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COMPASS

COMMUNITY PLANNING ASSOCIATION
of Southwest Idaho

*Transportation Impact Studies
Recommended Practices*

Report Number 17-2008

Transportation Impact Studies Recommended Practices

September 22, 2008

Community Planning Association of Southwest Idaho

Report Number 17-2008

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Foreword

Transportation impact studies (TISs) are evaluations of land use actions in terms of transportation issues and needs. How many trips would be generated and where would they go? How will traffic affect roads? What are the opportunities for alternative modes—walking, biking and transit? Will increased road capacity be needed? What about new or improved traffic signals, changes in access? Who should pay for improvements?

Land use actions can include development applications, comprehensive plan changes, rezones, or any other change that can alter travel demand and patterns. Based on well-prepared TISs, agencies can make informed decisions about needed improvements, service changes, and financing.

This report is based on discussions starting in late 2006 with the local and state agencies in Ada and Canyon Counties, Idaho. Most of these agencies are members of Community Planning Association of Southwest Idaho (COMPASS), the metropolitan planning organization for the two-county region. Staff and elected officials expressed concern that the TISs were sometimes deficient in evaluating the total scope of transportation demand or that agencies were often unaware of TISs for more regionally critical land use actions. Some agencies voiced concern that, when the TISs were put out for comment, key agencies failed to comment. As the region becomes more metropolitan, consideration of the transportation effects of larger, more complex land use changes is critical.

The Regional Technical Advisory Committee (RTAC) of COMPASS, and a subgroup of RTAC, titled the Work Group, discussed TIS issues. This report is based on these discussions. The intent of this document is to lay out strategies that could improve the way TISs are done. However, this report is not prescriptive: there is no implication that member agencies' TIS policies or ordinances must adhere to these strategies. Nor should it be inferred that this report constrains agencies from adopting additional changes to TIS policies. Agencies need to determine their own needs and resulting strategies based on local conditions and resources. So the recommendations contained in this report can be seen as basic measures, with each agency encouraged to provide other TIS specifications beyond these measures.

For those agencies interested in improving their TIS policies, there are many valuable resources available for further research. These are listed under the References section. Two of the more important resources that are quoted frequently in this report are:

- *Best Practices for Traffic Impact Studies: Final Report. SPR 614.* Prepared for the Oregon Department of Transportation and the Federal Highway Administration. June 2006.
- *Transportation Impact Analyses for Site Development.* Institute of Transportation Engineers. Publication No. RP-020C. 2006.

Agencies looking to improve the process should not be intimidated by the seeming complexity of this report. Three key changes would serve to remedy many of the basic issues seen today:

1. Use an “area of influence” approach to establish the study area and the agencies to be involved.
2. Require a scoping session before any study commences.
3. Require the analysis be based on a “cumulative development” approach.

Executive Summary

The following are extracts of the “recommended practices” from each section.

Qualifications for TIS Preparer

- Specify a registered professional engineer (P.E.) in Idaho and a stamp of the final TIS.
- Encourage further qualifications such as Professional Traffic Operations Engineer.

Ownership/Client Responsibility

- Require a professional engineer prepare the TIS to provide protection of the public interest within the prevalent practice of consultant engineers being retained by the developers.
- Ensure the issues identified in the scoping are thoroughly reviewed in the final document.

Area of Influence

- There are several methods to establish the area of influence or study area. Agency policies should establish a variety of criteria, using simple measures such as the Institute of Transportation Engineers (ITE) table for smaller projects. Larger, more complex projects should be subject to a negotiated area.
- The area of influence is more likely to be an “amoeba” rather than a circle. Desire lines for travel are not symmetrical around a development. Use of a travel demand model to establish an area of influence would be desirable.
- For smaller projects, the size of the area of influence could be indicated by average trip lengths generated by a travel demand model.
- The area of influence should provide the basis for involving transportation and land use agencies in subsequent negotiations regarding the final study area, scope of work, and review of the TIS.
- The final determination of the study area should incorporate any congested corridors or facilities and intersections in proximity to the area of influence. This would be established during the negotiation.

Development of Thresholds

- Include conditions under which a TIS may be required for major future land use map changes in comprehensive/master plans, creation of special districts, access permits, conditional use permits and other types of actions which can affect transportation.
- Provide guidance in the policy or ordinance as to when a TIS requirement may be waived or enforced whether the defined thresholds have been met or not. Examples would include highly congested or constrained intersections, sensitive land uses, or safety issues.
- Incorporate an appeal process for the decision to waive or require a TIS.
- Adopt common thresholds for TIS based on rural, suburban and urban typologies.

Establishing a Scoping and Review Process

- Include in the TIS ordinance/policy language to involve appropriate agencies as indicated by an Area of Influence evaluation or other mechanism to identify the affected agencies. Language should specify a time limit for agencies to respond with extensions for very large, complex projects.

- Specify that these agencies will be involved in scoping and reviewing the TIS under the lead of the land use or transportation agency having authority over development approval.
- In many cases, poor coordination can be improved by increased communication between agencies.
- Include provisions in the ordinance/policy to require a scoping prior to the conduct of the TIS.
- The scope can only be amended upon approval by the lead agency. An appeal process should be specified to allow modifications or waivers.
- Include multi-modal considerations as part of the scope.

Table of Contents

- Include in the agency’s policy a requirement for an initial table of contents or outline and a list of figures. A suggested outline modeled after the ITE or ITD examples could be included in the policy.
- Include in the agency’s policy a requirement that the table of contents list specific figures and tables. A suggested list modeled after the ITE report could be included as an example or starting point.
- Incorporate the need to discuss additional needed evaluations or potentially superfluous evaluations as part of the initial scoping session.
- The resulting product should be part of the scoping agreement and constitute the order of the final TIS.

Cumulative Development

- The need for a cumulative development analysis should be explicit in the policy or ordinance.
- The source for the cumulative development data may be COMPASS or another recognized source such as a local government agency with land use authority. The cumulative data source needs to be identified and approved during the scoping session.
- A cumulative development analysis would comprise an analysis of the future base growth (existing plus approved development) without the development proposal and an analysis with the development proposal.
- Any variations in the approach should be discussed and subject to written agreement.
- The policy should stipulate that a TIS should include “background” traffic from previously completed TISs in the vicinity of the project unless the proposed project(s) connected to the TIS(s) were denied.

Forecasting

- The selection of the forecasting method should be determined during the scoping session.
- The growth trend method should be considered only on roads with minimal volume.

Other Issues

- Incorporate specific evaluation of alternatives into the policy. The extent of the analyses should be determined as part of the scoping process.
- Include safety evaluations into the policy. The evaluations should address vehicular, pedestrian, and bicycle issues, as appropriate.
- Specify that only projects and services programmed (budgeted) for construction or implementation can be assumed for purposes of the TIS capacity analysis. The period of time for programmed improvements may range up to five years. Planned projects included in the regional long-range transportation plan (e.g., *Communities in Motion*) or in local transportation plans may be included for informational purposes, but not for capacity analysis.

- Require truck traffic analyses. The extent of such analyses should be subject to the scoping process.

Documentation of Assumptions and Data

- Assumptions must be part of the scoping process. All assumptions must be detailed and specified as to source and date, specifically including programmed transportation improvements.
- Traffic counts, turning movements, and other evaluations should be provided as technical appendices to the main report.
- Failure to document assumptions and data should be noted as grounds for rejection of the TIS.

Public Document

- Identification of confidential or proprietary information must be disclosed during the scoping meeting and made part of the scope in advance of any study or finding. It should be explicitly stated in the policy that the burden of proof for withholding information for reasons of confidentiality is on the applicant.
- No information should be withheld that is related to the determination of the need for mitigation.

Level of Service

- Clearly specify the acceptable levels of service (LOS) for the transportation elements. If variable LOS, these need to be clearly tied to each roadway type and area.
- Specify that mitigation measures must bring LOS within acceptable standards using measures consistent with local and state plans.
- When multiple agencies have jurisdiction over the transportation facilities within the study area of a TIS, there needs to be some recognition in the policy and/or scoping as to what LOS shall be applied.
- Use of corridor planning LOS analyses should be considered in place of more detailed intersection LOS, particularly when evaluating long-term implications of the proposed development.

Publication/Library

- Include in policy or ordinance that draft and final copies of TISs be provided in accessible PDF to allow easier review and comment. Provision should be made that the original TIS document from the consultant remain with the lead agency as the “official” document and that no changes not authorized by the consultant be made to that document.
- Stipulate in policy or ordinance that TISs must include all technical materials such as documentation for assumptions, proposed development information, site maps, etc.
- Consider use of shape files to delineate the study boundaries of the TISs. The shape files should be produced by the consultant as one of the deliverables.

1. Background of TIS Issue

In late 2006, RTAC a standing committee of COMPASS, discussed issues related to TISs. A COMPASS Board workshop was held in December 2006 to acquaint elected officials with the problems faced by agencies regarding TISs. This workshop resulted in a general agreement by officials that the current approach was not adequate, with the following issues highlighted as concerns:

- A cumulative development approach is needed to gauge the true effects of development on transportation.
- There needs to be some regionally coordinated threshold for development size which would trigger a TIS.
- The area to be addressed in a TIS often should be larger than is typically included.
- Many agencies feel left out of the communication. There is no comprehensive way to bring transportation agencies together for joint consideration. Some participants voiced a concern that this disconnect meant needed actions were not required.
- There were questions about the general quality of TISs and the qualifications of the preparers. A suggestion was made that a list of qualified professionals be maintained.

The COMPASS Board concurred that the agency should play a role in the provision of data for TISs. There was no implication that COMPASS should take on any “regulatory” function, but the Board workshop did show a need for greater coordination of information and a better consistency between studies.

2. Definition and Purpose of TIS

As defined by the ITE report, *Transportation Impact Analyses for Site Development* TISs, “...are intended to determine the need for any improvements to the adjacent and nearby transportation system in order to maintain a satisfactory level of service, an acceptable level of safety and the appropriate access provisions for a proposed development. In no case are such studies appropriate, either singly or in combination, for developing area-wide transportation plans. Area-wide or regional transportation plans are necessary to evaluate the cumulative effects and needs generated by many developments over extended periods of time.” (Ref. 5. p. 2)

The manner in which a TIS is prepared can be critical in understanding and planning for system improvements. An Oregon Department of Transportation (ODOT) report, *Best Practices for Traffic Impact Studies: Final Report*, noted that “TISs with either overly conservative or aggressive estimates can create problems. For individual projects, overly conservative TISs may result in wasted resources for improvements that are not needed. The cumulative effect of overly conservative TISs may be perceived as an agency antigrowth bias to the development community. The other extreme occurs when assumptions made about the basic variables allow the applicant...to underestimate projected impacts from development, or over-assume available capacity. Outcomes from this situation can include unanticipated congestion and safety problems, inappropriate or ‘throwaway’ mitigation, and a ‘chasing the last trip’ phenomenon, meaning the traffic effects of approved and built projects become the burden of future development.” (Ref. 4. p. 1)

The ODOT report is an excellent, in-depth analysis of TIS procedures. It evaluated twelve case studies of TISs and compared the forecasted traffic issues with actual traffic conditions after the developments were in place. In some cases, the TISs over-predicted traffic compared to actual levels.

Both the ODOT and ITE reports are highly recommended reading for agencies wanting to improve their local policies or ordinances.

3. Qualifications for TIS Preparer

Who is qualified to prepare a TIS? The ITE report does not stipulate that a preparer be an engineer. Instead it notes that “...studies should be prepared under the supervision of a qualified and experienced transportation professional who has specific training in traffic and transportation engineering and planning and several years of experience...” It goes on to recognize that some jurisdictions do require a signing and sealing by a registered professional engineer. (Ref. 5. p. 3)

The professional engineer (P.E.) stamp can provide some assurance regarding the quality of the TIS. In part, the assurance is provided under ethics promulgated by the State of Idaho Board of Professional Engineers and Professional Land Surveyors, which prohibits “...the use of statements containing a material misrepresentation of fact or omitting a material fact.” Violation of these ethics can result in fines or even the loss of one’s license. The ethics prohibit a P.E. from stamping work “...dealing with subject matter in which they lack competence, nor to any plan or document not prepared under their direction and control.” (Ref. 11) This is specifically noted in IDAPA 10.01.02, “A Registrant shall undertake to perform assignments only when qualified by education or experience in the specific technical field involved...” and “A Registrant shall affix his signature and seal only to plans or documents prepared under his responsible charge.” (Ref. 15) These ethical rules do not pertain to preparers of TISs who are not licensed P.E.s.

The requirement for a P.E. oversight and stamp is not clearly specified in all policies. Ada County Highway District’s (ACHD) policy states that, “A qualified professional shall prepare the traffic impact study. The District shall approve the professional who will do the study before the work begins. The District Traffic Engineering Supervisor, or designated staff member, will confirm the qualifications of the proposed professional(s).” (Ref. 7. pp. 7100-19 and 20) The Idaho Transportation Department’s (ITD) policy specifically states that, “A TIS shall bear the stamp and signature of a professional engineer registered in the State of Idaho.” (Ref. 8. p.2) The Association of Canyon County Highway Districts’ (ACCHD) TIS procedures also specify a P.E. stamp by an engineer registered in Idaho. (Ref. 6. p. 3000-24)¹

Recommended Practices

- Specify a registered professional engineer (P.E.) in Idaho and a stamp of the final TIS.
- Encourage further qualifications such as Professional Traffic Operations Engineer.

¹ Three local TIS policies were used for this evaluation from the Ada County Highway District, the Association of Canyon County Highway Districts, and the City of Caldwell. No inference should be drawn concerning other local policies and their provisions.

4. Ownership/Client Responsibility

One issue that is rarely addressed in the literature is “ownership” of the TIS. Who is the TIS consultant’s client? While many elements in a TIS are issues of fact, there will always be areas requiring professional judgment. The issue is touched upon to a degree in the ITE report. “Although study preparers and reviewers will sometimes have different objectives and perspectives, all parties involved in the process should adhere to established engineering ethics...and all analyses and reviews should be conducted in an objective and professional manner.” (Ref. 5. p. 4)

The December 2006 workshop with the COMPASS Board, and subsequent discussions with RTAC and the Work Group, indicated that the ITE guidance is not always observed. One recommendation from the COMPASS workshop was that a list of qualified individuals be maintained. As noted under the Qualifications section, in some cases a TIS must be prepared by a registered engineer, while other policies are more general in their requirements.

In most cases, the client for the consultant is the developer. ITD’s policy specifies that the consulting engineer will be hired by the developer. The City of Caldwell has taken a different tack by requiring the contract with the consultant be held by the City, with the developer paying the cost. Caldwell’s policy states, “The applicant shall pay for a traffic impact study commissioned by the city.” (Ref. 10) Caldwell stipulates that qualified applicants wanting to be considered for inclusion on the list must receive letters of recommendation from other regional transportation agencies. The developer can select a consultant from this list, or the City of Caldwell will use the next available consultant in a rotation process.

The two approaches have their pros and cons. The virtue of the Caldwell approach is that the consulting engineer’s client is the public agency. For some public agencies, however, the contracting process may be too cumbersome to meet the schedule requirements of development reviews. Furthermore, the additional requirement of using a professional engineer and a stamped TIS brings the P.E. ethical requirements noted above into play, regardless of who holds the contract.

Recommended Practices

- Require a professional engineer prepare the TIS to provide protection of the public interest within the prevalent practice of consultant engineers being retained by the developers.
- Ensure the issues identified in the scoping are thoroughly reviewed in the final document.

5. Area of Influence

The *Transportation Impact Analyses for Site Development* notes that, in addition to identifying *when* a project needs to prepare a TIS, the process needs to identify the extent of the TIS. The extent includes not only what elements need to be evaluated, but how large an area needs to be included in the evaluation. The area is referred to as the “area of influence.”

In some existing policies, this area may be established as a fixed-distance. For example, the ACCHD policy notes that, “The traffic study area shall include all roadways and intersections directly joining the proposed development and adjacent collector/arterial intersection within ½ mile of the

development boundary. It shall include other nearby roadways and intersections that the District believes are affected by traffic generated by the proposed development.” (6. p. 3000-24)

Another approach is used by ACHD in leaving the definition of the study area to negotiation between the developer’s traffic consultant and ACHD staff, “The boundary of the study area shall be identified jointly by the professional conducting the study and the District staff.” (Ref. 7. p. 17)

ITD uses yet another method by setting a numerical and/or percentage change in volume. “In general, any links (streets) that will experience a directional increase of 250 ADT or 25 vehicles in the peak hour should be included in the study. The study area should extend beyond the immediate area up to a one half mile (1/2 mi.) outside the development boundaries and may include any link or street that experiences a 5% directional increase in traffic and the effects of other development which may coincide with the immediate development.” (Ref. 9. p. 2)

All of the methods above have their strengths and weaknesses. A fixed distance is simple to administer, but in some instances the traffic effects may be much greater than a half-mile. An open negotiation provides a great deal of flexibility, but may sometimes lead to inconsistent requirements based on the individuals involved in the negotiation.

A more complex process is shown in the table below taken from the *Transportation Impact Analyses for Site Development* manual by ITE. It provides some guidance for the “radius” of an area of influence based on the type and magnitude of the proposed development.

Suggested Study Area Limits for Transportation Impact Analyses	
Development	Study Area
Fast-food restaurant	Adjacent intersection if corner location
Service station, with or without fast-food counter	Adjacent intersection if corner location
Mini-mart or convenience grocery with or without gas pumps	660 ft. from access drive
Other development with fewer than 200 trips during any peak hour	1,000 ft. from access drive
Shopping center less than 70,000 sq. ft. or Development with peak-hour trips between 200 and 500 during peak hour	All signalized intersections and access drives within 0.5 miles from a property line of the site and all major unsignalized intersections and access drives within 0.25 miles
Shopping center between 70,000 and 100,000 sq. ft. GLA, or Office or industrial park with between 300 and 500 employees, or Well-balanced, mixed-use development with more than 500 peak-hour trips	All signalized and major unsignalized intersections and freeway ramps within 1 mile of a property line of the site
Shopping center greater than 100,000 sq. ft. GLA, or Office or industrial park with more than 500 employees or All other developments with more than 500 peak-hour trips	All signalized intersections and freeway ramps within 2 miles of a property line, and all major unsignalized access (streets and driveways) within 1 mile of a property line of the site

Suggested Study Area Limits for Transportation Impact Analyses

Development	Study Area
Transit station	0.5-mile radius

Source: Adapted from Stover and Koepke 2002 and Barbara M. Schroeder.

GLA = gross leasable area (Ref. 6. p. 10)

Using a Travel Demand Model to Establish the Area of Influence

Another method for determining the area of influence was presented during the final sessions of the TIS work group. The critical step of determining the area of influence affects the composition of the scoping and review group. As noted in the Background section, one of the most common concerns was that some agencies believe the current process leaves them out of the scoping and review of a TIS. The following test was run using a “typical” development with approximately 900 employees in the COMPASS travel demand model. Using the percentage changes in traffic, the test showed effects on four cities (Meridian, Boise, Nampa, and Kuna), Ada and Canyon Counties, ACHD, the Nampa Highway District, and ITD.

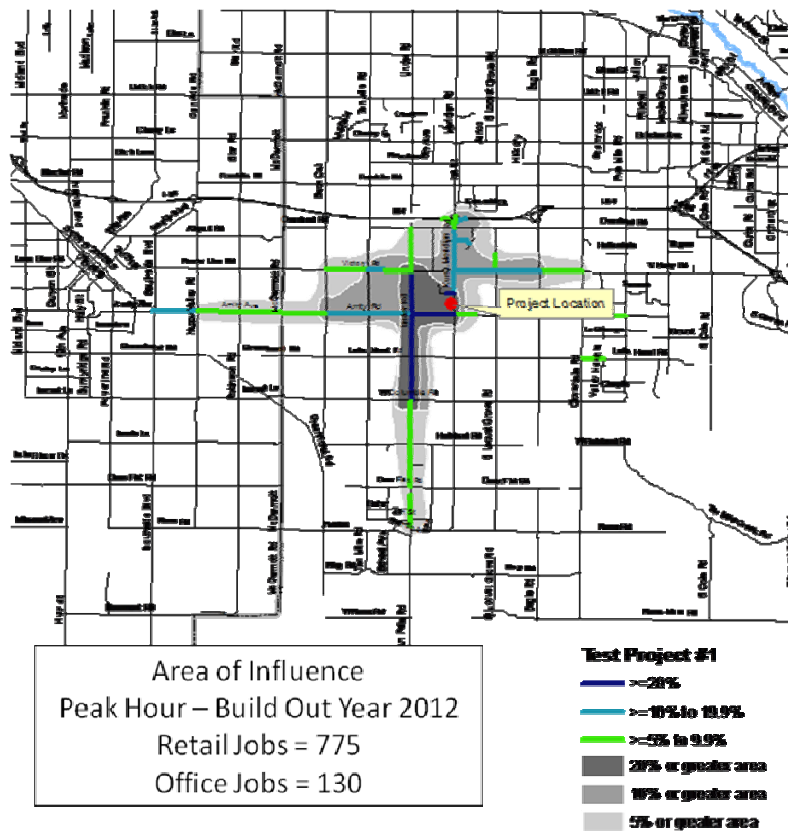


Figure 1 - Area of Influence Based on Percentage Change

The same test project was run and tracked the volume changes through the system. This alters the shape of the area of influence, pushing the areas more east and north than when using a percentage change basis.

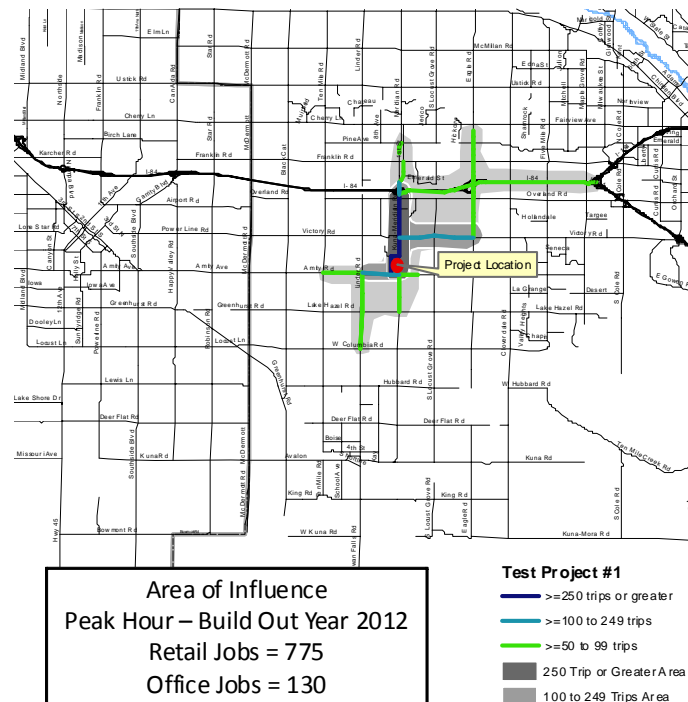


Figure 2 - Area of Influence Based on Volume Change

The travel demand model could establish an initial area of influence as a useful tool in negotiating the final study area. Smaller projects, such as designated in the ITE table above, would not be tested in this fashion, but larger projects, especially developments such as regional shopping centers or major mixed use developments, are very appropriate for this type of analysis. A test of a mixed use project in Canyon County (2,100 homes and 800 jobs) indicated the ripple of traffic at 250+ trips per day stretched over seven miles from the site, affecting two cities and two highway districts, in addition to ITD facilities.

Area of Influence Data Requirements

If the travel demand model is used to evaluate the area of influence, the TIS must include a detailed and legible site plan showing the following:

- Internal roadways (number of lanes and speed if different from a traditional 2-lane, 30mph collector)
- Site schedule/phase by development sub-area
- Square feet by non-residential development type by sub-area (retail, office, and manufacturing are basic types)
- Residential units by type (single family, multi-family, townhomes, etc.) by development sub-area
- Provide opening year and build out year

A simple example showing the necessary data needed for area of influence or any travel demand model analyses is shown below. To provide a reasonable result using the model, information on the types of land use, their size or amount, their general location, and a simple schematic of the transportation connections is needed. A bubble site plan is adequate.

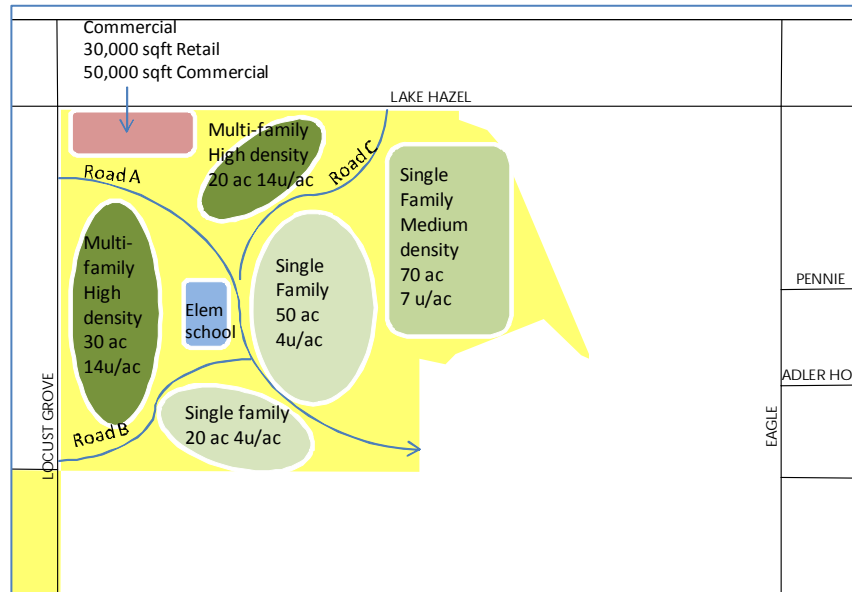


Figure 3 - Example of Site Plan Information Needed for Travel Demand Model

Recommended Practices

- There are several methods to establish the area of influence or study area. Agency policies should establish a variety of criteria, using simple measures such as the ITE table for smaller projects. Larger, more complex projects should be subject to a negotiated area.
- The area of influence is more likely to be an “amoeba” rather than a circle. Desire lines for travel are not symmetrical around a development. Use of a travel demand model to establish an area of influence would be desirable.
- For smaller projects, the size of the area of influence could be indicated by average trip lengths generated by a travel demand model.
- The area of influence should provide the basis for involving transportation and land use agencies in subsequent negotiations regarding the final study area, scope of work, and review of the TIS.
- The final determination of the study area should incorporate any congested corridors or facilities and intersections in proximity to the area of influence. This would be established during the negotiation.

6. Development of Thresholds

When is a project large enough to warrant a TIS? Are there other factors that may trigger a need for a TIS? What types of actions indicate a need for a TIS? These are all issues that should be addressed in a TIS policy.

The ITE report noted that, “There is little consistency in specific threshold quantities...” in terms of the number of daily trips, peak hour trips, acreage or square footage. Its research found ranges of 500-3,000 trips per day with the most common being 1,000 trips per day. Peak hour trips most commonly fell into a range of 50-100 trips per hour. It went on to recommend 100 trips per hour based on the likelihood that this volume can change the intersection conditions appreciably. (Ref. 5. p. 5) It cautioned that quantitative thresholds need to be locally determined, with many agencies using thresholds lower than 100 trips per hour.

The ITE report provided other factors that could warrant a TIS:

- System deficiencies that create safety issues
- Existing congestion problems
- Sensitivity of adjacent uses (neighborhoods)
- Needs for bike or pedestrian improvements
- Transit related issues
- Access management

Examples of Local Thresholds				
	Idaho Transportation Department	Association of Canyon County Highway Districts	Ada County Highway District	City of Caldwell
Residential Units	n.a.	40	100	100
Commercial/Retail Square Footage	n.a.	15,000	30,000	30,000
Industrial/Institutional Square Footage	n.a.	25,000	50,000	50,000
Trips (vehicles per day)	1,000/250*	5,000	n.a.	1,000
Waiver Provision (may waive TIS or require TIS regardless of threshold)	Yes	Yes	Yes	Yes
* ITD requires a “full” TIS at 1,000+ trips per day and a “minor” TIS for the lower threshold				

The location and place where a development occurs greatly influences the demands on the transportation system. Demand on the transportation system affects automobiles, bikes and pedestrians. By and large, urban places have more complex transportation infrastructure (sidewalks, safety zones, curb, gutter, bike lanes, multiple lanes, traffic calming devices, traffic control devices, etc.) than suburban places which in turn have more complex and complete transportation infrastructure than rural places. These “mature urban areas have ubiquitous transportation and development that policy can affect only marginally and over the long run” (Ref. 17.) Because the transportation system has been previously improved in urban and suburban places, increased transportation demand is more readily accommodated. Increased transportation demand in rural areas

resulting from development is more to be resolved by improving the existing infrastructure. Therefore, it is realistic for TIS studies to occur more frequently in areas where the opportunity for transportation system improvements is relevant; rather than in places which already have transportation systems that are fully improved. “Each local government will need to establish its own threshold based on local needs and policy. For example, a local government may base its threshold on the overall availability of transportation system capacity. Those with a great deal of available capacity may consider a higher threshold based on the system’s ability to accommodate additional traffic. If system capacity is limited, a local government may want to set a lower threshold to have greater control over impacts to the system.” (Ref. 18.)

Rural developments are defined as located in the jurisdiction of the County and not within a Municipal Area of Impact, Suburban sites are in the County and within a Municipal Area of Impact or 1 mile of City Limits, and urban sites have been or will be annexed at the time of application. No provision for trip capture is included during the threshold phase. Developments or projects that generate trips in excess of either the Peak Hour Trip or Daily Trip Thresholds should provide a Transportation Impact Study as part of a complete application.

Recommended Thresholds			
	Urban	Suburban	Rural
Peak Hour Trips	150	100	50
Average Annual Daily Trips	1500	1000	500

Waivers are often noted in very general language. The language in the ACHD policy is, “If a project has special circumstances associated with it, the District may require an impact study, even if the aforementioned criteria are not met. The District may waive the requirement if, in the District's opinion, there are no traffic issues to resolve.” (Ref. 7. p. 7100-17)

In addition to the “usual” development application purpose for a TIS, the ITE report lists other types of actions which may be appropriate for evaluation:

- Access permits
- Environmental assessments
- Formation of special purpose districts
- Amendments to comprehensive plans
- Annexations. (Ref. 5. p. 3)]

Application of TIS to comprehensive plans is in accord with Title 67, Chapter 65 of the Idaho Code which states that one of the required components of a comprehensive plan is a transportation section that contains “...an analysis, prepared in coordination with the local jurisdiction(s) having authority over the public highways and streets, showing the general locations and widths of a system of major traffic thoroughfares and other traffic ways... This component may also make recommendations (regarding) control of access....and a proposed system of public or other transit lines and related facilities...” (Ref. 16.)

Recommended Practices

- Include conditions under which a TIS may be required for major future land use map changes in comprehensive/master plans, creation of special districts, access permits, conditional use permits and other types of actions which can affect transportation.
- Provide guidance in the policy or ordinance as to when a TIS requirement may be waived or enforced whether the defined thresholds have been met or not. Examples would include highly congested or constrained intersections, sensitive land uses, or safety issues.
- Incorporate an appeal process for the decision to waive or require a TIS.
- Adopt common thresholds for TIS based on rural, suburban and urban typologies.

7. Establishing a Scoping and Review Process

Fifty years ago, each city could be evaluated separately from each other, and clear distinctions could be made between urban and rural travel issues. Today transportation crosses boundaries and switches from one jurisdiction's facilities to another. Traffic generated by Development X in one city may pass through Neighborhood Y in another city. While the separate approach might have been appropriate 50 years ago, growth in the region has pushed boundaries closer together. The proximity of boundaries may have been one reason the December 2006 Board workshop concluded that many agencies felt left out of the communication process during development of a TIS. There is no consistent way to bring agencies together for joint consideration, and key issues may not be addressed.

Within the reviewed ordinances and policies there is no formal process regarding relevant agencies in scoping or reviewing a TIS. In part, this is due to the uncertainty of how the study area is established. For a very large proposal, transportation impacts may extend for several miles and involve several local governments and affecting travel on local and State roads. This issue of "defining the box" is addressed under the Area of Influence section that provides guidance as to which agencies need to be involved.

There is also no provision for involving Valley Regional Transportation in the process. This may not have been a substantive issue to date, but future analyses need to consider potential effects of an expanded public transportation system.

Just as there is little or no discussion of what other agencies should be involved, there is no definition as to how they would be involved. Especially in Idaho, where roadway jurisdictional authority is sometimes separate from land use authority, the lack of a joint review process hinders the effectiveness of TISs.

The agencies within the Area of Influence may include:

- Highway districts (roads, sidewalks, on-street bike facilities, signal system)
- Idaho Transportation Department (roads, state system bike facilities)
- Cities (land use, roads, pathways off-road)
- Counties (land use)
- Valley Regional Transit (public transportation)
- Ada County Highway District (carpooling and vanpooling)
- COMPASS (data and travel demand modeling)
- School districts (safe routes to school, school busing)
- Special districts, urban renewal districts

The list would depend on the size of the proposed action and the resulting Area of Influence. The consideration of alternative modes, particularly walking and biking, may be problematic given the number of agencies which may have jurisdiction over different facilities in some areas. In other areas, particularly those areas outside city boundaries, there may not be an agency to implement pathways or sidewalks.

One of the other issues noted was the need to establish some tracking system for the status of TIS. This is something that should document the release of a draft TIS, record the comments received, and document the final approved version.

The ITE report notes that the review process should "...be conducted or directed by properly trained transportation engineers or transportation planners in agencies that are responsible for development review and approval. In some cases, adjacent jurisdictions that may be affected by the proposed development should also be offered an opportunity to review the study." One of the keys to an effective review is noted earlier in the report. "It should be emphasized that the review process be iterative and that it begin when a development's planning is initiated, not after a development has been planned and a transportation study completed." This statement ties to a complaint heard often during discussion at the Work Group and RTAC. Agencies see the TIS after it has been completed. Key elements may have been left out—e.g., analyses of pedestrian issues around a school site—may have not been done, possibly requiring revisions of the TIS. So the developer may then face additional costs and delays. A more comprehensive scoping early in the process could be beneficial to both the public agencies and the developer.

The scoping element is sometimes neglected in the existing ordinances and policies. The following example of a strong policy was found in the following Pasco County, FL ordinance.

Prior to conducting any study, a methodology statement shall be prepared by the applicant and submitted for review and approval by the county. The purpose of the methodology statement is to establish agreed upon methodologies and assumptions prior to the start of the study and, if appropriate, to provide substantiation that the development's impacts are de minimis² and further traffic study and review is not required.

A methodology statement shall be prepared using the guidelines provided in the following paragraphs. The methodology statement will be first reviewed by a county representative, if necessary, through a methodology meeting with the applicant's consultant. The applicant's consultant will then revise the statement based upon agreed upon methodologies. The applicant shall ensure the consultant does not prepare a traffic study without an approved methodology statement signed by the county.

The methodology agreements shall be valid to govern submittal of the TIS for a period of six months from the date of approval. If methodology agreements have been reached under earlier editions of these procedures, those agreements will remain valid for a period of six months after approval of the methodology. Expired methodology agreements must be updated to reflect the current version of the TIS Guidelines. (Ref. 12. pp. 1-2)

² For the purpose of requiring a transportation impact study, a proposed development may be deemed to have a minimal impact (called de minimis) and not be subject to requirements.

An appeal may be requested by the applicant, whereby the TIS scope can be evaluated and perhaps modified or waived at the discretion of the Land Use/Transportation jurisdiction; and further, the Land Use/Transportation jurisdiction retains full authority to waive, modify and require additional metrics for a complete TIS for any development entering the entitlement process as is required by Idaho State Code (67.6501).

Recommended Practices

- Include in the TIS ordinance/policy language to involve appropriate agencies as indicated by an Area of Influence evaluation or other mechanism to identify the affected agencies. Language should specify a time limit for agencies to respond with extensions for very large, complex projects.
- Specify that these agencies will be involved in scoping and reviewing the TIS under the lead of the land use or transportation agency having authority over development approval.
- In many cases, poor coordination can be improved by increased communication between agencies.
- Include provisions in the ordinance/policy to require a scoping prior to the conduct of the TIS.
- The scope can only be amended upon approval by the lead agency. An appeal process should be specified to allow modifications or waivers.
- Include multi-modal considerations as part of the scope.

8. Table of Contents

During discussions with the COMPASS Board, RTAC, and the Work Group, a common theme heard throughout the process was the perceived lack of consistency and sometimes quality in the TIS products. This is not surprising given the diversity of development types and the number of firms doing TISs. In many of the reviewed policies and ordinances, neither a preliminary scope nor a specific outline is required. This leaves the contents and approaches open to discretion by the consultant. While most consultants, especially those with professional licenses and experience in traffic engineering/planning, will be very familiar with the “standard” elements to include in a TIS, the lack of specificity can lead to abuse—or at least omissions based on ignorance. The ITD policy provides a “guide” for the contents of TISs, noting that, “Some studies can be easily documented using this outline; however, additional sections may be warranted because of specific issues or results of the study and inapplicable sections may be omitted.” (Ref. 2. p. 10) The ITD table of contents is included for consideration in Appendix 1.

Also included in this report is a table of contents included in appendices of the ITE report. (See Appendix 2.) Similar to ITD’s policy, the ITE report suggests it as a guide, with supplemental sections required in some circumstances and suggested sections open to elimination if not appropriate. There are many similarities between the two outlines, and either would be appropriate.

The contents should also address the list of figures to be included in the final report. These may include location maps, turn movement inventories and forecasts, site plans and other features. The intent is to clearly depict the situation, various analyses and recommendations in a manner that allows reviewers to follow the process. See Appendix 3 for sample list of figures from the ITE Report. The critical piece seems to be starting with some basic expectation as to what will be addressed, with the scoping session intended to refine what other evaluations may be needed or what suggested evaluations may be unnecessary. If local agencies were to include the same, or at least very similar,

tables of contents in their policies, the work of the consultants and reviewers of the TISs would be easier.

Recommended Practices

- Include in the agency’s policy a requirement for an initial table of contents or outline and a list of figures. A suggested outline modeled after the ITE or ITD examples could be included in the policy.
- Include in the agency’s policy a requirement that the table of contents list specific figures and tables. A suggested list modeled after the ITE report could be included as an example or starting point.
- Incorporate the need to discuss additional needed evaluations or potentially superfluous evaluations as part of the initial scoping session.
- The resulting product should be part of the scoping agreement and constitute the order of the final TIS.

9. Cumulative Development

Even though many policies directly or indirectly indicate the need to consider the effects of development beyond the proposal under immediate consideration, most of elected officials at the COMPASS workshop and staff participating via RTAC or Work Group indicated that the TISs generally evaluate existing traffic conditions and add the proposed development to existing traffic. This would be solved by specifying a “cumulative development” approach that factors in all approved unbuilt projects (e.g., a nearby subdivision with 400 lots but only 40 existing homes) and other projects under consideration.

The need for a cumulative growth process is noted in the recent Adequate Public Facilities Ordinance draft ordinance completed for the *Blueprint for Good Growth* project in Ada County. (Ref. 14) Maintenance of the data base will require that land use agencies work with COMPASS to maintain the currency and accuracy of development information, especially in terms of pending developments and revocation of development rights.

Many of the local examples already call for a baseline analysis (without proposed project) and a buildout. In addition, many call for some evaluation of traffic using both vacant, approved growth, and proposed developments in the general vicinity. The sources for the data are not specified, however. As an example, ACHD’s policy states that the TIS shall identify and consider, “forecasts of future traffic patterns, roadway capacity, and turning movements in the study area before the proposed development is built. This establishes ‘background traffic.’ Traffic patterns and roadway capacity shall be forecast for the build-out year and for 20-year planning. Turning movements shall be forecast for the build-out year. Traffic forecasts by the Ada Planning Association³ should be used, where available. Those forecasts shall be checked for credibility and reconciled with independent forecasts. The study should include a reasonable rate of regional traffic growth. It should estimate additional traffic likely to be generated by vacant land development in, and surrounding, the area. The basis of development projections will be current zoning, prepared with advice from local government staff.” (Ref. 7. p. 7100-18)

³ The ACHD policy refers to the organization existing prior to 2000, when a two-county organization was formed and renamed Community Planning Association (COMPASS).

Another example is for ITD's policy, which states, "When the present peak hour traffic has been identified and developed, then the future year background traffic volumes can be developed. This non-site traffic consists of the future through traffic and the generated traffic of all other future developments up to one-half mile (1/2 mi.) from the immediate area. There are many different methods for calculating the background traffic." (Ref. 2. p. 3)

The policy goes on to note that the consultant could use travel forecasts from metropolitan planning organizations such as COMPASS or use a percentage increase for the background traffic levels. Either approach can be problematic when rapid changes in land use make metropolitan planning organization forecasts obsolete and make historic background increases invalid. The policy also recognized this issue in the following statement, "In addition to the existing traffic growth projections, potential traffic increases due to other developments (planned and anticipated) in the area may also be required. In addition, some assumptions for development of other vacant lands in the vicinity of the project should be identified and included in the total background non-site traffic. This additional traffic is important in areas where developmental growth may not be represented sufficiently in the traditional growth trends. The Local Planning Agency (LPA) and the ITD District Traffic Engineer should be consulted to determine requirements for assessing other developments in the TIS." (Ref. 2. p. 4)

The Oregon report recommends the cumulative development approach, "This method is most suitable for smaller urban areas, or a portion of a large urban area (if a travel demand model is not available), where there is useful local information about future projects. This method projects future traffic volume by adding the estimated traffic generated by all approved, but not yet opened, developments in the study area. Long-term forecasts should also include the effects of future developments on undeveloped lands."

The travel demand model can be used with a cumulative development approach. This has been discussed with RTAC, the Demographic Advisory Committee, and the Transportation Model Advisory Committee. There were concerns that formalizing the cumulative growth might create issues with air quality conformity or divert resources from projects needed to support the vision of *Communities in Motion*.

If cumulative development is to be used in a TIS process, there is a need for a quality database regarding both the transportation system and land use.

Transportation project assumptions shall be clearly identified in a TIS. Projects fit within one of following three categories:

Existing transportation system - transportation projects built or under construction Programmed improvements which may range from one to five years included in the appropriate transportation programs (FYWP, CIP, TIP, STIP).

- These projects shall be included in a TIS for all development projects. Transportation project construction years must coincide with the anticipated development year.
- For example, if a development is anticipated to open 2009 and be complete by 2012 than, the TIS may include transportation projects with a construction year between 2009 and 2012.
- The preparer is responsible for requesting, researching and using the latest and most up to date information.

Planned improvements - included as horizon, preliminary development in current transportation programs, long-range transportation plans, or capital improvement programs.

- Planned improvements shall be included in the TIS.
- For example, if a development is anticipated to open 2015 and be complete by 2030 than, the TIS may include transportation projects listed as PD or horizon, in the CIP, and long range transportation plan.
- The preparer is responsible for requesting, researching and using the latest and most up to date information.

Unfunded/illustrative - listed as illustrative in the long-range transportation plan, unfunded in CIP or for right-of-way preservation

- The inclusion of unfunded illustrative projects shall be discussed and determined at the scoping meeting.

Land use must also be tracked by a variety of categories:

Existing development - on the ground or an issued building permit

Authorized - approved un-built, council and/or commission act on development, final plat or building permit issuance.

In Process - full application submitted and accepted by land use agency, TIS submitted and accepted by highway district and both submitted to COMPASS for review, and/or completed preliminary plat phase

- Zoning and/or comprehensive plan changes are requested
- Public hearings are scheduled and listed on planning and zoning, council, and/or commission agendas
- Development will be entered into the "database" if COMPASS receives a copy of the TIS, reviews and submits comments to member agency staff.

Anticipated - pre-application complete, submitted and accepted by the land use agency

- Developers/owners make available a draft site plan, estimate of number of lots per use (residential, non-residential, open, common area) to highway district and land use agency staff.
- Enough information is available to begin a transportation impact study.

Speculative - no formal pre-application or application filed

- Developers/owners meet with highway district staff or land use agency staff to discuss general plans to develop
- No detailed site information is available or provided.

A high quality process will identify the other developments within the "Area of Influence" or that may affect the same roadways and intersections and determine if they should be included in the cumulative analysis of a TIS. The following are possible options:

- Not necessary to include any "Speculative" development's impact as background traffic due to the lack of information
- Acknowledge all "Anticipated" other developments. This requires that the appropriate level of information is available in draft or submitted TIS. This information would consist of a general site

plan including location, number of housing units, square feet of non-residential, trip generation and distribution estimates. Trip generation and distribution estimates should be acknowledged in the Background Traffic section of the TIS. Caution is to be taken because the other development's TIS may be revised based on staff comments.

- Consider including all "In Process" other development's trip generation and distribution estimates in the background traffic section of a TIS. The preparer must provide reasons for excluding the other development's information.
- Include all "Authorized" other developments. These development's trip generation and trip distribution estimates must be included as "background traffic" in the TIS.

Other considerations

Small developments anticipated to build out within five years may not be required to include other development's impacts as background in the TIS. This decision should be at the discretion of the appropriate agency and be discussed at the scoping meeting. "Other developments" refer to those projects with a long-term build out (15 years or more). However, the agency may require a portion of this "other development" to be included as background if the phasing information is available.

Existing zoning may constitute a committed demand on the transportation system capacity, especially where specified uses are deemed "use by right" under the zoning codes. For example a commercial zoning class may allow specific retail uses up to specific floor area ratios without additional hearings or reviews. The only step necessary is to submit for a building permit. Discussions with some local governments indicated this is a potential issue, but the resolution to inventorying this category and determining its effect on cumulative impact demand is unclear.

Recommended Practices

- The need for a cumulative development analysis should be explicit in the policy or ordinance.
- The source for the cumulative development data may be COMPASS or another recognized source such as a local government agency with land use authority. The cumulative data source needs to be identified and approved during the scoping session.
- A cumulative development analysis would comprise an analysis of the future base growth (existing plus approved development) without the development proposal and an analysis with the development proposal.
- Any variations in the approach should be discussed and subject to written agreement.
- The policy should stipulate that a TIS should include "background" traffic from previously completed TISs in the vicinity of the project unless the proposed project(s) connected to the TIS(s) were denied.

10. Forecasting

The ODOT report concluded that a regional travel demand model is the best method for forecasting travel demand in a TIS. (Ref. 4. p. 9) It should be noted that Oregon has much stricter state rules regarding development approvals within the context of comprehensive plans and the authority of regional growth and transportation plans. As

Common Methods for Projecting Background Traffic

1. ***Regional Travel Demand Models:*** The best tool for forecasting over long timeframes.
2. ***Cumulative Analysis:*** Most suitable for smaller urban areas or a portion of a large urban area and for short periods of time.
3. ***Growth Trends:*** Most suitable for rural areas with stable growth rates.

- Ref. 4. p. 29

noted in the Cumulative Development section, a combination of regional travel demand modeling and cumulative growth offers a productive solution where comprehensive plans are not legally binding.

ITD's policy notes the availability of models under the State's metropolitan planning organizations. ACHD, ACCHD, and the City of Caldwell recommend using the COMPASS travel demand model, with the caution "... (t)hose forecasts shall be checked for credibility and reconciled with independent forecasts." Use of the cumulative growth base would alleviate the issue with growth and travel forecasts at odds with development approvals.

Growth trends are feasible only where development patterns are in keeping with historic trends. Within the Treasure Valley most areas are now challenged with new types of development demand. For example, planned communities are being proposed in areas with a minimal history of development. Past traffic increases would be misleading when developments with thousands of dwelling units and major non-residential uses are being proposed.

ACHD, the City of Middleton, and the City of Nampa have developed, or are developing, subarea travel demand models. Such models can provide more detail about intersection movements or demand on collector streets. These can be used in coordination with the more regional travel demand model overseen by COMPASS. Regardless of which travel demand process is used, maintenance of consistent development records, a common data base of traffic counts, and a protocol for assessing system capacity and other factors will be imperative.

Recommended Practices

- The selection of the forecasting method should be determined during the scoping session.
- The growth trend method should be considered only on roads with minimal volume.

11. Other Issues

A number of other issues surfaced during discussions with RTAC and the Work Group. These are listed below:

- Evaluation of Transit, Walking, Biking and Other Demand Management Approaches
- Safety and School Routes
- Budgeted vs. Planned Improvements
- Truck Traffic

Evaluation of Transit, Walking, Biking and Other Demand Management Approaches

Not surprisingly, the focus of most TISs is the roadway system: vehicle demand, turning movements, roadway and intersection capacities, and mitigation. ACHD's policy notes the need to consider "...potentially viable non-roadway measures, such as ridesharing, transit, bicycling incentives, and staggered or flexible work hours" and "school crossings, safe routes to school, and bikeways" under Section 7106.1.1. (Ref. 7. p. 7100-18) ACCHD and the City of Caldwell have very similar provisions.

These examples are not unusual. The ODOT report notes that, "No research could be located on the inclusion and analysis of alternative modes (transit, bicycle, and pedestrian) in TISs." It found that less than 10% of the policies studied even required alternative analyses. (Ref. 4. p. 8) The ITE report, however, believes that TISs have "evolved" from a rubber-tired focus to one providing, "...accessibility

to all users, particularly in urban areas.” (Ref. p. 67) The ITE report goes on to state that, while transit, biking, and pedestrian evaluations should be part of every TIS, in some cases these can be addressed qualitatively. It advocates a quantitative analysis be considered where demands are likely to exceed alternative capacity, particularly in downtown sites, educational facilities, or transit centers. The ITE cautions that level of service for alternative modes is really more of a Quality of Service (QOS) since many times the measurements evaluate issues such as the existence of sidewalks, their widths, crosswalk features, lighting, and other elements—not assessments of demand relative to capacity of the facilities. (Ref. 5. p. 70)

A local example of how alternative transportation can affect policy was in a draft of the Adequate Public Facilities Ordinance (APFO) proposed under *Blueprint for Good Growth*. It contains an unspecified trip reduction credit for development within ¼ mile of transit. (Ref. 14. p. 21) Without a QOS evaluation for transit, it would be hard to establish a specific reduction. How often does the route operate? How long during the day? What are the direct connections between the development and the route? These are among the issues to be addressed as part of the TIS.

Certainly shifting travel demand out of the peak hour is an avenue that should be explored. If the new development were subject to a conditional use that stipulated a start time of 7:00 am, this could provide mitigation. Four-day work weeks, telecommuting and other demand management techniques could be included—as long as the TIS conclusions are given some enforceability in the development agreement.

Safety and School Routes

Safety issues may be implicit in the TIS policies, but of the local policies evaluated, only the City of Caldwell’s explicitly addresses pedestrian safety, “The evaluator should give special consideration to locations that satisfy the school crossing warrant or the accident warrant.”

Safety Analysis in TISs

The TIS should take proactive steps to analyze specific safety elements. A field study is recommended to identify safety characteristics that contribute to existing safety conflicts and to address any existing safety issues.

- Ref. 4. p. 32

The ODOT report provides much more detail in terms of how safety issues are to be addressed. The elements stipulated for analysis include:

- Crash History
- Conflict Analysis
- Intersection Sight Distance
- Safe Stopping Distance
- Vehicle–Pedestrian Conflicts
- Vehicle–Bicyclist Conflicts
- Access Conflicts
- Signal Warrants
- Auxiliary Lanes
- Queuing and Storage
- Horizontal and Vertical Geometry
- Truck Movements (Ref. 4. p. 32-33)

Budgeted vs. Planned Improvements

In some TISs reviewed by COMPASS over the past several years, the “planned” roadway improvements have been used as the base future network. This assumption may be optimistic, given the growing shortfall faced by local and state transportation agencies. Roadway improvements to ITD facilities such as US 20/26 and SH 55 are shown in *Communities in Motion* but have no budgeted funding. ITD, ACHD, and other agencies budget projects in a three to five-year capital program process. The APFO calls for only programmed projects to be included in a deficiency analysis. (Ref. 14. p. 14)

Truck Trip Generation

Truck trip generation analysis should be evaluated for all proposed land uses.

Recommended guidance follows:

1. At a minimum, the existing percentage of truck trips in the project area should be cited in the TIS.
2. More complex should also assess truck safety, and operations.
3. The most complex projects should assess truck distribution.

- Ref. 4. p. 27

Truck Traffic

A subset of the “rubber tire” TIS is an analysis of truck traffic related to the proposed development. Use of the ITE Trip Generation Manual will provide information on possible truck movements, especially in the context of industrial uses. None of the local policies or ITD’s policies specifically addresses a truck component of the TIS.

The ODOT report provides some basic questions which should be addressed as part of a TIS. What is the existing truck percentage? Are there any truck safety issues in the area? How will the proposed development affect truck travel? Are existing geometrics sufficient (curb radii)?

Recommended Practices

- Incorporate specific evaluation of alternatives into the policy. The extent of the analyses should be determined as part of the scoping process.
- Include safety evaluations into the policy. The evaluations should address vehicular, pedestrian, and bicycle issues, as appropriate.
- Specify that only projects and services programmed (budgeted) for construction or implementation can be assumed for purposes of the TIS capacity analysis. The period of time for programmed improvements may range up to five years. Planned projects included in the regional long-range transportation plan (e.g., *Communities in Motion*) or in local transportation plans may be included for informational purposes, but not for capacity analysis.
- Require truck traffic analyses. The extent of such analyses should be subject to the scoping process.

12. Documentation of Assumptions and Data

One issue noted during discussion was the introduction of assumptions or data that are poorly documented or sometimes not documented at all as to the source or date of information.

The ODOT report provided the following examples of assumptions:

- Pass-By Trip Reduction Assumptions
- Forecasted trip generation
- Trip distribution

The effectiveness of the final TIS is directly related to the quality of initial scoping. ODOT, applicable local jurisdictions, and the applicant should discuss and agree on the scope, analysis methods, and assumptions in a pre-application scoping meeting prior to initiating the TIS.

- Ref. 4. p. 7

- Future traffic conditions
- Capacity and performance of roadway improvements.

One other assumption that has developed in the past few years is the concept of retained trips. Particularly with planned communities, the rates of retention have been assumed to be high based on plans for mixed-uses. The COMPASS travel demand model will factor in trip reduction based on employment and services near residential uses. This can create a “double-counting” effect when the consultants request travel forecasts from COMPASS and then apply a trip retention factor on top of the model requests. The ITE report cautions that, “Multi-use projects are another case in which any adjustments should be applied carefully because of the limited data available.” (Ref. 5. p. 40) It notes the publication of a National Cooperative Highway Research Program Project 8-51, “Enhancing Internal Trip Capture Estimation for Mixed-Use Developments” in 2007.

The Pasco County, FL policy states that, “Internal capture estimates shall be based on ITE acceptable methodologies and, where the ITE data is not applicable, professional judgment. However, in no case will an internal capture of more than 20 percent be acceptable, unless the County accepts a higher internal-capture percentage based on verifiable documentation (e.g., field studies of comparable sites).” (Ref. 12. p. 8)

Trip distribution can be challenging if a future distribution is based on existing turning movements. In one local study, a major development with several hundred new residential units was evaluated on turning movements based on existing rural development.

Traffic counts must also be as recent as possible. ITD’s policy specifies traffic counts be no more than two years old. But some policies make no reference to the age of the traffic count data.

Truth in Data Disclosure

Only the most current and adopted versions of the following resources should be used as references in any TIS:

- Institute of Transportation Engineers, *Trip Generation and Traffic Engineering Handbook*
- Transportation Research Board, *Highway Capacity Manual*
- Federal Highway Administration, *Manual on Uniform Traffic Control Devices* (MUTCD). This should be the version as adopted by the State of Idaho
- American Association of State Highway Transportation Officials, *A Policy on Geometric Design of Streets and Highways* (Green Book)
- National Cooperative Highway Research Programs, *REPORT 457: Evaluating Intersection Improvements*.

Any TIS lacking data that justify the result contained therein may be subject to rejection based on the determination of the Land Use/Transportation Jurisdiction and all data used to generate the result should be provided in the TIS. Trip Capture rates used in generating an estimated ADT must be justified and accompanied by the data used to calculate that rate.

Recommended Practices

- Assumptions must be part of the scoping process. All assumptions must be detailed and specified as to source and date, specifically including programmed transportation improvements.
- Traffic counts, turning movements, and other evaluations should be provided as technical appendices to the main report.
- Failure to document assumptions and data should be noted as grounds for rejection of the TIS.

13. Public Document

During the discussions about the availability of TISs to other agencies or the public, one participant voiced concern about the release of confidential information related to the TIS. An example would be discussing the nature of tenants in a proposed shopping center.

The general response from participants was that the TIS is part of a public record on an action taken by a local or state agency. Information pertinent to the quality of the TIS or affecting the findings of the public agency should not be withheld from the public record.

Recommended Practices

- Identification of confidential or proprietary information must be disclosed during the scoping meeting and made part of the scope in advance of any study or finding. It should be explicitly stated in the policy that the burden of proof for withholding information for reasons of confidentiality is on the applicant.
- No information should be withheld that is related to the determination of the need for mitigation.

14. Level of Service

As used in this report, level of service (LOS) should be interpreted as a standard by which the transportation system performance may be judged. Roadway LOS procedures apply to roadway segments and to intersections. When applied to the latter, LOS is calculated by delay time, typically measured through the procedures in the *Highway Capacity Manual* (HCM), published by the Transportation Research Board. ACHD, the City of Caldwell, and ACCHD all specify the HCM's most recent version (currently 2000) be used. The HCM also lays out procedures for calculating LOS on roadway segments and pedestrian facilities.

Acceptable LOS needs to be established by each jurisdiction for its facilities. Recent work under the Transportation and Land Use Integration Plan (TLIP) calls for a variable LOS which, "... will move ACHD away from the historically applied LOS "D" for Minor Arterials and LOS "E" for Principal Arterials that set the basis for the Capital Improvements Plan in some locations. The ideas surrounding Typology and Constrained Roadways set the basis for establishing Variable Level of Service standards that have been a centerpiece of the *Blueprint for Good Growth* and associated Adequate Public Facilities Ordinances (APFOs), as some subareas or corridors may be acceptable at LOS "F," while rural areas may maintain a LOS "C" or better; these LOSs will be based on single-, and multi-peak-hour volumes." (Ref. 13)

If TLIP's recommendations are applied within a community, the acceptable LOS will vary dependent on a street's functional classification and the nature of the community through which it passes. A minor arterial with the same design in one area could have a lower number of acceptable trips per day or per hour than when in another.

The outcome of the LOS analyses needs to be specific. ITD's policy states that, "When an intersection or link is identified as operating at a LOS equal to or below the minimum level specified in local transportation plans or ITD's Congestion Management System Work Plan, then mitigation measures shall be developed to bring the LOS back to an acceptable level." (Ref 2. p. 6) It goes on to note that mitigation measures must be consistent with local and state plans. For intersections, LOS, should be provided for each movement rather than as an average single LOS for the entire intersection.

The issue noted by the last sentence above is of particular concern given the multiple agencies that may be involved in a given TIS. A highway under ITD's jurisdiction may involve local highway district's streets at intersections and local plans of one or more cities. This highlights the need to involve all affected government agencies early in the scoping process.

Recommended Practices

- Clearly specify the acceptable levels of service (LOS) for the transportation elements. If variable LOS, these need to be clearly tied to each roadway type and area.
- Specify that mitigation measures must bring LOS within acceptable standards using measures consistent with local and state plans.
- When multiple agencies have jurisdiction over the transportation facilities within the study area of a TIS, there needs to be some recognition in the policy and/or scoping as to what LOS shall be applied.
- Use of corridor planning LOS analyses should be considered in place of more detailed intersection LOS, particularly when evaluating long-term implications of the proposed development.

15. Publication/Library

Another common concern that arose from discussion with RTAC and the Work Group was the lack of awareness of current and historic TISs. The common practice is that the requesting agency (highway district, city, or county) keep the TIS. Where the requesting agency is the land use agency, the TIS would end up in the development file. Other agencies may not have ever seen the TIS. In some cases, they may not have been aware that a TIS has been prepared.

One issue is that TISs may be issued in paper print, with a very limited number of copies. In none of the policies, ordinances, or literature materials is the issue of publication format discussed. Given the need for a broader review of TISs, often in a short period of time, and the need to compile information from previous TISs to build some sense of cumulative demand on the transportation system, a new approach to disseminating these documents is indicated.

The preferred publication mode would be Adobe Acrobat PDF (portable document format). Adobe PDF is a common method of publishing documents on the Internet. It allows heavily formatted documents with maps, charts, and tables to be viewed by anyone with Adobe Reader, which is free software. At the same time, documents cannot be modified easily by the viewer.

To make the PDF documents of maximum use to the reviewer, consultants publishing the TISs must be required to create files in modes that allow searching for text, annotating materials, and copying materials from the file for use in reviews. Some PDF publications are designed to prevent such activities.

To promote access to the PDF files, the Work Group supported an Internet posting of the files. These could be filed under their development name and linked to a site location so that viewers could see all the studies associated with a particular area.

A file structure for the TIS database would contain the following information:

- TIS title
- Development name with phase (when applicable)
- Consulting firm
- Lead agency (highway district or land use agency)
- Contact staff name and information
- Date of study
- Approval status of development
- Status of construction

COMPASS or some other agency could maintain the Internet site. The preference would be for a single agency or a county-wide agency to make the system convenient. Posting to the web site could be done by authorized agencies.

Recommended Practices

- Include in policy or ordinance that draft and final copies of TISs be provided in accessible PDF to allow easier review and comment. Provision should be made that the original TIS document from the consultant remain with the lead agency as the “official” document and that no changes not authorized by the consultant be made to that document.
- Stipulate in policy or ordinance that TISs must include all technical materials such as documentation for assumptions, proposed development information, site maps, etc.
- Consider use of shape files to delineate the study boundaries of the TISs. The shape files should be produced by the consultant as one of the deliverables.

16. References

1. *Evaluating Traffic Impact Studies - A Recommended Practice for Michigan Communities*. 1994. <http://ntl.bts.gov/DOCS/etis.html>
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APPENDICES

Appendix 1
Outline for Traffic Impact Studies
Idaho Transportation Department
Supplement to Board Policy B-12-06
Ref. 2. pp. 9-11

- I. Introduction and Summary
 - A. Purpose of Report and Study Objectives
 - B. Executive Summary
 - 1. Site location and study area
 - 2. Development description
 - 3. Principal findings
 - 4. Conclusions
 - 5. Recommendations
- II. Proposed Development
 - A. Off-site Development
 - B. Description of On-site Development
 - 1. Land use and density
 - 2. Location
 - 3. Site plan
 - 4. Zoning
 - 5. Project phasing and timing
- III. Area Conditions
 - A. Study Area
 - 1. Area of influence
 - 2. Area of significant traffic impact
 - B. Study Area Land Use
 - 1. Existing land uses
 - 2. Existing zoning
 - 3. Anticipated future development
 - C. Site Accessibility
 - 1. Area roadway system
 - a) Existing
 - b) Future
 - 2. Traffic volumes and conditions
 - 3. Public transportation service
 - 4. Other as applicable
- IV. Projected Traffic
 - A. Site Traffic (Each Horizon Year)
 - 1. Trip generation
 - 2. Trip distribution
 - 3. Modal split
 - 4. Trip assignment
 - B. Through Traffic (Each Horizon Year)
 - 1. Method of projection
 - 2. Non-site traffic for anticipated development in study area
 - a) Method of projections

- b) Trip generation
 - c) Trip distribution
 - d) Modal split
 - e) Trip assignment
 - 3. Through traffic
 - 4. Estimated volumes
 - C. Total Traffic (Each Horizon Year)
- V. Traffic Analysis
 - A. Site Access
 - B. Capacity and Level of Service
 - C. Traffic Safety
 - D. Traffic Signals
 - E. Site Circulation and Parking
- VI. Improvement Analysis
 - A. Improvements to Accommodate Base Traffic
 - B. Additional Improvements to Accommodate On-Site and Off-Site Traffic
 - C. Alternative Improvements
 - D. Status of Improvements Already Funded, Programmed or Planned
 - E. Evaluation
- VII. Conclusions
 - A. Site Accessibility
 - B. Traffic Impacts
 - C. Need for Improvements
 - D. Compliance with Applicable Local Codes
- VIII. Recommendations
 - A. Site Access/Circulation Plan
 - B. Roadway Improvements
 - 1. On-site
 - 2. Off-site
 - 3. Project phasing, if appropriate
- IX. Other

Appendix 2
ITE Transportation Impact Analyses for Site Development
Table 10-1. Site Transportation Impact Study Report
Sample Table of Contents (Ref. 5. pp. 102-103)

As a guide for the organization of the report, the following sample table of contents is offered:

- I. Introduction and Summary
 - A. Purpose of Report and Study Objectives
 - B. Executive Summary
 - 1. Site location and study area
 - 2. Development description
 - 3. Types of studies undertaken (impacts, signal warrant, site access, etc.)
 - 4. Principal findings
 - 5. Conclusions
 - 6. Recommendations
- II. Proposed Development (Site and Nearby)
 - A. Off-Site (or Background) Development
 - B. Description of On-Site Development
 - 1. Land use and intensity
 - 2. Location
 - 3. Site plan
 - 4. Zoning
 - 5. Phasing and timing
- III. Existing Area Conditions
 - A. Study Area
 - 1. Area of influence
 - 2. Area of significant transportation impact (may also be part of Chapter IV)
 - B. Study Area Land Use
 - 1. Existing land uses
 - 2. Existing zoning
 - 3. Anticipated future development
 - C. Site Accessibility
 - 1. Area roadway system
 - a) Existing
 - b) Future
 - 2. Traffic volumes and conditions
 - 3. Transit service
 - 4. Pedestrians and bicyclists
 - 5. Existing relevant transportation system management programs
 - 6. Other as applicable
- IV. Projected Traffic
 - A. Site Traffic (each horizon year)
 - 1. Trip generation
 - 2. Trip distribution
 - 3. Modal split
 - 4. Trip assignment
 - B. Through Traffic (each horizon year)

1. Method of projection
2. Non-site traffic for anticipated development in study area
 - a) Method of projections
 - b) Trip generation
 - c) Trip distribution
 - d) Modal split
 - e) Trip assignment
3. Through traffic
4. Estimated volumes
- C. Total Traffic (each horizon year)
- V. Transportation Analysis
 - A. Site Access
 - B. Capacity and Level of Service
 1. Existing conditions
 2. Background conditions (existing plus growth) for each horizon year
 3. Total traffic (existing, background and site) for each horizon year
 - C. Transportation Safety
 - D. Traffic Signals
 - E. Site Circulation and Parking
- VI. Improvement Analysis
 1. Improvements to Accommodate Existing Traffic
 2. Improvements to Accommodate Background Traffic
 3. Additional Improvements to Accommodate Site Traffic
 4. Alternative Improvements
 5. Status of Improvements Already Funded, Programmed, or Planned
 6. Evaluation
- VII. Findings
 1. Site Accessibility
 2. Transportation Impacts
 3. Need for Any Improvements
 4. Compliance with Applicable Local Codes
- VIII. Recommendations
 - A. Site Access/Circulation Plan
 - B. Roadway Improvements
 1. On-site
 2. Off-site
 3. Phasing, if appropriate
 - C. Transit, Pedestrians and Bicycles
 - D. Transportation System Management / Transportation Demand Management Actions
 1. Off-site
 2. On-site operational
 3. On-site
 - E. Other
- IX. Conclusions

Appendix 3
ITE Transportation Impact Analyses for Site Development
Table 10-2. Suggested Figures and Tables to be included in the
Site Transportation Impact Study Report pp. 104-5

Item	Title	Description	Example (in this report)
Figure A	Site location	Area map showing site location	Figure 6-1
Figure B	Study area	Map showing area of influence	
Figure C	Existing transportation system	Existing roadway system serving site. Should show all major streets, minor streets adjacent to site and site boundaries. Show also transit, bicycle, and major pedestrian routes, if applicable, along with right-of-way widths and signal locations. In some cases, may be combined with Figure A.	Figure 3-4
Figure	Existing and anticipated area development	Map at same scale as Figure H showing existing and anticipated land uses/developments in study area.	Figure 4-3
Figure E	Current daily traffic volumes	Recent or existing daily volumes on roads in study area. May be combined with Figure C or F. Include existing moving lanes if not shown in Figure C.	Figure 3-2
Figure F	Existing peak-hour turning volumes	Current peak hour turning volumes at each location critical to site volumes access or serving major traffic volumes through study area. May be combined with Figure E. Also existing moving lanes if not shown in Figure C.	Figure 3-3
Figure G	Anticipated transportation system	Area transportation system map showing programmed and applicable planned roadway, transit, bikeway and pedestrian-way improvements affecting site access or traffic flow through the study area. May be combined with Figure C.	Figure 4-5
Table A or Figure H	Directional distribution of traffic	Map or table showing (by percentages) the portion of site traffic approaching and departing the area on each roadway; may differ by land use within multi-use development.	Figure 6-5
Table B	Estimated site traffic generation	Estimated peak hour (and daily if required) trips to be generated by each major component of the proposed development; must be shown separately for inbound and outbound directions.	Table 5-4
Figure I	Site traffic	Map of anticipated study area roadway network showing peak hour turning volumes generated by site development.	Figure 6-7
Table C	Estimated trip generation for non-site development	Trips generated by off-site development within study area. Similar to Table B.	Table 4-1

Item	Title	Description	Example (in this report)
Figure J	Estimated non-site traffic	Map similar to Figure H showing peak hour turning volumes generated by off-site development within study area plus through horizon year traffic.	Figure 4-2
Figure K	Estimated total future traffic	Map similar to Figure H showing sum of traffic from Figures I and J.	Figure 7-1
Figure L or Table D	Projected levels of service	Levels of service computed for critical intersections in study area. Include existing, horizon year non-site and total horizon year (with site development) conditions.	Figure 7-2 or Table 7-1
Figure M or Table E	Recommended improvements	Map showing recommended off-site transportation improvements, site access points and on-site circulation and parking features, as appropriate. May require more than one figure. Table will describe improvements by location and type. If phasing of improvements is to be stipulated. This should also be shown on these or a separate figure or table.	Figures 8-1, 8-2.8-3, and 8-4
Figure N or Table F	Study checklist	Checklist showing the required/optional elements of transportation impact analysis report, whether or not they have been incorporated, and their locations in the report.	Figure 10-1

Appendix 4 Work Group on TIS

The TIS Recommended Practices project involved the Regional Technical Advisory Committee (RTAC) and a Work Group of RTAC volunteers and others.

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