Highway Capacity Analysis Input Request

Project Development and Environmental Analysis Branch		Approved: October 9, 2007 Version 1

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Purpose

The purpose of this procedure is to describe how to obtain input and recommendations from Congestion Management, including a capacity analysis or review of capacity analysis.

Background

The capacity analysis describes traffic conditions and assists in determining the need for improvements. Typically, capacity analyses are prepared based on the current (or base) year and design year traffic volumes for both the no-build and build conditions. The results of the no-build are often included in the purpose and need documentation. A capacity analysis is also used to evaluate proposed improvements, the effectiveness of various alternatives, and to determine appropriate design features (number of lanes, storage lengths, etc.) based on design year traffic volumes. Congestion Management's analysis report will supplement the comments and recommendations Congestion Management provided at scoping on behalf of the Traffic Engineering and Safety Systems Branch.

Responsibility

It is the responsibility of the PDEA Project Engineer to request from Congestion Management a capacity analysis (in the case of in-house projects) or a review of a capacity analysis and recommendations prepared by a private engineering firm (in the case of consultant projects)..

Policy, Regulatory, and Legal Requirements

There are no policies or legal requirements related to this procedure.

Scheduling and Time Constraints

Allow four months to receive Congestion Management's analysis or for Congestion Management to review an analysis performed by a consultant.

It may be necessary to request two capacity analyses: (1) for existing conditions (no build) and (2) for build alternatives. To determine this, PDEA must consult with Roadway Design and Congestion Management, and reach consensus among all three. For an existing conditions analysis, the request should be made as soon as no-build traffic projections are received. For a build alternative analysis, the request should be made as soon as build traffic projections and design concepts are received. In the case of a project where build alternatives are limited, such as a widening project, one request for both build and no-build analyses will suffice. Again, coordinate with Roadway Design and Congestion Management in making these determinations; three-way consensus between PDEA, Roadway Design, and Congestion Management should be reached.

If the request for congestion management input is not submitted in a timely manner, significant project delays will occur. Although the request will only take a half a day to prepare, the actual analysis or analysis review can take up to six months to complete.

Procedures

Typically, a capacity analysis or review for the build and no-build scenarios is requested following the receipt of traffic projections. However, for new location projects it may be necessary to request a capacity analysis or a review of an analysis twice: (1) a no-build analysis following receipt of no-build traffic projections and (2) a build analysis following the development of build alternatives. Capacity analyses are usually prepared using the base year and design year traffic volumes.

The no-build capacity analysis should be requested and completed prior to the Concurrence Point 1 meeting for merger projects. Ideally, the request should be sent six months prior to the Concurrence Point 1 meeting. This allows four months for the completion of the analysis, and two additional months to incorporate the material into scoping materials and distribute well in advance of the meeting.

Sometimes, the build analysis may need to be conducted for preliminary study alternatives (prior to Concurrence Point 2) in order to identify the alternatives to carry forward for detailed study (CP 2). There may be times where Build Alternatives can be established (CP 2 reached) without this analysis; in this case, the build analysis will be requested after CP 2 for the Detailed Study Alternatives only. PDEA must discuss this with Congestion Management and Roadway Design around the time of scoping or once preliminary alternatives are identified, and three-way agreement should be reached.

Another build analysis may be needed during preliminary design if the constraints of the project change (i.e., a planned turn lane cannot be accommodated due to other environmental issues). PDEA must discuss this with Congestion Management and Roadway Design, and three-way agreement should be reached. In the case of an in-house project, the PDEA project engineer may opt to perform the analysis, rather than asking Congestion Management to perform it, only under the following circumstances:

- Congestion Management has determined that HCS is the only software tool determined necessary for the project's analysis (since PDEA does not have the other tools);
- The PDEA project engineer uses a version of the HCS that is approved by Congestion Management. This should be coordinated on a project by project basis;
- Congestion Management must review the analysis, and their comments must be addressed to their satisfaction.

Follow the steps below to request a capacity analysis or analysis review from Congestion Management.

Step	Action
1	The Project Planning Engineer should review the traffic forecast for completeness. When reviewing the traffic forecast, the Project Planning Engineer should check for the following: • Does the traffic forecast present volumes for the appropriate base and design years? • Does the traffic forecast include all the intersections requested? • Do the traffic volumes balance? • Are all required directional and DHV percentages provided? • If this traffic forecast was prepared by a PEF confirm that it has been approved (not just reviewed) by the Transportation Planning Branch.
2	The Project Planning Engineer completes the template requesting the capacity analysis or analysis review. (Refer to the Resources and Tools section for template) This template should include the following: • **Project (Alternative) description** (TIP number, WBS element, project limits, proposed improvements, years for analysis, type of analysis required [no-build and or build analysis], existing and/or proposed speed limit(s), and due date [Please allow at least four months for the due date]) • **Existing and/or proposed typical section(s)** (number of lanes, lane/shoulder widths, median width and type) • **Type of access control** • Any **special instructions** or information (coordinate with Congestion Management Section to discuss unusual circumstances)
3	The Project Planning Engineer should include the following items with the request: • Vicinity map • Traffic forecast • Design concepts or preliminary design (if build analysis is requested) • Capacity analysis electronic files (if requesting review of an analysis) • Traffic analysis technical report and appendices (if requesting review of a consultant's analysis)
4	The Project Planning Engineer submits the request and attachments to the Plan Review Engineer.

Warnings and Precautions

If the request for congestion management input is not submitted in a timely manner, significant project delays will occur as this work can take up to six months to complete. Significant delays have occurred in the past because traffic data provided to Congestion Management Section lacked information needed to complete the capacity analysis. Therefore, the Project Planning Engineer should coordinate with Congestion Management Section and Roadway Design prior to submitting the traffic forecast request (see Traffic Forecast Request (future link) and Project Initiation meeting procedures). If the traffic forecast for a project is more than a year or two old, check to make sure there is not a more recent forecast or forecast request, prior to submitting the request for congestion management input.

Resources and Tools

- Aerial photograph
- Completed capacity analysis (for a review request)
- Conceptual or preliminary design for build alternatives
- Congestion Management Request Alternative Template
- Capacity Analysis Guidelines
- Traffic forecast
- Vicinity map

Contacts

- For suggestions to change this procedure contact: Karen Capps (919) 715-5505
- For questions about performing this procedure contact: Missy Dickens (919) 733-7844 ext. 293, Jay McInnis (919) 733-7844 ext. 249, or Eric Midkiff(919) 733-7844 ext. 232

Glossary

None

User Access

NCDOT Internal Use Only

Flowchart

None