



CITY COUNCIL AGENDA REPORT

MEETING DATE: NOVEMBER 21, 2006

ITEM NUMBER:

SUBJECT: EASTSIDE NEIGHBORHOOD TRAFFIC STUDY

DATE: NOVEMBER 13, 2006

FROM: PUBLIC SERVICES DEPARTMENT – TRANSPORTATION SERVICES DIVISION

PRESENTATION BY: PETER NAGHAVI, MANAGER, TRANSPORTATION SERVICES

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RECOMMENDATION:

Review results of the latest 2006 Eastside Neighborhood Traffic Study, consider staff report, and provide direction.

BACKGROUND:

At the Study Session of June 13, 2006, City Council received a staff report regarding Eastside neighborhood traffic issues and resident concerns for increased traffic safety on Broadway. The residents overall concern included lack of sidewalks, as well as excessive speeding on Broadway.

In June 2006, during the budget hearing process, City Council considered possible options to address the concerns of residents on Broadway, as well as overall Eastside neighborhood traffic concerns. As a result, Council approved funding in the amount of \$202,000 for installation of sidewalks on Broadway between Raymond and Irvine Avenue as part of the FY06-07 fiscal year budget. Additionally, in order to further evaluate methods to address traffic concerns within the eastside residential neighborhood, the City Council also authorized funding in the amount of \$10,000 to enable Transportation Services Division staff to complete collection of current traffic data and to prepare an update of the 1997 Eastside Residential Traffic Management Study. The update will document any significant changes in traffic conditions that may have occurred since completion of the 1997 study.

By way of background, the 1997 Eastside Residential Traffic Management Study included analysis of traffic conditions in the primarily residential east side area bounded by East 17th Street to the south, Newport Boulevard to the west, Mesa Drive to the north and Irvine Avenue to the east. The Eastside Study responded to traffic concerns expressed by many residents in the Eastside neighborhood regarding speed and volume of vehicles and non-local, cut-through traffic within the residential environment. As a means to assess the level of safety within the area, the Eastside Residential Traffic Management Study included the evaluation of the prevailing speed and volume of traffic, accident data, and a determination of the level of "cut-through" traffic in the area.

The study documented 1997 traffic conditions and examined many different level traffic control measures designed with the potential to address concerns of area residents. These measures included speed humps, four way stop controls, and physical traffic diverters or barriers to prohibit through movement.

Following an extensive public involvement and review process extending over a twelve-month period and including the participation and oversight of an Ad-Hoc Committee, the overwhelming consensus of the participants was to not implement any drastic measures such as diverters, barriers, one way streets, etc., but instead implement low level measures such as increased police visibility and enforcement of existing traffic regulations.

At a public hearing on September 2, 1997, the City Council considered public input and the Ad Hoc Committee's recommendations for traffic control on the east side. Accordingly, the City Council approved only a few low-level traffic control measures that would not directly affect normal circulation patterns. This action was supported by a majority of the residents within the study area.

A copy of the 1997 Eastside Residential Traffic Management Study is attached (**Attachment 1**).

ANALYSIS:

2006 Eastside Neighborhood Traffic Study

As directed by Council, staff has collected traffic data on numerous east side area streets in order to provide an update and document any significant changes in traffic conditions since the 1997 Study. **Attachment 2** depicts the study area and existing traffic controls currently in place. Staff has also researched and reviewed a number of traffic calming strategies for Council consideration.

Traffic Volume

Attachment 3 depicts current Average Daily Traffic (ADT) volumes on eastside area streets for comparison with traffic volumes from the 1997 study or closest available data. Overall, traffic volumes have increased on the average by 21 percent on some street segments within the east side area while volumes on other streets are little changed from earlier surveys. Three of the most significant changes in traffic volume are on certain segments of Orange Avenue, Tustin Avenue, and 20th Street as listed below.

AVERAGE DAILY TRAFFIC INCREASES – 1997/2006				
Street	Segment	MPH Designation	Volume 1997/2006	Percent Increase
Orange Avenue	North of 21 st	Collector	5,000/7,057	41%
Tustin Avenue	North of 17 th	Collector	4,000/5,460	36%
20 th Street	East of Orange	Local	2,890/3,932	36%

The City's Master Plan of Highways (MPH) (**Attachment 4**) identifies Orange Avenue, Santa Ana Avenue, and Tustin Avenue as north-south collector streets through the east side area. The MPH also identifies 18th, 19th, and 22nd Streets as east-west collector streets. Collector streets are expected to carry a higher volume of traffic than other residential streets and this is generally true for streets in the east side area.

An average growth rate of up to two percent per year is considered a normal growth rate. Over a period of almost ten years since data collection for the 1997 Eastside Study, traffic volume increases of up to 20 percent on average is not unusual.

As shown on **Attachment 3**, traffic volume for the east-west streets of 18th, Broadway, 20th, and 21st Streets is within a very close range to each other as compared to other local streets. Each of these east-west local streets provide a desirable through access to Newport Boulevard, and in the case of Broadway, provide traffic signal controlled access to Newport Boulevard. The following table illustrates the close relationship of traffic volumes on these streets.

TYPICAL EAST-WEST TRAFFIC VOLUMES			
Street	Segment	MPH Designation	2006 Volume
18 th Street	East of Orange	Collector	2,649
Broadway	East of Orange	Local	3,186
20 th Street	East of Orange	Local	3,932
21 st Street	East of Orange	Local	3,054

It should be noted that traffic volumes significantly diminish on the east-west streets as one moves away from Newport Boulevard. Traffic volumes in the blocks surveyed adjacent to Irvine Avenue are much lower than those adjacent to Newport Boulevard. In summary, while traffic conditions on some east side area streets have increased since the 1997 study, a majority of locations show little change since that time.

Vehicle Speed

Attachment 5 depicts the results of speed surveys on east side area streets for comparison with speed surveys from the 1997 study. As shown on the attachment, overall vehicle speeds have risen on some street segments within the east side area while speeds on a majority of streets have declined or are little changed from earlier surveys. The most significant changes in speeds are on certain segments of Orange Avenue, Santa Ana Avenue, and 22nd Street. No other east side streets surveyed exceeded a 5 percent increase since 1997, and in fact many locations surveyed are lower than previous years.

While collector streets are generally expected to carry higher volume than local streets, numerous speed surveys conducted over the years throughout the city document little correlation between speed and volume in residential neighborhoods.

Traffic Calming Strategies

The results of the recent traffic analysis within the study area when compared with the 1997 study does not document a serious or significant change to traffic conditions that would indicate unsafe conditions. However, if the traffic volume increases are deemed significant in certain locations, different level strategies are provided for Council consideration that are expected to positively affect these specific conditions. These strategies with different level of severity are discussed below.

Level 1 – Traffic Circles

Attachment 6 depicts “traffic circles” at four key intersections.

- Broadway/Westminster Avenue
- Broadway/Raymond Avenue
- 18th Street/Westminster Avenue
- 19th Street/Santa Ana Avenue

Three of the selected intersections are currently controlled by two way stop signs on the minor side street only. The intersection of 19th Street/Santa Ana Avenue is a four way stop controlled intersection.

Studies of the effects of “traffic circles” in other communities note reductions in vehicle speed and improved traffic safety. The installation of traffic circles at intersections where through traffic is not required to stop may result in a reduction in speed as drivers slow to navigate around the circle. Three of the key intersections on Broadway and 18th Street are at the mid-point of a one-quarter mile segment uninterrupted by any other traffic controls. Also, these locations represent areas where concern has been expressed by residents regarding traffic safety issues.

While controlled by four way stop signs, the intersection of 19th Street and Santa Ana Avenue is one of the highest accident locations in the east side area, with six accidents occurring in the past three years. This specific intersection is also at the mid-point distance between Newport Boulevard and Irvine Avenue. The selection of East 19th Street and Santa Ana Avenue intersection provides an opportunity to not only enhance traffic safety, but also raise driver awareness of the residential environment. The aesthetics of the streetscape would be upgraded by installation of a landscaped island.

The traffic circle design (as shown in **Attachment 10**) includes an option to construct a raised median island on the approach to the circle in lieu of pavement striping. In addition to providing directional control to drivers, this option adds landscaping to the area.

A disadvantage of traffic circles is that they may be difficult for larger vehicles to navigate. Care in the design of the traffic circle and shape of the curb is needed to avoid this type of problem for large trucks and vehicles with trailers. Traffic circles also require the removal of some on-street parking to provide sufficient lane width approaching the intersection. The impact to on-street parking would be to those properties adjacent to the intersection and could result in the loss of up to six parking spaces on each approach or a total of up to 24 parking spaces for each traffic circle.

The cost to construct a single traffic circle as shown in **Attachment 10**, page 6 is estimated to be approximately \$90,000 each for a typical residential intersection. This includes landscaping and irrigation for the interior of the circle, flashing warning lights on bollards or posts for night time visibility, plus all necessary signage and striping. The cost to add two raised medians for the major street approaches as shown on **Attachment 10**, page 3 brings the total to approximately \$140,400 per typical intersection. The total cost for traffic circles with raised median islands at all four locations as shown in Level 1 is approximately \$561,600. If landscaping were omitted from the traffic circle and median islands were completed in pavement striping the cost would be reduced to approximately \$67,000 per intersection or approximately \$268,000 for all four locations as shown in Level 1.

Level 2 – Speed Humps

Attachment 7 depicts speed humps at four locations. Those locations are on 18th Street and Broadway near to the key intersections described in Level 1, plus another location on 18th Street mid-block between Santa Ana Avenue and Raymond Avenue. This location is not included in Level 1 as it is one continuous block with no cross street to accommodate a traffic circle. However, traffic conditions within this block are similar to those found on Broadway. Speed humps are not recommended on 19th Street due to the existing high volume of traffic and greater potential for traffic diversion to other paralleling streets. East 19th Street also serves as a primary route for emergency response.

Guidelines for the installation of speed humps (**Attachment 8**) were adopted by the City Council in 1990, in response to residents' concerns regarding high levels of traffic within residential neighborhoods. The speed hump guidelines have been developed specifically to address traffic conditions that are uncommon or are at an unusually higher level than those normally encountered in similar residential environments. The speed hump guidelines focus on both speed and volume of traffic as key factors in the determination of the appropriate use of speed humps as a traffic control device. The minimum threshold established by the guidelines to qualify for speed humps is a traffic volume of 3,500 vehicles per day in conjunction with an 85th percentile speed of 30 miles per hour. As a result of the recent traffic surveys on east side area streets, it is clear that most streets do not qualify for the installation of speed humps.

Speed humps have been installed in three locations in Costa Mesa over the past 20 years. These streets are County Club Drive, East 16th Street and El Camino Drive. The following table illustrates the changes in traffic volume as a result of the installation of speed humps on these streets.

SPEED HUMPS EFFECT ON TRAFFIC VOLUME		
Street	ADT Before	ADT After
Country Club Drive	5,800	4,700
East 16 th Street	5,400	3,200
El Camino Drive	7,200	4,400

Costa Mesa's experience with speed humps has shown reductions of from 7 to 10 miles per hour on streets where speed humps have been installed. This experience has also shown that speed humps can result in a diversion of traffic to other streets as drivers seek more convenient routes to avoid the humps. For these reasons, the current guidelines for installation of speed humps include exercising caution when speed humps are considered in neighborhoods with a "grid" pattern layout of residential streets. If the speed humps should cause any significant diversion of traffic to other convenient paralleling routes, those residents would likely demand similar methods of traffic control on those impacted streets as well.

The installation of speed humps, while effective at reducing vehicle speeds, offers no direct secondary benefit or options to enhance streetscape aesthetics.

The cost to construct a speed hump is estimated to be approximately \$7,500 each including signage and pavement striping. The total cost for all four locations as shown in Level 2, (**Attachment 7**) is approximately \$30,000.

Level 3 – Combination of Chokers, Median Islands, and Speed Humps

Attachment 9 depicts the installation of **chokers** with **raised median islands** and **speed humps** on 18th Street, Broadway, and 19th Street at locations similar to those shown on Level 1 and Level 2. On 19th Street a median island is proposed at the “T” intersection of Westminster Avenue, mid-block between Orange and Santa Ana Avenues.

Chokers and medians create a narrowing effect of the roadway, thereby causing drivers to reduce speed through the narrow section. The installation of chokers and medians provides an alternative to traffic circles without direct disruption to straight through vehicle movements. Unlike traffic circles, chokers and medians may be placed at mid-block locations as well as at intersections.

Because straight through vehicle movements are not as significantly affected as they are with traffic circles, chokers and medians may be somewhat less effective at reducing overall vehicle speeds. For this reason, the installation of speed humps is also shown in the vicinity of each choker in addition to on 18th Street in the mid-block location between Santa Ana and Tustin Avenues.

The disadvantages of chokers and medians are that locations must be compatible with existing residential drive approaches. Chokers may impact existing curb drainage flow paths. They also require the removal of some on-street parking to provide sufficient lane width. The impact to on-street parking would be to those properties directly adjacent to the choker or median island and could result in the loss of two parking spaces on each side of the street or a total of up to 8 parking spaces at each location.

The cost to construct a typical choker for two approaches as shown in **Attachment 10**, page 10 is estimated to be approximately \$145,600 per intersection. This includes landscaping and irrigation in the extended curb area plus all signage and striping. Without landscaping, the cost is estimated as approximately \$104,200.

The cost to construct median islands as shown in **Attachment 10**, page 14 is estimated to be approximately \$115,300 per location. This includes landscaping and irrigation for the interior of the median plus all necessary signage and striping. Without landscaping, the cost is estimated as approximately \$92,300.

The total cost of four chokers, one median island and four speed humps to complete all locations as shown in Level 3 is approximately \$727,600. Without landscaping, the cost is estimated as approximately \$538,990.

Development of Citywide “Traffic Calming” Guidelines

In order to consistently apply the above or similar traffic calming measures in neighborhoods, the development of guidelines is necessary if the direction is provided by the Council. Because each neighborhood is unique, a thorough evaluation of traffic data must be completed on a citywide basis. An overall step by step process where traffic conditions are measured and resident input is considered would have to be in place before implementing any traffic calming measures. Through a petition process and by conducting neighborhood workshops, a traffic calming plan could then be developed to address residents concerns. With appropriate guidelines in place, installation of any traffic calming measures recommended and supported by residents would ultimately be presented to City Council for approval and designation of a funding source.

Transportation Services staff could develop new guidelines and return to Council in early 2007 with recommendations. Alternatively, the City Council could direct staff to solicit consultant services for the development of guidelines. Transportation Services Division staff would then develop cost estimates for consultant services to perform this task for consideration during the FY07-08 fiscal year budget deliberations.

ALTERNATIVES CONSIDERED:

The City Council may consider the following alternatives:

1. Consider certain "traffic calming" measures as described in Level 1, 2, or 3 to implement at key locations in the east side area.
2. Direct staff to delay any action within the east side area until such time that new guidelines and procedures for implementing traffic calming measures such as speed humps, traffic circles, chokers, and median treatments in residential neighborhoods have been adopted.
3. Continue to implement current traffic control measures to only those streets that meet current minimum warrants or adopted guidelines for stop signs or speed humps on a case by case basis.
4. Increase the level of police presence and enforcement of traffic violations in east side residential neighborhoods.

FISCAL REVIEW:

If any traffic calming measures are approved, the fiscal impact to the City is directly related to the specific measure. Should Council desire to proceed with any other items, such as additional studies or development and implementation of other traffic calming measures, it will be necessary to provide a more accurate cost estimate through completion of design and designation of a funding source.

LEGAL REVIEW:

While the installation of any "traffic calming" measure would require a review by the City Attorney's office for potential issues, this specific report does not require legal review.

CONCLUSION:

The Transportation Services Division staff has completed an update of the 1997 Eastside Residential Traffic Management Study. Based on comparison of traffic volume and speed data between 1997 and 2006, staff has determined that there are no significant changes on a majority of street segments. However, a range of "traffic calming" measures with different level of effectiveness are provided for Council consideration. These range from traffic circles, increased application of speed humps beyond existing guidelines, and chokers and median islands.

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- ATTACHMENTS:
- 1 1997 Eastside Residential Traffic Management Study
 - 2 Study Area and Existing Traffic Controls
 - 3 Average Daily Traffic Volume Data
 - 4 Master Plan of Highways (MPH)
 - 5 Speed Survey Data
 - 6 Level 1 – Traffic Circles
 - 7 Level 2 – Speed Humps
 - 8 Speed Hump Guidelines
 - 9 Level 3 – Chokers with Speed Humps
 - 10 Examples of Traffic Calming Measures

File Name

Date

Time