Transportation Impact Study (TIS) Guidelines Update

Cambridge Transit Advisory Committee Meeting
March 3, 2022
Purpose, Outcome, and Process of Presentation (POP)

• **Purpose**: Receive feedback from TAC members on ways that the City may modify the Transportation Impact Study (TIS)

• **Outcome**: City staff will understand feedback from TAC, TAC members will understand current TIS procedure.

• **Process**: Presentation that describes the TIS and current ways that transit is included in the study, followed by group discussion.

• **Next Steps**: City staff will take your input into account in developing new TIS Guidelines for development projects.
What is a TIS

(Transportation Impact Study)
Why does the Zoning Ordinance require a TIS?

• For City staff and the Planning Board, we need information from a project proponent to determine potential transportation impacts. We want to avoid or mitigate for any negative impacts.

• The project proponent provides an analysis using standard, accepted transportation estimates, so that City staff and Planning Board, and the public, can understand the project’s transportation impacts.
Transportation Impact Study (TIS)

- A Transportation Impact Study (TIS) is required under zoning Article 19 Project Review for projects that meet certain thresholds, such as:
  - Projects over 50,000 sf
  - College/university that create 150 new parking spaces or relocation of 250 spaces or any combination thereof
  - Retail and Consumer Service projects over 25,000 sf.
  - Primary school over 40,000 sf

Examples of a TIS
Transportation Impact Study (TIS)

- A TIS reviews current transportation conditions in the proposed development project’s area.
- Estimates the new trips that a project will create for all modes (i.e., new vehicles, transit, pedestrian and bike trips).
- Evaluates the impacts that the new trips will have.
Transportation Impact Study (TIS)

TIS Process

- **Existing Transportation Condition**
  - Estimate number of trips made by different modes based on proposed amount of development

- **Build Condition**
  - Add Background Growth Rate and Other Area Project Trips

- **Future Transportation Condition**
  - Project Impacts evaluated against Planning Board Transportation Criteria
    - Project Trip Generation
    - Change in Level of Service at intersections
    - Increased traffic volume on residential streets
    - Increase vehicle queue at intersections
    - Sufficient pedestrian and bicycle facilities

- Evaluate future cumulative transportation impacts
  - Includes trips from other area projects permitted, approved or under construction.
TIS Impact Criteria (if exceeded = potentially substantial adverse impacts on city traffic)

1. Project Vehicle Trip Generation
   • 2,000 daily vehicle trips; or
   • 240 peak hour (AM, PM or Saturday midday) trips

2. Change in level of service (LOS) at study area intersections

<table>
<thead>
<tr>
<th>Existing</th>
<th>With Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>VLOS A</td>
<td>VLOS C</td>
</tr>
<tr>
<td>VLOS B, C</td>
<td>VLOS D</td>
</tr>
<tr>
<td>VLOS D</td>
<td>VLOS D or 7% roadway volume increase</td>
</tr>
<tr>
<td>VLOS E</td>
<td>7% roadway volume increase</td>
</tr>
<tr>
<td>VLOS F</td>
<td>5% roadway volume increase</td>
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</tbody>
</table>

3. Increased volume of trips on residential streets

<table>
<thead>
<tr>
<th>Parameter 1:</th>
<th>Parameter 2: Current Peak Hour Street Volume (two-way vehicles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount of Residential</td>
<td>&lt; 150 VPH</td>
</tr>
<tr>
<td>1/2 or more</td>
<td>20 VPH</td>
</tr>
<tr>
<td>&gt;1/3 but &lt;1/2</td>
<td>30 VPH</td>
</tr>
<tr>
<td>1/3 or less</td>
<td>(No max.)</td>
</tr>
</tbody>
</table>

Notes: 1. Amount of residential for a two block segment as determined by first floor frontage.
2. Additional project vehicle trip generation in vehicles per lane, both directions.
4. Increase in length of vehicle queues at intersections

<table>
<thead>
<tr>
<th>Existing</th>
<th>With Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 15 vehicles</td>
<td>Under 15 vehicles, or 15+ vehicles with an increase of 6 vehicles</td>
</tr>
<tr>
<td>15 or more vehicles</td>
<td>Increase of 6 vehicles</td>
</tr>
</tbody>
</table>

- Will the average number of vehicle queues at rush hours increase at study area intersections.

5. Lack of sufficient pedestrian and bike facilities
   a. pedestrian level of service (PLOS)

<table>
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<th>Existing</th>
<th>With Project</th>
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<tr>
<td>PLOS A</td>
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</tr>
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<td>PLOS B</td>
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</tr>
<tr>
<td>PLOS C</td>
<td>PLOS C</td>
</tr>
<tr>
<td>PLOS D</td>
<td>PLOS D or increase of 3 seconds</td>
</tr>
<tr>
<td>PLOS E, F</td>
<td>PLOS D</td>
</tr>
</tbody>
</table>

- Will the average pedestrian crossing delays at intersections get longer.

   b. Safe pedestrian facilities - Sidewalks, crosswalks or walkways meet City Design standards

   c. Safe bicycle facilities - must exist or be preserved where sufficient ROW exists.

- Do safe pedestrian facilities (i.e., sidewalks or paths) exist adjacent to the project.

- Do safe bicycle facilities exist, or space being preserved for safe bicycle facilities adjacent to the project site.
Currently we only evaluate and describe transit impacts
Transportation Impact Study (TIS)

Transit Impacts evaluated in a TIS, such as:

- Location of bus and transit stops, shelters, stations and routes.
- Existing daily and peak hour ridership
- Estimated new transit trips from the proposed project
- Transit impacts calculated based on peak hour ridership to transit service capacity
Typical graphics in a TIS showing transit facilities near the development project
Opportunities for changes
• We have an opportunity to change how transit impacts are evaluated in a TIS.
  • One way is to add a transit specific criteria

• Another way is to modify existing criteria, such as:
  • Modify Criteria 1. Replace new vehicle trips criteria with new persons trips criteria and establish impact thresholds for number of trips by mode, such as number of new public transit trips.
  • Modify Criteria 5. Replace Lack of pedestrian and bicycle facilities with Lack of pedestrian, bicycle and transit facilities and develop a threshold such as, nearby bus stops must meet MBTA bus stop design standards.
What do you want to know about a project's impact on transit?

• Think about the goals in the Cambridge Transit Strategic Plan, how a development project may impact the goal, and how to align impact metrics to transit goals:

<table>
<thead>
<tr>
<th>Transit Strategic Plan Goals:</th>
</tr>
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<tbody>
<tr>
<td>T1. Maximize transit ability to serve all trips</td>
</tr>
<tr>
<td>T2 Increase and prioritize transit funding</td>
</tr>
<tr>
<td>T3 Increase efficiency and reliability of transit services</td>
</tr>
<tr>
<td>T4. Expand transit service</td>
</tr>
<tr>
<td>T5. Improve useability, accessibility and safety of transit</td>
</tr>
<tr>
<td>T6. Improve public outreach and participation</td>
</tr>
<tr>
<td>T7. Improve resiliency to and preparedness for climate change</td>
</tr>
</tbody>
</table>
One way to think about aligning goals with metric is to think about transit in three ways:

**OPERATIONAL**
- T3 Increase efficiency and reliability of transit services
- T4. Expand transit service

**PHYSICAL**
- T1 Maximize transit ability to serve all trips
- T5 Improve useability, accessibility and safety of transit

**POLICY**
- T2 Increase and prioritize transit funding
- T6 Improve public outreach and participation
- T7 Improve resiliency to and preparedness for climate change
• One idea is to develop metrics and thresholds for the level of impacts (such as, Low, Medium or High) that a project would have on buses and trains.
Potential Transit Metrics and Thresholds
### Potential Transit Metrics and Thresholds

<table>
<thead>
<tr>
<th>Metrics</th>
<th>Low Impact</th>
<th>Medium Impact</th>
<th>High Impact</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td># peak hr. transit trips</td>
<td>&lt; 20 transit trips</td>
<td>20-50 transit trips</td>
<td>&gt;50 transit trips</td>
<td>But more transit trips may be better not worse.</td>
</tr>
<tr>
<td>Transit utilization (e.g., how new transit riders will impact transit capacity)</td>
<td>&lt; 0.8 v/c</td>
<td>0.8 – 1.00 v/c</td>
<td>&gt; 1.0 v/c</td>
<td>Considerations: peak hr. or peak of peak, or closest stops to project, or stops with peak load points.</td>
</tr>
<tr>
<td>Access to transit</td>
<td>Bus stops meet design standards</td>
<td>Half of stops meet standards</td>
<td>Bus stops do not meet standard</td>
<td>MBTA bus stop planning and design standards</td>
</tr>
<tr>
<td>New vehicle trips on bus delay/ reliability</td>
<td>&lt; 60 peak hr. auto trips</td>
<td>60-120 peak hour auto trips</td>
<td>&gt; 120 peak hour auto trips</td>
<td>More vehicle trips on roadway could impact bus travel times.</td>
</tr>
<tr>
<td>Yes/No policy question.</td>
<td>100% T pass subsidy Real-time transit screen</td>
<td>50% T-pass subsidy Real-time transit screen</td>
<td>No T-pass subsidy No real-time transit screen.</td>
<td></td>
</tr>
</tbody>
</table>
Other potential transit impact metrics

• Multimodal level of service (MMLOS)
• Passenger load at peak of route, even if not in Cambridge. (peak load point for each route)
• Hours of transit operation (weekdays/weekend service hours and frequency
  • Note, this is controlled by MBTA not development project.
We want to avoid a lot of data and analysis without a clear conclusion.
Questions and group discussion

Q: What do you want to know about a projects impact on transit?
Thank you

Transportation Impact Study (TIS) Guidelines Update

Contact:
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617-349-4745
Back burner
Typical 8-step transit analysis in a TIS

1. Determine Existing transit bus/train capacity including the average On-time performance factor.
2. Determine Existing transit ridership
3. Determine Existing transit utilization (peak hour riders per capacity = volume/capacity (v/c)).
4. Determine Project’s new transit trips
5. Add new transit trips to existing transit system
6. Determine v/c with Project transit trips (Build transit utilization).
7. Add transit trips from other projects and background growth rate.
What do you want to know about a project's impact on transit?

| T1. Maximize transit ability to serve all trips | Will the Project help maximize transit systems' ability to serve all trips? |
| T2 Increase and prioritize transit funding | Will the Project increase and prioritize transit funding? |
| T3 Increase efficiency and reliability of transit services | Will the Project increase or decrease transit efficiency and reliability? |
| T4. Expand transit service | Will the Project expand or impact transit service? |
| T5. Improve useability, accessibility and safety of transit | Will the Project improve useability, accessibility and safety of transit? |
| T6. Improve public outreach and participation | Will the Project improve public outreach and participation in transit? |
| T7. Improve resiliency to and preparedness for climate change | Will the Project improve or impact transit services resiliency to and preparedness for climate change? |