

# **Transportation Impact Analysis Guidelines**

DRAFT

City of Austin



Austin Transportation Department  
Transportation Development Services Division

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## 1. Background

The purpose of the Transportation Impact Analysis (TIA) Guidelines is to provide development and transportation consultants with the framework and guidance to prepare TIAs for review by the City of Austin. These guidelines also serve as a reference for the basic information that should be contained in a TIA. A finalized TIA will be valid for a period of up to five years, starting from the date of approval by either the City or the appropriate Commission, whichever is earlier.

A TIA should assess the transportation aspects of a proposed development that has the potential of generating new trips. New trips can be vehicular trips, transit trips, pedestrian trips, or bicycle trips. Development changes the travel patterns in the area adjacent to the site; affecting vehicular, transit, pedestrian, and bicycle modes. A TIA should help mitigate the adverse impacts created by these trips, provide an understanding of the transportation conditions around the proposed development, and demonstrate that the proposed development is meeting the transportation goals established in City adopted plans (Austin Strategic Mobility Plan (ASMP), Imagine Austin Plan, etc.).

A TIA shall:

- Be signed by a licensed professional engineer with demonstrated experience in transportation engineering
- Provide information on the projected traffic generated by a proposed development
- Assess the effects of the proposed development on the surrounding transportation system and recommend measures and/or improvements to mitigate adverse effects on traffic operations
- Identify operational, geometric, and safety impacts, and recommend actions to address these concerns
- Include, but not be limited to, capacity analysis, safety, and geometric analysis, transportation demand management, and conceptual plans or designs to support recommended mitigations

## 2. Authority and Determination

According to the current Land Development Code (LDC), Chapter 25, Article 3, Section 25 – 6, an applicant submitting a site plan, zoning, or rezoning application must submit a Transportation Impact Analysis if the expected number of vehicular trips generated by a project exceeds 2,000 vehicle trips per day as determined by the latest ITE's Trip Generation Manual. Transportation mitigation may still be required for projects that do not require a TIA per code section 25-6-101 – Mitigation of transportation impacts. (See section 6. *Projects Not Warranting a TIA* of the TIA guidelines for more information)

An applicant or applicant's consultant shall submit a TIA determination worksheet to the Development Assistance Center (DAC) for review prior to beginning the scoping process for a new TIA. The TIA determination worksheet contains trip generation information and details of the proposed development including: project location, land use, access points, density, phases of site construction, and the timeline for occupancy. The DAC will perform and sign the TIA determination and, if applicable, based on the 2,000 vehicular trips per day threshold, direct the applicant to submit a TIA Scope according to TCM guidelines to the Austin Transportation Department (ATD) for review. All appeals to a TIA Determination will be made to ATD.

Following the City of Austin's Transportation Criteria Manual, the latest edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual should be used to determine the number of trips generated by a proposed development in the TIA determination worksheet. Vehicle trip reductions for internal capture, pass-by, and Transportation Demand Management (TDM) may not be applied when making the TIA determination.

Other sources of trip generation publications, e.g. National Cooperative Highway Research Program (NCHRP) Report 684, may be proposed in the TIA determination if and only if the trip generation information is not available in the ITE Trip Generation Manual.

Trip generation counts conducted by an applicant or applicant's consultant may not be for the purposes of TIA determination.

### 3. TIA Process

#### *3.A TIA Process Outline*

Please see the Transportation Development Services (TDS) Division website for the TIA process flowchart. Further clarification on each step can be found in these guidelines.

#### *3.B TIA Fees*

Before the review of a TIA or TIA scope, the appropriate fee must be paid following the fee schedule published on the ATD Transportation Development Services website.

#### *3.C Timeline for Review*

ATD attempts to maintain a general timeline for the review of submittals. Review time may vary based on the intensity of the development and any applicable special considerations. All reviews are conducted on a first-come-first-served basis. The official timeline for review will not begin until a complete submittal has been received and any required review fees have been paid. Below is the expected timeline for review once a complete submittal has been received:

*Table 1 – Expected Timeline for Review*

Item	Timeline (business days)	
	1st Submittal	Follow-up Submittals
TIA Scope	10	5
Alternate TIA Review	10	5
TIA Review <15,000 trips	20	20
TIA Review >15,000 trips	30	20

A TIA containing all necessary information and commentary should only require 2 submittals, therefore, the typical time expected for review is 40 business days. Additional time may be required when finalizing mitigations, which will require coordination between the applicant, city staff, and any other external stakeholders.

## 4. TIA Scope Guidance

### *4.A Purpose*

A TIA scope is required to determine the extent of the analysis. The following section will identify objective criteria to determine the study area and the requirements of the analysis, along with trip rates, growth rates, and trip distribution used in the analysis.

These are general guidelines for preparing and submitting the scope of a TIA, however, there may be exceptions based on the proposed development's land use and location. Engineering judgment should be applied where appropriate.

### *4.B Submitting a TIA Scope*

If the review of a TIA Determination Worksheet determines that a TIA is required for a proposed development, a TIA scope should be submitted electronically to the ATD Lead Development Engineer for review based on the applicable council district following the map of the City Area Engineers:

North Area (District 4, D7, D6, D10)

Central Area (D1, D9)

South Area (D2, D3, D5, D8)

A map of the designated review areas and contact information can be found on the ATD Transportation Development Services Division website.

The TIA Scope submitted to ATD shall include the following, at a minimum:

1. Project Location Map

2. Site Plan
3. Land uses, size, and intensity of the proposed development
4. Proposed Phases of development, if applicable, year of occupancy, and the operating conditions for study (e.g. existing, no-build, build, etc.)
5. Estimated per year traffic growth rate
6. Estimated trip rates, peak hour trips, and daily trips generated by the proposed development
7. Internal capture trip reduction rates
8. Pass-by trip reduction rates (based on ITE Trip Generation Manual)
9. Vehicle Trip distribution
10. A list of existing and future intersections, roadways (for road-sizing), and interchanges to be analyzed
11. List of affected County and TxDOT roadways
12. Locations for Signal Warrant Analysis
13. Locations for safety and geometric review
14. Locations identified for sight distance studies
15. Transportation Demand Management (TDM) measures should be proposed with the vision of working towards the ASMP mode split goals. For further guidance on acceptable TDM measures, reductions, and requirements please contact the Transportation Development Services Division at ATD or find additional information on the TDS website.

An example scoping document can be found on the ATD Transportation Development Services website. The ATD Lead Development Engineer and the applicant's consultant shall both sign the agreed-upon scope. The TIA scoping fee shall be paid at the time of scope submittal and before review.

Upon receipt of the approved TIA scope, if the applicant's consultant has any questions regarding the scope, they should contact the corresponding ATD Lead Development Engineer and/or request a meeting. A meeting will not be scheduled unless a draft TIA scope with supporting documentation has been submitted for review. A copy of the TIA scope signed by the applicant's consultant shall be returned to the ATD Lead Development Engineer documenting acceptance of the scope's provisions. TIAs received without an approved scope shall not be reviewed by ATD.

For TIAs submitted in support of proposed development projects in the City's Extraterritorial Jurisdiction (ETJ), the applicant/applicant's consultant should contact corresponding jurisdictions e.g. County, TxDOT, etc. for TIA scoping and review. TIAs for development projects in the City's ETJ will only be reviewed by ATD under special circumstances. (e.g. planned annexation, PUD zoning, etc.). If it is determined that ATD should scope and review a TIA in the ETJ, the City of Austin TIA guidelines should be followed for all TIAs submitted to the City.

#### *4.C Alternate TIA Scope*

An Alternate TIA is effectively a Standard TIA which is limited in scope and typically would not include a detailed capacity analysis. The Alternate TIA is intended to identify needed improvements and provide justification for mitigations when it may be impractical to conduct additional analysis, allowing the study and review to be completed in a shorter timeframe. Usually, Alternate TIA proposals are considered when there are several TIAs, and other transportation studies (corridor plans, etc.) already completed in the adjacent transportation network, and transportation improvement needs are already well identified and understood.

Typically, an Alternate TIA will be considered if the following conditions are met:

1. There has already been a significant transportation study in the last 5 years considering the transportation system adjacent to the proposed development;
2. Needed improvements can be identified without further study;
3. It can be shown that the development's site trips will benefit from the proposed improvements identified;
4. In most cases, an Alternate TIA will not be applicable if the proposed site trips are greater than 5,000 daily trips or greater than the daily trips considered in the TIAs previously completed in the area.

If these conditions are met, the applicant or applicant's consultant should provide an Alternate TIA scope to ATD and pay the TIA scoping fee. An Alternate TIA scope follows the requirements of a Standard TIA but omits unnecessary elements of the analysis and allows for a truncated review.

As approved by ATD, the Alternate TIA Scope will replace the typical TIA Scope requirement, while still requiring scoping and review fees. Scopes still follow many of the requirements in section 4.B.

#### *4.D Trip Generation Scoping Guidance*

Trip generation should be included with the TIA scope and follow the latest edition of the ITE trip generation manual. However, data related to 'dense city core' may not be used without review and approval from ATD.

#### *4.E Vehicle Trip Reductions and Mode Split Scoping Guidance*

Vehicular trip reductions can be classified into three categories described below:

1. **Pass-by** trip reductions shall follow the latest edition of the ITE trip generation manual.
2. **Internal capture** should follow the methodology in the ITE trip generation manual or NCHRP.



3. **TDM Reductions** are applied based on established targets based on the City of Austin ASMP mode split goals. TDM measures should be identified to achieve the target TDM reduction established in the scope.

It should be noted that internal capture and TDM reductions are not mutually exclusive. Depending on the project location and land use mix in a proposed development, the internal capture may be dependent on certain TDM measures proposed. Also, trip reductions must be based on site context. Most ITE trip data only determines vehicle trips and therefore consideration should be made to estimate person trips when applying trip reductions to achieve the desired mode split. The approved TDM reduction targets consider person trips included in the ITE trip generation values. All TDM reductions may be applied directly to the appropriate ITE vehicle trip generation after pass-by reductions are applied. The reductions applied to ITE vehicle trips and the target mode split will not be the same number.

The following mode split targets in Table 2 below follow the long-term targets established in the ASMP. If specific information is not available in the ASMP (Table 2, below), the target mode split below should be met based on-site context.

*Table 2 - Mode Split Target*

Site Context	Target TDM Reductions	Max TDM Reduction
City Core	40%	50%
Urban Core	25%	35%
Urban	20%	30%
Suburban	10%	10%

TDM measures should be identified in the scope to achieve or exceed the target TDM reduction based on site context. Each site context is defined below.

1. **City Core:** Any site location zoned Central Business District (CBD) or Downtown Mixed Use (DMU), located on a core transit corridor, or located in a Downtown Austin Plan District.
2. **Urban Core:** Imagine Austin Regional and Town Centers.
3. **Urban:** Any site located in the urban roadway boundary as defined in LDC section 25-6-478, Activity Centers and Corridors, and ¼ mile from the Transit Priority Network.
4. **Suburban:** Remaining areas.

A map of the four site-context areas can be found in Appendix C.

#### ***4.F Transportation Demand Management Scoping Guidance***

Transportation Demand Management (TDM) measures and associated reductions should be determined at scoping.

The TDM measures should be tailored to the development site context and land use. A TDM plan, in the form of an appendix or section of the TIA, should be provided. The TDM plan should:

1. List TDM measures and the proposed reductions based on the approved measures from the city's TDM website;
2. Provide a Sustainable Modes Analysis (See section 5.E.i Sustainable Modes Analysis);
3. Provide specifics about how each measure will be incorporated into the site. (e.g. SF of Bike locker space, proposed parking reductions compared to LDC, timeline for joining a TMA, etc.); and
4. Describe ongoing reporting requirements.

#### 4.F.i Sustainable Modes Scoping Guidance

A Sustainable Modes Analysis shall be performed as part of the TDM plan. The extent of the study shall be established in the scope. A typical study will evaluate active-modes and transit-connectivity within a study area up to a 0.5-mile radius from the edge of the project boundaries. The study may also be defined based on pedestrian corridors, boundary streets, or desire lines to pedestrian generators. At a minimum, significant pedestrian and transit generators and facilities should be included when determining the project area.

A Sustainable Modes Analysis will identify needed infrastructure improvements that can be considered in TDM measures. Therefore, a TDM reduction may be applied at scoping before identifying improvements. TDM reductions associated with the Sustainable Modes Analysis should be determined at scoping. The following table identifies the target reductions:

*Table 3 - Sustainable Modes Analysis Reductions*

<b>Site Context</b>	<b>Given TDM Reduction for Sustainable Modes Analysis</b>
City Core	20%
Urban Core	12%
Urban	10%
Suburban	5%

#### 4.G Intersection Capacity Analysis Scoping Guidance

The following guidelines should be followed to determine which existing and future intersections are to be analyzed. This process should be followed by the developer's engineer and should be submitted with the scope for review by the ATD Lead Development Engineer.

To select the intersections within the scope of a TIA, the following procedure should be followed:

1. Peak hour trips (AM and PM) generated from a proposed development shall be distributed to the adjacent roadway network and intersections until
  - a. Peak hour trips at an intersection are below 50 trips; or
  - b. Peak hour trips access a freeway; or
  - c. Peak hour trips are 1.5 miles from the boundary of the proposed site.
2. All the driveways/accesses to a proposed development shall be included in the TIA scope, regardless of the number of peak-hour trips.
3. The first functional arterial (level 3 and above) intersection(s) adjacent to a proposed development shall be included in the TIA scope, regardless of the number of peak-hour trips.
4. Intersections adjacent to a proposed development with significant existing or future safety issues shall be included in the TIA scope, regardless of the number of peak-hour trips. To identify intersections which meet this criteria, the developer's consultant should contact the ATD Lead Development Engineer for the area.

An example of the above procedure can be found in Appendix D.

A brief description of expected travel patterns should also be included with the distribution.

#### *4.H Roadway Capacity and Road-Sizing Scoping Guidance*

The guidelines outlined in this section should be followed to determine which existing and future roadways are to be analyzed.

The following roadways should be identified for capacity analysis and road sizing:

1. Roadways adjacent to the site for non-urban areas;
2. Roadways for which significant intersection improvements (e.g. the addition of more than one turn lane) are needed on the approaches;
3. Internal or on-site roadways; and
4. Roadways for which future widening is planned.

If it is determined that a non-scoped roadway is under capacity due to site traffic, additional analysis should be provided.

#### *4.I Access-Management Analysis Scoping Guidance*

Access-Management Analysis should be conducted to ensure safe and effective access for the site's operations. For certain uses where on-site queuing is probable, such as drive-thru restaurants or schools, a queueing analysis may be required. A queueing analysis should

identify the project's queues and ensure that on-site storage can contain the queue generated by the development.

## 5. TIA Report Requirements and Contents

All TIAs submitted to the city should contain the following sections:

### *5.A Executive Summary*

This section should contain a brief overview of the purpose of the study, location of the site, site description, site access, trip generation, and land use. The key results of the study should be presented, including principle findings, conclusions, identified improvements for construction and/or financial contribution.

### *5.B Table of Contents*

A table of contents should be provided that identifies sections of the TIA along with a list of tables and figures.

### *5.C Introduction and Background*

This section contains a brief overview of the purpose of the study, the location of the site, land use, trip generation, and the type of project supported by the study. Other related studies/applications associated with the proposed development site are also useful information. The study methodology should also be summarized.

The following maps should be included:

1. Site location map which also identifies the surrounding areas and land uses
2. Site plan and site land use, including site access points
3. A map showing all background projects and estimated trips for each project
4. A map showing all roadways and driveways analyzed (labeled and dimensioned)

### *5.D Trip Generation and Mode Split*

#### **5.D.i Mode Split Discussion and TDM Reductions**

Provide discussion and estimate person trips generated for each proposed ITE land use code. Next, compare the expected mode split for the development with mode split goals established in the TIA scope and identified in the ASMP. It should describe the proposed TDM reductions and how they contribute to achieving the mode split goals.

#### **5.D.ii Vehicle Trip Generation**

This section contains a detailed overview of the ITE vehicle trip generation.

Calculations and assumptions used for internal capture, pass-by trips, and TDM reductions should be provided.

### *5.E Transportation Demand Management Plan*

Transportation Demand Management (TDM) provides developments the opportunity to reduce vehicular trip generation to/from a site in conjunction with a TIA. TDM measures lower the burden of increased traffic on surrounding communities and promote multimodal travel options to and from sites, and thus reduce single-occupancy vehicle trips generated by new developments. As the City of Austin continues to grow, it is imperative that new developments mitigate their impact(s) on the surrounding transportation system and limit new single-occupancy vehicle trips by utilizing various TDM measures in both meaningful and measurable ways.

TDM reductions are applied to the ITE vehicle trip generation and established at the time of scoping.

All development applications which trigger a TIA are encouraged to utilize TDM measures to reduce their overall vehicle trip generation. A TDM plan should be included within the initial TIA submittal and shall include a site-specific plan with specific measures outlining how the project will decrease single-occupant vehicle travel to and from the project site. All measures taken should include the associated trip reduction percentages. A TDM Trip Reduction map can be found on the City's TDM website; this map illustrates target trip reduction percentages based on geographic context and should be used when determining context-specific TDM measures. All TDM plans should follow these minimum requirements.

Information on specific TDM measures can be found on the city's TDM website.

Additionally, specifics for many measures may not have been developed at the time of submittal. In these cases, measures should still be presented, however, it is the responsibility of the applicant's consultant/engineer to ensure that the measure would meet a reasonable standard to achieve the vehicle trip reductions. Several resources to evaluate TDM measures can be found on the City's TDM website.

A Transportation Demand Management Plan should:

1. Meet TDM reduction goals established in the TIA scope;
2. Evaluate and describe provided parking, regardless of reductions are applied or not;
3. Describe the specifics of each identified measure and vehicle trip reductions proposed in the scope;
4. Provide conceptual exhibits and/or specifications for on-site and off-site improvements;
5. Describe yearly reporting requirements after site plan approval;

6. Identify/Assign a dedicated on-site transportation coordinator; the on-site transportation coordinator shall submit an annual monitoring report to ATD. The report may also be submitted through a Transportation Management Association or a Transportation Consultant.
7. Include a Sustainable Modes Analysis as described in section 5.E.i.

#### 5.E.i Sustainable Modes Analysis

A Sustainable Modes Analysis should include the following:

1. Infrastructure Inventory: An inventory and investigation of the existing active-modes and transit infrastructure (sidewalks, shared-use paths, bike lanes, and transit stops where applicable) in the area surrounding the proposed development, including their current state of repair. The inventory and investigation should be complemented with photographs. Appropriate infrastructure improvements shall be recommended for any missing links and/or barriers to active-mode and transit connections identified within the study area.
2. Desire Lines: A conceptual level figure illustrating the desire-line for pedestrian and bicycle connections between the proposed development and major pedestrian and bike traffic generators within the study area, such as schools, community activity centers, recreation centers, transit stops, public places, and existing/planned bicycle networks.
3. Transit: Identification of applicable proposed and needed transit improvements. For large Transit Oriented Developments (TODs), ridership analysis may be required on a case-by-case basis.
4. Traffic Control: Identify the need for new traffic control devices and upgrades to existing traffic control devices (PHBs, signals, pedestrian refuge islands, signs, etc.).
5. Conceptual plans for all proposed improvements.

#### 5.F Access Management Analysis

As required in the TIA scope, an access management analysis shall be performed and include the following:

1. The number of driveways to/from proposed developments. The number of access points should be minimized since additional driveways create additional conflict points and speed differential, creating additional potential safety issues. New driveways' interaction with major roads should be analyzed.
2. Determination of the need for deceleration and/or acceleration lanes at the development's access points based on roadway speed and safety considerations.

3. Pick-up/drop-off operations, trash, loading/unloading, and any other operations that require idling on or adjacent to the site.
4. Queuing analysis showing adequate storage on-site for any anticipated queues (e.g. for drive-thru or school pickup).

## *5.G Vehicular Traffic Operations*

### **5.G.i Existing Conditions**

This section should contain a detailed overview of the available transportation infrastructure surrounding the proposed development site, as well as identify existing issues and concerns.

This section shall include the following components when applicable:

1. A detailed description of the transportation system with figures outlining traffic controls, intersection lane configuration with dimensions, bicycles routes, speed limits, parking restrictions, bus stops, directional signs, pedestrian signage, surrounding land uses, driveways, distance of driveways to adjacent intersections, railway crossings and any other information that may affect the intersection performance during the selected analysis periods (typically morning and afternoon). Data collected through site visits should be presented and described. It is advisable to include photos which point out issues (e.g., closely spaced driveways, non-standard intersections, etc.). The functional classification of existing and future roadways should be presented in this section.
2. Existing traffic volumes are to be presented in both graphic and tabular form. Daily traffic volumes are to be presented in this section when relevant. Daily traffic volumes can be obtained from actual counts or estimated using proper expansion factors if appropriate. Summer counts are discouraged due to atypical traffic patterns but may be acceptable in certain cases when presented with an appropriate growth factor with accompanying documentation for approval by ATD.
3. Short-term changes in the surrounding area, unrelated to the site are to be documented in this section and reflected in the analysis. The consultant is expected to do their due diligence in their review of system changes. If the scheduled date of the change falls within the timeframe of the study of the application, changes must be reflected in the study.

### **5.G.ii No-Build (Forecasted) Conditions**

This section is to provide a detailed overview of the expected transportation infrastructure in the area surrounding the proposed development site in the build year without the site. This section shall include the following components when applicable:

1. Future background operating conditions and changes to the intersection configuration, unrelated to site improvements, shall be provided in both descriptive and, if significant, graphic forms. Traffic may be re-routed if projected future roadway patterns would alter traffic operations.
2. Calculations performed to obtain the background growth factor should be included in the report and spreadsheets. Background traffic volumes should include traffic volumes from other approved (but not-yet-built) developments. Documentation for background developments shall be included in the appendix of the TIA. When establishing background traffic volumes for the build year, the applicant's consultant should consider annual growth rate and approved projects for development (which were not operational at the time traffic counts were collected). The growth rate can be obtained from comparing counts from previous years and based on the TIA scoping document.
3. Annual growth factor calculations should be presented.
4. Forecasted traffic volumes are to be presented in both graphic and tabular form. Daily traffic volumes are to be presented in this section when relevant. Daily traffic volumes can be obtained from actual counts or estimated using proper expansion factors if appropriate.

#### 5.G.iii Build (Site + Forecasted) Conditions

This section is meant to provide a detailed description of the proposed developments including land uses, densities, access points, and any other details that may have an impact on the transportation system.

1. A site plan (or conceptual site plan if submitted for zoning) shall be included or referenced in this section.
2. Site access should be identified.
3. Site traffic should be estimated based on the trip rates and reductions as approved in the TIA scope. Site traffic distribution and assignment should be completed based on the guidelines noted in *4.G Intersection Capacity Analysis Scoping Guidance*. Build Condition traffic volumes are obtained by adding the site-generated traffic volumes to the background traffic volumes.
4. The trip generation and any trip reductions should be included or referenced.
5. A trip distribution figure should be included.
6. Build condition traffic volumes are to be presented in both graphic and tabular form. Daily traffic volumes are to be presented in this section when relevant. Daily traffic volumes can be obtained from actual counts or estimated using proper expansion factors if appropriate.



#### 5.G.iv Mitigated (Build w/ Mitigations) Conditions

This section is meant to provide a detailed description of improvements needed to mitigate the site vehicular impact.

1. All roadway improvements used in the analysis should be identified in this section.
2. Improvements should be identified for each phase of construction, if applicable.
3. Conceptual exhibits of the proposed improvements should be presented here.

Conceptual exhibits should contain:

- a. ROW
- b. Lane configurations
- c. Lane widths (measured from the lip of gutter)
- d. Sidewalks and Ramps
- e. Signal Pole & Utility Locations (if applicable)
- f. Signage and Striping
- g. Driveway Spacing
- h. Aerials
- i. Bicycle facilities
- j. Transit Locations
- k. Relevant items should be dimensioned

Mitigations identified should not negatively affect safety. For example, signal re-phasing such as permissive left turns or reduction in pedestrian crossing time may not be allowed unless it can be proven to improve safety, or it has documented approval from ATD. Also, identified improvements should not significantly degrade another movement. For example, adding more green time to a NBL movement while taking time from a SBT movement causing a degradation in level of service to the SBT, may not be acceptable.

#### 5.G.v Capacity Analysis

The capacity analysis for each intersection and site access as outlined in the TIA scope should be included in this section.

1. Study Scenarios for Intersection Capacity Analysis:

Capacity analysis should be completed for the scenarios listed below. Additional peak hours, such as midday, special event, or weekend peak hour, may be required if the proposed development would generate trips during non-standard periods.

- a. Existing Operating Conditions – AM and PM Peak Hours;
- b. No-Build (Forecasted) Operating Conditions – AM and PM Peak Hours;
- c. Build (Site+forecasted) Operating Conditions without Mitigation – AM and PM Peak Hours; and

d. Mitigated (Build with Mitigations) Operating Conditions – AM and PM Peak Hours.

Additional operating conditions should be analyzed for long term projects that will be constructed in phases over more than five years. Improvements should be identified in the phase for which they are needed. If the proposed project schedule is not available and the proposed land use mix in each phase is not known, TIA updates will be required with site plans instead of estimating the proposed phasing of development.

A description of the methodology and software (Synchro) used to complete the assessment should be included. Signal timing plans should be obtained from the Arterial Management Division within the City of Austin Transportation Department or TxDOT and be used for the analyses. Signal timing sheets shall be included in the appendix of the TIA. In the event of a proposed or planned traffic signal, a reasonable signal timing plan should be provided. All intersections must be modeled in one Synchro file (including unsignalized intersections). SIDRA software should be used for any capacity analysis at a roundabout. Synchro files must be in real-world coordinates and contain a connected network.

2. Reporting Intersection Capacity Analysis Results:

The results from the capacity analysis for all scenarios should include, but not be limited to, the following:

- a. Intersection Level of Service (LOS) by individual movements at an intersection;
- b. Volume/Capacity (v/c) ratio by individual movements at an intersection;
- c. Delay (veh/sec) by individual movements at an intersection;
- d. 95% Queue length (feet) by individual movements at an intersection;
- e. Overall intersection LOS; and
- f. Roadway Capacity Analysis for adjacent roads, boundary streets, and internal roadways.

The latest Highway Capacity Manual (HCM) capacity analysis results should be presented in a tabular format (preferably in 11"x17") for all the scenarios noted. Previous versions of the HCM should be used if the latest version of the HCM is unable to analyze intersection operations and should be noted when such cases are experienced. Synchro Lane/Volume/Timing reports should be presented only if Synchro is unable to analyze intersection operations using HCM methodology.

When results obtained from analyses completed in Synchro show poor performance (i.e., excessive queue lengths with the potential of blocking intersections, conflicts with left-turning vehicles, etc.), the consultant shall validate the results with observations in the field for existing conditions or SimTraffic simulation for post-development/build conditions.

3. Results for Intersection Capacity Analysis in the Non-Urban Core:

In non-urban core areas, poor performance is defined by LOS E or F, and/or a Volume/Capacity ratio over 0.95 for individual movements or the overall intersection. Poor performance may also include extensive queues for movements that extend beyond available storage and block other travel lanes or site driveways, or extensive queues on through movements that extend past and block adjacent intersections. If No-Build Conditions are LOS D or better and the Volume/Capacity ratio is less than 0.95, Mitigated (Build w/ Improvements) Conditions should attempt to maintain LOS D or better and a Volume/Capacity ratio of less than 0.95 for individual movements and the overall intersection during the peak hours evaluated. Any extensive queues blocking travel lanes, adjacent intersections and/or driveways expected in the Build Conditions should be mitigated to address any potential safety and mobility concerns.

The definition of poor performance, noted above, is provided as general guidance for TIA preparation. It is understood that it will not always be possible to bring a movement or intersection back to LOS D or better and a Volume/Capacity ratio to less than 0.95. In these cases, discussion and justification should be provided with any prohibitive constraints. It should also be noted that development projects vary in nature, scale, location, and impact on transportation infrastructure. The purpose is to provide general guidance on the acceptable traffic parameters in the TIA; each development project will be assessed on a case-by-case basis considering nature, scale, location, and impacts of the proposed development on the transportation infrastructure.

4. Results for Intersection Capacity Analysis in the Urban Core:

Development intensities in the urban core may justify the need for different considerations of acceptable operating conditions. LOS F and Volume/Capacity ratios greater than 0.95 are generally considered poor performance. Within the Urban Core, LOS E or LOS F may be considered acceptable based on the adjacent transportation system and reasonable constraints. However, alternative mobility and safety improvements shall be recommended in the TIA to address any safety and mobility impacts from the proposed development. TDM measures that identify transportation infrastructure (e.g. shared used paths, sidewalks, separated bike lanes, transit stops, etc.) should be recommended, along with a TDM plan, to alleviate mobility impacts from proposed developments where opportunities for physical capacity improvements are limited.

5. Road-Sizing Analysis for Non-Urban Core:

Daily traffic volumes should be estimated for post-development conditions on adjacent roads (boundary streets and internal roads), and roadways identified for road-sizing in

the scope. Based on this analysis, the cross-section of roads shall be recommended for boundary streets and internal roads.

A road sizing analysis should be completed by calculating the segmental vehicles per hour (vph) from the average of the largest peak hour volume at the boundary intersections. Then multiplying the segmental vph by a factor of 10 (or a factor of 8 for predominantly industrial land-uses in the surrounding area) to estimate the average daily trips (ADT = vph\*10). 24-hour counts should be used if available for the identified segment.

Road-sizing for roadways shall be based on the following criteria plus additional considerations for turn lanes at intersections:

Number of Lanes	Typical AADT
2	~10,000
3	~20,000
4 (undivided)	~30,000
4 (divided)	30,000~40,000
6 (divided)	Over 40,000+

The objective of a road-sizing analysis is to determine the number of lanes needed for a road/street (4 lane divided road, 6 lane divided road, etc.). The level of service analysis at intersections only provides information at intersections and fails to provide details on the basic cross-sections/number of lanes needed along a road/street. Results should be presented in tabular format. Additional calculations should be provided in the appendix.

6. Special Considerations for phased developments:

- a. For projects with more than one phase of development, signal retiming should be assumed in the No-Build Condition for phases five years beyond the time of the study. This does not apply to the first phase.
- b. Improvements should be identified in the phase for which they are needed.

7. Presentation:

Results of Intersection Capacity Analysis should be presented in tabular format, displaying the following for each movement at an intersection for each analysis condition:

- a. Delay
- b. Level of Service
- c. v/c ratio

- d. 95<sup>th</sup> percentile queue
- e. Bay length

When the delay in the mitigated operating conditions is greater than the delay in the No-Build operating conditions and at an unacceptable level of service (LOS E or F), the cells should be highlighted. Below is an example.

Intersection / Movement	Existing					No-Build				Build				Mitigated (w/ Imps)				
	LOS	Delay	V/C	95th % Queue (ft)	Bay Length (ft)	LOS	Delay	V/C	95th % Queue (ft)	LOS	Delay	V/C	95th % Queue (ft)	LOS	Delay	V/C	95th % Queue (ft)	Bay Length (ft)
Example Street and Frist Street	C	22.3	0.74	-	-	C	34.8	1.19	-	F	153.0	2.14	-	F	95.6	2.14	-	-
EBL	C	22.0	0.20	61	100	C	22.3	0.38	107	E	74.5	1.00	462	E	73.0	1.00	461	100
EBT/R	C	20.5	0.53	567	-	A	9.1	0.79	166	A	8.4	0.83	296	A	7.9	0.83	252	-
WBL	E	61.2	0.57	96	100	F	160.5	1.19	327	F	190.0	1.28	373	F	190.9	1.28	377	100
WBT/R	A	6.1	0.46	60	-	B	16.4	0.78	550	C	20.1	0.86	702	C	20.6	0.86	742	-
NBL	D	46.0	0.44	110	150	E	76.4	0.81	202	F	120.0	1.00	227	F	120.0	1.00	277	300
NBT	E	62.0	0.44	153	-	E	62.9	0.53	230	F	146.5	1.14	561	F	146.5	1.14	561	-
NBR	A	6.4	0.32	24	50	B	15.6	0.42	76	B	19.8	0.47	95	B	19.8	0.47	95	50
SBL	D	43.4	0.35	97	100	E	56.1	0.62	160	F	281.4	1.48	303	F	281.4	1.48	280	300
SBT	E	76.3	0.74	209	-	F	84.9	0.87	301	F	550.8	2.14	998	F	550.8	2.14	998	-
SBR	B	11.3	0.60	15	50	F	102.4	1.11	349	F	500.7	2.05	1099	E	65.6	1.00	338	50

## 5.G.vi Additional Sections

Additional analysis, listed below, should be included as required:

1. Safety/Geometric Review
2. Sight Distance Studies
3. Signal Warrant Studies (required whenever a signal is recommended as an improvement)

## 5.H Conclusions and Identified Mitigation

Improvements should be identified that mitigate the site's impact on the transportation network. This includes roadway, active, transit and TDM improvements. Identified improvements should be described. Improvements, cost estimates, and pro-rata share should be provided in tabular format. An example is provided below in *Table 4 - Example Improvements Table*.

*Table 4 - Example Improvements Table*

Location	Improvement	Estimated Cost	Pro-Rata Share (%)	Justification for Pro-Rata	Pro-Rata Cost	Developer Requirement
Street A & Street B	NBL turn lane (200')	\$250,000	18%	NBL turn lane	\$45,000	Construction
	SBR turn lane (100')	\$150,000	16%	SBR turn lane	\$24,000	
	Signal Timing Mod	\$5,000	100%		\$5,000	
Street A	Widen to 4 lane XS	\$800,000	22%	Share of Segment Traffic	\$176,000	
Street B between site and transit stop	Sidewalk connection	\$40,000	N/A	N/A	\$40,000	Construction
Corner of Street B and Street C	Stop Improvements	\$27,800	N/A	N/A	\$27,800	Fee In-lieu

### 5.H.i Pro-Rata

Pro-rata is typically only used for improvements related to vehicle trips. The pro-rata share for improvements can be based on the greater proportional share of site traffic (Pro-rata Share = (site)/(site + forecasted)) in each condition, AM or PM, for impacted movements requiring mitigation.

The calculations used to determine the pro-rata share should also be included in the submittal package. Either planning-level or itemized cost estimates for each improvement must be provided with any supporting documentation.

### 5.H.ii Identifying Improvements for Construction

Developers are expected to fully construct site mitigation measures equivalent to their pro-rata share, as identified in the TIA and agreed upon with the City. The pro-rata cost for improvements identified should be prioritized and pooled to fund the construction of critical improvements. For system improvements not adjacent to the project site, developers are encouraged to construct; when not feasible, developers are expected to fund mitigation measures equivalent to their pro-rata share. The applicant should rely on the analysis and work with ATD to determine the critical improvements for construction.

Improvements should be identified for construction or contribution based on the developer's pro-rata share. In *Table 4 - Example Improvements Table*, above, the pro-rata share for improvements at the intersection of Street A and Street B and along Street A can be consolidated so the developer's responsibility is to construct the turn lane at the intersection.

(\$45,000 + \$24,000 + \$5,000 + \$176,000) Pro-Rata Cost

=

(\$250,000) NBL turn lane for construction

Mitigations shall prioritize network safety, needs, and impacts of the development, feasibility of construction, and any existing improvement projects. When it is not feasible to construct the improvements or if ATD has a proposed project in design, a transportation mitigation fee-in-lieu may be paid to ATD for improvements identified in the TIA.

### 5.H.iii Cost Estimates

Cost estimates for improvements identified in the TIA, for which the applicant is to construct, may be a high level, lump-sum estimate to determine the pro-rata share of needed improvements.

Cost estimates for improvements identified in the TIA, for which the posting of a fee-in-lieu is required, shall be itemized and include all costs reasonably expected to design, permit, and construct said improvements. These include, but are not limited to, the following:

1. Engineering costs
2. Contingency
3. Mobilization costs
4. Right-of-Way preparation
5. Traffic control
6. Concrete and asphalt excavation and addition
7. Traffic signal equipment removal, relocation, and addition
8. Traffic signal re-timing
9. Traffic signs and markings
10. Sidewalks and curb ramps
11. Pavement resurfacing
12. Drainage modifications
13. Right-of-way acquisition

Additionally, the cost estimates for the improvements shall be for the year in which they are intended to be built. The cost for future years must be based on the ENR construction cost index for the past 10 years. In cases where the applicant has been conditioned to construct an improvement, and the ultimate construction cost differs or exceeds the estimated cost of the improvement(s), the obligation will remain, and no cost difference will be conferred to other obligations.

### *5.I Appendices*

Supporting documentation, data, and calculations are to be included in the report appendix.

Sections may include:

1. TIA determination worksheet
2. TIA scoping document
3. Trip Generation
4. Traffic Volumes
5. Traffic Counts
6. Signal Timing Sheets
7. Sample Calculations
8. Cost Estimates
9. Referenced City of Austin Improvement documents/exhibits
10. Signal Warrants
11. Road Sizing Analysis
12. Synchro Outputs Report
13. Exhibits
14. TDM Plan

### *5.J TIA Submittal Requirements*

A complete submittal of the report is required to be accepted for review. To be considered a complete submittal, the following should be provided:

1. A minimum of two (2) hard copies (containing TIA Report and Appendix) should be sent to the Austin Transportation Department for review purposes and Development Services Department for record purposes (one copy to each department). The submittals should be included in a 3-ring binder and have the TIA labeled on the binding.
2. One CD or thumb drive containing:
  - a. An electronic (PDF) copy of the entire TIA (including Appendix);
  - b. Synchro files showing a connected roadway network for all conditions analyzed;
  - c. Conceptual plans or designs of proposed improvements, where applicable;
  - d. Raw count data, in pdf and excel form, separated by intersection for addition to the City's count database.
3. Excel spreadsheets with overall trip generation calculations, internal and pass-by trip capture calculations, site traffic distribution and assignment within the roadway system, and site driveways for each scenario to aid review of the TIA.
4. TIA review fees should be paid before the TIA review begins. The applicant should submit the appropriate TIA review fee based on the City of Austin's fee schedule. The fee schedule can be found on the ATD Transportation Development Services website.



5. The applicant's consultant should contact any other appropriate agencies (e.g. TxDOT, Travis County, etc.) for their submission requirements. Please note an incomplete TIA will not be reviewed. The applicant is tasked with providing all necessary and required information at the time of submittal for a permit. Incomplete submittals will be returned for completion.

## 6. Projects Not Warranting a TIA

### *6.A Mitigations*

For a project or development for which a TIA is not required, the applicant must mitigate for adverse effects related to the traffic generated by the proposed development and/or provide improvements to address safety and connectivity issues. Adverse effects, defined as degradation in safety or operations on network roadways, can be mitigated through system improvements. Per Land Development Code, Section 25-6-101, improvements are limited to the following:

1. Sidewalks and curb ramps
2. Traffic signs, markings, and upgrades to signal infrastructure
3. Traffic calming devices
4. Bicycle lanes or upgrades to bicycle facilities
5. Rectangular rapid flashing beacons
6. Pedestrian refuge islands
7. Pedestrian hybrid beacons
8. Shared use path or urban trail improvements
9. Improved accessibility to transit facilities
10. Right-of-way dedications
11. Measures to shift transportation demand from vehicular to other modes (Transportation Demand Management) or limit transportation demand

### *6.B Mitigation Location*

Required system improvements will be focused on the transportation system around the proposed development and within the boundaries of the site. Impacts from the development may require system improvements outside the boundaries of the site, but system improvements may not be farther from the proposed development than:

1. one-quarter mile; or
2. three-fourths of a mile, for an improvement required to provide access between the proposed development and a school, bus stop, public space, or major roadway as determined in the transportation plan.

## Appendix A – TIA Determination Worksheet

# Traffic Impact Analysis (TIA) Determination Worksheet

Applicant must complete this worksheet.

Project Name: \_\_\_\_\_

Location: \_\_\_\_\_

Applicant: \_\_\_\_\_ Telephone No: \_\_\_\_\_

Application Status: ☐ Development Assessment ☐ Zoning ☐ Site Plan

## EXISTING:

## FOR OFFICE USE ONLY

Tract Number	Tract Acres	Bldg. Sq. Ft.	Zoning	Land Use	I.T.E. Code	Trip Rate	Trips Per Day

## PROPOSED:

## FOR OFFICE USE ONLY

Tract Number	Tract Acres	Bldg. Sq. Ft.	Zoning	Land Use	I.T.E. Code	Trip Rate	Trips Per Day

## ABUTTING ROADWAYS:

## FOR OFFICE USE ONLY

Street Name	Proposed Access?	Pavement Width	Classification

## FOR OFFICE USE ONLY

- ☐ A traffic impact analysis is required. The consultant preparing the study must meet with a Transportation planner to discuss the scope and requirements of the study before beginning the study.
- ☐ A traffic impact analysis is NOT required. The traffic generated by the proposal does not exceed the thresholds established in the City of Austin Land Development Code.
- ☐ The traffic impact analysis has been waived for the following reason:  
\_\_\_\_\_  
\_\_\_\_\_
- ☐ A neighborhood traffic analysis will be performed by the City for this project. The applicant may have to collect existing traffic counts. See a Transportation planner for information.

Reviewed By: \_\_\_\_\_ Date: \_\_\_\_\_

Distribution: ☐ File ☐ Cap. Metro ☐ TxDOT ☐ DSD ☐ Travis Co. ☐ ATD Total Copies: \_\_\_\_\_

*NOTE: A TIA Determination must be made prior to submittal of any Zoning or Site Plan application, therefore, this completed and reviewed worksheet MUST ACCOMPANY any subsequent application for the IDENTICAL project. CHANGES to the proposed project will REQUIRE a new TIA Determination.*

## Appendix B – TIA Scope Template



## TRANSPORTATION IMPACT ANALYSIS SCOPE OF WORK

The scope must be approved prior to formal submittal of a Transportation Impact Analysis (TIA) Report. This scope acknowledges that the TIA for the following Project will be prepared in accordance with the latest version of Transportation Criteria Manual and the City of Austin's TIA Guidelines.

Date: August 27, 2019

Case # (If assigned): \_\_\_\_\_

### Contact Information

➤ **Applicant's Consultant:**

\_\_\_\_\_  
Engineer's Name (Organization/Company)

Contact:

Email: [abc@xyz.com](mailto:abc@xyz.com)

Phone: (xxx) xxx – xxxx

➤ **Applicant:**

Contact:

Email: [abc@xyz.com](mailto:abc@xyz.com)

Phone: (xxx) xxx – xxxx

### I. Project Information

1. Project Name: \_\_\_\_\_
2. Project Address: \_\_\_\_\_
3. Project Jurisdiction(s): ☐ City of Austin ☐ Other: Enter Applicable City/County/TXDOT
4. Project Description: \_\_\_\_\_
5. Submission Type: ☐ Site Plan ☐ Zoning ☐ Rezoning ☐ PUD ☐ Other - \_\_\_\_\_
6. Site Zoning Code (Districts): \_\_\_\_\_

### II. Project Details

1. Proposed Land Use:  
☐ Residential ☐ Commercial ☐ Mixed Use ☐ Other \_\_\_\_\_

2. Site Context:

	Site Context	Max TDM Reduction	Target TDM Reduction
<input type="checkbox"/>	City Core	50%	40%
<input type="checkbox"/>	Urban Core	35%	25%
<input type="checkbox"/>	Urban	30%	20%
<input type="checkbox"/>	Suburban	10%	10%
<input type="checkbox"/>	Other		

3. Trip Projection: ☐ ITE Trip Generation Manual, 10th Edition ☐ Other - \_\_\_\_\_  
Total Daily Trips<sup>1</sup>: Trips/Day      Total AM Peak Hour: Trips/Hour      Total PM Peak Hour: Trips/Hour
4. Existing Year: \_\_\_\_\_      Buildout Year: \_\_\_\_\_

<sup>1</sup> Unadjusted Trips

5. Project to be developed in phases? ☐ Yes ☐ No

If yes, please provide an attachment with the proposed land use and trip generation by phase.

### III. Study Requirements

1. Study Type: ☐ Standard TIA ☐ Alternate TIA
  - a. Sections IV.1-IV.4 are not required with an Alternate TIA.
2. Applicable Long-range Transportation Programs/Plans/Studies: (List adopted comprehensive plans and public infrastructure improvement projects applicable to this site)
  - a. Austin Strategic Mobility Plan (ASMP)
  - b. Imagine Austin Comprehensive Plan
  - c. *List applicable corridor plans*
3. Transportation Demand Management Proposed (*Attachment A*): ☐ Yes ☐ No
  - a. Sustainable Modes Analysis: ☐ Required ☐ Not Required
    - i. Study Area: (Define study corridors, boundary streets, or radius)
4. Signal Warrant Studies: Required for all proposed signal locations.
5. Safety and Geometric Review: Required for all site driveways and new roadway connections.
6. Access Management Analysis: ☐ Required ☐ Not Required
  - a. Queueing Analysis: ☐ Required ☐ Not Required

### IV. Study Assumptions

1. **Annual Traffic Growth Rate:** \_\_\_\_\_ %

List all the sources used for the calculation below and provide calculations in an attachment.

- *Source #1*

2. **Related Background Projects**

The following related projects are to be included for background traffic calculations.

Project Name	Permit Number
Background Project 1	SP-2018-XXXXX
Background Project 2	SP-2017-XXXXX
Background Project 3	SP-2016-XXXXX

3. **Trip Distribution**

Provide maps in both Excel file and PDF file (aerial view) showing Project trips distribution and percentages (inbound/outbound for both AM/PM peak hours) at the project driveways, study intersections and freeways as an attachment(s). The maps must be included in the TIA and pre-approved by Transportation

Development Services Division at ATD<sup>2</sup> with the TIA scope. The maps may be subject to change after conducting thorough traffic counts at the study intersections.

**4. Study Intersections and Road Sizing Segments**

To select the study intersections for TIA, the criteria mentioned in the section 4.G of TIA guidelines should be followed

a. List the study intersections below:

1. <i>All Site Driveways</i>	2.
3.	4.
5.	6.
7.	8.
9.	10.

b. List the roadway segments for road sizing analysis below:

1.
2.
3.
4.

**5. Project Trips Details**

Attach a detailed trip generation table including a description of the proposed land uses for *each of the phases*, ITE rates, estimated AM & PM peak hour volumes (ins/outs/totals), proposed trip reductions, etc. Summarize the overall trip generation in the table below.

<sup>2</sup> Austin Transportation Department (ATD)

### Land Use Specific Trips Summary

ITE Land Use Type and Land Use Code	Trip Rate	Units	Daily Trips	AM Peak Trips	PM Peak Trips	Internal Trips (PM Peak)		Pass-By Trips (PM Peak)	
						_____		_____	
						_____%		_____%	
						_____		_____	
						_____%		_____%	
						_____		_____	
						_____%		_____%	
						_____		_____	
						_____%		_____%	
<b>Total Unadjusted Trips</b>			_____	_____	_____				
<b><i>TDM</i></b>		_____%		_____	_____				
<b><i>Existing Trips</i></b>				_____	_____				
<b>Total Adjusted Trips</b>				_____	_____				

**6. List any other additional items, concerns, or comments**

a.



V. TIA Report Submittal Requirements

1. One - hard and soft copy (CD/USB flash drive recommended) must be sent to following each of the following agencies:
- **Transportation Development Services Division (For Review Purpose)**  
**Austin Transportation Department (ATD)**  
901 S. MoPac Expressway, Building 5, Suite 300, Austin, TX 78746
  - **Development Services Division (DSD) (For Record Purpose)**  
One Texas Center, 505 Barton Springs Road, 4th Floor, Austin, TX 78704
  - *List applicable jurisdictional agencies whose roadways are expected to be impacted by the Project.*

This TIA Scope is based upon the TIA requirement identified in the TIA Determination Worksheet dated [Click or tap to enter a date.](#).. Any change to the assumptions made in the scope is subject to approval by Transportation Development Services Division at ATD.

The applicant confirms that all the documents, reports and files strictly adhere with submittal requirements of TIA Scope and TIA Report Guidelines published by the Transportation Development Services Division at ATD.

**SIGNED:** \_\_\_\_\_  
**(ATD Transportation Development Engineer)** \_\_\_\_\_, P.E. [Click to enter a date.](#)

**SIGNED:** \_\_\_\_\_  
**(Applicant)** \_\_\_\_\_, P.E. [Click to enter a date.](#)

**TIA Scope – Checklist**

*(Items To be attached to scope by Applicant)*

1) Signed TIA Determination Worksheet	<input type="checkbox"/> Yes	<input type="checkbox"/> N/A
2) Detailed phases of the development (II.5)	<input type="checkbox"/> Yes	<input type="checkbox"/> N/A
3) Project site plan/area map	<input type="checkbox"/> Yes	<input type="checkbox"/> N/A
4) Traffic growth rate calculations sheet (IV.1)	<input type="checkbox"/> Yes	<input type="checkbox"/> N/A
5) Map of study intersections (IV.3)	<input type="checkbox"/> Yes	<input type="checkbox"/> N/A
6) Trip distribution and assignment (IV.3)	<input type="checkbox"/> Yes	<input type="checkbox"/> N/A
7) Trip generation calculations sheet (IV.5)	<input type="checkbox"/> Yes	<input type="checkbox"/> N/A
8) Identify TDM Measures (Attachment A)	<input type="checkbox"/> Yes	<input type="checkbox"/> N/A

# TRANSPORTATION IMPACT ANALYSIS SCOPE OF WORK

## Attachment A – Transportation Demand Management

**Date:** August 27, 2019

**Case # (If assigned):** \_\_\_\_\_

*At TDM Reduction target of \_\_\_\_% is proposed. TDM reductions equate to a vehicle trip reduction below the approved ITE land use code and associated trip generation, and do not necessary represent mode split.*

Required TDM reduction:

	Site Context	Max TDM Reduction	Target TDM Reduction
<input type="checkbox"/>	City Core	50%	40%
<input type="checkbox"/>	Urban Core	35%	25%
<input type="checkbox"/>	Urban	30%	20%
<input type="checkbox"/>	Suburban	10%	10%

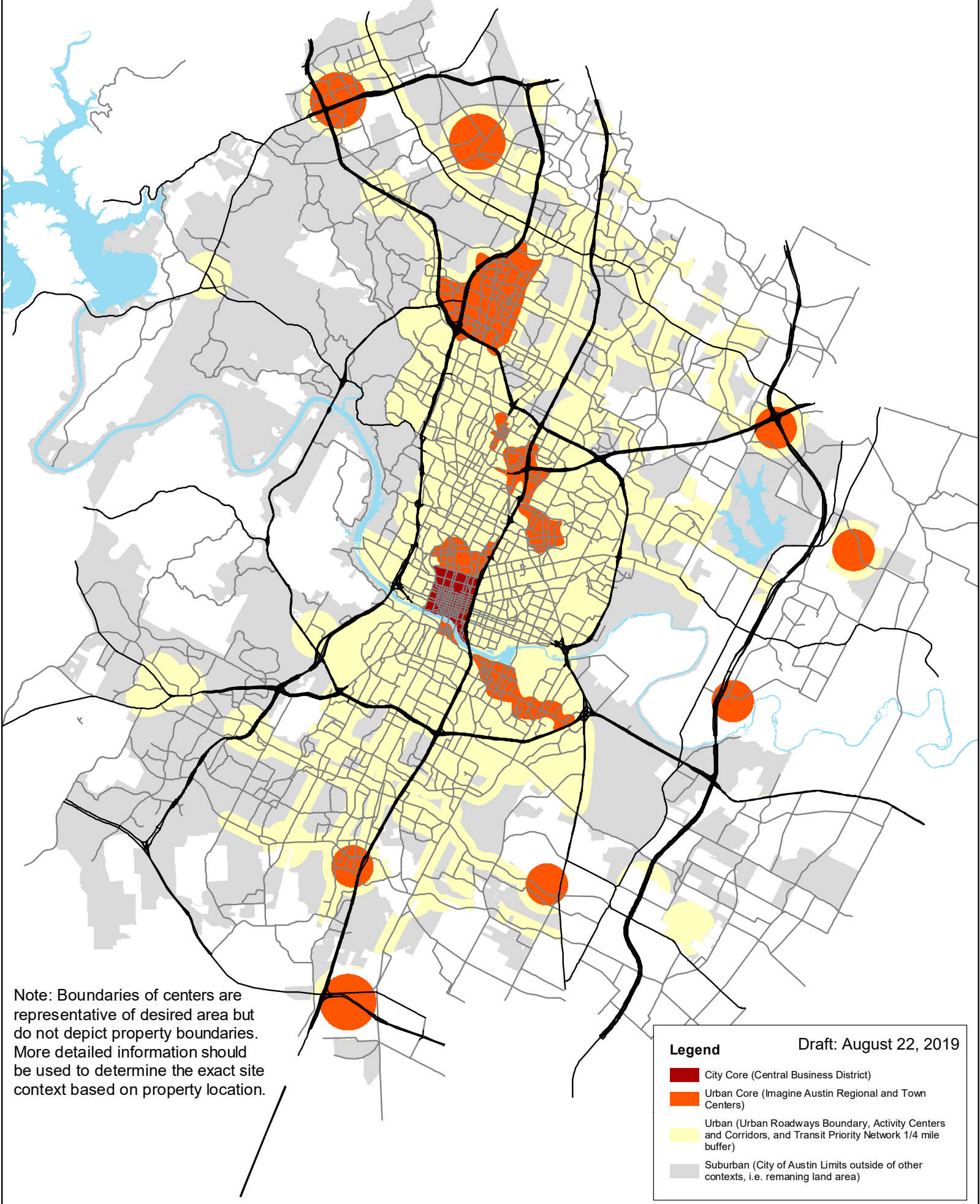
*Select proposed TDM strategies from the following list. Additional information and TDM measures can be found on the future City of Austin's TDM website.*

	TDM Measure	CC	UC	U	S
<input type="checkbox"/>	Sustainable Modes Analysis	20%	12%	10%	5%
<input type="checkbox"/>	Contributions for Sustainable Transportation	10%	8%	7%	5%
<input type="checkbox"/>	Bicycle Parking	0.5%	0.5%	0.5%	0.5%
<input type="checkbox"/>	Showers & Lockers	0.5%	0.5%	0.5%	0.5%
<input type="checkbox"/>	Bike Share Membership	0.5%	0.5%	0.5%	0.5%
<input type="checkbox"/>	Bike Share Station	0.5%	0.5%	0.5%	0.5%
<input type="checkbox"/>	Bicycle Repair Station	0.5%	0.5%	0.5%	0.5%
<input type="checkbox"/>	Bicycle Maintenance Services	0.5%	0.5%	0.5%	0.5%
<input type="checkbox"/>	Fleet of Bicycles	0.5%	0.5%	0.5%	0.5%
<input type="checkbox"/>	Car Share Parking	1%	1%	1%	1%
<input type="checkbox"/>	Car Share Membership	1%	1%	1%	1%
<input type="checkbox"/>	Carpool Program	10%	8%	7%	5%
<input type="checkbox"/>	Shuttle Bus Service	Up to 7%			
<input type="checkbox"/>	Vanpool Program	Up to 7%			
<input type="checkbox"/>	Multimodal Wayfinding Signage	1%	1%	1%	1%
<input type="checkbox"/>	Real Time Transportation Information Displays	1%	1%	1%	1%
<input type="checkbox"/>	On-site Affordable Housing	1%	1%	1%	1%
<input type="checkbox"/>	Unbundled Parking	6%	6%	6%	6%

	<b>TDM Measure</b>	<b>CC</b>	<b>UC</b>	<b>U</b>	<b>S</b>
<input type="checkbox"/>	Short Term Daily Parking Provision	10%	8%	7%	3%
<input type="checkbox"/>	Peak Period Pricing	10%	8%	7%	3%
<input type="checkbox"/>	Priced Parking	10%	8%	7%	3%
<input type="checkbox"/>	Parking Cash Out: Non-residential Tenants	5%	4%	3%	2%
<input type="checkbox"/>	Parking Supply (Reduction = 25% * [ (LDC parking reduction) (max 12.5%)])				
<input type="checkbox"/>	TDM Coordinator	1%	1%	1%	1%
<input type="checkbox"/>	Telecommuting	2%	2%	2%	2%
<input type="checkbox"/>	TMA Membership	1%	1%	1%	1%
<b>Total (reductions are additive)</b>					

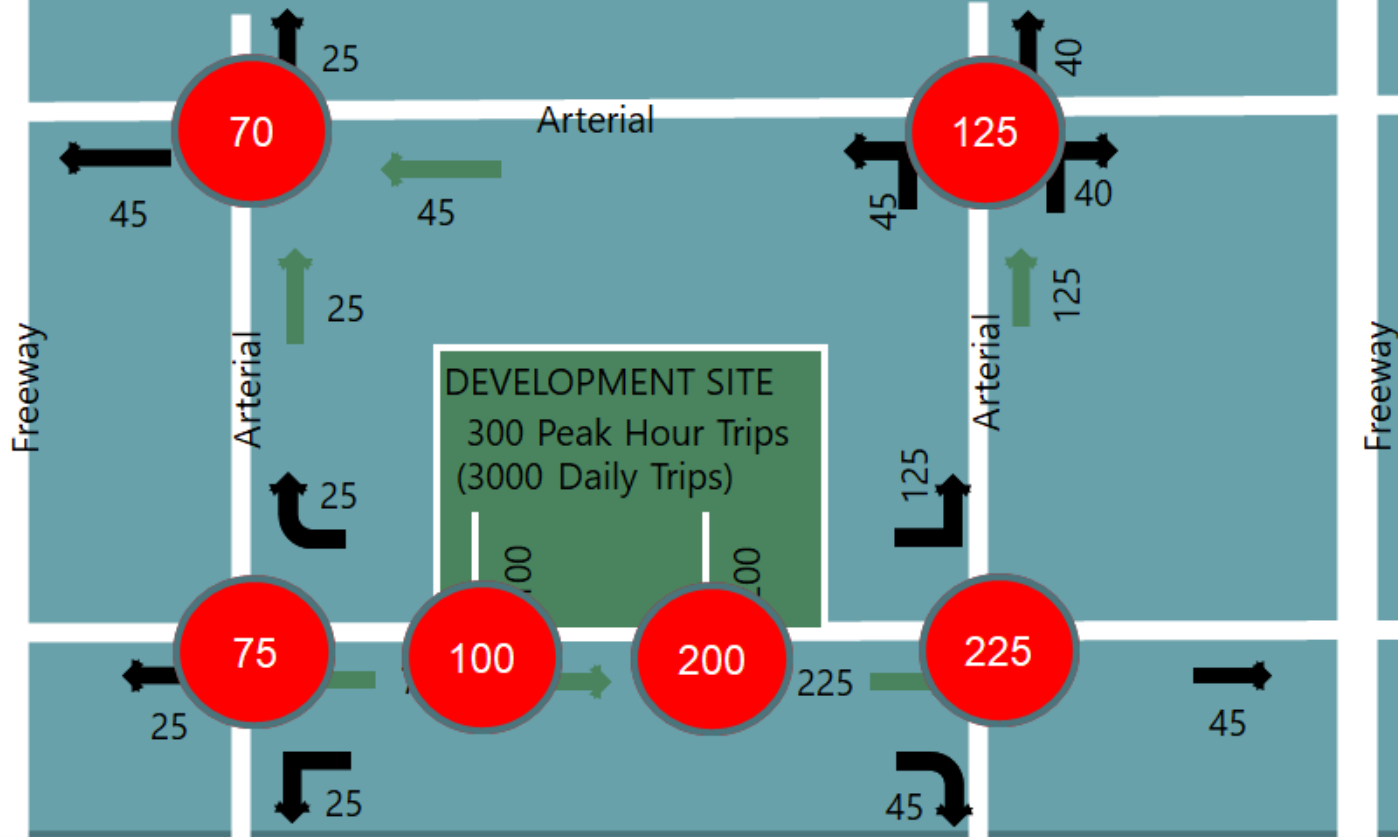
## Appendix C – Transportation Development Site Context

# Transportation Development Site Context Map

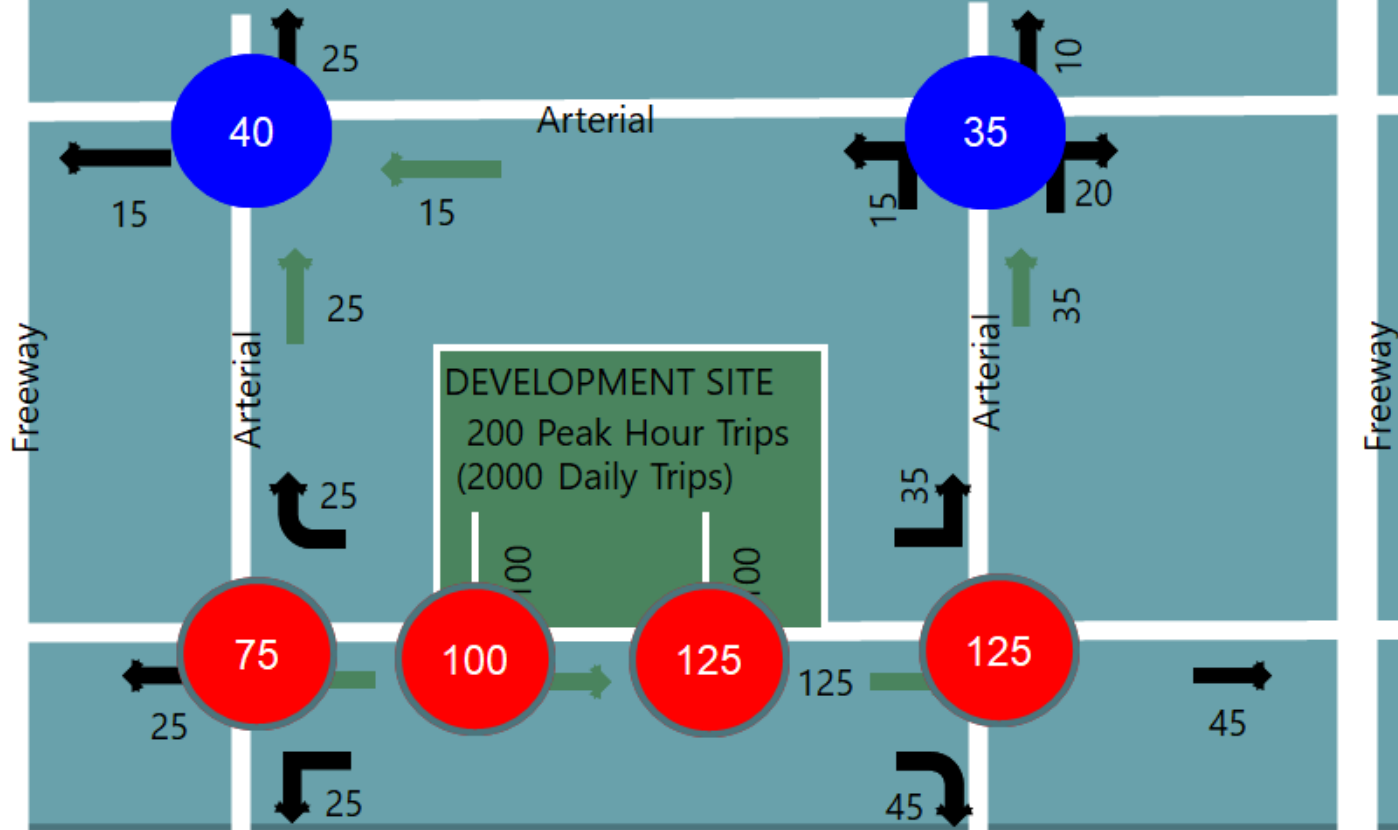


## Appendix D – Trip Distribution Example

# *Determining Study Area of a TIA*



# *Determining Study Area of a TIA*





# Determining Study Area of a TIA

