

TRAFFIC IMPACT ASSESSMENT GUIDELINES



These **Traffic Impact Assessment (TIA) Guidelines** have been prepared to provide municipalities, consultants, and developers with a practical and consistent framework for evaluating the transportation impacts of new developments. The guidelines are designed for use by municipalities that may not have their own detailed standards but still require a transparent and technically sound process to assess how proposed projects will affect local road networks, transit services, and the public realm.

The purpose of this document is to:

- Ensure developments are functionally integrated into the surrounding transportation system.
- Provide municipalities with a review tool that is straightforward and accessible.
- Give developers and consultants clear expectations for study content and methodology.
- Promote safe, efficient, and sustainable transportation networks while supporting responsible growth.

By standardizing the process, these guidelines help reduce uncertainty, protect public infrastructure, and provide developers with the opportunity to proactively address site access, circulation, and safety considerations.

Disclaimer

These guidelines are intended as a general framework and reference tool. They are not a substitute for jurisdiction-specific regulations, standards, or engineering judgment. Municipalities are encouraged to adapt thresholds, methodologies, and assumptions to reflect local conditions.

The calculations, assumptions, and examples provided herein are for planning-level analysis only. Actual outcomes may vary depending on socioeconomic conditions, land use patterns, travel behavior, and service design.

Nothing in this document should be interpreted as a legal or regulatory requirement unless formally adopted by a municipality. Developers and consultants are responsible for verifying requirements with the relevant approving authority.

For projects that require a professional TIA, municipalities may require preparation and/or review by a licensed Professional Engineer or qualified transportation planner.

Table of Contents

1.0	Who Can Prepare a Traffic Impact Assessment?	4
2.0	When is a TIA Required?	4
3.0	Study Area Definition	5
4.0	Base Data Requirements	5
5.0	Background Developments	5
5.1	Growth Rates and Horizon Years	6
6.0	Trip Generation	6
6.1	Pass-By Trips	6
7.0	Trip Distribution & Assignment	6
8.0	Capacity & Operations Analysis	7
8.1	Acceptable software:	7
8.2	Default Parameters:	7
8.3	Special Considerations	7
8.3.1	Transit Lanes	7
8.3.2	On-Street Parking	7
8.3.3	Pedestrians and Cyclists	7
8.3.4	Safety	8
9.0	Parking & Access Review	8
9.1	Parking Demand	8
9.2	Access Design	8
9.3	Vehicle Maneuvering Checks	8
9.4	Parking Layout and Circulation	8
10.0	Mitigation Measures	8
11.0	Reporting Requirements	9
12.0	Reviewer's Checklist	10
13.0	Calibration & Local Adaptation	10
14.0	References	10
15.0	Conclusion	10
16.0	Frequently Asked Questions (FAQ) about Traffic Impact Assessments	11

Traffic Impact Assessment (TIA) Guidelines for Municipalities

[Traffic Impact Assessments](#) (TIAs) are critical tools that help municipalities understand how new developments will affect local transportation networks. These TIA guidelines provide a practical framework for preparing and reviewing TIAs in municipalities that do not yet have their own standards. The intent is to balance technical credibility with simplicity, ensuring municipalities can review studies with confidence while consultants follow a consistent process.

⚠ Disclaimer: These guidelines are intended for municipalities that do not have their own detailed TIA standards. They are not a substitute for jurisdiction-specific regulations. Municipalities may adapt thresholds and parameters as local conditions require.

1.0 Who Can Prepare a Traffic Impact Assessment?

A Traffic Impact Study is a technical document and should be prepared by individuals with training in **transportation planning or traffic engineering**.

- In many jurisdictions, municipalities require a **licensed Professional Engineer (P.Eng. or equivalent)** to lead or stamp the study, especially where roadway design or signal timing modifications are involved.
- In smaller municipalities or contexts where licensing requirements are not enforced, a TIA may be prepared by a qualified transportation planner, traffic engineer, or consultant with experience in traffic analysis software and local road design standards.
- Municipalities are encouraged to set their own requirements. For example:
 - **Small to medium projects:** may be accepted from a qualified planner/engineer with relevant experience.
 - **Complex Medium and large projects:** should require preparation or review by a licensed Professional Engineer.

2.0 When is a TIA Required?

A TIA should be required for developments that have the potential to significantly alter traffic operations, safety, or travel patterns. Typical TIA triggers include:

- Size thresholds:
 - Residential: >100 dwelling units
 - Retail/Commercial: >1,500 m² GFA

- Office: >2,500 m² GFA
- Trip thresholds: >100 new peak-hour trips.
- Sensitive locations: CBD areas, school zones, transit corridors, or locations with known congestion/safety issues.

Municipalities may adapt thresholds based on local conditions.

3.0 Study Area Definition

The study area should include:

- All roadways directly serving the site.
- Adjacent arterial and collector roads.
- Intersections where site traffic is expected to add **≥5% to peak hour volumes**.

As a guide:

- **Small projects:** site access + 2 intersections.
- **Medium projects:** site access + up to 10 intersections.
- **Large projects:** corridor or network-level analysis / 20 or more intersections

4.0 Base Data Requirements

A TIA must establish existing conditions using reliable data:

- **Classified Traffic counts:** AM and PM peak turning counts at study intersections (not older than 12 months). These should include cyclists, conflicting pedestrians, and heavy vehicles.
- **Roadway inventory:** lanes, classifications, speed limits, intersection controls, signal timing plans.
- **Transit services:** routes, stops, headways.
- **Parking conditions:** on-street parking supply, restrictions.
- **Active modes:** pedestrian and cyclist volumes.
- **Safety:** recent collision data (if available).

5.0 Background Developments

TIAs must account for **other approved or pending developments** within the study area that will contribute traffic in the same horizon year.

- Municipalities should maintain a list of approved projects and provide its TIA Report (if available) to consultants.
- If no such list is available, consultants must confirm with planning staff.
- Background development trips should be added to the network before assigning subject-site trips.

5.1 Growth Rates and Horizon Years

Traffic volumes should reflect **both development traffic and general background growth**.

- Apply a linear **annual growth rate** (e.g., 2%) to existing counts.
- Base rate on historical count trends, regional travel demand models, or local forecasts.
- Analyze at least two scenarios:
- **Opening Year with Development**
- **Future Horizon Year (5–10 years post-opening)**
- Growth rates may be adjusted based on observed traffic trends.

6.0 Trip Generation

Trip generation estimates the number of trips produced by a development.

- Use the **ITE Trip Generation Manual** or locally collected data.
- Apply the [Trip Generation Estimator Tool](#).
- Adjustments to gross trips:
 - **Redevelopment**: subtract existing site trips.
 - **Internal capture**: reduce trips for mixed-use developments.
 - **Pass-by trips**: apply for eligible retail land uses

6.1 Pass-By Trips

Pass-by trips are made by vehicles already on the road network that stop at the development in passing (e.g., gas stations, fast food). They do not represent new demand on the wider network, but must be assigned at site access points.

Default Pass-By Rates (ITE-based):

- Fast food with drive-thru: 50–60%
- Gas station: 40–50%
- Convenience store: 30–40%
- Shopping center: 10–20%

Key rules:

- Apply only to eligible land uses.
- Subtract from net “new” trips, but still include in access and intersection analysis.
- Document all assumptions and cite sources.

7.0 Trip Distribution & Assignment

Distribute trips to the network based on:

- Regional O-D data, where available.
- Gravity model or proportional assignment by approach volumes.
- Professional judgment informed by roadway hierarchy and land use patterns.

👉 Use our [Trip Distribution Tool](#).

8.0 Capacity & Operations Analysis

Traffic Impact Assessments must analyze impacts on intersections and corridors.

8.1 Acceptable software:

- Synchro/SimTraffic - [If using Synchro in left-hand drive networks, apply this procedure for adjusting network topology.](#)
- Sidra Intersection
- Highway Capacity Software (HCS)
- PTV Vistro
- Microsimulation (VISSIM, Aimsun) for complex or major projects only.

8.2 Default Parameters:

- **Peak Hour Factor (PHF):** assume 0.90 if local data unavailable ([PHF Calculator](#)).
- **Saturation flow:** 1,900 veh/h/ln (adjust for local conditions).
- **Transit lanes:** reduce effective GP lane capacity to ~1,500 veh/h/ln.
- **On-street parking:** reduce to ~1,600 veh/h/ln.
- **Heavy vehicle adjustment:** use Passenger Car Equivalents (PCEs) or %heavy vehicles in synchro.

Level of Service (LOS) or delay thresholds should follow HCM/TAC standards, with municipal discretion for acceptable performance.

8.3 Special Considerations

8.3.1 Transit Lanes

- When transit or HOV lanes exist, adjust capacity of remaining GP lanes.
- Consider bus dwell times and intersection priority treatments.

8.3.2 On-Street Parking

- Reduce effective capacity by 10–20%.
- Check for queuing and weaving impacts near accesses.

8.3.3 Pedestrians and Cyclists

- Consider crossing delays at intersections.
- Identify safety issues near schools and activity centers.

8.3.4 Safety

- Review 3–5 years of collision history.
- Identify potential conflict points created by site accesses.

9.0 Parking & Access Review

A Traffic Impact study must include a detailed review of **site access and circulation** to ensure safety and functionality.

9.1 Parking Demand

- Estimate needs using the [Parking Demand Estimator](#) or established parking requirements. See [parking ratios for commercial developments](#).
- Size lots with the [Parking Lot Area Calculator](#).
- Identify if proposed supply is under- or over-provided.

9.2 Access Design

- Evaluate driveway spacing, sightlines, turning radii, and queue storage.
- Ensure site-generated queues do not block public roadways or intersections.
- Apply AASHTO or local standards for driveway widths and throat lengths.
- Confirm sightline clearances with [sight triangles](#)

9.3 Vehicle Maneuvering Checks

Use AutoTURN, Vehicle Tracking, or equivalent software to confirm that:

- **Passenger vehicles (AASHTO P-design vehicle)** can enter/exit all driveways and navigate parking aisles.
- **Service vehicles** (HSU, MSU, SU-30, garbage trucks, fire trucks) can maneuver into loading bays, turnarounds, or waste collection areas.
- **Tractor trailers** can access designated delivery areas without reversing onto public streets.

9.4 Parking Layout and Circulation

- Test tight parking spaces to confirm usability.
- Check that two vehicles can pass each other in drive aisles.
- Provide **minimum clearances**:
 - 0.3–0.6 m (1–2 ft) from vehicle to curb/obstruction.
 - 6.0–6.5 m two-way drive aisle width.
 - Larger clearances for truck routes and fire lanes.

10.0 Mitigation Measures

Where impacts are identified, mitigation may include:

- [Signal timing](#) adjustments. Check intersections with a [signal warrant](#).
- Additional turn lanes or through lanes.
- Access consolidation or relocation.
- Parking restrictions.
- [Transportation Demand Management \(TDM\)](#): bicycle facilities, transit incentives, staggered work hours.

11.0 Reporting Requirements

A complete TIA should include:

1. Executive summary.
2. Project description.
3. Existing conditions (traffic, transit, parking, safety).
4. Background developments and growth assumptions.
5. Trip generation and reductions.
6. Trip distribution and assignment.
7. Capacity and operational analysis.
8. Parking and access review.
9. Mitigation measures.
10. Conclusions.
11. Appendices: terms of reference/scope, traffic counts, Synchro reports, turning templates, figures.

A copy of the TIA should be submitted to all interested parties for the proposed development including the applicable road owning jurisdictions, nearby highway/freeway authorities.

All software working files are to be submitted along with the report.

👉 Municipalities can require use of the [Free TIA Report Template](#).

12.0 Reviewer's Checklist

Municipal staff should confirm that:

- ☐ Trip rates are reasonable and sourced.
- ☐ Pass-by trips are applied only where appropriate.
- ☐ Background growth and developments were included.
- ☐ PHF is realistic (not 1.0).
- ☐ Parking/transit lane adjustments were made if applicable.
- ☐ Vehicle maneuvering templates were tested for all relevant design vehicles.
- ☐ Mitigations are proportional and feasible.

13.0 Calibration & Local Adaptation

Municipalities are encouraged to:

- Collect at least one set of local traffic counts annually.
- Compare TIA predictions with observed outcomes for completed projects.
- Develop a **local trip rate database** over time.
- Adjust defaults (PHF, saturation flow, pass-by rates) as local data becomes available.

14.0 References

- Institute of Transportation Engineers (ITE), *Trip Generation Manual*.
- Highway Capacity Manual (HCM).
- Transportation Association of Canada (TAC).
- City of Toronto, *Transportation Impact Study Guidelines* (adapted).
- [Arterials TIA Report Template](#).

15.0 Conclusion

A Traffic Impact Assessment is not intended to penalize developers or create unnecessary burdens. Its purpose is to ensure that a development is functional, safe, and well-integrated into the surrounding transportation system. By identifying access issues, circulation challenges, or potential congestion in advance, a TIA protects the public realm and ensures that pedestrians, cyclists, transit riders, and motorists can all move safely.

For developers, a properly prepared TIA can also be an advantage:

- It reduces the risk of costly redesigns late in the approval process.
- It demonstrates to councils and communities that the project is responsible and considerate.

- It can highlight opportunities for better site access, parking efficiency, or integration with transit.

Municipalities should use TIAs as a tool to achieve balance: allowing growth and development while maintaining the safety and efficiency of their road networks.

If you require a **professional Traffic Impact Assessment** prepared or reviewed for your project, please [contact Arterials](#) for support.

16.0 Frequently Asked Questions (FAQ) about Traffic Impact Assessments

What is the purpose of a Traffic Impact Assessment (TIA)?

A TIA evaluates how a proposed development will affect the surrounding transportation system. It helps municipalities and developers identify potential issues with traffic flow, safety, parking, and access, and determine if mitigation measures are needed.

When is a TIA required?

A TIA is generally required for medium to large developments, or those expected to generate more than 100 peak-hour trips. Municipalities may also require one for projects located near congested corridors, schools, or transit hubs.

Who can prepare a TIA?

TIAs should be prepared by professionals with expertise in traffic engineering or transportation planning. In many jurisdictions, municipalities require a licensed Professional Engineer (P.Eng. or equivalent) for larger or more complex projects. Smaller municipalities may accept reports from qualified consultants with demonstrated experience.

What is included in a TIA?

A complete TIA typically includes:

- Trip generation and reductions (internal capture, pass-by trips, transit share).
- Trip distribution and assignment to the road network.
- Capacity and operations analysis at key intersections.
- Parking and access review (including vehicle turning templates).
- Recommended mitigation measures.

What software is used for TIAs?

Commonly accepted software includes Synchro/SimTraffic, Sidra Intersection, Highway Capacity Software (HCS), and PTV Vistro. Microsimulation packages such as VISSIM or Aimsun may be used for large or complex projects.

Do developers have to pay for road improvements identified in a TIA?

Developers are generally responsible for improvements directly attributable to their project (e.g., new turn lanes, signal adjustments at their site). Broader system-wide upgrades should be the responsibility of the municipality. The goal of a TIA is not to penalize developers, but to ensure sites function safely and efficiently within the network.

How accurate are TIA forecasts?

TIA results are based on accepted data sources and standard assumptions, but actual traffic conditions can vary depending on local socioeconomic factors, travel behavior, and land use changes. Municipalities are encouraged to monitor outcomes and adjust assumptions over time.

Where can I find a TIA template?

You can download a [free TIA Report Template](#) to use as a starting point for preparing studies.