

## REPORT FROM THE ITE COMMITTEE ON TRANSIT & TRAFFIC IMPACT STUDIES

By Michelle DeRobertis, M.S., P.E. and John Kulpa, Ph.D.

### Committee Description

In April 2014, the ITE Transit Council approved the formation of the ITE Transit and Traffic Impact Studies Committee. This committee emerged from discussions in the ITE *Western District's* SB 743 Task Force, formed to comment on California's SB 743, which mandates that within transit priority areas: "automobile delay, as described solely by level of service or similar measures of vehicular capacity or traffic congestion shall not be considered a significant impact on the environment." The implementation of SB 743 may initially be focused on transit priority areas in urban jurisdictions but will likely include the entire state of California in the very near future. During the proceedings of this Task Force, it was noted that changing the metric for traffic impacts from vehicular level of service (LOS) to, for example, vehicle miles of travel (VMT) would do nothing to address the lack of attention that traffic impact studies (TIS) give to public transit. Specifically, a typical TIS does not address:

- How the safety, mobility, and delay of transit vehicles (and bicyclists and pedestrians) are impacted by automobile traffic;
- *Transit service adequacy* in terms of availability, frequency, and capacity; and
- Mitigation measures to improve transit service and bicycle/pedestrian infrastructure (as well as traditional traffic mitigation measures).

To address these gaps, author Michelle DeRobertis proposed that ITE might partner with the American Public Transportation Association (APTA) to develop transit service standards by mode based on city size and land use density that establish goals for transit headways and average travel speeds. These would supplement LOS standards for automobiles. Monica Suter, then an

ITE International Director, agreed and suggested forming an ITE committee under the auspices of the Transit Council to document how transit is currently being assessed in the TIS process.

The committee was established to: "Review the state of the practice of traffic impact studies on the assessment of transit service and for the evaluation of traffic impacts on transit operations.... [including] whether and how transit quality of service is addressed, whether and how traffic impacts on transit service is addressed, and documentation of the methodologies and metrics used to assess these issues."

### Problem Statement

The problem is that as a profession, transportation engineering has, in the vast majority of cases, only measured automobile level of service, and therefore mitigation only addresses auto capacity issues. To paraphrase psychologist Abraham Maslow: If your only tool measures only auto LOS, you tend to see only the problem of auto congestion.<sup>1</sup> This singular focus on auto LOS implies that anything that increases traffic delay is an *adverse* impact and improvements that might help *reduce* traffic, such as providing facilities for bicycling, pedestrians and transit, must be analyzed for their potentially adverse "impact" on traffic rather than for the benefits and travel options they would create. This results in an illogical double standard: while removing a traffic lane for bicycle and/or transit-only lanes must be analyzed for adverse impacts on automobile traffic; projects which generate auto traffic are not required to assess how newly-generated automobile traffic inhibits transit, walking and biking.<sup>2</sup>

Across the country, a typical traffic impact study (TIS) either minimally analyzes impacts to transit or ignores transit altogether. Currently, ITE guidance is poor. For example *Transportation Impact Analyses for Site Development—An ITE Recommended Practice*

provides no guidance on how transit service should be addressed in a TIS. The same is true for ITE's *Sustainable Transportation: State of the Practice Review* and ITE's, *Promoting Sustainable Transportation Through Site Design: An ITE Recommended Practice*. Since only auto LOS is discussed in a TIS, project mitigation measures are mainly auto capacity increasing projects, and traffic impact fees usually fund roadways, ignoring other modes.

ITE has established practices and procedures for measuring the "auto" LOS and for describing what is acceptable (e.g. LOS D or better) and unacceptable (LOS E and F). ITE should also provide the guidance needed so that other modes are improved, including the conditions for pedestrians, bicyclists, and transit riders. For example, evaluations should address how newly generated traffic will impact transit travel times on that arterial and how much the new traffic will increase pedestrian delay in crossing an intersection.

An underlying premise of many studies seems to be that biking, walking, and even transit usage are deemed "discretionary," but motor vehicle traffic is invariable and all "projected" automobile traffic must be "accommodated." Typically, existing conditions are defined only by vehicle counts and auto-based trip generation rates are exclusively used to define impacts. On the contrary, the profession should recognize that many auto trips are discretionary. By addressing only auto capacity and convenience, we are ensuring that driving is chosen as the most feasible or preferred option. If we were instead to focus on making transit and non-motorized modes more accessible, then these too could be chosen more often as the preferred mode.

### Committee Purpose

The purpose of the Committee is to give ITE members tools and guidance on addressing public transit and alternate modes at the same level as auto travel. These, in turn, will be used

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by local jurisdictions, which require the analysis of land development, to change their policies and procedures to address transit access and service as thoroughly as they do automobile access. This is an opportunity for ITE to once again lead the transformation of the state of the art in transportation impact analysis. Transportation engineers developed the concept of automobile LOS. Once LOS measurement became an accepted practice, cities institutionalized it as a planning metric and in 1991 it was incorporated into the *California Environmental Quality ACT*. In practice, the use of LOS as the sole measure for impact analysis has led to the ironic consequence of environmental review documents being used to prevent bike and transit projects from being implemented.<sup>3</sup> The committee maintains that since the transportation engineering profession developed the metric that “80 seconds of motor vehicle delay is ‘LOS F’ and ‘unacceptable,’” the same profession should also develop metrics that evaluate transit service and alternative modes.<sup>4</sup>

### State of the Practice Report

The first step toward what will ideally culminate in an ITE recommended practice (RP) is to determine how transit is being addressed in traffic impact studies when it is addressed. The Committee’s first product will be an ITE state of the practice report focused on addressing the state of the practice in five areas:

1. Transit in the overall context of the proposed action and development setting;
2. Impacts of vehicular traffic on transit operations;
3. Impacts of additional transit passengers on transit facilities;
4. Transit in traffic-impact fees and recommended project impact mitigation measures; and
5. Transit operators’ involvement in TIS and setting up traffic impact fee project lists.

This report will include a literature review of available methodologies and practices; description of existing data sources; analysis

of the survey of existing traffic impact studies guidelines; and description of best practices on assessing transit in traffic impact studies.

### Status of Committee’s Work

To date, the committee has focused on three main tasks: literature review, identifying currently available data, and administering a survey of agency practices on conducting traffic impact studies.

### Literature Review

Members of the committee reviewed dozens of documents to assess whether these documents address the issue of how transit should be or could be assessed in TIS. Our preliminary conclusion is that ITE materials do not address transit sufficiently. There are several independent research papers that do describe methodologies for analyzing transit service. However, most are either focused at the system level and not applicable to site impact studies, or are too complicated for use in TIS. The most comprehensive document is the *Transit Capacity and Quality of Service Manual*, Third Edition TCRP Report 165, TRB, 2013. This manual defines quality of service (QOS) as “the overall measured or perceived performance of transit service from the passenger’s point of view.” It describes quality of service as two key issues:

1. **Transit availability:** Is transit service an option for a given trip?
2. **Transit comfort and convenience:** If transit service is an option, how attractive is it to potential passengers?

This manual, at 600 pages, contains dozens of performance metrics to assess these two areas as well as transit capacity analyses. Such comprehensiveness could prove to be too complicated for use in a site impact study. However, it may be feasible to select a few key metrics described in TQOS as potential starting points for a recommended practice especially metrics using data that are readily obtainable.

### Available Data

For transit to be routinely assessed in TIS, some type of metric(s) will be needed. It is useful to identify what types of transit data are currently generally available. This will inform what might be easily turned into an RP as well as what might be an RP for those geographic areas where agencies have more data. The National Transit Database (NTB) maintained by the Federal Transit Administration, was established to create uniform categories of transit operational data and reporting systems. While NTB doesn’t apply to rural transit agencies or transit systems with fewer than 10 vehicles, most transit agencies are required to submit their data to NTB, thus these data would be readily available for most TIS. Data are reported annually on an agency-wide level by mode. However, data in most cases have also been collected by the agency at the route level, which is the most appropriate for use in site-specific TIS. While there are hundreds of individual fields that could be used, the most useful NTB data include:

- Hours of service—revenue (when open for use by the public) and dead-head (when not in use by the public).
- Miles of service—revenue and dead-head.
- Unlinked Passenger Trips (ridership)—number of passengers who board public transportation vehicles.
- Passenger miles—the cumulative sum of distances ridden by each passenger.

Additional statistics that can easily be calculated from NTB data that may be useful in TIS include: load factors (ridership vs. capacity), effective travel speeds (revenue hours/revenue miles), on-time performance, and data that measure the level of access to the entire transit network.

In recent years, local planning agencies and metropolitan planning organizations (MPOs) have begun to embrace multimo-

dality and the concept of performance measures for all modes of travel. It is intended that this committee's work will assist in this effort.

## Survey of Practitioners to determine "State of the Practice"

To get an overview of the state of the practice, ITE members were surveyed on the contents of their agency's TIS guidelines. The survey questions to assess the "state of the practice" were developed by a subcommittee and ITE staff created an electronic survey that was sent to public agency employees who were members of four ITE Councils. More than 200 responses were received from more than 30 states, four provinces in Canada, and from eight other countries. In addition, TIS guidelines known to contain good content are being reviewed by Committee members to include as case studies of best practices. The committee is analyzing results of the survey to identify best practices in each of the five topic areas.

## Conclusions and Next Steps

While it is premature to identify specific best practices for incorporating transit into the TIS process, it is certain that such guidance is long overdue. It is hoped that the state of the practice report will be useful in leading to an ITE Recommended Practice. Two cautions regarding the forthcoming guidance:

- Transit service standards should not be used to punish transit agencies for not providing more frequent service. Rather the intent is to identify the unmet demand for transit, as has been done for roadways for decades.
- New standards should not penalize developers whose projects generate above average transit use, since this is a desirable outcome.

Instead, the intent of more fully addressing transit in TIS is to:

- Shine a light on the existing transit service and how it can be improved;
- Help create a mechanism so that project mitigation dollars can be targeted towards transit improvements instead of solely on auto capacity increasing projects;
- Shift the focus of reports to person-trips not auto-trips;
- Shift development impact fees into a fund for sustainable transportation, not solely for roadway capacity increasing projects; and
- Fund projects that build out an area in a way that is sustainable and socially responsible.

Addressing transit fully in the TIS process will end the incentive for developers to locate where there is currently excess roadway capacity, but where the lack of transportation options induces above-average driving. The way cities currently assess a project's impacts on schools may serve as a model. School impacts are based on project size, not on where the project is located within the city, and not whether there is capacity in the schools. Most U.S. school districts are independent of city government, (as are many transit agencies). But school districts can impose development fees that the city is then required to collect when the city issues a building permit. These fees are typically based on square footage of new construction, not whether the existing school buildings have room for more students.<sup>5</sup>

It is time for cities to recognize that the construction of a new building will generate additional demand for travel by all modes and that fees should be levied to serve this travel in the same way fees are levied for other infrastructure and services. It should not matter if the development is on the fringe where there is "excess" capacity. All development should pay its fair share. **itej**

## References

1. Abraham Maslow in *The Psychology of Science: A Reconnaissance* pp. 15–16, Harper & Row, New York stated, "If the only tool you have is a hammer, you tend to see every problem as a nail." Earlier (and later) writers are credited with similar quotes.
2. DeRobertis, Michelle, John Eells, Joseph Kott, and Richard W. Lee. "Changing the Paradigm of Traffic Impact Studies: How Typical Traffic Studies Inhibit Sustainable Transportation," *ITE Journal*, Vol. 84, No. 5., May 2014.
3. Ibid.
4. *Highway Capacity Manual*, 5th edition, Transportation Research Board, 2010.
5. Emeryville Unified School District Resolution Bo. 26-2006-2007, November 15, 2006: "Whereas new residential, commercial and industrial construction within "City or transit district boundaries" will add to the number of students enrolled in the District beyond the District capacity to accommodate these students requiring the District to acquire new school facilities to serve this increased enrollment."



**Michelle DeRobertis, M.S., P.E.** is Chair of the ITE Committee on Transit & Traffic Impact Studies. She is a principal with Transportation Choices for Sustainable

Communities Research and Policy Institute in Oakland, CA, USA. Michelle has more than 30 years of experience in transportation engineering, 20 years as a consultant and 10 years in the public sector. Her areas of expertise are bicycle and pedestrian transportation, and she was a German Marshall Fund Fellow in 2009, studying German and Italian policies. Michelle holds a bachelor of science and master of science in civil engineering from the University of California—Berkeley. She is an ITE Fellow.

## ATTEND ITE'S 2015 INTERNATIONAL CONFERENCES



**John Kulpa, Ph.D.** is Vice-Chair of the ITE Committee on Transit & Traffic Impact Studies. He is a professional transportation planner with more than 34 years of experience in highway development, airport ground access, transit, rail, and large-scale multidiscipline, and multi-modal transportation programs. His experience in transportation planning and engineering covers the entire range of transportation systems management and planning techniques. John's administration and management experience for urban transportation and highway development projects covers construction values up to \$9 billion across the United States and abroad. John is a member of ITE.



Registration and early bird rates are now available for the ITE 2015 Annual Meeting and Exhibit taking place August 2–5, 2015 in Hollywood, FL, USA. The theme of this meeting is “Addressing the Shifting Priorities: What Transportation Professionals Need to Know to Face the Challenges of Today and Tomorrow.” The meeting will take place at the Diplomat Resort & Spa and will include technical sessions, technical and guest tours, seminars, networking events, and the ITE Collegiate Traffic Bowl Championship competition.

### IMPORTANT DATES

- June 30: Cut-off for Hotel Reservations
- July 10: Early Bird Registration Deadline



Visit the Annual Meeting and Exhibit website at <http://bit.ly/18oiMcg> for more information and to register. Also, be sure to save the dates for the ITE 2015 Technical Conference, taking place October 26–29, 2015 in Tucson, AZ, USA. For information on exhibiting or sponsoring, contact Pam Goodell, ITE marketing senior director at [pgoodell@ite.org](mailto:pgoodell@ite.org) or +1-202-785-0060 ext. 128. **itej**

## ITE NEWS

### Make Your Room Reservation by June 30 for the ITE 2015 Annual Meeting and Exhibit!

Booking a room at the host hotel for the ITE Annual Meeting & Exhibit enables you to stay at the center of activities at a great group rate while supporting ITE. The Institute is obligated to pay for a portion of unused sleeping rooms in the reserved block, so your stay helps ITE meet commitments to the hotel and keep costs low. Plus, you'll enjoy many advantages of being onsite! Please support the ITE Annual Meeting and Exhibit in Hollywood, FL, USA by making your room reservation now at the Diplomat Resort & Spa (<https://aws.passkey.com/g/37707181>).

### Top 10 Reasons to Stay at the Diplomat Resort & Spa, ITE's host hotel for the 2015 Annual Meeting & Exhibit:

1. Network at all hours...maybe even in a poolside cabana.
2. See and be seen: most attendees stay at the host hotel.
3. Easily run back to your room between sessions to drop off/pick up anything you need.
4. Save time and cab money going back and forth from an offsite location.
5. Sleep a little later and never be late for any of the great technical sessions.
6. Enjoy six restaurants and lounges onsite.
7. Cool off with an impromptu dip in the infinity-edge pool.
8. Relax knowing there's no need to leave the resort.
9. Experience all the resort amenities this Hilton Curio Collection Hotel has to offer.
10. Did we mention NETWORKING? **itej**

*Answer to Where in the World? photo on page 17: Westernport Highway looking north towards the Dandenong Ranges, showing roundabouts and wire rope safety barrier, Melbourne, Australia. Photo courtesy of David Nash, Secretary, ITE ANZ (Australia & New Zealand Section).*

## ITE DISTRICT AND SECTION MEETINGS

### 2015 MIDWESTERNITE/ SPRING MOVITE MEETING

June 29–July 1, 2015

Branson Convention Center  
Branson, MO, USA

**Contact:** [www.branson2015mwite.com](http://www.branson2015mwite.com)

### WESTERN DISTRICT 2015 ANNUAL MEETING

July 19–22, 2015

Planet Hollywood Resort  
Las Vegas, NV, USA

**Contact:** Lindsay Sundberg, [lindsay.sundberg@kimley-horn.com](mailto:lindsay.sundberg@kimley-horn.com)