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## Policy on Requirements for Traffic Impact Studies for Proposed Developments

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In general, a Traffic Impact Study (TIS) must include the following elements:

*Data Collection* – Compile and review information regarding existing and proposed conditions.

- In general, all proposed access locations/ new streets connecting to the existing public streets, and the next significant intersection in each direction will be included.
- Internal streets proposed as arterial or collector streets will be included.
- Current traffic count data and/ or turning movement counts for each existing intersection, including traffic associated with the typical school attendance day in the City. The City will share any available traffic counts.

*Traffic Information* – Determine current and future traffic for the existing transportation system (background traffic) and estimated daily and peak hour trip generation for the proposed development.

- Scenarios will include Opening Year of each proposed development phase, and the Design Year, typically 20 years in the future<sup>1</sup>, and includes full build-out of the development.
- Analysis will typically include weekday AM and PM peak periods, but substitute or additional periods may be required (e.g. mid-day, school dismissal, weekend).
- Provide graphics for each scenario, identifying:
  - Background peak period turning movement volumes: The preferred method to estimate growth of background traffic is the expected growth of the City's population. The estimated 2024 population is 76,200 residents<sup>2</sup>. The estimated 2040 population of the City is 108,000 to 130,000 residents<sup>3</sup>.
  - For Design Years after 2040, 1% growth per year after 2040 shall be assumed.
  - Alternate methods of estimating growth are allowed but must be documented in the study.
  - Expected traffic volumes associated with neighboring planned, but not occupied, land development will be added to background traffic for appropriate scenarios. This information, from previously-initiated TIS for these neighboring developments, will be provided by the City.
  - Distributed site-generated trips: The preferred method of distribution is based on the respective peak hour background traffic distribution at the entry/ exit gateways (external nodes) of the study area.
  - Pass-by trips, if applicable: Consult the latest "Trip Generation Handbook" (ITE) for application and calculation of pass-by trips. ITE data and methods should be utilized for any internal capture adjustments with mixed-use developments.
  - Total (background plus site-generated and pass-by trips) turning movement volumes.

### **PROVIDE THE COMPILED TRAFFIC INFORMATION TO THE CITY FOR REVIEW AND CONCURRENCE PRIOR TO COMMENCING ANALYSIS.**

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<sup>1</sup> The term "Future Year" will include the Design Year and the year(s) of any proposed development phase(s) beyond Opening Year.

<sup>2</sup> US Census Bureau, 2024 Special Census

<sup>3</sup> The Ankeny Plan 2040

**Crash Experience** – Provide tabulation and summary of the reported crashes in the most recent five (5) years, as available from Iowa DOT’s Iowa Crash Analysis Tool (ICAT), including trend identification and Iowa DOT’s Potential for Crash Reduction (PCR) ratings if available<sup>4</sup>.

- Note any recent safety-related improvements within the five-year study period.
- Note any recommended countermeasures, with reference to the relevant Crash Reduction Factor (CRF) from the Crash Modification Factors (CMF) Clearinghouse or other appropriate research.

**Capacity Analysis** –

- Provide tabulation or diagram reporting level of service (LOS) and average delay (rounded to whole seconds) for each controlled lane group.
- The preferred analysis tool is the latest edition of Synchro by Trafficware. The City will provide available Synchro model(s) of the study area.
- Provide all models with cited results to the City, for staff use in review of the study.

**Signal Warrant Analysis** - For locations identified with the potential need for signalization, provide analysis and documentation according to the current Manual on Uniform Traffic Control Devices (MUTCD), Chapter 4C, for each applicable peak hour in the study.

- Review the studied peak hours and state whether the projected traffic volumes exceed the respective thresholds under Warrant 1 – Eight-hour Vehicular Volumes, Warrant 2 – Four-Hour Vehicular Volume.
- If the land use meets the conditions of MUTCD Section 4C.04, include analysis of Warrant 3 - Peak Hour Vehicular Volume.
- Analysis should assume that each street/ access has at least two (2) travel lanes on both the major street and the minor street approaches.
- Typically, right-turn volume reduction is not applied but can be noted for consideration.
- If the consideration for signalization is based on current traffic conditions, background conditions and/ or crash experience, provide full Warrant 1, Warrant 2 and/ or Warrant 7 - Crash Experience analyses.
- If the need for signalization is associated with Design Year (or future development phase) rather than Opening Year, analysis of warrants and need at 10 years after Opening Year may be required.
- If a roundabout is considered in place of signalization, provide corresponding analysis.

**Turn Lane Warrant Analysis** –

- The preferred left-turn lane warrant review reference for arterial streets is NCHRP<sup>5</sup> Report 745 *Left-Turn Accommodations at Unsignalized Intersections*.
- The preferred left-turn lane warrant review reference for collector and local streets is NCHRP Report 457 *Evaluating Intersection Improvements: An Engineering Study Guide*.
- Warrant review for a right-turn lane, including at an intersection with existing or proposed signalized control, will include consideration as an unsignalized case via NCHRP Report 457, in support of safe and efficient traffic flow on the arterial streets.
- The preferred reference for future arterial or collector street classification is the *Transportation Master Plan (2025 or current)*.

**Queue Analysis** – Provide 50<sup>th</sup> percentile and 95<sup>th</sup> percentile queue data, for Design Year conditions.

- On-site queuing, such as school pick-up/ drop-off operations, will be fully-contained with negligible impact to the adjacent street(s).
- For proposed new signalized intersections, provide calculation of functional area on all legs of the intersection per Statewide Urban Design and Specifications (SUDAS) Chapter 5L-3, under Design Year conditions.

<sup>4</sup> Potential for Crash Reduction (PCR) - Iowa DOT

<sup>5</sup> National Cooperative Highway Research Program

**Transit, Pedestrian and Bicycle Accommodations** – In select locations where transit, pedestrian and/ or bicycle travel is deemed by the City to be significant, such as schools, parks, trails, business districts, sports or entertainment venues, special review and analysis of the needed infrastructure may be required.

**Recommended Improvements** – Identify recommended improvements, if any, to the transportation system within or adjacent to the development in order to provide sufficient traffic safety and operations, including recommendations to meet the desired level of service:

- Desired level-of-service for signalized intersections is overall LOS C, with no major movements subject to average delay greater than 55 seconds per vehicle.
- Desired level-of-service for unsignalized intersections shows no controlled major lane group with average delay greater than 90 seconds per vehicle.

Potential improvements may include but are not limited to: adding thru-lanes on a corridor; adding or lengthening thru- or turn lanes at intersections; adding or converting intersections to roundabouts; adding, removing or modifying traffic signals or signs; and access management.

**Study Report** – Prepare a TIS report which summarizes the data collected, traffic information developed, traffic analyses performed, and recommended transportation system and/or access improvements. Provide an appendix with all supporting data and analysis results.

**Other Items** - The TIS shall be completed by an individual who is experienced in traffic and transportation engineering, analyzing traffic operations and mobility, and transportation design elements. The TIS report must be sealed by a Professional Engineer licensed in the State of Iowa. **A draft TIS report shall be submitted to the City for review, and the report shall be finalized, based on comments provided by the City, prior to the plat, site plan, or access permit approval. Typical City review period is ten business days.**

If a proposed development will impact the primary highway system (i.e. I-35, US Highway 69, Iowa Highway 415, or Iowa Highway 160) which is under the Iowa Department of Transportation's (DOT) jurisdiction and oversight, the Iowa DOT's requirements and criteria for a traffic impact study will also need to be followed. The City will coordinate review by Iowa DOT if needed.

### **Other References**

- Iowa Department of Transportation. *Guidelines for Traffic Impact Analysis*. 2024.
- Iowa State University's Institute for Transportation. *Iowa Statewide Urban Design and Specifications (SUDAS) Design Manual*, current edition.