Roadway Improvement Project
Cost Allocation

CTS 21st Annual
Transportation
Research Conference

April 27, 2010
Potential Applications
Potential Applications

- Alternative Urban Areawide Reviews
- Subarea Studies
- Roadway Project Feasibility Studies
- Land Use Plans
- Corridor Studies
- Visioning Studies
- Site Specific Development Applications
- ETC, ETC, ETC…
Potential Applications

- Alternative Urban Areawide Reviews
  - Large area of land identified for development/redevelopment
  - Organized land use planning and identification of the transportation impacts
  - Varying impacts
  - Determine which parcels have the potential for greater roadway impact
  - Proportionately allocate improvement costs
Potential Applications

- Roadway Project Feasibility Studies
  - Identified potential roadway infrastructure improvement
  - Documentation of estimated project costs
  - Determine property assessments and appropriate cost allocation
  - Recommend feasibility
Potential Applications

- Site Specific Development Applications
  - Project site identified for development/redevelopment
  - Determine applicable adjacent roadway impacts and necessary improvements
  - Outline proportional impacts associated with the proposed development, adjacent existing development and external sources
Roadway Improvement Overview
Roadway Improvement Determination

- Highlight future infrastructure needs through forecast horizon year (one year after construction, 5 years, 20 years, etc.)
- Review potential land use scenarios
- Determine adjacent roadway impacts and mitigation measures related to potential land use types using vehicular trip generation
- Determine the costs associated with the infrastructure needs
Roadway Improvements

• Outline roadway improvements for documentation purposes
Roadway Improvement Concepts

- Concept sketches can be prepared for each of the infrastructure improvements
- Utilize aerial photos to tie-in landmarks and graphically depict impacts
- Consider existing right-of-way and parcel data
- Develop preliminary and/or final design plans
Roadway Improvement Concepts

CONCEPT
SUBJECT TO CHANGE
1/14/2006

CONSTRUCTION OF THIS IMPROVEMENT
CONSTRUCTION - SEE OTHER IMPROVEMENT

LEGEND

IMPROVEMENT 16: FAIRVIEW AVENUE at COUNTY ROAD X and COUNTY ROAD Z
Convert Fairview Avenue to a two-lane section between County Road X and County Road Z with a continuos
center turn lane.

IMPROVEMENT 16 (1 of 2)
Twin Lakes Infrastructure Improvements
City of Roselle

Figure 18A
Roadway Improvement Concepts
Roadway Improvement Cost Estimate

- Cost estimates can be developed based on concept sketches
- Based on lateral impacts only (two dimensional), do not account for large topography changes (concept costs)
- Quantities are based on major construction components (10-percent contingency cost added to account for miscellaneous)
- Cost estimates for preliminary and/or final designs are more accurate and include cut/fill calculations
Roadway Improvement
Cost Allocation
Roadway Improvement Cost Allocation

- All costs are allocated based on vehicular trip contributions for each parcel/development/redevelopment
- Future improvement costs are allocated proportionately to the appropriate parcels/developments/redevelopments
- A proportional share of the costs are assigned to background traffic (City/County/State responsibility)
  - Future developments/redevelopments use available excess capacity, existing developments use a percentage of its initial capacity contributing to the capacity constraints and subsequent need for improvements.
Roadway Improvement Cost Allocation

- Definition of “cost per network trip” is represented by the graphic shown below.
Roadway Improvement Cost Allocation

- Determine an average cost per network trip based on land use type (i.e., commercial, industrial, residential, mixed use, etc.) and location (proximity to improvements)
- As land use develops in the area the resultant cost per network trip values can be used as a guideline to determine future parcel/development/redevelopment proportional costs
Roadway Improvement Cost Allocation

- No change will be needed to the proportional cost if land use type and size are the same under future conditions.
- If land use type and size are different when the parcel develops, then:
  - Need to calculate new network trip total
  - Review associated roadway impacts and additional improvement needs.
## Roadway Improvement Cost Allocation

### 2030 Weekday PM Peak Hour - Cost Allocation per Network Trip based on proposed Use

<table>
<thead>
<tr>
<th>Sub Area</th>
<th>Block</th>
<th>Proposed Land Use</th>
<th>Scenario C</th>
<th>Average Cost per Network Trip based on Land Use and Location</th>
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<tbody>
<tr>
<td></td>
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<td></td>
<td>Network Trips</td>
<td>Total Cost Allocation</td>
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<tr>
<td>I</td>
<td>1</td>
<td>Commercial - Office</td>
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<td>Residential</td>
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<td>$137,375</td>
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| II       | 6     | Commercial - Office | 77   | $101,154  | $1,314 |
|          | 7     | Commercial - Office | 68   | $88,407   | $1,290 |
|          |       | Commercial - Retail | 144  | $1,449,876 | $1,257 |
|          | 9     | Commercial - Office | 942  | $633,500  | $1,208 |
|          | 10    | Residential        | 424  | $649,080  | $1,531 |

| III      | 11    | Residential - Already approved | N/A | N/A | N/A |
|          | 12    | Commercial - Office | 1677 | $1,203,075 | $1,139 |
|          |       | Residential        | 205  | $229,704  | $1,124 |

| N/A     | N/A   | Year 2000 Background Traffic | 49,520 | $4,340,557 | $867 |
| N/A     | N/A   | Northwestern College | 408  | $195,680  | $480 |

Total | 3161 | $22,782,364 |
**Roadway Improvement Cost Allocation**

<table>
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<tr>
<th>Sub Area</th>
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<th>SCENARIO C</th>
<th>AVERAGE COST PER NETWORK TRIP BASED ON LAND USE AND LOCATION</th>
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<tr>
<td></td>
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<td>Network Trips</td>
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- **Network Trips** = sum of this developments vehicular trips that pass through intersections/segments requiring improvements
- **Total Cost Allocation** = this developments total cost proportion based on its network impacts
- **Average Cost per Network Trip** = Total Cost Allocation ÷ Network Trips
Presentation Summary

- Numerous land use planning applications
- Vehicular trip forecasts
- Identify roadway impacts
- Minimum conceptual design and costs
- Determine cost per network trip values for each development area
Questions...

Craig Vaughn, P.E., PTOE
SRF Consulting Group, Inc.
763–249–6774
cvaughn@srfconsulting.com