

**BROADWAY BOULEVARD CITIZEN PLANNING TASK FORCE  
MEMORANDUM**

**TO:** Broadway Boulevard Citizens Task Force  
**FROM:** Broadway Boulevard Project Team  
**DATE:** May 10, 2013  
**RE:** **Response to CTF Member Colby Henley’s Questions presented at the November 15, 2012 CTF Meeting**

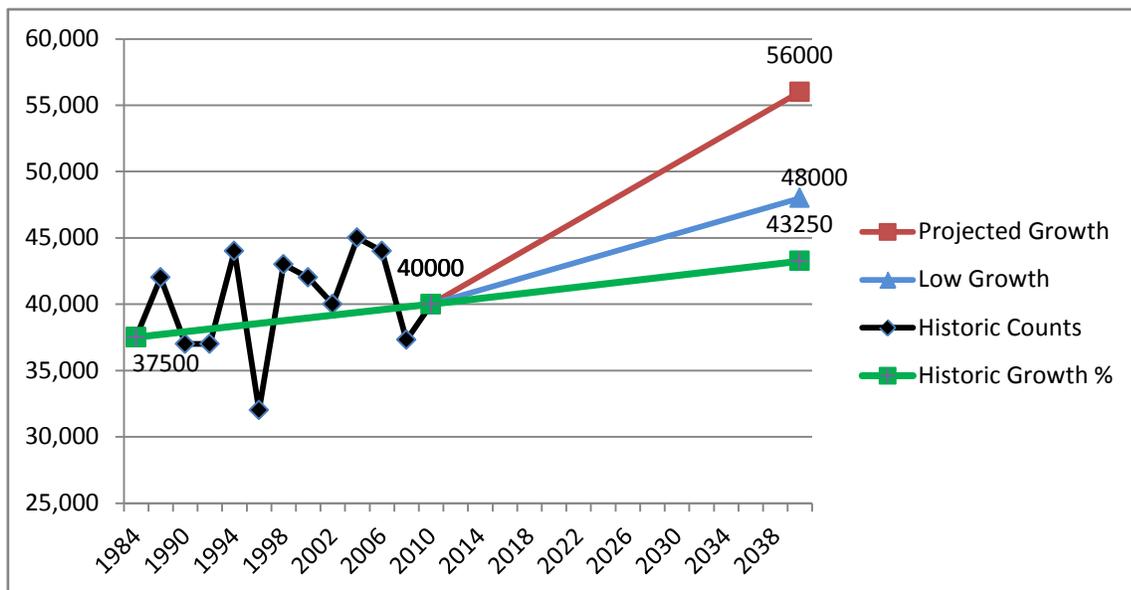
At the November 15, 2012 CTF meeting, CTF member Colby Henley presented a handout to the CTF and project team. The handout contained questions related to the information presented and discussed at the CTF’s October Study Sessions focusing on the topic of transportation. At issue are the traffic model used for the Broadway project’s traffic analysis, projections used for the analysis, and Level of Service ratings for vehicular traffic. The handout was set up in “sections”, and those sections are reprinted here within the dashed lines and shaded segments, with the project team responses provided below.

**PAG TRAFFIC MODEL**

- Assumes 8-lane configuration and “deals out” traffic based on the quickest/most direct route
- Obviously, an 8-lane road will be a magnet for traffic, so this is a self-fulfilling process (induced demand – widen it and they will drive it)

**SUMMARY OF TRAFFIC ANALYSIS (AUG 30, 2012)**

Figure 2 – modified to include future projections

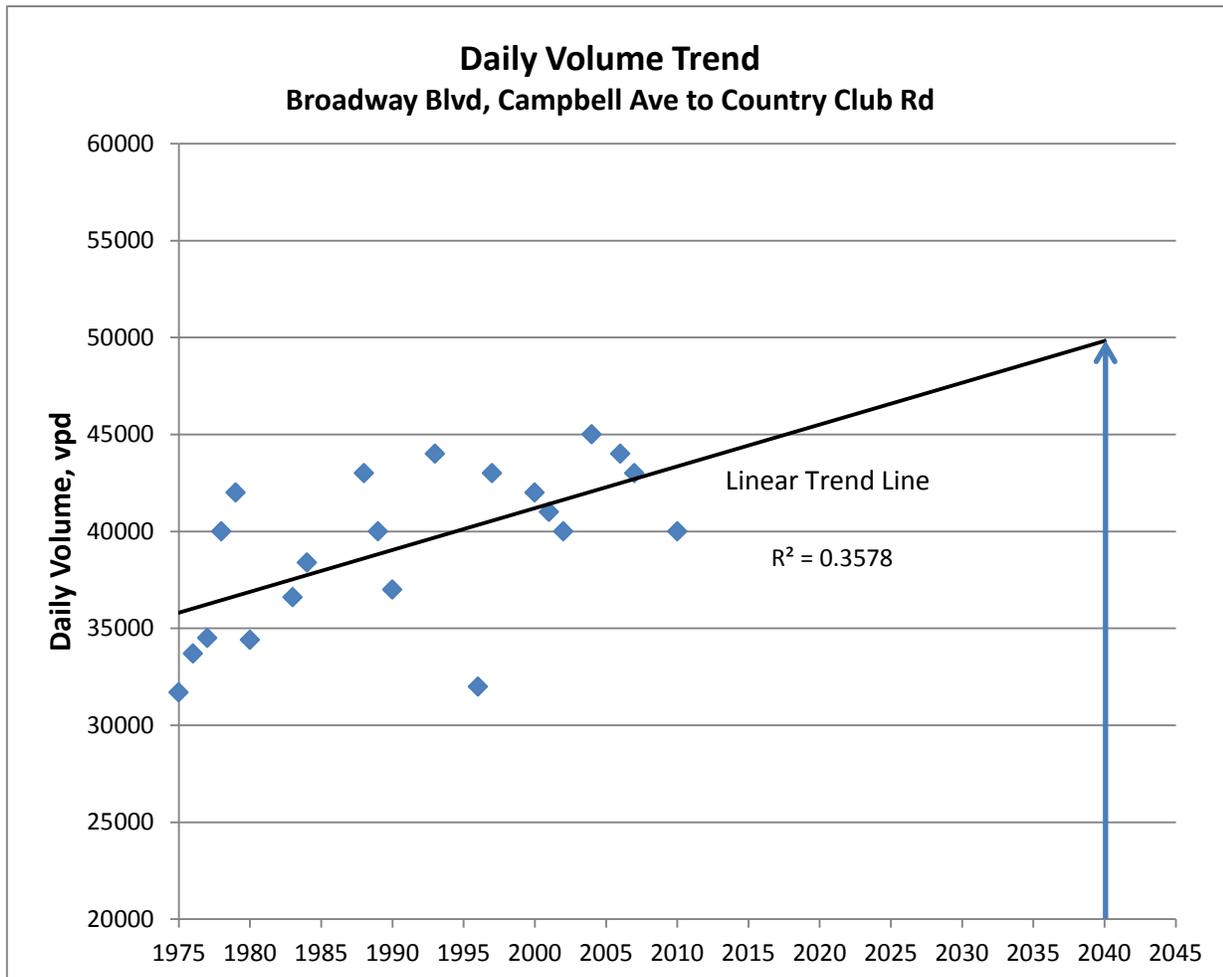


**Question: After an increase in Broadway ADT of 2,500 from 1984 to 2010 (26 years – which includes a boom period of historic growth in the region), why does the model project an increase of 16,000 over the next 30 years?**

**Project Team Response:**

The region has indeed experienced substantial growth, however the majority of that growth has occurred outside of the core urban Tucson area and the traffic demand generated has not had a substantial impact on Broadway. Planned downtown redevelopment/ revitalization efforts over the past 20 years, only now beginning to come to fruition, are reflected in projected traffic growth on Broadway. The current 2040 travel forecasting model includes substantial growth in both population and employment in the downtown area, continued growth of the University of Arizona, increased employment along Broadway, as well as population and employment growth along Kino Parkway (e.g. the Tucson Marketplace, which is under development is expected to generate some 55,000 trips per weekday).

In order to consider the historic growth of traffic along Broadway, it is necessary to develop a trend line that is based on traffic volumes collected in all years, not just the first and last year of the data. A fitted mathematical trend line based on the count data going back to 1975 is presented in the graph below. The low  $R^2$  value indicates a fairly poor fit of the trend line to the data, which is expected given the significant fluctuation in the traffic count from year to year.



Although historical volume is not a good indicator of future traffic demand, it is interesting that the projected 2040 daily volume of approximately 50,000 vpd from the trend line is generally consistent with the low growth estimated daily volume of 48,000 vpd utilized in the traffic analysis. It is important to note, that while evaluating a historical trend may be a noteworthy exercise, this method of projecting traffic demand on an urban transportation system is not capable of reflecting the specific impacts that new development, changes in land use, or changes in the transportation network can have on a specific segment of the network.

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Similarly, the reduced traffic projection differs substantially from the historic trend.

Summary – pg 10, second paragraph:

*“It would be difficult to technically justify the use of the lower volumes even if they did result in the roadway operating acceptably.”*

**Question: Please explain? Why would it be difficult to justify when the reduced volumes are still greater than historic growth?**

***Project Team Response:***

As noted in the figure above, projections based on a historic growth trend line are consistent with the low growth volume that was included in the traffic analysis. The statement in the traffic report is not intended to suggest that lower traffic projections cannot be used to determine capacity requirements along Broadway. We will do this in coming months in our work on the project. However, we must recognize that PAG’s formalized process for developing traffic projections includes local and regional consensus on land use and future growth, planned and programmed transportation system improvements, and development of a calibrated travel forecasting model. It should be noted that PAG is now starting the process to develop population and employment projections for 2050, which will result in an updated regional travel demand model and updated traffic projections.

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Summary – Figure 11 (pg 9) Four Lane Section, Reduced Traffic Volumes:

**Question: For the intersections movements with LOS F (Campbell & Country Club), can you model 6 through lanes at the intersection only, then merging back to 4 lanes? (I’ve seen this approach at other intersections).**

***Project Team Response:***

Traffic operations of a through lane add followed by a lane drop can be evaluated using a microscopic traffic simulation program. This type of intersection capacity enhancement is primarily implemented as an interim solution in advance of an eventual roadway widening. It typically works well on arterials carrying low to moderate volumes in suburban areas where there are few

driveways in the vicinity of the intersection (e.g, Orange Grove Rd. at La Canada Dr.). In urban areas, such as at Alvernon Way/Speedway Blvd., the add/drop lane is often significantly underutilized, particularly during peak traffic periods, as drivers do not want to have to merge back into traffic. This merging area also increases accident potential, especially as drivers in the outside lane race to beat the traffic in the through lanes to the merge point, and can create a bottleneck downstream of the intersection. These factors are disincentives for drivers using the short through lane.

In 2005, San Jose, CA exempted its downtown completely from LOS standards and lifted the minimum LOS D standard for “Special Strategy Areas”, including Transit Oriented Development Corridors and Neighborhood Business Districts. (Resolution 72765.1, 6/21/05).

Likewise, Florida DOT LOS Standards (Rule14.94-003) allow for LOS E on roadways parallel to exclusive transit facilities (i.e. the auto lanes on Broadway if the future design includes dedicated transit lanes.)

**Question: Would TDOT policy allow for LOS E along Broadway given its urban character and transit priority?**

***Project Team Response:***

Through analysis, such as what we are embarking on for Broadway, we will be able to experiment with how different improvements could impact Levels of Service for all of the modes. As with most decisions, there are benefits and trade-offs that we will be discussing. Before TDOT or the Mayor and Council could accept a lower Level of Service for vehicles, there would need to be consideration given to all the impacts and benefits on vehicular, transit, pedestrian, and bicycle safety; the potential impacts of cut-through traffic on adjacent neighborhoods; and, the economic impacts to businesses. Convenient and safe access is a primary concern for businesses along an arterial and can impact commercial property values. With respect to public health and air quality, accepting lower LOS levels means that more congestion is being accepted. Congestion contributes particulates and greenhouse gases into the air. This type of policy decision would also need the support of the elected officials.

**TRANSIT/MODE SHARE**

Summary of Traffic Analysis – pg 1, bottom paragraph:

- Sun Tran route 8 has in excess of 10,000 riders per weekday.

Based on 2010 traffic counts of 34,000-40,000 ADT<sup>1</sup>, this represents a 20%-23% transit mode share.

Land Use, Urban Form report – pg 4 bottom figure:

- Alternate Mode Usage Rate (2010 Census) for residents along the corridor ranges from 13% to 59%

November 2 Memo – response to CTF questions:

- Question 3 re: mode share – PAG model estimates transit mode share of 4% - 5%

Based on above data, this grossly underestimates the actual transit mode share.

Additionally, shouldn't we be encouraging & incentivizing an increased mode share by 2040?

Assuming high-end 2040 traffic projections:

| 2040 Projected Volumes        | PAG Model - 5% Transit Mode Share | Existing - 20% Transit Mode Share | Desired? – 30% Transit Mode Share |
|-------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| Total “People”                | 59,000                            | 59,000                            | 59,000                            |
| Transit riders                | 3,000                             | 11,800                            | 17,700                            |
| Average Daily Traffic (autos) | 56,000 <sup>1</sup>               | 47,200                            | 41,300                            |

**Question: Request either a re-run of the PAG model using a more realistic transit mode share, or that the Traffic Analysis include the more realistic transit mode share.**

***Project Team Response:***

As noted in the paper discussing the PAG travel demand model, the current model does a fairly good job of estimating transit ridership. The daily transit ridership estimated by the current existing conditions model of 9,600 compares well with the actual 2012 ridership of 10,519.

Estimating actual transit mode share along a specific arterial is difficult since the number of transit riders, as well as the auto volumes, can vary significantly within each segment. The assumption that all 10,519 Route 8 trips travel the entire length of Broadway is incorrect. The length of each person trip, both auto and transit rider, must be considered. Along Broadway, an estimate of the transit share of person trips is calculated as follows:

Transit Ridership:

- 2011/2012 Route 8 (Broadway/6th Ave) = 3.2 million annual ridership; approx. 55% (1.76 million) ride the Broadway segment.
- Of the 10,519 average weekday riders on the entire route, 5,785 riders were on Broadway (using the 55%).
- Assuming the average trip length for each transit rider is 5 miles, the average number of weekday riders in any one-mile section between Euclid and Camino Seco (9 miles) is approximately 2,900.

Auto Ridership:

- Assuming an average daily traffic volume of 43,000 on Broadway between Euclid and Camino Seco, based on 2010 counts, and an average vehicle occupancy of 1.5 persons/auto (based on 2008 PAG household travel survey), daily auto person trips is 64,500.

Existing Transit Mode Share:

- $2,900 \text{ transit person trips} / (64,500 \text{ auto person trips} + 2,900 \text{ transit person trips}) = 4.3\%$

In order to generate a 10% transit mode share based on existing trips:

- the daily ridership along Broadway would need to increase from 5,785 to 13,450 – or potentially 3.8 million riders on the Broadway segment annually – which is double the current ridership of 1.76 million.
- Consequently, the existing average traffic volume along Broadway could be expected to drop to approximately 40,000 vpd. Note that this does not account for any future growth in travel demand on Broadway.

<sup>1</sup> Summary of Traffic Analysis (August 2012), Figure 3