

## COST vs BENEFIT ANALYSIS of BROADWAY PROJECT by Les Pierce

### Greetings:

After having observed the activities of the Broadway Citizen Task Force (CTF) meetings and the overall roadway change process, and read much of the relevant documentation, one must conclude:

(A) The proposed work will have almost zero (~1.4%) benefit, as the Design Concept Report (DCR) data itself declares.

(B) Regional Transportation Authority (RTA) requires that "Where a departure from the ballot description is being considered, a performance comparison between the proposed alternative and the original scope of work must show no degradation in performance".

(C) Therefore, since functionality for cars will not be improved under ANY widening scenario (4-lane, 6-lane, or 8-lane), less invasive options that improve road functionality for everyone else (pedestrians, bicyclists, transit) will still comport with RTA's directive while saving scarce tax dollars and must be given urgent and careful consideration.

These points are explored in more depth below.

(A) The proposed work will have almost zero (~1.1 - 1.4%) benefit.

Broadway draft DCR, page "5.9" (9th page of Chapter 5), figure 5.10 "Travel Time Euclid to Country Club" states that travel time by car\* from Euclid to Country Club on the current 2+2+center-turning lane configuration is 7.1 minutes. Of all the four (4) considered alternatives -- 4-lane, 4+2T, 6-lane, and 8-lane -- only ONE enables faster travel time over this distance, the 6-lane option. How much faster? Six seconds. A 1.4% improvement, which could be margin of error and not even real. It should be noted that the 8-lane "ballot language" option actually makes things WORSE, increasing travel time by a full minute.

(\* These comments focus on car-centric performance because car/vehicle performance appears to be the only transportation metric being given more than token consideration. We thus attempt to meet the world halfway.)

Figure 5.11 "Average Speed" on the same page shows the current average car travel speed over the two-mile segment of Broadway between Euclid and Country Club to be 17.4 MPH. Again, of all the considered alternatives, only the 6-lane option shows any improvement AT ALL, and that is an extremely modest 1.1% increase to 17.6 MPH which, again, could simply be margin of error. And again, the 8-lane "ballot language" option would have dropped average speed by over two minutes, to 15.2 MPH.

Also, the level-of-service (LOS) predicted from the four (4) presented options shows no real difference between them in terms of overall average performance. When averaged (where 0 = 'F', 1 = 'E', 2 = 'D', 3 = 'C', 4 = 'B', and 5 = 'A'), the LOS data presented on Broadway DCR page 4.18

(54th page of PDF document) yields:

(A) Broadway LOS at PAG 2040 traffic projections, by intersection:

config: Euclid - Highland - Campbell - Tucson - CountryClub - overall

4-lane: 2.17 - 3.33 - 1.75 - 2.00 - 2.08 - 2.26

6-lane: 2.08 - 3.75 - 2.58 - 2.92 - 2.08 - 2.68

4+2T: 1.50 - 2.83 - 2.33 - 2.17 - 2.08 - 2.18

8-lane: 2.50 - 3.58 - 2.75 - 2.83 - 2.00 - 2.73

(B) Broadway LOS at PAG "low growth" traffic projections, by intersection:

config: Euclid - Highland - Campbell - Tucson - CountryClub - overall

4-lane: 2.33 - 3.67 - 1.83 - 2.17 - 2.08 - 2.25

6-lane: 2.17 - 3.75 - 2.50 - 2.92 - 2.00 - 2.22

4T+2: 1.92 - 3.25 - 2.33 - 2.42 - 2.17 - 2.25

8-lane: 2.58 - 3.83 - 2.75 - 3.00 - 2.25 - 3.13

It would appear that there is no appreciable overall difference in LOS between the presented options, with all performances but one landing in 'D' territory (the 8-lane option under "low growth" projections rates a low 'C'). Without current LOS data in the DCR, it is not clear which, if any, of these options would actually improve conditions or by how much.

This should come as no surprise, since the 1987 Parsons-Brinckerhoff Broadway Corridor Study stated (table 3, page 10) that widening Broadway (either to six or to eight lanes) would not improve performance at the Euclid, Campbell, or Country Club intersections AT ALL, and that even the "nuclear option" of installing grade-separated interchanges (GSI's) at these intersections would only raise performance at Euclid and Campbell from a then level-of-service (LOS) of 'F' to 'D' (Country Club would not improve, and would stay at the then-current 'D'). In the thirty years since, nothing has changed: none of the nine (9) alternatives contemplated by Parsons in 1987 would effect any appreciable improvement then, and none of the four (4) alternatives presented to the Broadway CTF over the past (almost-) four years will effect any appreciable improvement now.

The 1987 study was purportedly commissioned to address what was projected to be the demands of traffic in 2005. None of the suggestions made by Parsons has been enacted -- aside from intersection changes at Kino Parkway in 1989 and as part of the more recent Park-Euclid realignment, but not on the scale recommended by Parsons -- yet the proverbial sky has not fallen, and Broadway remains one of our more easily traversed roads. The perceived "problem" does not exist to an extent that justifies spending \$74 million on a notional "solution" that will make no noticeable difference in average travel time or speed, or to overall throughput.

It is also not clear how a 6-lane Broadway would solve the bottleneck at Fourth/ Congress/ Toole: northbound Downtown Links, being a 30-MPH four-lane road, will siphon away only a small fraction of the traffic load. Hurling cars westbound down Broadway will not improve overall road performance, as they will only accumulate and back up faster than Downtown Links and Fourth/ Congress/ Toole can disperse them. This is likely a moot point given the modest

performance gains the Broadway proposal would realize, but if these changes were to move more cars per lane per hour the 6-lane "solution" on Broadway will only create another problem downstream.

This makes all the more puzzling the assertion made in Pima County's ordinance 2015-10 (which amended its ordinance 1997-80, the Transportation Bond Improvement Plan that includes project DOT-56, "Broadway Boulevard, Euclid Avenue to Campbell") where the Broadway project benefits were described as: "The estimated economic value of the improvements to traffic flow and reductions in accidents are \$172.85 million. The benefit/cost ratio is 4.9:1." It is not clear how a 1% performance increase (time saved, speed gained) creates \$173 million in benefits; in fact, one would expect accidents to rise (in number and/or severity) as speed does.

One must also wonder about end-user sentiment: for \$74 million, drivers would not unreasonably expect to feel a difference in the Broadway commute experience proportionate to such an expenditure. Six seconds, the best projected outcome possible from among the considered options, is a woefully inadequate consolation prize.

(B) RTA requires that "Where a departure from the ballot description is being considered, a performance comparison between the proposed alternative and the original scope of work must show no degradation in performance".

As discussed above, an 8-lane configuration of Broadway would either have no effect on traffic conditions (Parsons-Brinckerhoff, 1987) or would make them worse (time and speed comparison charts, DCR page 5.9). Leaving things at status quo would yield better traffic performance results than inflicting the "ballot language" option.

(C) Therefore, since functionality for cars will not be improved under ANY widening scenario, less invasive options that improve road functionality for everyone else (pedestrians, bicyclists, transit) must be given urgent and careful consideration.

DCR states (page 5.18) that "It is not an option to leave the roadway as it is -- the City will have to improve the roadway per Federal [Americans with Disabilities Act] requirements, and there is no money to do so". The inadequate pedestrian and bicyclist facilities on Broadway need to be improved in any event; the low incidence of bicycle traffic on Broadway is likely for the same reason there are few bicyclists on I-10, i.e., bicyclists were simply not considered when the road was last expanded. As our mindsets evolve from "one mode" transportation to handling all modes, so too will our roads.

If getting an ADA-compliant street\* is in fact the only reason this project is moving forward -- and it is difficult to draw any other conclusion, given the negligible benefits on offer -- there are, and have been suggested by the CTF and the public, other alignment options that will improve functionality for pedestrian and bicyclist road users, lay the foundation for future transit improvements, and also preserve much more of the surrounding built environment for historic, commercial, and/or residential purposes.

(\* One wonders, though, how a medianized roadway that forces wheelchair users to go blocks out of their way to cross Broadway at one of a handful of wheel-able crossings comports with ADA's goals of equality of access. Pedestrian travel and community connections are not just along Broadway, but across it.)

Given the current budget constraints under which City, County, and RTA are operating, it is only prudent to review what a project area truly needs, what any proposed "solution" will actually effect, and reduce the project scope accordingly. With \$74 million earmarked for Broadway, negligible projected benefit from the proposed Broadway changes, and more pressing transportation needs elsewhere, we urge a rigorous and unflinching value analysis of the current proposal and implementation of less-invasive less costly measures to create a Broadway that works for midtown and all of Tucson.

#### SOURCES AND DOCUMENTS:

Broadway project draft Design Concept Report --  
<http://broadwayboulevard.info/pdf/Broadway-DCR-Public-Review-FullDoc-120815.pdf> --  
(~48MB, 118 pages, PDF format)

Parsons-Brinckerhoff, 1987 Broadway Corridor Transportation Study --  
<https://www.tucsonaz.gov/files/transportation/broadwaycorridortransstudy.pdf> -- (~1.67 MB, 39 pages, PDF format) -- see specifically Table 3, page 10 (16th page of PDF document) for compared expectations of various roadway configuration options

1989 Kino/Broadway intersection widening --  
[https://www.tucsonaz.gov/apps/maps-and-records/webroot/images/Plan\\_Lib/1988/I/I-88-035A/i-88-035a\\_013.tif](https://www.tucsonaz.gov/apps/maps-and-records/webroot/images/Plan_Lib/1988/I/I-88-035A/i-88-035a_013.tif) -- (~227KB, TIFF format)

County ordinance 1997-80, Transportation Bond Improvement Plan, plus subsequent amendments -- <http://webcms.pima.gov/cms/one.aspx?portalId=169&pageId=7610>

09-APR-2015 County ordinance 2015-10, amending the 1997 Transportation Bond Improvement Plan -- <http://webcms.pima.gov/common/pages/UserFile.aspx?fileId=194763> -- (~529KB, 48 pages, PDF format) -- and describing the possible benefits of widening Broadway (page "40", 45th page of PDF document)

19-OCT-2010 County ordinance 2010-62, amending the 1997 Transportation Bond Improvement Plan -- <http://pima.ecustomdev.intrafinity.com/common/pages/UserFile.aspx?fileId=9400> -- (~195KB, five pages, PDF format) -- including redline of River Road Ventana Wash project wording

Past roadway projects that seemed like a good idea at the time and, as history has proven, were best left on the drawing board -- <https://www.arizonaroads.com/urban/index.html> -- (Tucson's marvels are ~2/3ds from the top), since we would be so much poorer as a City without Armory Park or the Campbell Avenue mercantile district