25.00 per sign per year or about \$25,000/year.

Negative public reaction should be expected if the ordinance is changed and tickets are issued without signs indicating the change. The 30 mph speed limit has been established for many years. There has been indication that over 30 mph is too fast in residential areas. Therefore, increased installation of 30 mph signs along with additional enforcement of the existing speed limit might receive less negative reaction. Additional information could be gathered if Council were to select one or two neighborhoods for zero tolerance special enforcement of the existing 30 mph speed limit without posting additional signs. This could provide information regarding whether not placing additional signs could be an option that would be accepted by the public in Columbia.

Staff has pursued placement of some 30 mph speed limit signs on some residential streets. These additional signs are generally placed to help enforcement and prosecution of violators. Staff has received both positive and negative feedback regarding placement of the signs. Negative feedback generally included concerns about mowing around the sign, desires of not driving that slow of speed, complaints about persons still driving faster than 30 mph and concerns about the aesthetic impact in the neighborhood due to “sign clutter”. Positive feedback has generally been that people think more drivers pay attention to the sign.

2. Enforcement – Given the research, an arbitrary reduction in the speed limit with new signs alone will likely result in little reduction in travel speed on residential streets. Since it is being communicated that there is a desire to induce speeds below what drivers are currently driving, increased enforcement of more visible signs would appear to be required for the program to be effective.

To respond to that, the Police Department will have to increase enforcement activities on residential streets by increasing their presence, use of speed trailers and issuance of tickets for speeding. This enforcement level could be expected to translate into either additional costs for more officers and equipment or reduction in resources in other areas of police activity (level currently unknown).

Another consideration with an aggressive enforcement program is that the largest percentage of vehicles on most residential streets is typically local residents. Therefore, it can be expected that most tickets would be issued to local residents of an area. It is likely that residents will prefer that only non-residents receive tickets. It is not possible to differentiate between residents and non-residents of an area, nor would it seem to be effective if the goal is have everyone drive slower.

Of the 80+ traffic calming projects currently at various stages of examination, the general trend is that the 85<sup>th</sup> percentile speed is approximately 33 to 37 mph. This is in excess of the existing 30 mph ordinance. Some communities have established zero tolerance programs for well defined, advertised and marked locations. Many of these programs require a high percentage of local residents to sign a petition (90-100%). Through these communications and agreements with neighborhoods, complaints about tickets might be minimized and when there are complaints there is also support for the police enforcement. In 2005, Staff researched some programs in North Carolina that met with limited success. Some locations were abandoned due to complaints and some were retained due to neighborhood buy in. Follow up research has not been completed due to time constraints. Some Columbia neighborhoods could be willing to try to pursue this approach. Given current staffing levels and demands, Staff would not be able to adequately respond to this kind of request in a timely manner unless nearly all the meetings and efforts were completed by local residents through volunteer efforts. Effectiveness is somewhat questionable, but not truly known by Staff at this time and it may be an option to consider.

3. Roadway modification – The most effective way to achieve a reduction in speeds is to have roadways that do not encourage higher speeds. With proper subdivision design, street standards (possibly with inclusion of traffic calming devices), speeds can be better controlled. Retrofitting existing streets with traffic calming can be effective to an extent, but is extremely expensive.

The City Council has modified the subdivision regulations over the last decade to work towards minimize long straight sections for residential streets. While more robust regulations may eventually be necessary due to some recurring issues, the City could see a decrease in speeds for most newer residential streets that follow the spirit of the new ordinances (curvilinear features, shorter segments, etc). Given the general layout of most new subdivision plats, it appears most developers are attempting to minimize long straight streets.

It would be logical to assume that lowering the speed limits could increase demand for more neighborhood calming projects given higher expectations. Unfortunately, this indicates a future need for additional personnel and implementation funding for projects.

Many municipalities examine the same issue that Staff is being asked to examine. Due to the weight of the evidence of scientific research regarding the subject, most traffic professionals advocate for establishing speed limits near the 85<sup>th</sup> percentile speed or at the average speed. Generally, the reasons for this center on reducing the probability of collisions. Establishing speed limits based on the research should mean that speed limits will be near the lowest probability for collisions. This should lead drivers to truly respect speed limit signs and should ensure high compliance rates throughout the roadway network. The research indicates this should help to minimize the risk of collisions across the entire roadway system.

However, as a whole, traffic professionals have not done a very good job of communicating those reasons to the general public in the U.S. This is probably due to many factors, not the least of which is technical jargon (such as 85<sup>th</sup> percentile) that means little to someone not in the traffic profession. This is a short coming of our ability to communicate the issues, not of the general public's ability to comprehend the concept.

**Conclusion:**

The enactment of an unposted speed limit of 25 mph would not be inconsistent with other communities. Roadway features such as curves, width and unbroken length are more important to influencing driver behavior than signing or arbitrary speed limits. Arbitrarily establishing the unposted speed limit at 25 mph by itself would not likely initiate much of a change in driver behavior. Modification of unposted speeds to 25 mph may create expectations that cannot be met with current resources. A major financial commitment by the City in terms of signing, enforcement and roadway modification might impact driver behavior on residential streets. Increased signing of the existing 30 mph speed limit along with stepped up enforcement of the speed limit may influence driver behavior. Cost for additional enforcement is unknown. Demand (and cost) for additional calming devices is unknown, but expected to be more than \$250,000 per year if the change is expected to be effective. Cost for additional signing for the change in ordinance is estimated at \$255,000 initially and \$25,000/year for maintenance.

**References:**

1. Synthesis of Safety Research Related to Speed, Publication No\_ FHWA-RD-98-154
2. Effects of Raising and Lowering Speed Limits, Publication No\_ FHWA-RD-92-084

## UNPOSTED SPEED LIMITS

CITY	POPULATION	UNPOSTED SPEED LIMIT
Columbia, MO	84,531	30mph
Tuscaloosa, AL	77,906	25 mph
Santa Barbara, CA	92,325	25 mph
Boulder, CO	94,673	25 mph
New Haven, CT	123,626	25 mph
Cape Coral, FL	102,286	30 mph
Athens, GA	100,266	25 mph
Champaign, IL	67,518	30 mph
Springfield, IL	111,454	30 mph
Ames, IA	50,731	25 mph
Manhattan, KS	44,831	30 mph
Portland, ME	64,249	25 mph
Ann Arbor, MI	114,024	25 mph
Cape Girardeau, MO	35,349	30 mph
St. Joseph, MO	73,990	25 mph
Springfield, MO	151,580	30 mph
Billings, MT	89,847	25 mph
Lincoln, NE	225,581	25 mph
Wilmington, NC	75,838	35 mph
Fargo, ND	90,599	25 mph
Canton, OH	80,806	25 mph
Norman, OK	95,694	25 mph
Stillwater, OK	39,065	25 mph
Erie, PA	103,717	25 mph
Charleston, SC	96,650	25 mph
Columbia, SC	116,278	35 mph
Austin, TX	656,562	30 mph
College Station, TX	67,890	30 mph
Waco, TX	113,726	30 mph
Ogden, UT	77,226	25 mph
Roanoke, VA	94,911	25 mph

**SUMMARY**

Cities w/25 mph	19
Cities w/30 mph	10
Cities w/35 mph	2
Total	31

REPORT 12/04/02

Big 12 City