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Version 9

Development of Problem Statement

Description
This procedure describes how to develop the Problem Statement (PS) for an identified deficiency in an area's transportation system using information from the Comprehensive Transportation Plan (CTP) process.

Responsibility
TPD Project Engineer (PE) - To develop PS's as part of a CTP and to provide PS's for specific projects upon request for project development.

TPD Staff Engineer - To monitor and track requests for PS for project development and to enter the PS(s) developed upon request from project development into Project Store (See <u>Project Store – Enter Data</u> procedure).

Scheduling and Time Constraints
Coordination between TPD and Environmental Policy Unit within NCDOT is important to allow the smooth transition of a project from transportation systems planning to project planning. Development of a PS upon request for project development must meet agreed upon dates.

Procedures

Process 1 - Developing Problem Statements as Part of CTP Development
Process 2 - Developing Problem Statements Upon Request for Project Development
Process 3 - Creating Maps for Full Problem Statements

Process 1 - Developing Problem Statements as Part of CTP Development

Action
1. Determine which level of PS will be developed for various proposed projects in the CTP. This decision should be made by the TPD PE in consultation with the local governing body, the MPO, and/or the RPO, as appropriate. The level of documentation will vary based on the number of proposed projects and available resources. Criteria for determining which level of PS to develop for various proposed projects and available resources. Criteria for determining which level of PS to develop for various proposed projects is given in the '*<u>Problem Statement Guidance</u>*' provided below.
2. Develop the PS(s) in accordance with the '*<u>Problem Statement Guidance</u>*'. The information from the current CTP under development will be included in the PS. A PS will only include information that is typically generated during the CTP process. The level of detail provided and format may vary based on applicability and available resources (see also step 1 above). If a given proposed project crosses the planning area boundary, ensure that the PS being developed for the given CTP refers to and is consistent with the other relevant CTPs, as appropriate. The development of PS's should begin as part of the deficiency analysis. Document the identified problems or needs without regard to a potential solution. During alternatives analysis add additional information to the PS as you identify potential solutions to address your problems. The second section "CTP Project Proposal" should be drafted with the development of the DRAFT CTP maps once you have identified a selected long range planning alternative (or CTP

	Alternative). At a minimum, a brief statement of the problem and proposed project description will be documented for all proposed projects (for all modes of the CTP), according to the Minimum PS standards in the '*Problem Statement Guidance*'. Certain proposed projects will be selected for which Full PS will be developed. It may also be determined that a PS will be developed that is more detailed than the Minimum PS but less detailed than the Full PS. In this case, both sections of the guidance should be used to ensure that all elements of the Minimum PS are included and then information from the Full PS is added as resources allow. For MPO CTPs, the responsibility for documenting the PS may be shared by the TPD PE and the MPO staff, based on roles agreed upon in the CTP Step, 'Develop CTP Vision'. For CTPs in RPO areas, the TPD PE typically assumes responsibility for development of the PS, in consultation with the RPO and municipal/county staff.
3.	The TPD PE will include PS's as part of the CTP documentation. The draft PS's will be sent for internal review with the Draft CTP Maps (see TPD Procedure 'CTP Maps – Internal Review'). Additionally, the TPD PE will send the draft Full Problem Statements and CTP Maps (via e-mail in PDF format) to the Environmental Policy Unit requesting review of the Full Problem Statements **only** (see step 7 of TPD Procedure CTP Maps – Internal Review). The PS developed as part of a CTP study should be used as supporting information in the project prioritization process. MPOs, RPOs, and NCDOT should use the PS information as they rank needs for each area. When entering projects into the Prioritization Tool (managed by SPOT), the PS should be entered in the appropriate section. The PS developed as part of a CTP study should be shared by the TPD PE with the appropriate staff as a project moves forward. This may be to the Feasibility Studies Unit, Environmental Policy Unit, Division office, Project Management Unit, or other NCDOT business unit that is developing the project. It can be discussed whether the information is sufficient (if less than a Full PS has been developed) or whether additional information is needed (see procedures below).

Process 2 - Developing Problem Statements Upon Request for Project Development

Action	
1.	The TPD Staff Engineer receives a request for the development of a PS. The request for TPD to provide the PS for a project in project development is typically initiated by the PDEA Project Engineer (PDEA PE) but may also come from others. The request should be in the form of a memo to the TPD Staff Engineer. The memo should include the project scope, location map, any other relevant information, and a requested completion date (typically 12 weeks from the date of the request).
2.	The TPD Staff Engineer logs the request and distributes it to the appropriate TPD Planning Group Supervisor. The Group Supervisor will then assign it to the appropriate TPD PE within their Group.
3.	After receiving the PS request, the TPD PE will send the requestor a memo (copying the TPD Staff Engineer) acknowledging receipt of the request and confirming whether the suggested completion date can be met. (Typically a PS request will take 12 weeks to fulfill.)
4.	The TPD PE may schedule a meeting with the requestor to review the request and identify appropriate issues to be included in the PS documentation. Any existing documentation for the problem statement should be reviewed as well (from both the CTP report and the project prioritization system). During the development of the PS, the TPD PE should coordinate with the requester as appropriate.

5.	The TPD PE and/or MPO staff develops the PS in accordance with the '*Problem Statement Guidance*' provided below. TPD's commitment is to provide PS documentation for all projects that are within areas that have received transportation planning assistance through the TPD. For those requests that are in areas without an existing CTP (or Thoroughfare Plan), the Group Supervisor or the appropriate TPD PE will provide a reply that includes any available information. The product TPD will provide the requestor does not necessarily contain all the potential information listed for a Full PS (see the '*Problem Statement Guidance*' below), but will contain as much information as is readily available. The level of detail provided and format may vary based on available information and discussions with the requestor. The current CTP (or Thoroughfare Plan) should be reviewed for information to be included in the PS, if available. The TPD PE will then develop the PS if none exists or add information as needed if less than a Full PS exists. A PS will only include information that is typically generated during the CTP process and data current as of the CTP study date. However, the TPD PE must contact the MPO, RPO and municipal/county staff in the vicinity of the project to gather local input for the PS. Note that more specific information and updated data is expected to be obtained by the PDEA PE when using the PS to generate the Purpose and Need. Part of this request for this information may come to TPD. With Project Streamlining, the request for a traffic forecast will likely come after the Purpose and Need has been developed and approved. However, there may also be a request for a traffic estimate (mainline traffic projections from the CTP or LRTP) around the time of the PS request.
6.	The TPD PE provides the draft PS documentation to the TPD Regional Planning Group Supervisor and TPD Unit Head for review. Once comments are addressed, and it is approved by the TPD Regional Planning Group Supervisor, the TPD PE will distribute the PS to the requestor, the TPD Staff Engineer (electronically), the TPD PE's Supervisor, and the CTP main file.
7.	The TPD Staff Engineer enters the PS into the Project Store (see Project Store – Enter Data procedure).
8.	The TPD Staff Engineer logs the request as complete and maintains a copy of the PS.

Process 3 - Creating Maps for Full Problem Statements

A map is required for full PS's, but maps are optional for others. All full PS's should include a heading that contains the facility name, Local ID number, and improvement description. The map(s) are then located under this heading. A north arrow and scale must be shown on each map. The project location map should only show the given project on the CTP base map; other CTP project proposals are not to be included on the project location map, as shown in the Full Problem Statement Template. Adequate road names should be labeled so that the PS information can be followed. For instance, label intersecting roads and other features that are referenced in the PS when possible.

For a full PS, a project location map is required and other maps can be added at the project engineer's discretion. For example, a map showing the project within the entire planning area could be included. An aerial map and/or photographs may also be included if it is determined to be informative and desirable. The first half page, up to one whole page, of the PS may be used for maps.

Action
1. Create a polygon shapefile using ArcCatalog.
2. In ArcMap, with all required shapefiles, edit the polygon shapefile to create a new feature which is a rectangle around the area needed.
3. Using the polygon created in step 2, clip and export all required shapefiles. Use ArcMap's Clip tool from ArcToolBox to clip and export shapefiles, one at a time.
4. With the new shapefiles and the polygon rectangle around it, create the required image in ArcMap by adding symbology, shields, labels, text boxes, text, etc. Note: Always add labels, shields and text in Dataview.
5. In the Dataview, using text boxes and text tools create project ID labels on the map.
6. Once complete, export map from Dataview (NOT Layout View) by using File – Export map and save type as EMF (*.emf).
7. In Word document, perform Insert – Picture – From File – EMF (*.emf).
8. Using Edit toolbar, crop the picture.
9. In ArcMap, in Layout view, insert North Arrow and Scale. Copy each and paste in Word, near the previous picture. Change the format of each to "In front of text". Move them and place them in the bottom right corner of the project map picture.

Policy, Regulatory, and Legal Requirements

See "AASHTO Practitioner's Handbook – Defining the Purpose and Need and Determining the range of Alternatives for Transportation Projects" (August 7, 2016)

Resources

- Problem Statement Guidance
- Templates/Examples:
  - Full Problem Statement Template
  - Minimum Problem Statement Example
  - Problem Statement that References a Purpose and Need Underway or Completed Example
- "AASHTO Practitioner's Handbook – Defining the Purpose and Need and Determining the range of Alternatives for Transportation Projects" (August 7, 2016). Problem Statement Development Tips
- Customer Frequently Asked Questions
- Project Store Procedure

Background

The purpose of creating problem statements is to communicate the need, context, and concept for proposed projects included in the long-range transportation plan, CTPs or MTPs. The format provides two sections, titled 'Identified Problem' and 'Project Proposal'.

The 'Identified Problem' section is intended to provide a clear and concise description of the problem. This section does not contain a description of the project or any discussion that would limit possible alternatives for consideration.

The 'Project Proposal' section is intended to provide supporting information about the recommendation on the long-range transportation plan. It contains data that has been identified as "good to know" information when making decisions about the purpose and need for a project. This information is also valuable as project proposals from long-range transportation plans are prioritized and programmed by NCDOT.

PSs will be developed for recommended CTP improvements in new CTP reports. The guidance linked to this procedure outlines options for various levels of PS, ranging from the minimum standards for documentation to a Full PS. The decision about which level of PS to develop for various proposed projects in a CTP is based on available resources and the criteria provided herein based on project scope and priority.

Additionally, a PS may be requested for a project under study, which is typically a request from PDEA. This PS request may be for a specific project in areas where the CTP documentation has not been updated to include formal a PS, or where more detail is needed (in cases where a Full PS was not developed). Transportation Planning Branch (TPD) provides a PS upon request for projects that are within an area for which it has provided transportation planning assistance or for which it has developed a Comprehensive Transportation Plan (or Thoroughfare Plan) in the past. PSs only include information that is typically generated during the CTP process. PSs are intended to replace what was formerly known as "planning-level purpose and need" statements.

Flowchart

None

Record of Revision

The information contained in this procedure is deemed accurate and complete when posted. Content may change at any time without notice. We cannot guarantee the accuracy or completeness of printed copies. Please refer to the online procedure for the most current version.

Version	Section Affected	Description	Effective Date
1.1	Title	Removed 'CTP' from the title of the procedure in order to clarify the intent of the procedure	10/28/2008
2	Entire Procedure	Major overhaul to reflect new guidance	12/30/2009
2.1	Resources	Updated Problem Statement Guidance document. Added a FAQ document.	03/15/2010
3	Procedures	Added Step 7 to enter PS into Project Store.	03/31/2010
4	Entire Procedure	Various edits to procedure. Updated Problem Statement Guidance document and FAQ document. Added additional examples to Resources.	07/21/2010
5	Procedure	Changed name to 'Purpose and Need Underway or Completed', (adding 'or Completed'). Minor edits to Guidance and Full Example.	09/24/2010

6	Procedure & Guidance	Procedure – Added reference to project prioritization process. Guidance – Added explanation of the relationship of CTP project proposals to SHC. Full Example – changed formatting of heading, reduced number of maps, and added 'last updated' date in title.	02/10/2011
7	Procedure, Guidance, & Tools	Procedure – Added that only 1 map is required for a full PS; others are optional. Specified that the PDEA request for review is by e-mail in PDF format and the PS in the project prioritization system should be reviewed during project initiation. Other minor changes. Guidance – added more information on addressing multi-modal. Full Example – changed to a template. FAQs – added location of analysis methodology and explanation of when/where safety data may be included.	11/29/2011
8	Procedure, Guidance	Procedure's template was modified; no changes were made to the procedure processes. Guidance- clarified information to include related to environmental screening, other projects/ project history, and bridges.	3/14/2013
9	Procedure, Guidance	• Reference to *Purpose and Need Guidance for FHWA-funded Projects in North Carolina*, FHWA NC Division, Version 2, February 2009 was changed to "AASHTO Practitioner's Handbook – Defining the Purpose and Need and Determining the range of Alternatives for Transportation Projects" (August 7, 2016). • References to NCDOT Project Development and Environmental Analysis (PDEA) Branch were removed.	11/6/2019