Call to the Audience Guidelines
(Call to audience will be at 8 p.m.)

- Must fill out participant card
- Participants called in the order cards are received
- 2 minutes allowed per participant
- CTF Facilitator will call on speakers and manage time
- CTF members cannot discuss matters raised
- CTF cannot take action on matters raised
- CTF members can ask project team to review an item

Meeting Agenda

1. Call to Order/Agenda Review 15 min
2. Update: Process for Defining Functionality 20 min
3. Framing the Discussion on Functionality and Performance Measures 20 min
4. Presentation and Discussion of Broadway Traffic Studies and Analyses 45 min
5. Introduction to Transit, PAG’s High Capacity Transit Study, and Bus Rapid Transit (BRT) 40 min
6. Discussion of Transportation ‘Functionality’ Performance Measures 25 min
7. Call to the Audience (At 8 P.M.) 10 min
8. CTF Roundtable 20 min
9. Adjourn

Update on the Process for Defining Functionality

Jim DeGrood, Director of Transportation Services
Regional Transportation Authority

Jenn Toothaker Burdick, Project Manager
City of Tucson Department of Transportation

Framing the Discussion on Functionality and Performance Measures

Phil Erickson, AIA, President
Community Design + Architecture

Role of Functionality in Roadway Design

- Defining “Functionality” – What is it? And for whom?
- Vision and Goals: reflect community’s definition of functionality
- Select evaluation criteria related to Broadway’s functionality
- Apply performance measures to assess performance of existing conditions and proposed design alternatives
Functionality

- RTA’s adopted policy:
  - the “functionality should not and cannot be diminished” for voter-approved roadway and transit improvement projects
- Definition of Functionality:
  - How well does Broadway perform for its users
  - 1987 Study was focused on vehicular and transit function
  - City of Tucson and Broadway stakeholders interested in
    - Making sure transportation functionality is multi-modal
    - Adding non-transportation functionality

Tonight’s Focus on Multi-Modal Transportation Functionality

- Mobility – ability to travel
- Access – ability to reach destinations
- Safety – number and severity of accidents and personal safety
- Convenience – time, cost, and ease of travel
- Environmental – air quality and noise

Multi-Modal Functionality

- Mobility
  - Balancing local and regional mobility (both a vehicular and a transit issue)
  - Balancing different modes
  - Potential for modal emphasis
  - Other...

Multi-Modal Functionality

- Access
  - Balancing mobility along Broadway with access to uses and neighborhoods
  - Balancing access with safety across modes
  - Other...

Multi-Modal Functionality

- Safety
  - Balancing mobility for vehicles with safety for bicycles and pedestrians
  - Access management to improve safety
  - Other...
Multi-Modal Functionality

• Convenience
  – Providing effective modal choice
  – Minimizing time cost of travel
  – Minimizing cost of travel to users
  – Improving the experience of travel
  – Other...

Multi-Modal Functionality

• Environmental
  – Minimizing or improving air quality impacts
  – Minimizing or improving noise impacts
  – Other...

Measuring Functionality

• Later Agenda Item
  – Evaluation Criteria
    • Address Areas of Concern – mobility, access, safety, convenience, air quality,...
    • These will build from the Vision and Goals for Broadway
  – Performance Measures
    • Measuring the success in meeting evaluation criteria
    • Possible thresholds
    • Use for comparison between design alternatives

CTF Discussion
Role of Functionality in Roadway Design

• Defining “Functionality” – What is it? And for whom?
• Vision and Goals: reflect community’s definition of functionality
• Select evaluation criteria related to Broadway’s functionality
• Apply performance measures to assess performance of existing conditions and proposed design alternatives

Broadway Project Area Traffic Analysis Summary Presentation

Jim Schoen, PE, Principal
Kittelson & Associates

Traffic Overview

• Corridor Traffic Planning & Studies
• Roadway Classification and Function
• Existing Conditions
• Future Needs
**Corridor Studies**

- Broadway Corridor Plan (1987)
  - Transit focus
  - Defined current adopted cross section and alignment
- PAG High Capacity Transit System Plan (2009)
  - Identified Broadway as primary HCT candidate route
- Euclid to Country Club Traffic Study (On-going)

**On-Going Study Purpose**

- Support design decisions that address:
  - Safety
  - Capacity (lanes, turn-lane storage)
  - Traffic control, signal operations
  - Access
  - Multi-modal facilities
  - Neighborhood protection

**Roadway Classification and Function**

- Principal Urban Arterial
  - Backbone of urban system
  - Provide regional mobility
  - Connect major employment and activity centers
  - Provide high capacity
  - Allow limited access to adjacent properties

**Major Activity Centers**

**Physical Features**

- 4 travel lanes with continuous left turn lane
- 5 foot bike lanes
- Continuous sidewalk/paved surface (ADA deficiencies)
- 16 transit stops

**Physical Features**

- 5 signalized intersections
- 4 pedestrian HAWK signals, 1 planned
- 200 access points (driveways & side-streets)
  - 100 ft spacing
Traffic Volumes
Daily Traffic Counts on Major Arterials by Year
(from Campbell Ave. to Country Club Rd.)

Average Weekday Hourly Traffic

Traffic Volumes
Traffic Operations Measure: Level of Service

Transit Ridership

Pedestrian Activity

Existing Peak Hour Traffic Operations
**Multi-Modal Operations**

<table>
<thead>
<tr>
<th>Existing MMLOS</th>
<th>Transit</th>
<th>Bicycle</th>
<th>Pedestrian</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>1.3</td>
<td>4.56</td>
<td>3.17 – 3.75</td>
</tr>
<tr>
<td>LOS</td>
<td>A</td>
<td>E</td>
<td>E</td>
</tr>
</tbody>
</table>

MMLOS Criteria
- Frequency
- Perceived Wait/Travel Time
- Speed
- Seating/Shelter
- % Heavy Vehicle
- Vehicle Speed/Volume
- Lane Width
- Pavement Quality
- % Sidewalk
- Driveways/Sidestreets
- Lateral Separation

---

**Crash History**
Crash data for the 3-year period from January 1, 2008 to December 31, 2010:

<table>
<thead>
<tr>
<th>Crashes</th>
<th>Euclid</th>
<th>Highland</th>
<th>Campbell</th>
<th>Tucson</th>
<th>Country Cl.</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>Segment</td>
<td>67</td>
<td>12</td>
<td>101</td>
<td>51</td>
<td>70</td>
<td>305</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>434</td>
</tr>
</tbody>
</table>

---

**Future Traffic Demand**

- Planned Roadway Network
- Trip Patterns (Census 2010 Data)
- PAG 2040 Travel Demand Model
- Network Traffic Demand Estimates

---

**Traffic Projections**

<table>
<thead>
<tr>
<th></th>
<th>Euclid</th>
<th>Highland</th>
<th>Campbell</th>
<th>Tucson</th>
<th>Country Cl.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing</td>
<td>Volume (1000's)</td>
<td>35</td>
<td>34</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Volume (1000's)</td>
<td>41</td>
<td>45</td>
<td>46</td>
<td>47</td>
</tr>
<tr>
<td>PAG 2040</td>
<td>% Increase</td>
<td>18%</td>
<td>33%</td>
<td>36%</td>
<td>39%</td>
</tr>
<tr>
<td>PAG Reduced Growth</td>
<td>Volume (1000's)</td>
<td>39</td>
<td>41</td>
<td>42</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>% Increase</td>
<td>12%</td>
<td>22%</td>
<td>24%</td>
<td>26%</td>
</tr>
</tbody>
</table>

---

**Cross Section Alternatives**
- 4 and 6 through lanes
- Exclusive turn lanes at signalized intersections

---

**Capacity Needs**

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Euclid</th>
<th>Highland</th>
<th>Campbell</th>
<th>Tucson</th>
<th>Country Cl.</th>
<th>Country Cl. 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-lane PAG 2040 (30%)</td>
<td>AM</td>
<td>D</td>
<td>F</td>
<td>E</td>
<td>F</td>
<td>F</td>
</tr>
<tr>
<td>4-lane PAG Reduced Growth (20%)</td>
<td>PM</td>
<td>D</td>
<td>E</td>
<td>F</td>
<td>C</td>
<td>F</td>
</tr>
<tr>
<td>6-lane PAG 2040 (30%)</td>
<td>PM</td>
<td>C</td>
<td>A</td>
<td>D</td>
<td>C</td>
<td>D</td>
</tr>
</tbody>
</table>
Introduction to Transit, PAG’s High Capacity Transit Study & Bus Rapid Transit (BRT)
Carlos de Leon, Deputy Director
City of Tucson Department of Transportation

Multi-Modal Facilities

<table>
<thead>
<tr>
<th>Cross Section</th>
<th>Results</th>
<th>Transit</th>
<th>Bicycle</th>
<th>Pedestrian</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 lane divided w/ 12 ft multi-use lanes &amp; 6 ft sidewalk</td>
<td>Score 0.25</td>
<td>3.55</td>
<td>3.02</td>
<td></td>
</tr>
<tr>
<td>LOS</td>
<td>A</td>
<td>D</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>6 lane divided w/ 5 ft bike lanes &amp; 6 ft sidewalk</td>
<td>Score 1.27</td>
<td>4.37</td>
<td>3.10</td>
<td></td>
</tr>
<tr>
<td>LOS</td>
<td>A</td>
<td>E</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>4 lane divided w/ 5 ft bike lanes &amp; 6 ft sidewalk</td>
<td>Score 1.31</td>
<td>4.65</td>
<td>3.33</td>
<td></td>
</tr>
<tr>
<td>LOS</td>
<td>A</td>
<td>E</td>
<td>D</td>
<td></td>
</tr>
</tbody>
</table>

High Capacity Transit
• Bus Rapid Transit (BRT) most feasible
• PAG evaluating implementation alternatives

Questions?

Transportation Functionality Performance Measures

Phil Erickson, AIA, President
Community Design + Architecture
Measuring Functionality

- Later Agenda Item
  - Evaluation Criteria
    - Address Areas of Concern – mobility, access, safety, convenience...
    - These will build from the Vision and Goals for Broadway
  - Performance Measures
    - Measuring the success in meeting evaluation criteria
    - Possible thresholds
    - Use for comparison between design alternatives

EPA Guide to Sustainable Transportation Measures

“many transportation agencies are now being called upon by their stakeholders to plan, build, and operate transportation systems that – in addition to achieving the important goals of mobility and safety for all modes – support a variety of environmental, economic, and social objectives.”

EPA Guide to Sustainable Transportation Measures

- Performance Measures for different stages of transportation planning:
  - Land use visioning
  - Long-range transportation plans
  - Corridor Studies (Broadway Boulevard Project)
  - Programming
  - Environmental Review
  - Performance Monitoring

12 EPA Guide Performance Measures Applicability to Corridors

1. Transit Accessibility
2. Bicycle and Pedestrian Mode Share
3. VMT per Capita
4. Carbon Intensity
5. Mixed Land Uses
6. Transportation Affordability
7. Benefits by Income Group
8. Land Consumption
9. Bicycle and Pedestrian Activity and Safety (alternative measures Bicycle and Pedestrian LOS)
10. Bicycle and Pedestrian Level of Service
11. Average Vehicle Occupancy (alternative measure – Person Travel Time)
12. Transit Productivity

12 EPA Guide Performance Measures Applicability to Broadway

1. Transit Accessibility
2. Bicycle and Pedestrian Mode Share
3. VMT per Capita
4. Carbon Intensity
5. Mixed Land Uses
6. Transportation Affordability (not directly affected by Broadway project)
7. Benefits by Income Group (data not readily available at study area geography)
8. Land Consumption
9. Bicycle and Pedestrian Activity and Safety (alternative measures Bicycle and Pedestrian LOS)
10. Bicycle and Pedestrian Level of Service
11. Average Vehicle Occupancy (alternative measure – Person Travel Time)
12. Transit Productivity

13. Vehicular Intersection Level of Service
14. Vehicular Corridor Level of Service
15. Transit Level of Service
16. Suitability for Future High Capacity Transit
17. Access Management Improvement
18. Mixed Use Accessibility
19. Person Travel Time

Possible Additional Measures for Broadway

10/18/2012
### Possible Transportation-related Performance Measures

1. **Transit Accessibility**
2. **Bicycle & Pedestrian Mode Share**
3. **VMT per Capita**
4. **Carbon Intensity**
5. **Mixed Land Uses**
6. **Transportation Affordability**
7. **Benefits by Income Group**
8. **Access Management Improvement**
9. **Bicycle and Pedestrian Activity and Safety**
10. **Bicycle and Pedestrian Level of Service**
11. **Average Vehicle Occupancy**
12. **Transit Productivity**
13. **Vehicular Intersection Level of Service**
14. **Vehicular Corridor Level of Service**
15. **Suitability for Future High Capacity Transit**
16. **Benefits by Income Group**
17. **Land Consumption**
18. **Mixed Use Accessibility**
19. **Person Travel Time**

### Discussion of Example Performance Measures

<table>
<thead>
<tr>
<th>Performance Measure</th>
<th>EID Sector Product Area</th>
<th>Planning Stage Product Area</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Transit Accessibility</strong></td>
<td></td>
<td></td>
</tr>
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<td><strong>2. Bicycle &amp; Pedestrian Mode Share</strong></td>
<td></td>
<td></td>
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<td><strong>3. VMT per Capita</strong></td>
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<td><strong>4. Carbon Intensity</strong></td>
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<td><strong>6. Transportation Affordability</strong></td>
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Possible Transportation-related Performance Measures

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18. Mixed Use Accessibility
19. Person Travel Time

Call to the Audience

10 minutes

Please limit comments to 2 minutes

• Called forward in order received
• CTF members cannot discuss matters raised
• CTF cannot take action on matters raised
• CTF members can ask project team to review an item

CTF Roundtable

Nanci Beizer

• Each CTF member gets a chance to share
• Feel free to share anything you want
• Feel free to ask any questions you want answered by staff

Next Steps

Nanci Beizer

• Next CTF Meeting: Thursday, 11/8/2012
  5:30-8:30 p.m., Child & Family Resources
• Proposed Agenda:
  – Welcome / Agenda Review
  – Results of Historic Buildings Inventory
  – Results of Land Use, Urban Form, and Significant Structures Report
  – Introduction to Multi-modal Street Cross Section Elements and CTF Hands on Session
  – Roundtable
  – Call to the Audience

Thank You for Coming – Please Stay in Touch!

Broadway: Euclid to Country Club
Web: www.tucsonaz.gov/broadway
Email: broadway@tucsonaz.gov
Info Line: 520.622.0815

RTA Plan
www.rtamobility.com