



# **BROADWAY BOULEVARD**

ENGLID to COUNTRY CLUB

The Regional Transportation Authority Plan includes project #17 as: widen Broadway to 6 travel lanes, plus 2 dedicated bus lanes; bike lanes; and sidewalks. (2006 ballot)

The City of Tucson is leading this project, and is in the early stages of Planning & Design. Working with a Citizens Task Force, the project scope and roadway configuration alternatives are being reviewed.

The Planning & Design Phase is estimated to conclude in 2015. A Final Design Phase will follow, which will bring all construction plans to 100% complete and construction-ready.

**Construction is not anticipated until 2016.**

# Euclid to Campbell



# Campbell to Country Club



- Current historic district contributor
- Eligible as district contributor
- Individually eligible
- Historically significant historic fabric eligible
- Existing curb
- Existing right of way
- City-Owned Property



Facilitator/Recorder Initials   
 Table #

# The Citizen's Task Force

The Task Force shall advise the Department of Transportation and the Mayor and Council on any modifications to the 1989 Mayor and Council approved roadway alignment to widen Broadway Boulevard along the Project Corridor to six lanes and providing two additional dedicated transit lanes and alternative mode facilities and enhancements; complex roadway design cross section and features; land use and urban design plans for properties within and near the project boundaries.

## More Roadway Wordplay

### The Broadway project hangs on consonants and vowels

by [Tim Vanderpool August 08 2013](#)

Simply put, should Broadway become the eight-lane behemoth favored by Arizona's traditional asphalt boosters? Or might it be a roadway of the future, no wider than today, but chockablock with transportation alternatives, thereby not diminishing the road's *functional* ability to serve our needs into the horizon?

If the answers to those questions are a tad slippery, it's because the stakes are so high. As goes Broadway—smart, multi-use corridor or car-choked sea of asphalt—so might go all of the city's future big-ticket transportation projects.



## Funds for Broadway widening threatened

October 05, 2013 12:00 am • By [Darren DaRonco](#)

Pima County is threatening to pull its funding from an increasingly controversial road project if the city doesn't build it as originally planned.

County Administrator **Chuck Huckelberry** said it's becoming clear that the city might not fully implement the Broadway-widening project voters approved in two separate bond elections.

And if the city fails to build a full six-lane, median-divided roadway between Country Club Road and Euclid Avenue, the county won't contribute its \$25 million share to the \$71 million project and instead will put the money toward county roads.

In addition, the county would also seek a refund of the \$1.3 million it already has spent on the early stages of the project.

City officials say the county is prematurely placing an ultimatum on a project that is still being planned, and by doing so is undermining a citizens panel designed to find a workable solution for the Broadway corridor.

Huckelberry said the county's hands are tied because of language in a 1997 voter-approved bond. "The whole context of that bond was adding road capacity. And that means widening the road in most cases," Huckelberry said. "If (the city) doesn't meet the terms of the bond ordinance, we can't spend money on it."

He decided to send an internal memo to his staff earlier this week as way to start planning for the future, just in case folks against any expansion of Broadway win out.

"We keep hearing some people saying no widening at all," Huckelberry said. "We're saying no widening is not an option."

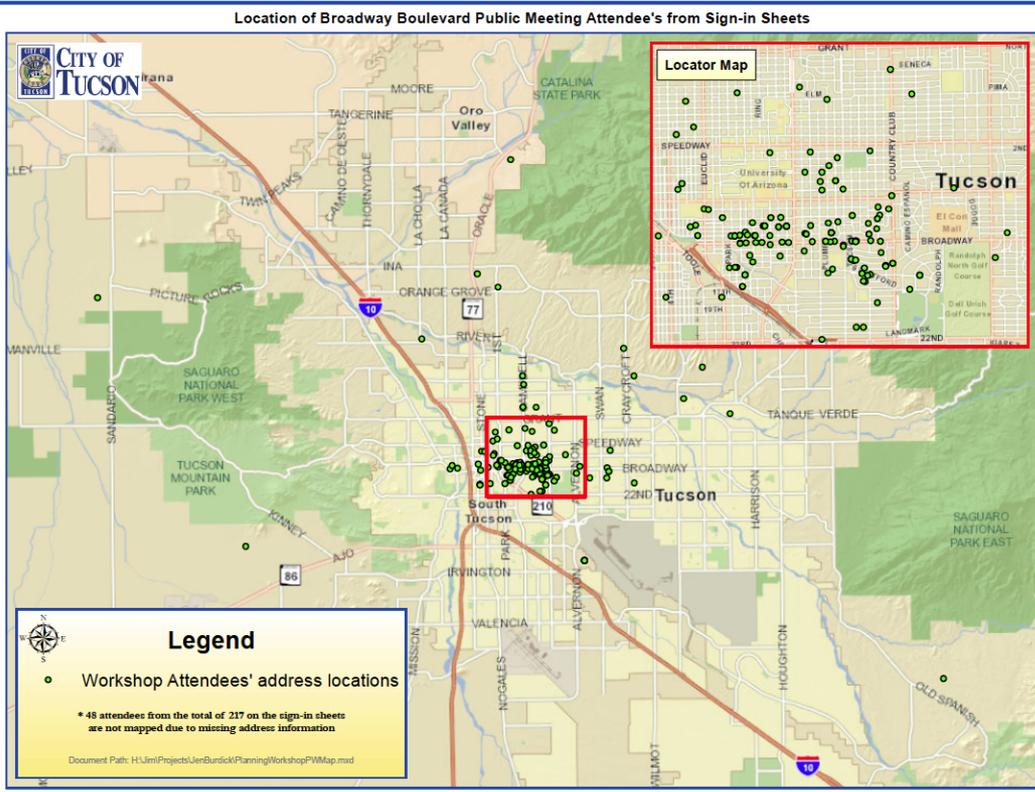
If the county pulled its money, the city would have to cover the difference.

For years, residents and government officials sparred over the proposed Broadway project. The idea was to expand Broadway, beginning in 2016, extending eastward from downtown to ameliorate future traffic congestion.

# Overview of Sept. 26<sup>th</sup> Workshop

- **217 participants signed in**

Location of Broadway Boulevard Public Meeting Attendee's from Sign-in Sheets



- 78% provided addresses
- 78% of addresses within 1 mile of the Broadway project

# Pick the 3 most important Performance Measures



## Pick the 3 most important Performance Measures

### PEDESTRIAN ACCESS AND MOBILITY

#### Pedestrian Environment

The overall quality of the pedestrian experience on Broadway. This includes improvements that influence the experience of people walking along Broadway such as:

- Width of the sidewalk and landscape buffer separating pedestrians from the roadway and how the width of the buffer area provides distance and landscape affects pedestrian comfort;
- Ability of sidewalk and buffer width to provide space for shade, lighting, seating, drinking fountains and other features to serve pedestrian needs, and provide for visual interest;
- Degree to which conflicts between pedestrians and vehicles exist at driveways; and,
- Provision of access and mobility for people of all ages and abilities using design elements that go beyond base requirements of the Americans with Disabilities Act (ADA) federal design requirements.

It also includes the ease of walking across Broadway and side streets intersecting with Broadway, which is influenced by both distance and presence of medians that can provide a refuge for crossing pedestrians.



### BICYCLE ACCESS AND MOBILITY

#### Bicycling Environment

The overall quality of the bicycling experience on Broadway. This includes improvements that influence the experience of people bicycling along Broadway such as:

- Degree to which the street design elements allow horizontal and vertical separation of cyclists from vehicular traffic;
- Frequency of points where vehicles cross the bike lane and the ability of the street design to make those potential conflicts evident to cyclists and motorists; and,
- Ability of cross section design to provide space for bike racks, shade, drinking fountains, green pavement (bike boxes and other markings), and other features to serve bicyclists' needs.

It also includes the convenience and quality of bicycle crossings of Broadway and side streets intersecting with Broadway, as well as the safety of cyclists turning left off and onto Broadway.



### TRANSIT ACCESS AND MOBILITY

#### Transit Travel Time

The time it takes to travel the length of the Broadway project by transit.



#### Accommodation of High Capacity Transit

The ability of the roadway and roadside design to accommodate future high capacity transit. This can ultimately improve performance of design concepts in relation to other transit performance measures through a future improvement project.



### VEHICULAR ACCESS AND MOBILITY

#### Through Traffic Movement

The effectiveness of moving through vehicular traffic along Broadway in the project area, which affects a variety of other transportation, environmental, and economic factors.



### SENSE OF PLACE

#### Potential Historic and Significant Buildings Impacts

The number of historic and significant structures lost due to direct impact and loss of usefulness resulting from reductions to parking, setbacks, site access, and other conditions.



#### Visual Quality

The ability of Broadway's design to enhance the visual quality along it. This includes the width and design of median and streetside landscaping and number and location of placemaking features such as public art, wayfinding, lighting, and furniture. It also includes Broadway's relationship with and impacts to the existing and future visual character of adjacent uses.



### ENVIRONMENT AND PUBLIC HEALTH

#### Walking and Biking Health Benefits

The degree to which the Broadway improvements can support increased frequency and length of walking and biking trips and the resulting positive effect on public health.



### ECONOMIC VITALITY

#### Change in Economic Potential

The suitability of parcels along Broadway to provide for current commercial or residential use, repurposing, adaptive reuse, and a future mix of commercial, residential, and open space uses that improves the economic value of uses along Broadway.



### PROJECT COST

#### Construction and Acquisition Cost

The total construction cost of planned improvements.



### CERTAINTY

#### City's Ability to Maintain Improvements

The assessment of relative cost and benefit, and ability of city budget to support costs for the operations and maintenance of the Broadway improvements.



# Bicycling Environment

## What it is:

The overall quality of the bicycling experience on Broadway. This includes improvements that influence the experience of people bicycling along Broadway such as:

- Degree to which the street design elements allow horizontal and vertical; separation of cyclists from vehicular traffic;
- Frequency of points where vehicles cross the bike lane and the ability of the street design to make those potential conflicts evident to cyclists and motorists; and,
- Ability of cross section design to provide space for bike racks, shade, drinking fountains, green pavement (bike boxes and other markings, and other features to serve bicyclists' needs.

It also includes the convenience and quality of bicycle crossings of Broadway and side streets intersecting with Broadway, as well as the safety of cyclists turning left off and onto Broadway.

**Individual Selections****Group Selections**

rank	Measure	Pct.	rank	Measure	Pct.
1	Historic and Significant Buildings	16%	1	Historic and Significant Buildings	20%
2	Economic Potential	15%	2	Economic Potential	16%
3	Visual Quality	13%	3	Visual Quality	12%
4	Pedestrian Environment	12%	4	Bicycling Environment	11%
5	Bicycling Environment	10%	4	Pedestrian Environment	11%
6	Health Benefits of Walking and Biking	8%	6	Health Benefits of Walking and Biking	9%
6	Traffic Movement	8%	6	Traffic Movement	9%
8	Accommodation of High Capacity Transit	7%	8	Accommodation of High Capacity Transit	7%
9	Ability of City to Maintain	4%	9	Ability of City to Maintain	3%
10	Construction and Acquisition Cost	3%	10	Construction and Acquisition Cost	1%
11	Transit Travel Time	2%	11	Transit Travel Time	0%



# Exercise 2: Street Section Alternatives and Assessment



STREET CROSS SECTION ALTERNATIVES		PERFORMANCE MEASURES													
		Pedestrian Environment	Bicycling Environment	Through Traffic Movement		Transit Travel Time		Accommodation of High Capacity Transit	Potential Historic and Significant Buildings Impacts	Visual Quality	Walking and Bicycling Health Benefits	Economic Potential	Construction and Acquisition Cost	City's Ability to Maintain Improvements	
EXISTING CONDITIONS		to -	to ○	Now Future (100% PAG) Future (70% PAG)		Now Future (100% PAG) Future (70% PAG)		-	+++	to ○	to -	- Now	NA	○ to ++	
4 LANE + DEDICATED TRANSIT WITHOUT LANDSCAPING															
Option 4-T SATA (Existing R.O.W.)		---	to ○	Future (100% PAG) Future (70% PAG)		Future (100% PAG) Future (70% PAG)		○	+++	to ○	-	○ to + Short term	○ to ++ Long term	\$\$	○ to ++
4 LANE WITH LANDSCAPING (84'-138' R.O.W.)															
Option 4A (98' R.O.W.)		○	○	Future (100% PAG) Future (70% PAG)		Future (100% PAG) Future (70% PAG)		-	++	++	+	○ to ++ Short term	+ to ++ Long term	\$\$	○ to +
Option 4B (114' R.O.W.)		+++	++	Future (100% PAG) Future (70% PAG)		Future (100% PAG) Future (70% PAG)		-	+	++++	++	- to ++ Short term	○ to +++ Long term	\$\$\$	- to ○
4 LANE + DEDICATED TRANSIT WITH LANDSCAPING (108'-162' R.O.W.)															
Option 4-T A (124' R.O.W.)		+	+	Future (100% PAG) to ○ Future (70% PAG)		Future (100% PAG) to ○ Future (70% PAG)		++	○	+++	+	--- to + Short term	- to +++ Long term	\$\$\$	- to ○
Option 4-T B (132' R.O.W.)		++	+++	Future (100% PAG) to ○ Future (70% PAG)		Future (100% PAG) to ++ Future (70% PAG)		+++	--	+	++	--- to ○ Short term	- to +++ Long term	\$\$\$\$	- to ○
6 LANE WITH LANDSCAPING (104'-162' R.O.W.)															
Option 6A (120' R.O.W.)		+	+	○ Future (100% PAG) + Future (70% PAG)		- Future (100% PAG) ○ Future (70% PAG)		○	○	+++	+	- to ++ Short term	○ to +++ Long term	\$\$\$	- to ○
Option 6B (152' R.O.W.)		++	++	○ Future (100% PAG) + Future (70% PAG)		- Future (100% PAG) ○ Future (70% PAG)		○	--	++	++	--- to ○ Short term	- to +++ Long term	\$\$\$\$	- to ○
6 LANE + DEDICATED TRANSIT WITH LANDSCAPING (126'-186' R.O.W.)															
Option 6-T A (146' R.O.W.)		---	○	+ Future (100% PAG) ++ Future (70% PAG)		+ Future (100% PAG) ++ Future (70% PAG)		++	--	-	○	--- to ○ Short term	- to +++ Long term	\$\$\$\$	○ to +
Option 6-T B (154' R.O.W.)		+	+	+ Future (100% PAG) +++ Future (70% PAG)		++ Future (100% PAG) +++ Future (70% PAG)		+++	--	+	+	--- to ○ Short term	- to +++ Long term	\$\$\$\$	- to ○

LEGEND Best Performance ++++ Neutral ○ Worst Performance --- Highest Cost \$\$\$\$\$ Lowest Cost \$ September 26, 2013

Facilitator/Recorder Initials    
Table #

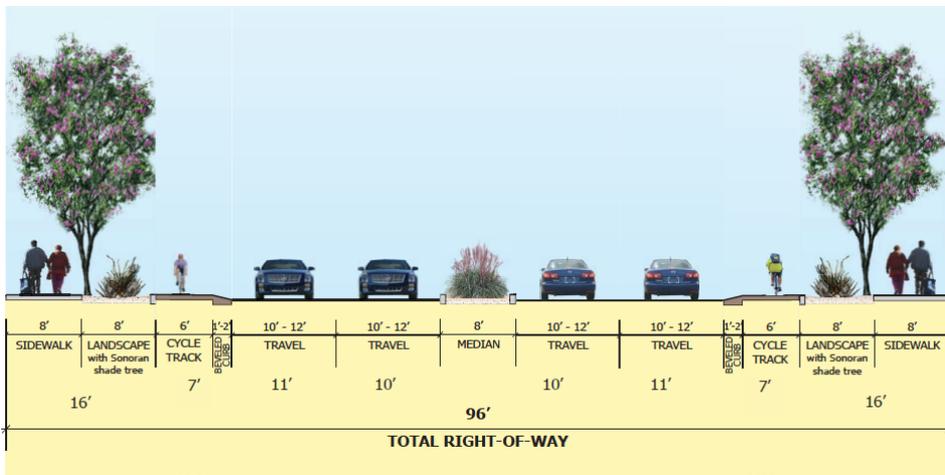
## PERFORMANCE MEASURES ASSESSMENT OF STREET CROSS SECTION ALTERNATIVES





# Base Cross Sections

- 4 Lanes
  - 96' R.O.W. previous options 98' & 114'

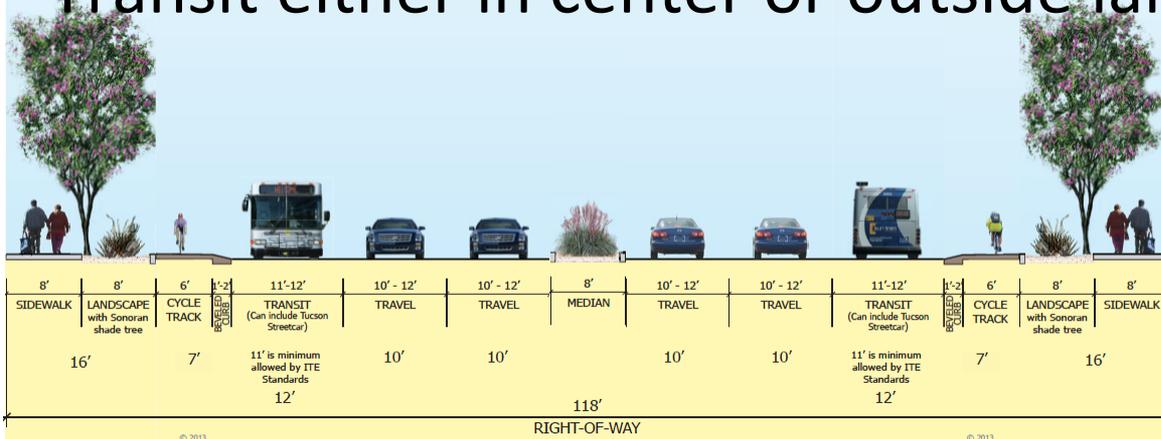


# Base Cross Sections

- 4+2T Lanes Options

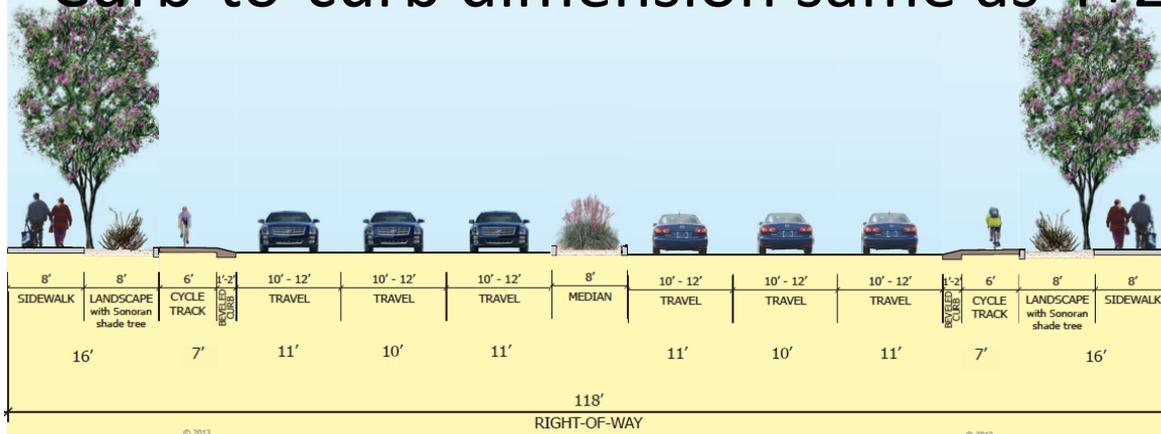
- 118' R.O.W. previous options 124' & 152'

- Transit either in center or outside lanes



# Base Cross Sections

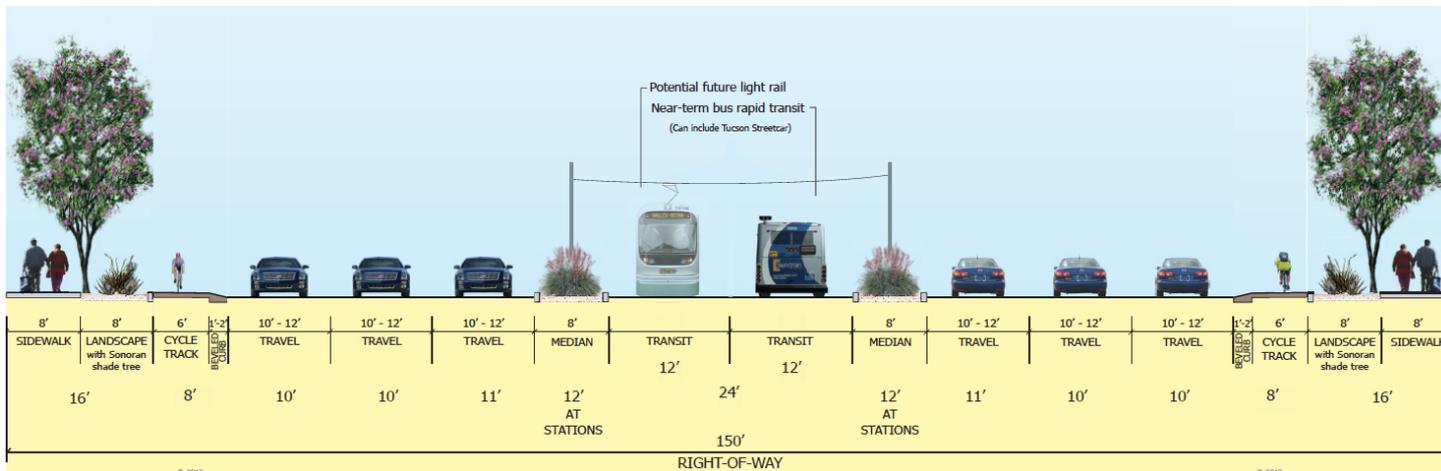
- 6 Lanes
  - 118' R.O.W. previous options 120' & 152'
  - Curb-to-curb dimension same as 4+2T Options



# Base Cross Sections

- 6+2T Lanes Options

- 150' R.O.W. previous options 146' & 154'
- Center running BRT/light rail or side running BRT/streetcar



# Pedestrian Environment Input

## *Discussion of tradeoffs*

Table P discussions—

- *Difficult balance to strike—road width vs. bike/ ped facilities which contribute to overall ROW width*
- *I'd be willing to trade bike/ped width improvements for not widening traffic lanes*
- Selections: 4-A, 4-B, 4+TB, and 6B
  - 4-B, 4+TB, and 6B are highest ranked for pedestrian environment

# Pedestrian Environment Input

## *Discussion of tradeoffs*

Table J discussions—

- Preferred not widening from existing width but wanted to add lighting, better traffic controls, and better pedestrian crossings
- Selected 4+T SATA, only if both pedestrian and bicycle environment improved

# Pedestrian Environment Input

## *What does it mean?*

- Explore **options to narrow improvements** while improving pedestrian comfort and safety
- Define **viability of providing public pedestrian access in space between street and existing buildings**
- Identify **local and other desert climate examples of pedestrian environments** to address lack of belief in pedestrian environment assessment
- Define and clarify **relationship of pedestrian environment to economic vitality**

# Bicycle Mobility Input

## *Discussion of tradeoffs*

Table O discussions—

- Chose Bicycling Environment as one of performance measures
- Comments regarding
  - Parallel bike boulevards
  - Narrowing or replacing landscape to improve bike facilities
- Selections: 4+T SATA and 4A
  - “*sacrifices*” to bicycle environment as tradeoff for better historic/economic/cost of maintenance performance

# Bicycle Mobility Input

## *Discussion of tradeoffs*

Table D discussions—

- Diverse opinions about bicycle environment
  - *We need the option of no bike lane at all and pedestrian overpasses like the snake bridge*
  - *Broadway is not a good place to bike*
  - *Bikes are the way to go for the future!*
- Selections: 4B, 4+TB, and 6B
  - Three best-performing alternatives for bicycles
  - Seemed to tradeoff Historic and Significant Buildings for Bicycling Environment

# Bicycle Mobility Input

## *What does it mean?*

- Clarify **City requires bike lanes** on Broadway Boulevard at a minimum; alternative **parallel routes do not negate this** requirement
- Explore **options for minimizing the total width of bicycle facilities** in relation to the pedestrian improvements and vehicle lanes
- Define and clarify **relationship of bicycle mobility to economic vitality**

# Dedicated Transit Input

## *Discussion of tradeoffs*

Table H discussions—

- *Would hate to see the businesses go, but they've been there for many years and don't really have much eye appeal. Many may be willing to make improvement [for better transit]*
- Selections: 4+T SATA, 4+TA, and 4+TB
  - Try to satisfy Accommodation of High Capacity Transit and Historic and Significant Buildings to detriment of traffic
  - One top selection for each measure
  - One selection performing in middle for each measure

# Dedicated Transit Input

## *What does it mean?*

- Explore potential for “**hybrid**” **approach to dedicated transit** – dedicated where space allows and at stations, transition to mixed-flow elsewhere
- Explore policy tradeoffs of defining **Broadway as a transit-emphasis street** where lesser level of vehicle performance is acceptable for transit benefit
- Define **traffic growth reduction needed** to make 4+T concept perform at same level as designs with 6 vehicle lanes

# Update on Development and Analysis of Design Concepts

- Base cross sections have been refined
- Parking and access design options and assessment under development
- VISSIM traffic simulations being developed
- Detailed design concept alignment work starting this week

# Street Types



**4 Lanes**



**4+T Lanes**



**6 Lanes**



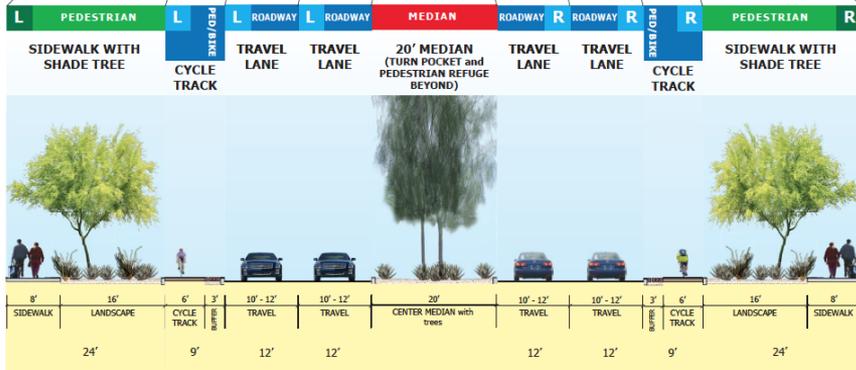
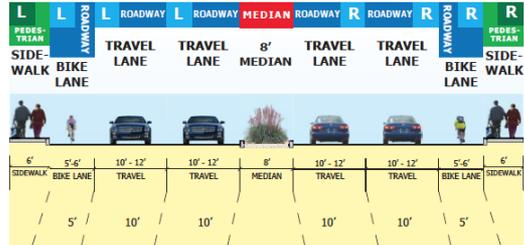
**6+T Lanes**

# Street Design Elements

- Use efficient widths to minimize impact while providing for:
  - Safety
  - Cost
  - Achieving desired goals
- Key areas to explore balance of function and width:
  - Bicycle facilities
  - Sidewalks
  - Landscape/Shade
- **Mixed Flow Lanes**
- **Transit Lanes**
- **Bicycle Facilities**
- **Sidewalks**
- **Landscape/Shade Types**
- **Medians**

# Street Types and Range of Width

70' Minimum Right of Way



134' Maximum Right of Way

- 4 Lanes
- 70 to 134 foot R.O.W.

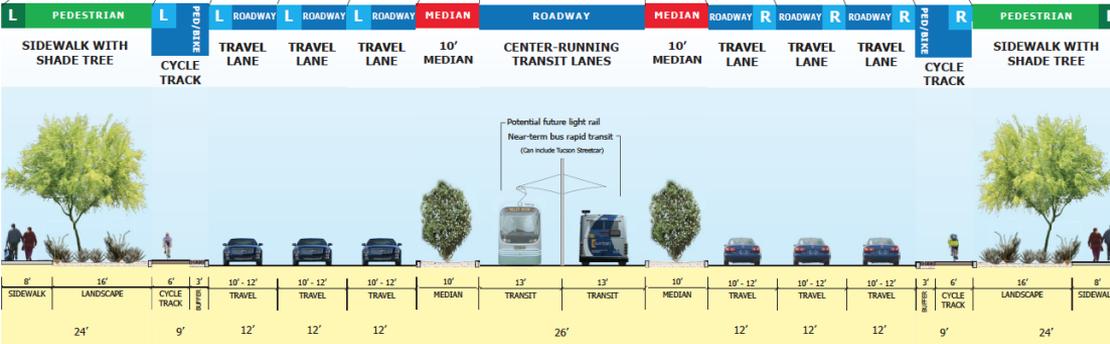
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# Street Types and Range of Width

106' Minimum Right of Way



- 6+T Lanes
- 106 to 184 foot R.O.W.



184' Maximum Right of Way

# Initial Detailed Analysis

Analyses to be presented to the Task Force at an early 2014 design charette on transportation and non transportation measures

- 4 lane
- 6 lane plus transit (8 lane)

Additional, less detailed analysis of the 4- lane plus transit (6 lane) and six lane options with just the multi-modal time and traffic capacity performance measures

# Methods of Measuring Performance

- Transportation Analysis
  - Traffic Movement
  - Transit Corridor Travel Time & Riders Per Vehicle
  - Bicycle Travel Time

# Methods of Measuring Performance

- **Traffic Operations**

- VISSIM: a traffic simulation modeling tool
- Used to evaluate multi-modal performance:
  - travel time (auto, transit, bicycle, pedestrian)
  - vehicle delay  level of service
  - queue length
  - speed

- **Traffic Safety**

- Highway Safety Manual
  - Used to assess the effect of roadway features on crashes

# Methods of Measuring Performance



# Methods of Measuring Performance

- VISSIM does not project traffic demand or distribute demand to the network
- Uses demand(s) generated from a regional traffic model (PAG) to simulate and evaluate traffic and multi-modal conditions
- Two traffic demand scenarios
  - PAG 2040 model projections
  - Reduced PAG 2040 model projections (70% of projected growth)

# Methods of Measuring Performance

## Bicycle-

The PAG 2012 bicycle count provides historical information regarding bicycle usage in the region and on specific routes. The report suggests that regional bicycle volumes have remained relatively unchanged between 2008 and 2012. However, counts in specific roadway section show marked changes. For ex: at the Snake Bridge and increase of 13% per year from 2008 to 20012.

Using bicycle counts taken in 2010 for the initial Broadway, Euclid to Country Club traffic study, we will double to bicycle volumes to reflect potential bicycle demand in 2040. This increase would result in a reduction of autos.

# Methods of Measuring Performance

- VISSIM will allow us to:
  - Compare traffic operations and performance measures for 4, 4+T, 6, and 6+T cross sections
  - Test the effects of
    - increased bus ridership (increased bus frequency, stops, dwell times) with reduced auto traffic
    - higher pedestrian activity (roadway crossings)
  - Evaluate alternative intersection configurations

# Project Goals Related to Parking and Access

- Improve safety, comfort, accessibility for all users
- Improve near and long-term economic vitality
- Minimize negative impacts and costs of potential property acquisition
- Recognize value of historic and significant buildings and sites, and maximize potential for future viability of existing buildings and uses
- Encourage appropriate mix of uses to support neighborhoods, districts
- Protect adjacent neighborhoods and existing businesses
- Balance function as a major street serving multimodal mobility with a stronger retail, service, civic destination

# Basics of Access

- Access to properties
  - For parking and loading
  - For fire and emergency services
  - For garbage and recycling pick up
- Provided directly from a public right-of-way or through a shared access easement (recorded agreement between private parties)
- Standards set by
  - City access management policies
  - Zoning and development standards

# Basics of Property Acquisition

- Must be for public purpose of the project (transportation)
- Valuation includes damages to real estate caused by the project, based on difference in market value of property before and after the project
- Full acquisition typically results from
  - cost of “solving” impacts exceeding the value of the property
  - Impacts result in no viable future use

# Parking Clarification

CTF and team members reviewed the City code following October 24th meeting and it does allow for 6 bicycle parking spaces to replace 1 vehicular required parking space at the discretion of the property owner

Economic value of bike vs vehicular parking?

# Follow-up articles relevant for bike parking discussion

Broadway Blvd – Citizen's Task Force

Articles relevant for parking discussion – December 5, 2013

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1. Business Cycles: Catering to the Bicycling Market. Transportation Research News, Issue 280 May-June 2012, pp. 26-32. Transportation Research Board, National Research Council.

*Customers who arrive by automobile spend the most per visit across all of the establishments, but **cyclists spend the most per month**. These results suggest that marketing to cyclists is likely to generate a positive expenditure return for businesses in the right context.*

2. Bike Corrals: Local Business Impacts, Benefits, and Attitudes. Drew Meisel. Portland State University School of Urban Studies and Planning. 2010.

*The businesses in the sample perceived that bicyclists, on average, account for one quarter (24.8 percent) of their total customer base. More than two thirds responded that **they have seen the demand for bike parking rise**.*

3. Why Bicyclists are better customers than drives for local businesses. 2012. DC.Streetsblog.org

*Far and away, the biggest reason business owners resist the addition of bike infrastructure is that **they're afraid it will limit parking**. Once they realize they can get **12 bike parking spaces for each car spot**, sometimes they begin to change their tune. "We tend to shop closer to home and shop more often," said April Economides, a consultant who helped the city of Long Beach, California build bicycle-friendly business districts.*

*Cyclists travel at what Portland Bike Coordinator Roger Geller calls a "human-scale speed" that allows them to "stop and buy something."*

4. Rocco's a Surprise Bike Magnet. 2013. TucsonVelo.org

*Rocco's is really bike-friendly with space for 14 bikes - Wednesday is his peak bike day, but **about half of his staff regularly rides to work** and many customers from the adjacent neighborhoods ride in as well.*

5. How Flexible Parking Requirements Spur Economic Development: Lessons from Santa Monica. 2013. LA.Streetsblog.org

*The properties in the flexible parking requirement area generated **eight times more sales tax revenue per parcel square foot** than the properties in the standard parking requirement area. Not only that, the businesses on those parcels generated all that sales tax revenue with a fraction of the onsite parking. These are exactly the areas where we don't need to require every business to operate as if every patron will drive alone in a car. On the contrary, **we should be encouraging trips by foot, bike and transit in these neighborhoods**. In fact, our decades- old parking requirements have encouraged driving and traffic, and they have degraded the pedestrian environment.*