Nashville Department of Transportation and Multimodal Infrastructure

# Traffic Impact Study (TIS) Guideline Update – Existing Assessment Report

February 2023

# Contents

# 1 Executive Summary

As part of the review and analysis of the Nashville Department of Transportation's (NDOT) existing guidelines and processes, internal and external stakeholders were invited to provide feedback of the current Traffic Impact Study (TIS) Requirements. The internal stakeholders included NDOT and Metro Nashville staff, while external stakeholders included traffic consultants, Metro employees, and private developers. Although both groups attended separate meetings, both resonated the same key issues and concerns with the current guidelines regarding the technical requirements of the current TIS. Some of those concerns were a lack of representation regarding new geographical and land use changes that affect TIS analysis, a lack of cohesiveness between the current TIS requirements and current best practices, and a lack of cohesiveness between updated city planning requirements and TIS requirements. Another dominant concern that was raised by stakeholders was related to process. Specifically, greater accessibility to documents and data and improved communication channels.

In preparation for the full guideline update, four peer cities were chosen for evaluation of their current development review requirements and procedures. The four cities, Austin, Seattle, San José, and Washington D.C. were chosen for their modern and robust guidance on development review and aspirations to create a multi-modal transportation system, in keeping with Nashville's own ambition. Each peer city's technical requirements and processes were evaluated. The evaluation provided insight into current best practices that could be incorporated into Nashville's TIS update. Some of the key takeaways from the peer city review included systems to measure TDM effectives, alternative metrics for measuring development impact and streamlined processes to obtain and track the construction of transportation improvements.

This assessment serves as a summary of the stakeholder engagement and research conducted by the project team. The information and conclusions found in this document are meant to serve as a foundation for the forthcoming TIS Guideline update.

# 2 Introduction

The Nashville Department of Transportation's (NDOT) Traffic Impact Study (TIS) Guidelines were last updated in 2004. In late 2022, NDOT contracted with Arcadis to complete a full update of the guidelines with the goals of improving the multimodal elements, bringing in the latest technical best practices, and streamlining the submittal and review process. Additionally, the revised guidelines are expected to clarify expectations as they relate to developer improvements and contributions.

The initial step in the update process was to complete a comprehensive review of the existing guidelines, conduct stakeholder meetings and interviews, and complete a peer review of cities with similar transportation aspirations as Nashville. This document serves as a summary of the existing assessment and includes findings from the consultant team's review of the existing guidelines and processes, summaries of internal and external stakeholder feedback, and the key takeaways from the peer city review.

# 3 NDOT Review

## 3.1 TECHNICAL REQUIREMENTS: STAKEHOLDER FEEDBACK

The TIS development and review process is not something that is done in a vacuum. While the 2004 TIS Guidelines focused mainly on roadway vehicular traffic, the elements of modern-day documents impact multiple groups within NDOT and Metro Nashville. To gain a better understanding of the deficiencies of the existing guidelines, numerous formal meetings and informal discussions were conducted with NDOT and Metro Nashville staff. The results of that

feedback generally fell within four areas: modes covered, geographic application, modernization of techniques, and developer recommended improvement guidelines. The following sections discuss each of these general areas in more detail.

## 3.1.1 INTERNAL STAKEHOLDER FEEDBACK

- **Modes Covered:** One of the most frequent comments from internal stakeholders was the lack of guidance or discussion of alternative modes in the existing guidelines. Currently, the technical requirements only cover vehicular mode of transit and specifically focus on intersection capacity such as LOS. However, as Nashville has grown so has its usage of other modes of transit such as pedestrian and bicycling. For example, in 2022 NDOT published the WalknBike blueprint for the expedited project delivery of pedestrian and bicycle projects. However, the current TIS requirements do not incorporate the findings of the WalknBike blueprint. In addition, the current guidelines do not address alternative mode reduction nor are any guidelines given for reasonable percentage based on the study area. Stakeholders also noted that the threshold for triggering a TDM plan is too high, and some measures are no longer applicable.
- **Geographical Adaptability:** At the internal stakeholder meeting it was addressed that the city of Nashville has grown substantially since the 2000's, but that the existing guidelines do not reflect those changes. For example, the existing guidelines carved out an exception for inner loop properties. The city is no longer an inner loop versus the rest of the city. Instead, the city has transitioned from an inner loop to suburban. The shift in geography is no longer binary but a gradient. Due to change in land use, LOS analysis is not reasonable, specifically, intersection LOS D threshold is not reasonable for most areas. The stakeholders suggested that the existing thresholds need to be based on area type and existing infrastructure operations.
- **Developer Improvement Guidelines:** Another frequent comment that was raised at the internal stakeholder meeting was how to improve developer guidelines. Stakeholders agreed that there is a need for a more structured way of identifying implementable and developer improvements or contributions. There is also a need to justify/support developer contribution requests. Currently this process is very subjective which makes it difficult to defend or apply consistently to different developments. Stakeholders also commented that that there is a need to incorporate all existing plans into the guidelines so that developers can consider the recommendations of existing plans.
- **Modernization of Techniques:** The stakeholders concluded that the current guidelines reflect tools and practices from the early 2000's. For example, below are a few tools and practices that are out of date that were taken from the current TIS guidelines:
    - Commitment to participate in an existing or future Transportation Management Association
    - Funding and/or staffing of Transportation Coordinator positions for employers
    - Carpool incentive and parking space limitation to free parking and parking subsidies

    These tools and practices focus on vehicular mode of transportation or are no longer in use. Stakeholders suggested that there is a need for the guidelines to be updated and include tools that are more wholistic for all transportation modes and reflect the current state of the practice.

## 3.1.2 EXTERNAL STAKEHOLDER FEEDBACK

As part of the review and analysis of NDOT'S existing guidelines and processes, external stakeholders were invited in January 2023 to provide feedback of the current TIS requirements. Stakeholders included in the meeting were traffic consultants, Metro employees, and private developers. The stakeholders identified issues within the required expectations of the technical Analysis, geographical differences, and traffic demand management.

- **Technical Analysis:** During the meeting stakeholders were asked specific questions about the current expectations of the technical analysis portion of the TIS. The questions focused on the reliability of performance analysis, such as Level of Service (LOS), the existing study thresholds for TIS, and how well vehicular traffic issues are addressed in the current TIS process. The stakeholders suggested that there were no clear expectations and that the TIS technical analysis requirements needed to be updated to include a clear expectation of acceptable LOS.
    - **Geographical Differences:** Many stakeholders also voiced frustration with perceived changes in requirements regarding different geographical locations. Although there were no specific questions concerning how geographical differences such as urban/suburban areas affected the existing TIS, the stakeholders discussed how the lack of clarity for these differences affected the execution of the TIS. Many stakeholder participants suggested that studies conducted in more densely populated areas of Davidson County should focus on alternative travel modes, safety, and upgrading deficient infrastructure, while studies conducted in suburban areas should continue to maintain traditional TIS elements, such as vehicular throughput performance measures. Suburban developments should incorporate multi-modal themes when the area can gain tangible connectivity, access, or safety benefits. The “one-size fits all” approach to the current technical requirements should instead be replaced by a more versatile system. This may include location-based requirements forStudy type (including supplementary studies such as safety, multi-modal, corridor, road diet)
    - Study size
    - Vehicular analysis
    - Multi-modal analysis
    - Anticipated improvement types**Traffic Demand Management:** Stakeholders were also asked specific questions regarding traffic demand management such as what obstacles are common in implementing a strong TDM plan and how NDOT encourages TDM coordination across stakeholders. Additionally, stakeholders were asked questions regarding pedestrian, bicycling, and transit. Stakeholders responded by stating that clear expectations needed to be provided for all analyses and recommendations relevant to TDM and multi-modal initiatives. To reduce confusion, multi-modal requirements should be adaptable to the needs of specific area type.

## 3.1.3 TAKEAWAYS: NDOT TECHNICAL REQUIREMENTS REVIEW

The internal and external stakeholder meetings highlighted many issues with the current technical review process. One of the key issues that both stakeholder groups discussed were that the current guidelines do not address the geographical or land use changes that the city of Nashville has experienced. By failing to address these changes, developers are unable to provide an accurate TIS analysis.

Another key issue that both stakeholder groups discussed was that the current guidelines do not reflect the updated practices in TIS development. The current guidelines focus on vehicular mode of transportation and fail to include alternative modes. By failing to include other modes of transit, the current guidelines are not compatible with other city planning documents that have been recently adopted, and developers are unable to fulfill TIS requirements and new city planning guidelines.

Finally, both stakeholder groups agreed that the lack of compatibility between the current guidelines, new TIS practices, and new planning concepts, creates a situation in which developers and NDOT are unable to provide consistent feedback to all developers.

Both internal and external stakeholders highlighted that there is a need to update the current guidelines, but to also a need to provide comprehensive guidelines that includes updated TIS requirements and new city planning

concepts and requirements. By providing a comprehensive guideline all developers will be given similar feedback regardless of the project type.

## 3.2 PROCESS: STAKEHOLDER FEEDBACK

Stakeholder feedback was sought out to address a broad range of topics related to the existing process.

### 3.2.1 INTERNAL STAKEHOLDER FEEDBACK

The internal stakeholder comments can generally be categorized into four areas: Accessibility and Communication, Trip Reductions, Scoping, and Adaptability.

- **Greater Accessibility and Improved Communication:** Internal stakeholders felt additional opportunities were needed to provide accessibility to NDOT forms and other documents. There had been feedback from applicants that these forms and documents are often not easily accessible. Internal stakeholders felt electronically linking these forms and documents by utilizing software such as Microsoft Form would be beneficial. Common forms requested by applicants include Form A, Form B, and others such as speeding and parking.

  Additionally, there should be an electronic link to the TIS form. The TIS form would ideally be revised to include summary details for applicants to fill out to allow staff to input their information into NDOT's internal tracking system.

  Internal stakeholders felt that NDOT needed to communicate more effectively their submittal requirements, which if done correctly by applicants, would result in a more streamlined process of their review. Common submittal omissions from applicants include:

  - Unofficial or not stamped (by a registered professional) TIS reports.
  - Studies missing sections (i.e., multi-modal, access, LOS, access, queueing sections)
  - Clearer set of expectations related to the maximum number of years applicants can pull traffic counts.

- **Appropriate Daily Trip Reductions:** The TIS Guidelines do permit certain reductions for ridesharing, transit use, and complementary land uses; however, internal stakeholders felt the need to provide a clearer set of expectations related to which reductions are appropriate. Specifically, applicants should consult with NDOT about reductions they intend to apply prior to the analysis of a traffic study. Internal stakeholders felt that introducing a request form for alternative reductions may provide clarity to both staff and applicants.

- **Updated TIS Scoping:** Internal stakeholders felt that TIS scoping guidelines needed to be updated to communicate effectively to applicants what would be permitted. They felt that there needed to be a requirement of a new TIS/scope if the previous study was completed more than five years before the subject development is completed. Other instances of when a new scope should be required include a change in land use and/or trip generation increases.

  There should also be an allowance for the Traffic Engineer to request revisions to traffic studies. This request could be based on failure to include all required materials, insufficient information, or other reasons the Traffic Engineer may find cause for.

  Lastly, clearer guidance needs to be issued on TIS waivers. Specifically, when it is and when it is not appropriate to issue them.

- **Greater Adaptability:** There was a strong desire by internal stakeholders to allow staff to be adaptable in their approach to individual developments. For instance, requiring applicants to provide additional studies as part of

their overall transportation analysis. These studies could include road diet studies, or multi-modal studies depending on if there was a specific need based on the demands of the development.

## 3.2.2 EXTERNAL STAKEHOLDER FEEDBACK

Participants at the January 2023 stakeholder meeting provided the following feedback related to data access, integration of existing tools, and the review process.

- **Transparency and Access to Data:** External stakeholders indicated that improved review process transparency and greater access to relevant data would substantially improve stakeholder experience. Other desired resources identified during the stakeholder meeting include the following:
    - Access to existing and planned development information
    - Safety data
    - Planned NDOT projects
    - Traffic count data
    - Traffic performance data
- **Review Speed and Reliability:** External stakeholders believe that there continues to be delays in review time of projects, and that miscommunication is a contributing factor. They believe that without a reliable and consistent review timeframe, they will have issues managing client expectations and avoiding delays. For example, stakeholders would rather know that all reviews take two months, instead of review times ranging from one to three months. Other elements of the review process that were frequently brought up as items that can be improved:
    - General communication (E-mail)
    - Meetings
    - Feedback and comments
    - Coordination across Metro Departments
    - Synchronization with Metro Planning Commission
- **Integration of Current Tools and Guidance:** One of the items that were mentioned when discussing TDMs and other modes of transportation with external stakeholders was the integration of existing tools and guidance. They felt that there needed to be clearer expectations provided for all analysis and recommendations that are relevant to TDM and multi-modal initiatives. Participants felt that third-party TDM guidance should be utilized to educate stakeholders on potential TDM strategies and incentivize implementation. Additionally, they felt NDOT should better leverage their existing tools.

## 3.2.3 TAKEAWAYS: NDOT PROCESS REVIEW

Greater accessibility to data and documents and improved communication were prevailing items raised amongst internal and external stakeholders. From an internal standpoint, there was a desire to make forms and documents more readily accessible via electronic means, responding to applicants' concern that they were often not easily able to locate them. There also seemed to be mutual demand by both groups for access to data. On the external side, the demand was more centered on gathering data for existing and planned developments to provide the most accurate information in their traffic studies. On the internal side, the demand was more related to collecting summary

details of projects that could be input into NDOT's tracker system. This would provide another outlet for applicants to collect data for their analysis.

Internal and external stakeholders diverged with respect to what they felt was not being communicated directly. On the external side, lack of communication centered around the timing of the review process of applications. On the internal side, communication deficiencies centered around a clearer set of expectations for applicants on submittal requirements and appropriate data to use when creating traffic reports. Bridging this divergence would help solve both concerns raised by stakeholders and ensure a more streamlined review.

# 4 Peer City Review

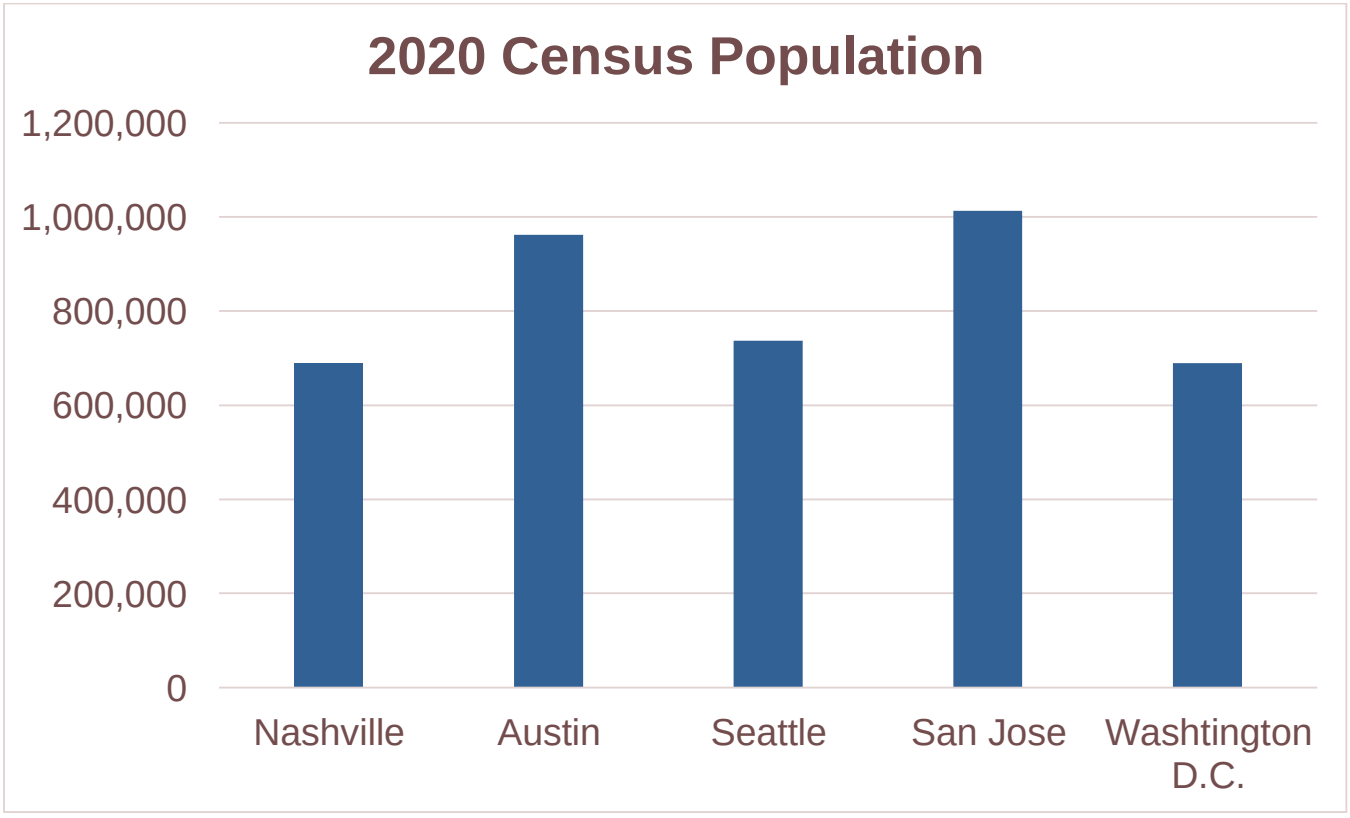
The transportation review processes of four peer cities were assessed in preparation for NDOT's TIS Guidelines update.

## 4.1 CITY SELECTION

Austin, Seattle, San José, and Washington D.C. were chosen for their modern transportation review programs and similar multi-modal ambitions.

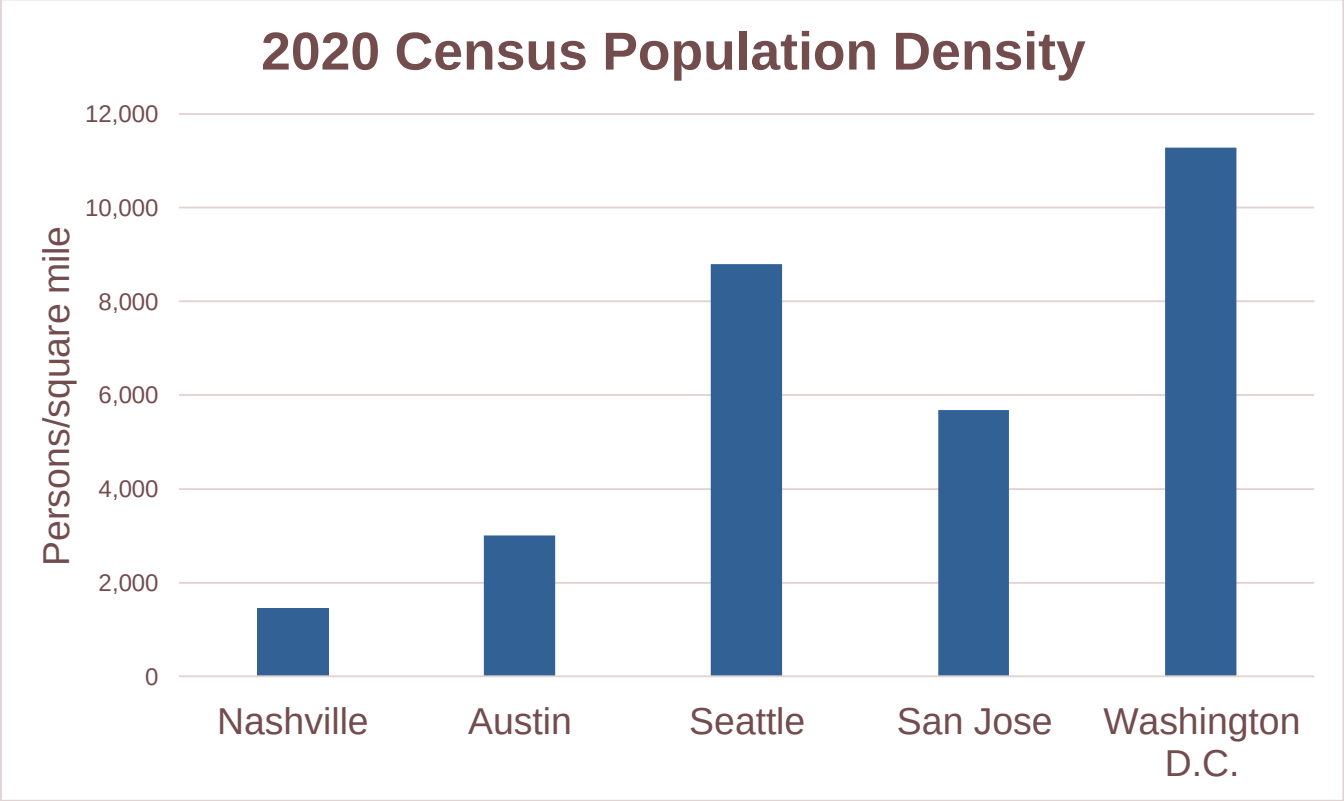
In comparison to each peer city, Nashville has the lowest 2020 census population, shown in the chart below.

**Figure 1: 2020 Census Population of Peer Cities vs Nashville**



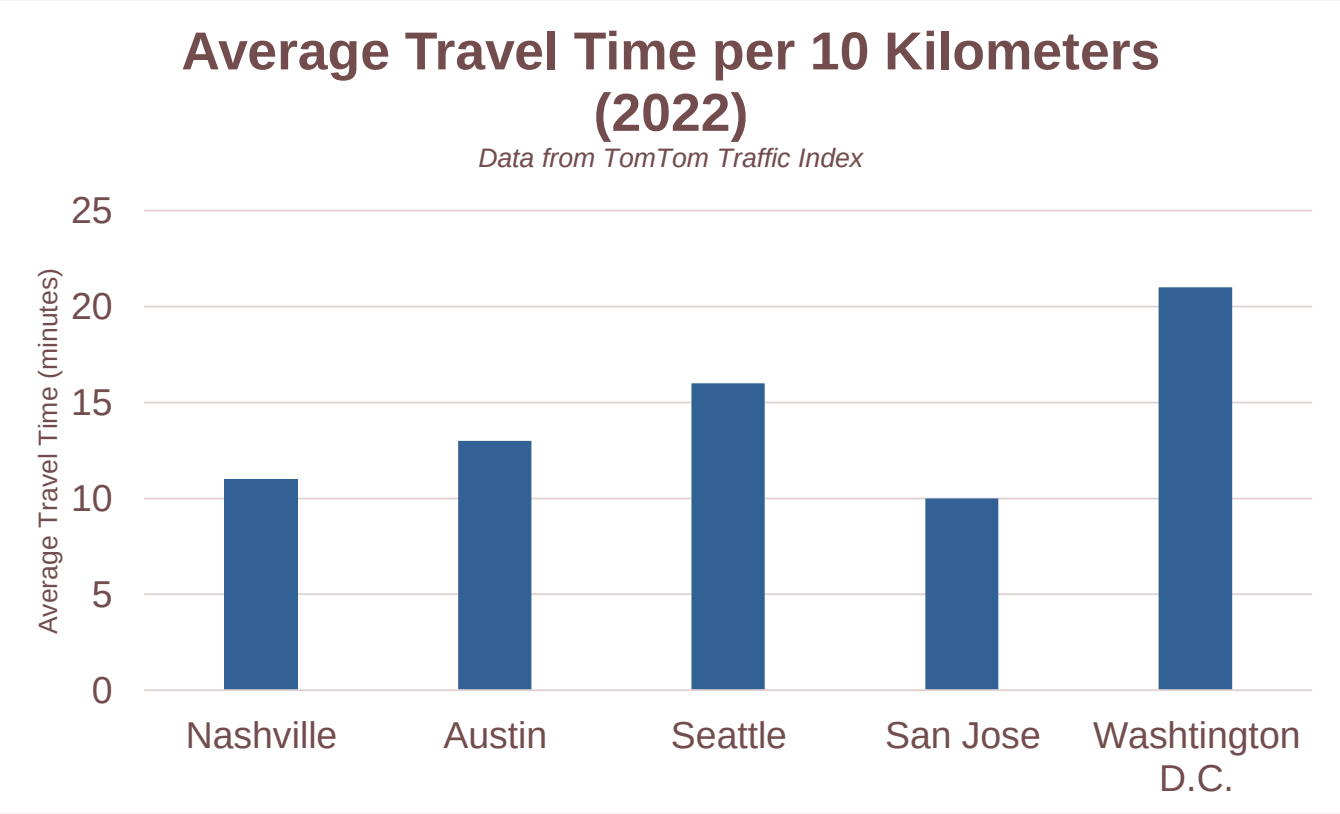
A comparison of the city's population densities is more extreme. Nashville's population density, per the 2020 census, is 1,449 persons per square mile. Austin, San José, and Seattle each get progressively denser, with Washington D.C. experiencing the densest population of 11,286 persons per square mile. Assessing cities with a greater population density allowed for the evaluation of multi-modal transportation systems that are a necessity of a dense urban landscape.

**Figure 2: 2020 Census Population Density of Peer Cities vs Nashville**



Data from TomTom was leveraged to confirm that each peer city experiences the same congestion issues as Nashville. It is these issues that underline the common objective of building a more multi-modal transportation network less reliant on single occupancy vehicles. The graph below shows the average time it takes to travel 10 kilometers in each city.

**Figure 3: Average Travel Time per 10 Kilometers of Peer Cities vs Nashville**




Austin, San José, Seattle, and Washington D.C. are all equipped with modern transportation review programs designed to create a transportation network for safe and efficient multi-modal mobility. Each program has its own strengths from which NDOT can learn from and incorporate into the forthcoming TIS Guidelines update.

## 4.2 AUSTIN

### 4.2.1 GOALS

The stated purpose of transportation studies submitted to the Austin Transportation Development Services (TDS), per their Transportation Impact Analysis Guidelines, is threefold:

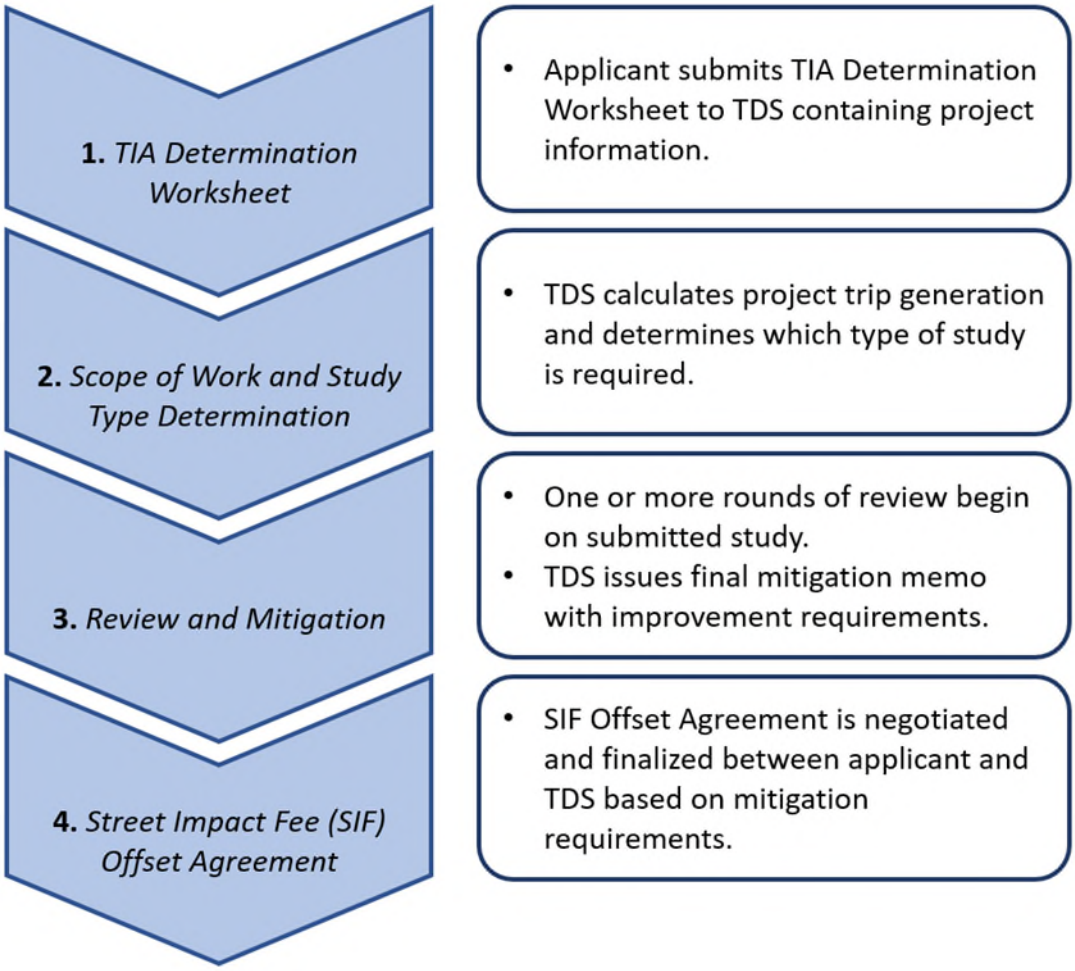
- Understand existing and proposed transportation conditions around the development.
- Provide recommendations to mitigate adverse impacts caused by the development.
- Demonstrate that the development meets the transportation goals established by City-adopted plans (i.e., Austin Strategic Mobility Plan).

All transportation studies submitted to the City of Austin shall provide a description of the proposed development, assess the potential impacts on the surrounding transportation system, and provide cost estimates and conceptual plans for all recommended infrastructure improvements.

## 4.2.2 PROCESS

Austin TDS requires developers to assess whether the threshold for a traffic analysis is met prior to engaging in a defined scoping process. Projected trip generation is used to determine the type of studies that must be conducted. Upon study submission and a completed review, a final memo is issued with mitigation requirements. The mitigation requirements set forth by TDS are the basis from which a Street Impact Fee (SIF) Offset Agreement is finalized. More information on the SIF Offset Agreement can be found in Section 4.2.3.

**Figure 4: Austin Transportation Development Services Process**




## 4.2.3 TECHNICAL REQUIREMENTS

Prior to engaging in a formal scoping process with TDS, applicants must fill out and submit the TIA Determination Worksheet, which serves to outline the basic characteristics of a project. It is the responsibility of TDS to assess the TIA Determination Worksheet, use ITE guidance to calculate unadjusted trip generation projections, and determine the appropriate study type. A TIA Determination Worksheet must contain the following information:

1. Project Location

2. Applicant Information
3. Application Type
4. Existing Lane Use Status
5. Proposed Land Use Status
6. Proposed Density
7. Trip Generation Information
8. Proposed Site Access Points
9. Phases of Site Construction

Following review of the TIA Determination Worksheet, TDS will determine the required studies that must be completed by the applicant. There are five study types, all with varying daily trip thresholds.

**Table 1: Austin Transportation Development Services Study Type Thresholds**

| Study Type | Threshold (Unadjusted Daily Trips) |
|---|---|
| **Transportation Impact Analysis (TIA)** | 5,000+ |
| **Transportation Demand Management (TDM) Plan** | 2,000+ |
| **Transportation Assessment** | 2,000-5,000 |
| **Zoning Transportation Analysis (ZTA)** | 2,000+<br>*(Required for zoning applications, can replace TA/TIA at agency's discretion)* |
| **Neighborhood Traffic Analysis (NTA)** | 300+<br>*(Required for developments with access to residential streets)* |

*Note: For a typical development projected to generate between 2,000 and 5,000 unadjusted daily trips, the applicant is typically required to submit a Transportation Assessment and TDM Plan. In cases where the projection is above 5,000 trips, the applicant is typically required to submit a TIA and TDM Plan.*

The purpose of Austin's TDM Plan is to reduce single occupancy vehicle use through the promotion and implementation of multi-modal travel options. The plan consists of two parts; a Sustainable Modes analysis and TDM Worksheet, the contents of which are described below. Following review of the TIA Determination Worksheet, TDS will determine the required studies that must be completed by the applicant. There are five study types, all with varying daily trip thresholds.

**Table 2: Austin Transportation Development Services TDM Plan Content**

| TDM Plan Component | Content |
|---|---|
| **Sustainable Modes Analysis** | • Inventory of existing pedestrian, bicycle, and transit infrastructure in the study area<br>• Desired path of travel between significant trip generators in the study area<br>• Descriptions of needed improvements (Including location, schematic, and cost estimate) |
| **TDM Worksheet** | • Site context<br>• TDM measures with associated point values |

TDS incentivizes developers to provide TDM recommendations by assigning a point value to each recommendation based on the expected mitigation it will bring to the area. A sum of the "TDM points" is then used to validate trip reductions taken in the broader transportation analysis. Developers are required to reach a certain TDM point threshold depending on development size, location, and context.

It should be noted that a Transportation Assessment is effectively the same as a TIA and contains the same technical requirements, but within a smaller study area. Differences in study area criteria is shown below.

**Table 3: Austin TIA and Transportation Assessment Study Area Criteria**

| Study Type | Study Area Criteria |
|---|---|
| **Transportation Assessment** | • All driveways or access points<br>• All existing or planned intersections within ¼ mile of the site with 100+ peak hour trips (AM or PM) |
| **Transportation Impact Analysis** | • All driveways or access points<br>• All existing or planned intersections within ¼ mile of the site<br>  o Intersection may be added at the discretion of TDS if it is within ½ mile from the site with 50+ peak hour trips (AM or PM)<br>• All existing and planned school sites, transit routes/stops, trails, sidewalks, and bike facilities within the ¼ mile boundary must be identified |

Once a Transportation Assessment or TIA is required per an approved TIA Determination Worksheet, the applicant submits a formal scope through Austin's TIA Portal for review. Scoping requirement include basic site information, preliminary traffic volume and distribution projections, study area information, anticipated TDM measures, and anticipated trip reductions.

The required content of a TIA shares many similarities with Nashville's existing TIS Guidelines. The key sections and criteria are outlined in the table below.

**Table 4: Austin TIA and Transportation Assessment Sections and Content**

| Section | Criteria |
|---|---|
| **Existing Road Network** | • Narrative description of every road in the study area (street classification, characteristics, cross-sectional elements, and planned improvements) |
| **Existing Conditions** | • Traffic count information (date, time, weather, adjustment factors)<br>• Peak hour traffic volume exhibits<br>• Study intersection descriptions |
| **No-Build Conditions** | • Growth rate and approved background project information<br>• Roadway network changes in the build year<br>• Projected peak hour traffic volume exhibits |
| **Build Conditions** | • Peak hour trip information, including reductions and TDM measures<br>• TDM Plan summary (measures, implementation, TDM methodology)<br>• Site plan |
| **Mitigated Conditions** | • Identification of roadway improvements<br>• Conceptual exhibits of proposed improvements |
| **Summary of Results** | • Synchro results summary table |
| **Access Management and Queueing** | • Number of driveways<br>• Pick-up/drop-off operational analysis<br>• Queuing analysis (if required) |
| **Conclusions and Identified Mitigation** | • Description of identified improvements<br>• Cost estimates, schematics |

Given significant differences in traffic operations inside and outside of Austin's downtown core, TDS provides different capacity thresholds for what is considered "poor" performance based on where the development is located. Outside of the downtown core, an LOS of E or F, and/or a Volume/Capacity ratio over 0.95 is considered poor performance, whereas inside the downtown core, these conditions may be considered acceptable depending on the adjacent transportation system and existing constraints.

It is understood that it will not always be possible to completely mitigate development impact on the transportation network, especially in densely populated areas with little available ROW. Austin maintains a goal outside of the downtown core to maintain the no-build condition if it was at LOS D or better, whereas they are more focused on furthering multi-modal connectivity and usage in heavily congested parts of the city.

TDS requires planning-level or itemized cost estimates for each improvement to be provided with supporting documentation. Estimates are expected to incorporate all costs reasonably expected to design, permit, and construct a given improvement in the build year. In certain cases where a developer has agreed to construct an improvement, they may be eligible to offset their required Street Impact Fee (SIF) cost. The Austin City Council adopted ordinances creating the SIF program in 2020, which helps fund roadway capacity projects. All SIF offsets shall be coordinated with TDS prior to approval.

Additional sections that Austin TDS may require of applicants include safety and geometric reviews, sight distance studies, and signal warrant studies.

At submittal, all applicants are required to submit a PDF copy of the entire Transportation assessment, Synchro files showing a connected roadway network for all scenarios analyzed, and Excel spreadsheets with overall trip generation, reduction, and distribution calculations.

# 4.3 SEATTLE

## 4.3.1 GOALS

In 2007, Seattle City Council passed Ordinance 122386, known as the Complete Streets Ordinance. The ordinance's guiding principles encourage transportation improvements that promote safe walking, bicycling, and transit use, saying,

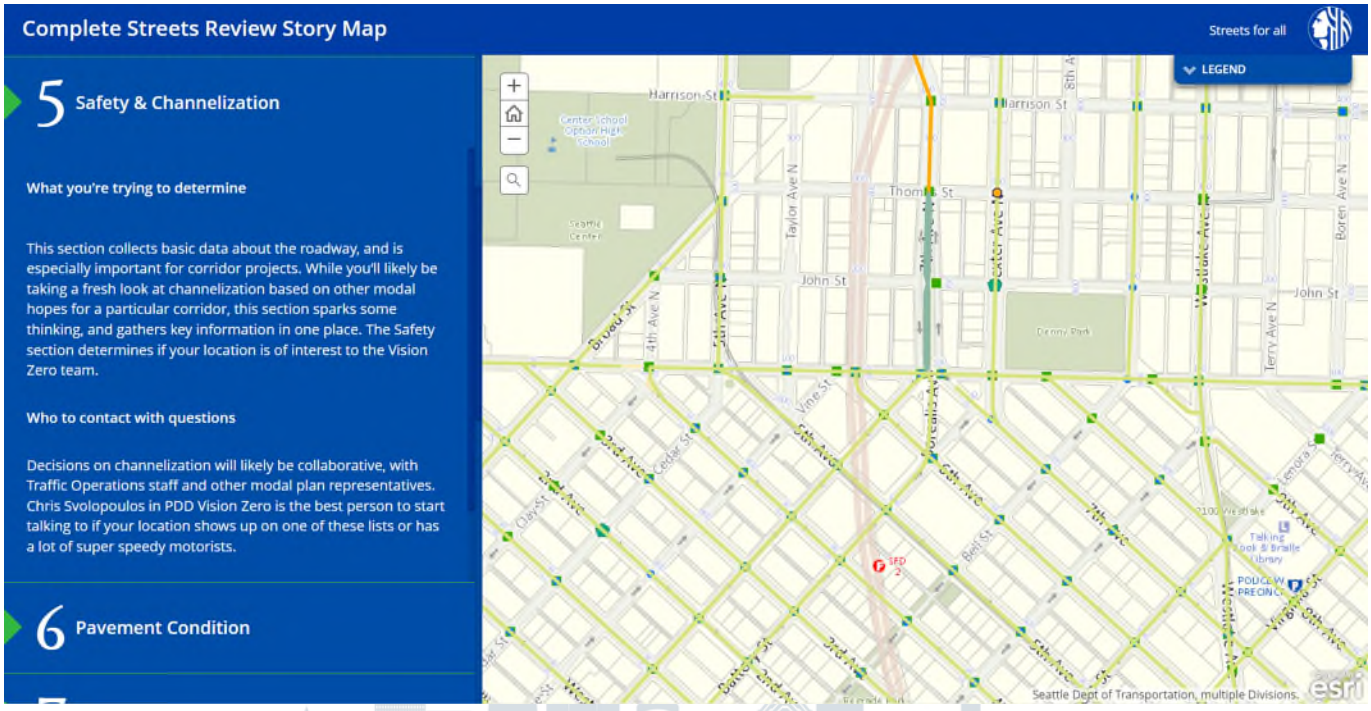
"*Seattle's Complete Streets guiding principle is to design, operate and maintain Seattle's streets to promote safe and convenient access and travel for all users*."

The aim of SDOT's development review process is to ultimately identify specific transportation improvements that can support the Complete Streets mandate and ensure the safe and efficient movement of people and goods.

## 4.3.2 PROCESS

SDOT's Complete Streets Checklist, the form through which transportation network data and information is collected, kick-starts the development review process. The compilation of this data is supported by the GIS-based Complete Streets Story Map, a visual aid that guides applicants through their evaluation of the transportation network. As the applicant completes the Complete Streets Checklist, they can leverage the interactive GIS maps associated with each section to glean relevant information and identify needs. The tool is also supplemented by descriptions of each map and relevant points of contact should the applicant need to inquire about an element of their review.

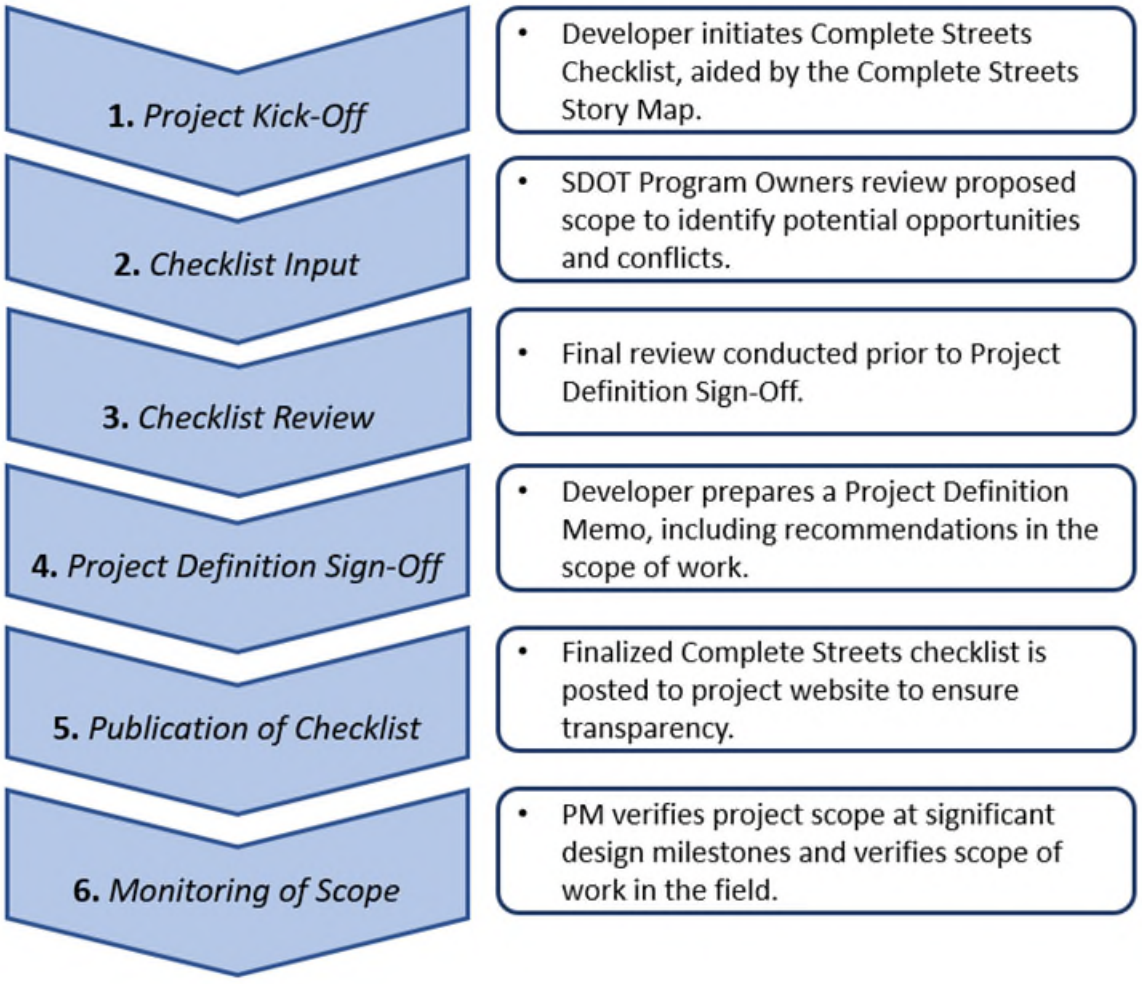
**Figure 5: Seattle Department of Transportation Complete Streets Story Map**



Initial evaluation by the applicant is further supported by Streets Illustrated, SDOT's online ROW Improvements Manual. Streets Illustrated is an online tool that provides developers, designers, planners, and engineers with design guidance on how to build and manage the public right-of-way. The tool reflects best practices in alignment with city plans and includes components that encourage the activation of public space.

The figure below outlines how SDOT defines a project scope in coordination with the applicant. The review process begins with the initiation of the Complete Streets Checklist and ends with verification of scope requirements completed in the field.

**Figure 6: Seattle Department of Transportation Process**




While SDOT and NDOT's existing processes are similar, SDOT successfully leverages interactive tools, such as the Complete Streets Story Map and Streets Illustrated, to guide applicants through the process and ultimately identify the most pressing transportation needs of the area surrounding a project.

## 4.3.3 TECHNICAL REQUIREMENTS

Per SDOT, the Complete Streets Checklist is a tool to collect data and information about the status of the street and surroundings, as well as the details of the project during the early stages of the design phase, with a goal of identifying specific improvements that can be incorporated into the project to balance the needs of all users. All developers with planned projects expected to cost over $500,000 must complete the form, supported by the Streets

Illustrated visual guide, and submit to SDOT for review. A summary of the Complete Streets Checklist criteria is provided in the table below.

**Table 5: Seattle Department of Transportation Complete Streets Checklist Content**

| SDOT Complete Streets Checklist Section | Key Content |
|---|---|
| **Project Information** | • Project scope and opportunity statement<br>• Project budget and funding source(s) |
| **Project Coordination** | • Coordination opportunities with ongoing city projects, public initiatives, and private developments |
| **Street Classification & Type** | • Street classification and type<br>• Existing ROW and deviation from roadway design standards |
| **Safety & Channelization** | • Traffic and speed data<br>• Priority safety locations<br>• Transit activity<br>• Improvement recommendations |
| **Pavement Condition** | • Areas of poor pavement condition (using Pavement Condition Index rating system) |
| **Flex Lane / Curbspace** | • Development impact on flex lanes and parking<br>• Recommendations to mitigate impact |
| **Signals & Intelligent Transportation Systems (ITS)** | • Development impact on existing or planned signals<br>• Signal warrants |
| **Pedestrian Infrastructure** | • Missing or damaged pedestrian infrastructure<br>• Intersections or pedestrian travel routes impacted by development<br>• School zones<br>• Recommendations and cost estimates |
| **Bicycle Infrastructure** | • Existing bicycle facilities a relevant master plans<br>• Bicycle travel impacted by development<br>• Recommendations and cost estimates |
| **Transit Infrastructure** | • Existing and planned transit infrastructure in the project area<br>• Transit operations impacted by development<br>• Improvement recommendations, including bus stop consolidation |
| **Freight Infrastructure** | • Development's relevance to the "Recommended Freight Network"<br>• Curb radius and clearance standards |
| **Urban Forestry** | • Existing and planned urban forestry assets in the project area. |
| **Urban Design & Planning** | • Relevant street design concepts and compliance<br>• Pedestrian lighting opportunities<br>• Age-friendly infrastructure opportunities |
| **On-Site Stormwater Management** | • Development characteristics that will impact stormwater assets |
| **Art** | • Opportunities to support the Seattle arts program |

The completion of the Complete Street's Checklist is the extent of the applicant's assessment of the study area, development impact, and improvement opportunities. Upon review by SDOT, the checklist is posted on the project website for transparency, and a scope of work is negotiated with the applicant. Build-out of improvement requirements in the field is monitored by SDOT at key design milestones.

# 4.4 SAN JOSÉ

## 4.4.1 GOALS

The San José transportation analysis (TA) process aims to support the overall goals of the *Envision San José 2040 General Plan* (General Plan), adopted in 2011. The General Plan aims to transform San José from a city built around personal motorized vehicles to one that prioritizes people and the public spaces where they live, work, and connect. By prioritizing pedestrian, bicycle, and transit facilities, the General Plan aims to build a transportation system where 60% of commute trips are made by walking, biking, transit, or carpool.

A TA in San José must also comply with the California Environmental Quality Act (CEQA), which ensures environmental protection through the review of public agency approvals. A TA submitted to the San José Department of Public Works must provide sufficient information to properly evaluate potential CEQA transportation impacts and required project mitigation.

The San José Department of Public Works uses the TA process as a mechanism to implement General Plan policies that encourage safe and efficient mobility. General Plan policies that call for transportation analysis and lead to implementation of the City's multi-modal vision include, but are not limited to:

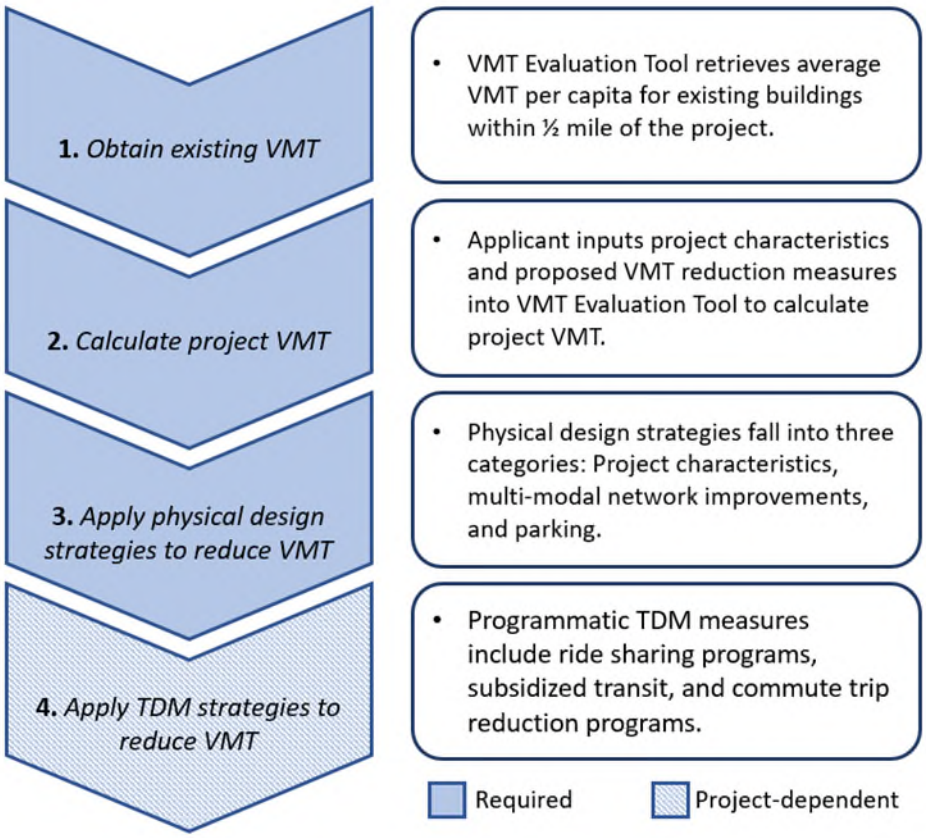
- Consider impacts on overall mobility and all travel modes when evaluating transportation impacts of new developments or infrastructure projects.
- Through the entitlement process for new development, projects shall be required to fund, or construct needed transportation improvements for all transportation modes, giving first consideration to improvement of biking, walking and transit facilities and services that encourage reduced vehicle travel demand.
- Develop, create, and maintain pedestrian and bicycle facilities on-site and connect to adjacent pedestrian and bicycle facilities in a safe, accessible, and pleasant manner.

## 4.4.2 PROCESS

The San José Department of Public Works TA review process contains two components: A CEQA Transportation Analysis and a Local Transportation Analysis.

If a project is not screened out by the criteria described in section 4.4.3, a detailed CEQA TA will be required and the applicant will undergo the process outlined in Figure 7. The key metric used in the CEQA TA process is project Vehicle-Miles Traveled (VMT). VMT is a measurement of total miles traveled by a personal motorized vehicle. By extension, project VMT is the total VMT generated by a project in a single day.

**Figure 7: CEQA Transportation Analysis Process**




The city of San José developed the San José VMT Evaluation Tool to estimate a project's VMT based on the project's description, location, and attributes. The tool uses existing per capita and per employee VMT figures within a ½ mile boundary from a project site to establish a baseline and measure the expected VMT impact of a project relative to its surroundings. Applicants can reduce their projected VMT by incorporating physical design strategies and TDM programs into the development. As more measures such as increasing density, providing multi-modal infrastructure, or limiting the parking supply are inputted into the VMT Evaluation Tool, projected VMT will be reduced until the development complies with city VMT thresholds.

The San José LTA review process follows a similar model to the existing Nashville framework, where the applicant will coordinate with the agency on the study scope, and upon approval will complete and submit a full study for review.

Applicants may submit a completed TA online through the San José permitting website, or directly to the review team via e-mail. If an initial submittal is incomplete, staff will contact the applicant prior to any review taking place.

## 4.4.3 TECHNICAL REQUIREMENTS

The CEQA analysis requires an evaluation of project impacts related to VMT using the department's analytical VMT tools. There are certain scenarios in which applicants may be screened out of a CEQA analysis. For typical residential and office projects, the screening criteria is shown in Table 6.

**Table 6: San José Department of Transportation CEQA Analysis Screening Criteria (Residential and Office Development)**

| Screening Section | Criteria (All listed items must be met) |
|---|---|
| **Planned Growth Areas** | • Located within a Planned Growth Area |
| **High Quality Transit** | • Located within ½ mile of an existing major transit stop or an existing stop along a high-quality transit corridor |
| **Low VMT** | • Located in an area in which per-capita or per-employee VMT is less than city-defined VMT thresholds for the area |
| **Transit-Supporting Project Density** | • Minimum Gross Floor Area Ratio (FAR) of 0.75 for office components<br>• Minimum 35 units per acre for residential components<br>• Below or at the maximum density set by a Planned Growth Area, if less than 0.75 FAR or 35 units per acre |
| **Parking** | • No more than the minimum number of parking spaces required |
| **Active Transportation** | • Not negatively impacting transit, bike, or pedestrian infrastructure |

Per the San José Transportation Analysis Handbook, a Local Transportation Analysis (LTA) will be required irrespective of a project's CEQA screening outcome. Exceptions are made for substantially smaller infill developments that do not incur significant VMT impacts. Examples of such developments are listed in the table below.

**Table 7: Local Transportation Analysis Exemptions**

| Development Type | Criteria |
|---|---|
| **Office** | • Less than 10,000 square feet |
| **Residential** | • Less than 15 single-family units or 25 multi-family units |
| **Industrial** | • Less than 30,000 square feet |

The LTA requires a thorough analysis of the existing transportation network, multi-modal facilities, site attributes, and potential improvement opportunities. The criteria for each section of the LTA is summarized below.

**Table 8: Local Transportation Analysis Criteria**

| Section | Criteria |
|---|---|
| **Bicycle and Pedestrian** | • Evaluation of bicycle and pedestrian infrastructure<br>• Evaluation of access points<br>• Conformance to existing plans and policies (including Vision Zero) |
| **Transit** | • Assessment of transit facilities, service, operations, and access |
| **TDM** | • Recommended measures to reduce traffic and increase bicycle, pedestrian, and transit use<br>• Annual trip monitoring reports required |
| **Intersection Operations Analysis** | • Trip reductions: Internal (mixed-use only), location-based, improvements-based<br>• LOS-based analysis at study intersections<br>• Recommended mitigation measures |
| **Queuing Analysis** | • Analysis of intersections shown to incur an adverse impact from development trips or where queues are abnormally long |
| **Signal Warrants** | • Intersection where a signal is being proposed or where safety and operations at an un-signalized intersection are impacted by the development |
| **Site Circulation and Access** | • Pedestrian and bicycle access<br>• Emergency and service vehicle access<br>• Trip distribution |
| **Delivery, Waste, and Moving Trucks** | • Truck turning exhibits<br>• Loading area feasibility |
| **Parking** | • Consistency with San José Code<br>• Parking survey prior to implementation of project<br>• Potential parking plan |
| **Neighborhood Traffic Intrusion** | • Speed and volume studies on identified streets<br>• Implementation of approved traffic calming or traffic control installations as warranted by analysis |

Other types of analyses that an LTA may require include channelization, acceleration/deceleration lanes, ADT volumes and speeds, turning movement volumes, and signal coordination plans. The content of a complete LTA is meant to work as a standalone document or supplement a CEQA analysis.

# 4.5 WASHINGTON D.C.

## 4.5.1 GOALS

Per the District Department of Transportation's (DDOT) Guidance for Comprehensive Transportation Review (CTR), the purpose of the CTR is to evaluate a development's impacts on the D.C.'s multimodal transportation network and determine appropriate mitigations to address potential impacts. The document outlines five core objectives:

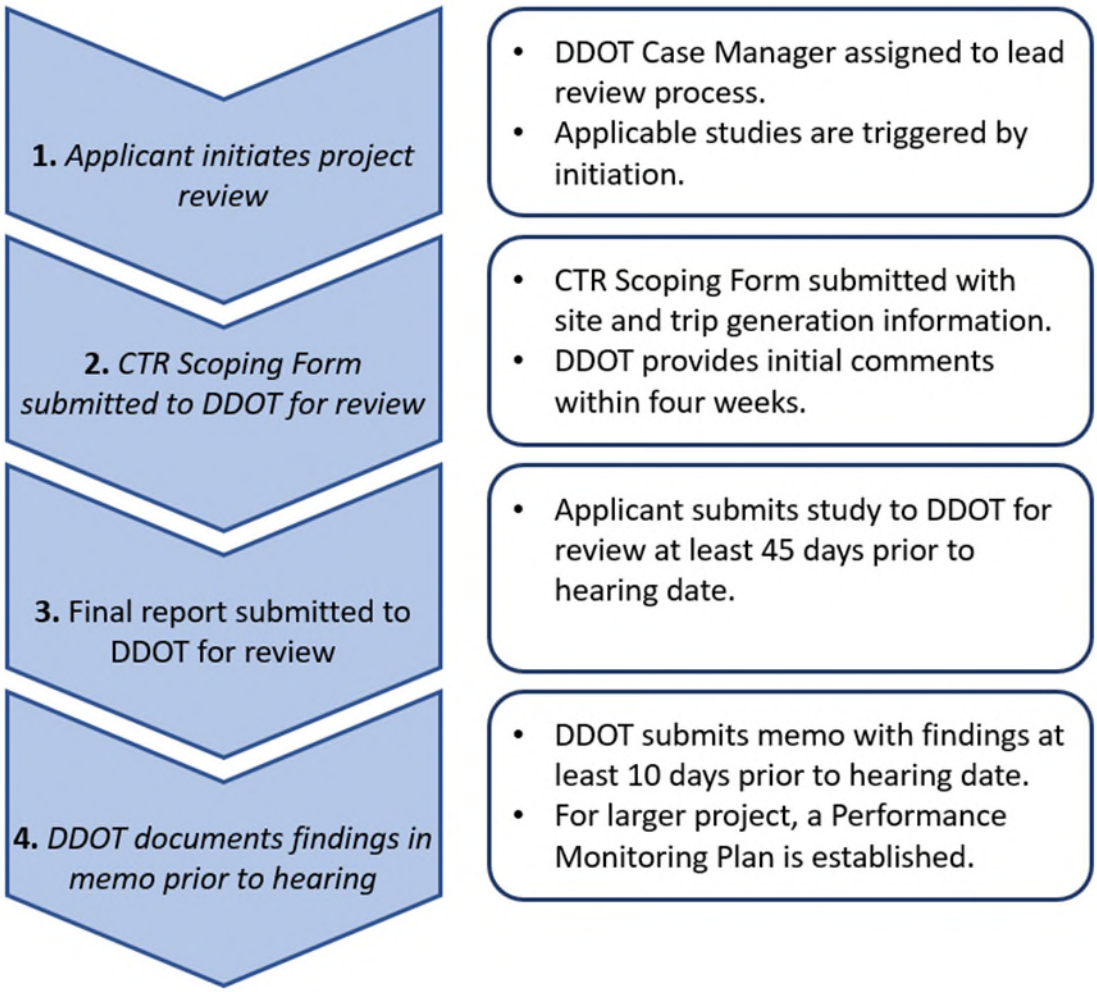
- Evaluate and determine the most optimal site design, specifically site access, loading, vehicle parking, and adjacent public space.
- Identify the additional generated pedestrian, bicycle, vehicle, and transit trips a proposed action would bring to the area.
- Determine how these additional trips will impact the transportation network.
- Propose actions that would mitigate the impacts.
- Identify the potential impacts on the transportation network of the proposed mitigations.

The CTR exists to support the overarching goals of DDOT, an agency committed to achieving exceptional quality of life for residents through sustainable travel practices, safer streets, and outstanding access to goods and services.

## 4.5.2 PROCESS

DDOT's development review process begins when the applicant contacts DDOT to inform of a proposed development. A DDOT Case Manager is then assigned to lead the review process and act as a liaison between DDOT and the applicant from project inception through scoping, review, permitting, and the issuance of any mitigation requirements. A summary of the process is shown below.

**Figure 8: District Department of Transportation Process**




A key feature of DDOT's CTR process is the time-dependency of submission relative to hearing dates. The hard deadline of 45 days prior to a hearing date for report submissions, and the self-imposed deadline for DDOT to produce a mitigation memo of 10 days prior to a hearing, keeps the review process and the overall development application on track. Mitigation measures are also required to be implemented prior to the applicant obtaining a building permit or certificate of occupancy.

In some cases, especially in the case of large developments, DDOT may require a Performance Monitoring Plan (PMP). A PMP establishes thresholds for new mitigation requirements, defines post-completion evaluation criteria and methodology, and establishes potential mitigation measures. It is not meant to overburden developers with expensive future capital liabilities, but rather focus on cost-effective programmatic changes such as altering parking costs, additional TDM measures, or minor facility upgrades.

## 4.5.3 TECHNICAL REQUIREMENTS

The outcomes of DDOT's CTR are supported by four key pillars: Multi-modal analysis, site, loading, and parking analysis, TDM, and traffic impact analysis.

The CTR Guidelines are divided into five sections, outlined in Table 9 below. Adherence to the criteria of each CTR section is key to ensuring the analysis is complete and can support purposeful improvements to the transportation network.

**Table 9: DDOT CTR Technical Criteria**

| Comprehensive Transportation Review (CTR) Study Section | Criteria |
|---|---|
| **Site Design** | • Site access<br>• Loading<br>• Vehicle and bicycle parking<br>• Streetscape and public realm |
| **Multi-Modal Trip Generation** | • Mode split<br>• Trip calculations |
| **Multi-Modal Network Evaluation** | • Pedestrian, bicycle, and transit network<br>• Safety analysis<br>• Curb management<br>• Pick-up/drop-off plan<br>• On-street parking occupancy study<br>• Queuing analysis |
| **Traffic Impact Analysis (TIA)** | • Study area<br>• Data collection<br>• Methodology<br>• Transportation network improvements<br>• Local and regional growth<br>• Trip distribution |
| **Mitigation** | • Operational and geometric changes<br>• TDM<br>• Performance monitoring plan (PMP) |

In addition to the five defined sections, DDOT encourages applicants to pay especially close attention to nine different site review priorities. These priorities are grouped into three categories: Design elements, managing travel demand, and traffic impacts. Priorities 1-5 ensure the design of a high-quality site layout that encourages safe multi-modal travel. Priorities 6-8 address modal split, site circulation, and potential vehicular mitigation measures that can be deployed. Priority 9 is the standard traffic impact analysis that evaluates existing and projected conditions of the transportation network and potential impacts made by the development.

**Table 10: DDOT Site Review Priorities**

| Category | # | Priority | Objectives |
|---|---|---|---|
| Design Elements | 1 | Site Access + Curb Cuts + Connectivity | • Prioritize alley access<br>• Minimize number of curb cuts<br>• Re-establish street grid |
| | 2 | Loading Design + Operations | • Head-in/head-out truck maneuvers<br>• On-site trash storage accommodation |
| | 3 | Vehicle Parking Supply | • Minimize number of parking spaces<br>• TDM commitments to offset over-parking<br>• Parking pricing |
| | 4 | Vision Zero + ADA + Public Realm Design | • ADA accessible pedestrian facilities<br>• Implementation of Vision Zero safety improvements<br>• No private site operations in public ROW |
| | 5 | Bicycle Facilities | • Traditional-to-protected bike lane conversions<br>• On-site bicycle facilities |
| Managing Travel Demand | 6 | Multi-Modal Trip Generation | • Understand modal split of the study area |
| | 7 | TDM Programming | • Robust TDM plan to encourage non-auto travel and offset induced auto demand from over-parking |
| | 8 | Curbside Management | • Address curbside needs and pick-up/drop-off trends<br>• Minimize truck conflicts with bicycles and pedestrians |
| Traffic Impacts | 9 | Traffic Impact Analysis | • Analyze traffic impacts |

It should be noted that if DDOT is satisfied with the applicant's proposal for priorities 1-8, then a project may qualify for a waiver exemption from further transportation analysis or traffic evaluations.

Upon completion of a CTR by the applicant, DDOT requires the delivery of three components at final submittal: A PDF of the study and appendices, traffic software analysis files, and electronic files of turning movement counts. It is at this point that DDOT staff will review the CTR and negotiate mitigation requirements with the applicant.

## 4.6 TAKEAWAYS: PEER CITY REVIEW

Evaluation of each peer city's development review process provided many strong features than could be incorporated into NDOT's TIS Guideline update. A summary of the key takeaways from each peer city is summarized in the table below.

**Table 11: Peer City Takeaways**

| City | Takeaways |
|---|---|
| **Austin** | • Requirement of cost estimates and schematics with improvement recommendations provide Austin TDS with greater clarity during negotiations of mitigation requirements and financial contributions (including offsetting Austin's mandatory Street Impact Fee).<br>• Mandatory points system used to measure the effectiveness of TDM strategies is location-specific, putting more responsibility on applicants to develop a purposeful and effective TDM plan.<br>• Standard formatting requirements for data submitted to Austin TDS helps reviewers draw conclusions.<br>• Differentiation in requirements for developments in the urban core and outside of the urban core allows for adaptable analysis and more practical recommendations. |
| **Seattle** | • GIS-based Complete Streets Story Map provides applicants with real-time information on the condition of the study area and supports the identification of improvement opportunities.<br>• Streets Illustrated provides interactive guidance on current ROW standards and opportunities to enhance public space.<br>• Streamlined checklist format efficiently identifies improvement opportunities without excess analysis. |
| **San José** | • Strong reliance on Vehicle-Miles Traveled as a means for measuring development impact instead of intersection performance metrics.<br>• Embedded analytical tools to support review, such as the VMT Evaluation Tool<br>• Foundational knowledge of typical mobility trends and growth projections for different areas of the city by using analytical transportation models<br>• Post-completion monitoring of development impact with annual trip monitoring reports |
| **Washington D.C.** | • TIS waiver option creates an adaptable process that prioritizes tangible improvements to the network over generic transportation studies.<br>• Performance Monitoring Plan establishes clear guidance on maintaining operational efficiency of the transportation network surrounding large development post-completion. |

# 5 Conclusion

As anticipated, the assessment of existing conditions indicated that NDOT has several opportunities for improving their overall TIS process through clearer standards, updated processes, and adaptation of the requirements to match the current growth patterns of the metro area. Irrespective of the stakeholder type, internal or external, the comments were similar in nature in that clearer guidelines would lead to better quality submittals and a more streamlined process. Additionally, the development community seems to understand that the current guidelines are inconsistent with the existing vision for Nashville's future transportation system.

An assessment of peer cities, similar in nature and ambition to Nashville, provided strong examples of development review programs. Elements from each peer city can be incorporated into NDOT's TIS Guideline update to lay a strong foundation for safe and efficient multi-modal growth.

The content of this report summarizes a multi-month effort to listen to existing stakeholders, identify areas for improvement, and understand how current best practices for development review can be used in Nashville. This report is intended to serve as a basis from which NDOT's TIS Guidelines can be updated.

# Resources

Austin: https://www.austintexas.gov/department/transportation-development-services

Seattle: https://www.seattle.gov/transportation/projects-and-programs/programs/urban-design-program/complete-streets-in-seattle

San José: https://www.sanjoseca.gov/your-government/departments-offices/transportation/policies/vehicle-miles-traveled-metric

Washington D.C.: https://ddot.dc.gov/page/development-review-program

# Appendix A

## Mode Split Memo

# Appendix B

## Traffic Growth Memo

# Appendix C

## Level of Traffic Stress Flow Charts

# Appendix D

## Level of Traffic Stress Analysis Example

# Appendix E

## Additional Level of Traffic Stress Examples

# Appendix F

## Transit Access Analysis Example

# Appendix G

## Mitigation Measure Examples