CTPS Project Manager’s Guide

August 2021 Draft

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WELCOME TO PROJECT MANAGEMENT

Whether you are new to project management or an experienced project manager looking to refresh your skills, this guide provides information about how to bring a project successfully from inception to conclusion. It describes the practices in place at CTPS for scoping and managing a project, responding to challenges and modifying work, creating deliverables, and sharing results. The guide also summarizes CTPS's policies and procedures that set common expectations for the role of a project manager.

As you read this guide, keep in mind that a project can be defined as "a temporary endeavor undertaken to create a unique product, service or result."[1] There are many circumstances that call for staff to use project management skills when working on specific initiatives:

- discrete studies identified through the annual Unified Planning Work Program (UPWP) development process that are funded with the Boston Region Metropolitan Planning Organization's (MPO's) "3C" dollars [2]
- projects funded by other agencies or sources
- the MPO's certification documents—the Transportation Improvement Program (TIP), Unified Planning Work Program (UPWP), and Long-Range Transportation Plan (LRTP)
- ongoing MPO programs (such as the Congestion Management Process, Public Participation, and Transportation Equity Programs)
- small-scale technical assistance projects for municipalities or transit agencies
- specific tasks within an ongoing MPO program
- CTPS initiatives, such as development of a strategic plan or guidebook

Project management is both an art and a science. Recognizing how challenging this work can be, CTPS will occasionally organize project management training for project managers and staff who wish to become project managers. For additional project management training or support, please reach out to your manager or staff in the Finance and Operations group.

ROLES

Project Managers

Project managers use tools, insight, and communication to lead a project from start to finish on-time and within an established budget, and they deliver products that fulfill the purpose or goal of the project.

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[1] https://www.pmi.org/about/learn-about-pmi/what-is-project-management

[2] The term "3C" refers to the continuing, cooperative, and comprehensive transportation planning that MPOs are required to conduct.

Throughout the course of a project, project managers

- set realistic expectations for project funders and stakeholders whom the project is intended to benefit;
- work with analysts, editors, graphic designers, and others to guide their contributions to meet the project's needs;
- track ongoing work through to completion, including by monitoring the budget, time expended, and work completed;
- identify and communicate challenges; and
- work with others to develop mutually agreed-upon solutions.

One of the key factors of success in project management is frequent communication with the staff carrying out work and the principal supporting the project manager. Project managers are also typically the primary conduit of communication with project funders, partners (who may fund or work closely with us on project work), and project stakeholders. The framework for communication and frequency of meetings should be established early in the project scoping process, and communication should also happen ad hoc as needed.

Project Principals

Project principals provide support to ensure project managers' development and success. Project principals may be assigned to a project because of their technical expertise and/or relationship with a project funder or other key agency. They leverage their expertise, relationships, and mentorship skills to support project managers when building relationships with project stakeholders and to successfully complete projects on time and within budget. Some more specific activities of project principals may include the following:

- working closely with less experienced project managers to develop scopes, schedules, and budgets;
- providing more experienced project managers review of scopes, schedules, and budgets at the early stages of the project;
- attending meetings early in the process and then supporting the project manager when establishing effective communications with the project funder;
- strategizing with the project manager when project delays, scoping issues, or other challenges are identified;
- coaching and empowering the project manager to employ good project management tactics;
- providing quality assurance (ensuring and verifying that the processes and activities used to create products are working properly); and
- ensuring quality control (checking products to verify that they meet specifications) of technical work.

Project managers with different levels of experience may need different levels of support from project principals. The relationship between project managers and principals should be two-way, iterative, and support project managers' growth.

PROJECT FUNDING SOURCES

Projects conducted by CTPS have various funding sources. The federal government funds studies, MPO programs, and technical assistance projects through the Boston Region MPO's UPWP. Other agencies and municipalities pay for CTPS's services as well. Occasionally, CTPS management will assign funds for special initiatives. These funding sources and the types of work they support are described in Appendix A.

PROJECT INITIATION

Project managers may propose a project themselves or be assigned a project either after the MPO board has voted or the CTPS directors have agreed to advance it. Project managers may also receive a request for assistance, either through an established technical assistance program or another way, such as from a staff member of a partner agency.

Staff who have been asked to initiate a project should consult with their group managers who can help identify whom they should coordinate with and determine how best to move forward. Before a project is initiated, group managers and staff should be in agreement that there is a reasonable funding source and enough staff availability to successfully complete the project. If there is consensus that a project should be initiated, the likely project manager would be asked to contact the Finance and Operations staff to confirm the funding source.

EARLY ORGANIZATION AND COORDINATION

Before starting a work-scoping process, take some time to organize an online folder for document filing, and identify and coordinate with the people who will work with you on the project.

Set up a Project Folder

Set up a folder for the project on Lilliput or Google Drive using the structure shown in the project archiving folder template at G:\All Project Archive-Current\Project_Archive_Template. This folder will provide a location for all people working on the project to organize and share materials. By starting with the template, you reduce the amount of effort you will need to expend at the end of the project to complete the project archiving process (see below).

Identify a Project Principal

Work with your group manager and other staff, as necessary, to identify a project principal. The project principal may be a group manager, a director, or a staff member who is an expert in the subject matter.

Develop a Team

Bring together a team of individuals who can lend their skills and expertise to the project. A team that could successfully complete a project might be comprised of various staff members:

- data analysts or travel demand modelers
- subject matter experts
- public involvement and communications staff

Staff from an agency or municipality that is funding a project may also be part of the team. Group managers who supervise staff should confirm that the preferred staff are available to participate in a project.

PROJECT SCOPING

When the team is formed, the scoping process can begin. A work scope is both a planning tool and a tool for the project manager to use during the project life to manage expectations among the team and the funding partner. Project managers may work with the identified project principal and/or their manager to develop a work scope. There are four key components to scoping a project:

1. information gathering
2. coordination
3. developing a scope of work
4. work scope review and approval

Gathering the relevant facts first will lead to productive coordination meetings and a well-informed scope of work.

Information Gathering

The first step, when gathering the available information about the project, is to identify the funding source. If a project is funded with MPO dollars, the description and budget in the UPWP can be used as a foundation for developing a refined scope. The UPWP manager may also know more details about the project's history, including items discussed in internal staff meetings and UPWP Committee meetings. If a project is funded by an outside agency, entity, or municipality, CTPS managers or directors may have more details about the project's history.

Regardless of the project funding source, the following are helpful questions for a project manager to ask:

- Is this project similar to one that staff have worked on before (such as corridor or TIP-Before-and-After studies)? If so, ask staff members who work in the topic area for their advice and review the Publications web page on the CTPS internet site for other related CTPS work products.
- Have there been recent discussions by the MPO board about this topic? If so, Certification Activities staff can provide information about recent conversations or direct you to meeting recordings and summaries.
- Have any of CTPS's partner agencies or others conducted related studies? If so, some preliminary research may help scope the project. A staff person's manager or project principal can help determine an appropriate amount of time to spend on such research during the scoping phase.

Coordination

When the relevant information has been obtained, the project manager can begin coordinating with team members and the project principal. There could be two phases to these discussions:

- *An initial scoping conversation* can offer a time to brainstorm and share ideas about the approach and products in an early outline of the scope. Relevant topics may include
    - overlap with other efforts both internally and outside CTPS;
    - potential risks;[3]
    - time and resources required to fully complete the project;
    - audiences that might benefit from the project;
    - relevant outside experts or stakeholders, and how to reach them;
    - types of work products and graphics to present results;
    - development of new or in-house analytical tools;
    - quality assurance and control;
    - presentation and communication of the project results; and
    - direct costs necessary to complete the project.
- *A discussion of a close-to-final draft work scope* can confirm that all staff being asked to participate in the project are aware of being included in the scope, that they are aware of and agree with the estimated amount of time needed to complete their identified work tasks, and that they have coordinated with their own managers.

Editorial and Graphics staff are engaged in most projects. It is important to discuss the format of deliverables with the managers of these groups or their designated staff and how they will be engaged early (during scoping) and throughout the project.

[3] See The Guide to Project Risk Assessment in Appendix B.

Communications and outreach staff should be consulted early in the scoping process to identify potential stakeholders and opportunities for raising awareness of our work, and to plan for any desired communications.

If you are working on a project funded by another agency, you should have an initial conversation with the staff of the funding agency to gather their thoughts about project parameters, including potential methodologies and data sources.

Developing a Scope of Work

The information and insight gleaned from research and conversations prepares the project manager to develop a written work scope, which describes the work to be performed on the project, deliverables, budget, timeline, and milestones. When a project requires a formal work scope, the project manager will use one of the CTPS work scope templates, described below, to write the scope. Some initiatives do not require the use of one of the preformatted work scope templates, yet the templates provide a structure that is useful when developing less formal scopes. A project principal can help a project manager determine the appropriate scoping document and requirements that a project will need to meet. The following steps describe how to develop a work scope using the templates.

Step 1: Begin with a template for the work scope

Work scope templates are preformatted to meet Americans with Disabilities Act (ADA) requirements for public agencies to make accessible all text and documents. Templates can be downloaded from the Templates page of the CTPS intranet site. There are three work scope templates: two are *work program* templates and the third is the *agency work plan* template. The choice of template depends upon whether the scope must be approved by the MPO board and the funding source.

Work program templates are for projects that are always approved by the MPO board. There are two work program templates, depending upon the funding source:

- The **MPO work program** template is for the discrete projects that are funded with MPO 3C Planning (MPO 3C PL) funds and are often referred to as UPWP studies. These studies are the nonrecurring studies described in Chapter 4 of the UPWP (Boston Region MPO Planning Studies and Technical Analyses).
- The **agency work program** template is for projects that are funded with money from an external agency or other entity but need MPO approval due to the level of effort, determined in coordination with the Certification Activities manager and Director of Policy and Planning. MPO board members may be interested in these projects, and they may want to confirm that agency funded projects do not interfere with staff's ability to complete MPO work.

Both work program templates include a Proposed Motion for the MPO to vote to approve the work program.

The **agency work plan** template is for projects that require a low level of effort and are funded with money from an agency or other external entity. A project manager should confirm with the Certification Activities Manager and Director of Policy and Planning that the level of effort is low enough.

Table 1 provides a summary of the required documents and approvals by project type.

Table 1
Scoping Documents by Project Type

Project Type	Required Documents	Required Approvals
Annual work plan for ongoing MPO program or study (a line item in the UPWP)	Certification Activities work plan	Certification Activities group manager
Task within an ongoing MPO work program (under a line item in the UPWP)	None required, but documentation can be helpful	None required
MPO-funded discrete study	Work program	MPO board
Agency-funded project, such as those funded by MassDOT, the MBTA, or a municipality	Applicable scoping document varies by project level of effort (confirm with project principal and Certification Activities group manager)	Varies by project level of effort. May include the MPO board. Funding agency staff
Technical assistance project	Applicable scoping document varies by project level of effort (confirm with project principal and Certification Activities group manager)	Varies by project level of effort. May include the MPO board. Funding agency staff
Staff-generated research	Research proposal, including: • a description of the research question or technical assistance project you would like to address, • the process you will use to address the question or project, • information or data that you would need to conduct the research, • your anticipated product, and • your proposed budget, including the number of days (by staff member if the project requires more than one staff member) required to complete the project.	Group manager and CTPS Director
CTPS management initiative	Varies depending on manager or director requests	Varies

Step 2: Utilize the work scope template

A work scope has several components, which are briefly described below.

1. **Collaborative Project Scope Development Form**
   This form, shown in Figure 1 and included as the first page of each work scope template, is completed towards the end of the scope-development process. It requires CTPS group managers to sign-off on the estimated hours and costs assigned to their staff on the project. (Instructions for obtaining these sign-offs are included on the form.)

   The project manager will estimate the hours of staff time and cost (generic salary rate or specific) for each person on the project, based on the scoping consultations with team members, and then list the totals for each CTPS group on the form. Once completed, the project manager sends this form along with the work scope, cost table, and schedule to the Director of Finance and Operations, who ushers it through DocuSign to obtain the required e-signatures. More details about developing a project budget are provided in Step 3.

   Finance and Operations staff must also sign off on any direct costs for the project, such as external printing costs, postage, supplies, and mileage reimbursements. They will help confirm that adequate funds are available and that proper procedures are followed.

Figure 1
Collaborative Project Scope Development Form

<Insert Figure 1>

2. **Scope cover page**
   The scope cover page will be the first page of the document after the Collaborative Project Scope Development form is extracted and distributed for signatures. The following information must be entered on the scope cover page:
   - UPWP Classification: Find this classification for MPO-funded work programs in the UPWP. The UPWP Manager may advise on the correct program classification if a project is not in the UPWP.
   - Project Number: This number may be included in the UPWP. If not, the Director of Finance and Operations should be asked to assign a project number.
   - Client: Usually the client is the project funder.[4]
   - Project Supervisors: List the project principal and the group manager, if relevant.
   - Funding Source: If unknown, the Director of Finance and Operations may advise.
   - Schedule and Budget: The Exhibit Builder Tool should be used to fill in the budget and schedule information after completing Step 3. It is essential that the information in the cover page matches the information in the exhibits. See Step 3 below for details.
   - Relationship to MPO Goals: For MPO-funded projects, this line should identify the Long-Range Transportation Plan goals that the study will address. The LRTP manager or others in the Certification Activities group can help identify the applicable goals.
   - Relationship to MPO Work: For non-MPO-funded projects, identify any linkages to MPO work and confirm that the scope, budget, and timeline do not interfere with staff's ability to complete MPO work.

3. **Background**
   This section should include general background information, such as information about why the study is being undertaken and why it is important. This section should also refer to previous work that is relevant to the proposed study. If a project focuses on a specific corridor, intersection, or other geographic area, it may be beneficial to create a map of the project location, in which case the project manager should contact the Graphics group.

4. **Objectives**
   Write a brief statement about what objectives the study will achieve.

[4] While "client" is often used to describe a project funder, as a public agency, we engage with funders in a more collaborative and iterative manner than is sometimes thought of as a typical client-consultant relationship. As staff to the Boston Region MPO, CTPS is always working to accomplish its MPO goals while supporting transportation planning in the region and beyond.

5. **Work Description**
   Describe the tasks and the expected work products. Consider these questions:
   - Who are the end users and interim stakeholders?
   - What stakeholders should staff communicate with? Will that involve formal meetings or events?
   - What is the flow of the work as defined in detailed work tasks?
   - What are the project deliverables?

Step 3: Develop a project schedule and budget

The process of developing a project schedule and budget may be iterative, such that a project manager may have to revise estimates multiple times before settling on a final budget and schedule that enables the work to be done with the available resources and within an acceptable timeframe. A project schedule should be grounded in a detailed estimate of the amount of resources and time needed to complete each project task. Different projects have different overall schedule constraints, for example:

- UPWP projects and programs are expected to be complete within the federal fiscal year covered by that UPWP, unless the project timeline was planned to be multiple years during the UPWP development process.
- Non-MPO or agency-funded projects may also have specified budgets and deadlines; your manager, your project principal, or representatives of the funding agency can provide you with that information.

The Exhibit Builder Tool is a tool for staff to build a project budget using estimates of the person-weeks and cost. The tool is located on the Intranet and can be downloaded as an Excel worksheet. It is useful when there is enough definition of the work tasks and timeline, or it can be used if a formal scoping product is not required. Group managers or project principals can help train staff who are unfamiliar with this tool as well as support staff as they use the tool.

The tool requires an estimate of the number of person-weeks to be worked by each staff person involved in the project on each task. Once those figures are identified, the tool can incorporate pre-populated person-week rates for staff already selected to work on the project and generic rates for undetermined staff. This generates project costs that can be compared to the known funding available. If the estimated effort is greater than the budget available, a project manager may revise the budget, scope, and/or schedule or explore the option of obtaining additional funding.

Here are a few tips and considerations for developing a budget and schedule:

- Assign each task a start and end date. A helpful approach can be the critical path method, which involves identifying dependencies. What tasks cannot start until another is finished? What tasks can happen in parallel?

- Consider factors, such as the need to obtain data, that may cause delays in completing the tasks.
- Consider the amount of time staff members have available to work on the project, which may be different from the hours needed to complete it.
- If less experienced staff are expected to be involved in the project, assume additional time for learning and mentoring.
- If the project involves developing a home-grown analytical tool to complete the project work, include the staff time required to follow the procedures described in In-House Software Development: A Standard Process.
- Include time for review of deliverables by the project principal, other CTPS personnel (including managers and directors, and Editorial and Graphics staff), project funders, and other parties as needed. This may involve budgeting time for regular meetings as well as interactions with the public and other external parties. The project principal and outreach and communications staff in the Certification Activities group should be consulted to confirm these needs and costs.
- Based on discussions with other staff about final products, graphics, and quality assurance and quality control, include the time and budget required to produce those items explicitly in your budget. For projects that will be presented to the MPO or in another setting, allocate additional time to develop presentation materials and to present at the meeting.
- Include time for project start-up, management, and close-out activities (see the section titled Closing Out Your Project).
- Consider whether an ongoing technical assistance task to accommodate small tasks not specifically budgeted for in the work scope is needed.
- Consider whether a project may involve direct expenses. As previously mentioned, consult with Finance and Operation staff about these expenses, which may include data purchases, equipment and materials, transportation expenses, postage, or printing.
- Consider appropriate time and budget contingencies for unexpected project challenges. This step is important to avoid miscommunication, misunderstanding, and excessive contract amendments. As previously mentioned, the Guide to Project Risk Assessment in Appendix B provides information on factors that involve risks to budget and schedule. For project work with great uncertainty (e.g., when carrying out alternatives in modeling work or when developing new analytical tools or methodologies), more conservative contingencies are appropriate and can be communicated with project funders. As projects progress and risk is better understood, expectations can be adjusted.

Work Scope Review and Approval Process

A project manager shepherds a project scope through internal review, editing, review by MassDOT Office of Transportation Planning (OTP) staff or project funders and, if relevant, the MPO approval process. The following guidance relates to the review and approval process:

- Follow the CTPS Work Plan or Work Program Development Process described in the CTPS Document Production Guidebook. Refer to this flow chart of the process. (See Figure 2.)
- Follow the Editorial Procedures and Style Guide when incorporating information into the templates and submitting materials for editorial review.
- If the work scope requires MPO approval, it must be presented to the MPO board.
    - The Tentative MPO-Meeting and Document-Review schedule provides guidance on distributing documents to MPO members in a timely way.[5]
    - The project manager must prepare a brief (five minutes or less), typically verbal (no PowerPoint), presentation of the proposed work program. The presentation should convey the project funder, project cost, project duration, objectives, brief work tasks and deliverables, and relevance to the MPO.
    - Certification Activities staff will schedule an internal dry run of the presentation one or three Thursdays prior to the MPO meeting at which it will be presented. This is an opportunity to practice the presentation, obtain constructive feedback, and prepare for potential questions from board members. A project manager should plan to spend some time addressing feedback in the dry run, including working with Graphics on short notice if necessary.

- If the project is funded through an agency or other entity (rather than through the MPO) and does not require MPO approval, a project manager should take the following steps:
    - Share the scope with the designated agency representative and obtain concurrence with the final scope (in writing via email at a minimum).
    - Check with the Director of Finance and Operations to determine whether a new contract is necessary. If so, ensure that the funding agency is preparing the contract so that work can begin as soon as possible.
    - Ensure that the funding agency is preparing a Notice to Proceed (NTP) or Purchase Order (PO), because work cannot begin until the NTP or PO is in place.

[5] Typically, materials are sent to the MassDOT OTP approximately three weeks prior to the MPO meeting at which the materials will be presented. We strive to post the materials publicly by 5:00 PM on the Thursday before the MPO meeting. If MPO approval is required, it must be posted no later than 10:00 AM on the Tuesday before the MPO per Massachusetts' Open Meeting Law

Figure 2
Work Scope Review and Approval Process
<insert Figure>

MANAGING YOUR PROJECT

This section contains some requirements and best practices for project management throughout the life of a project. CTPS recognizes that most staff become project managers by building project management skills over time. Project principals can provide mentorship and support, or a staff person may request additional training.

Project Start-up Activities

Early in a project, the project manager should engage in the following early activities.

Organize Materials

- Share the location of the project folder you established on Lilliput or Google Drive, using the structure of the project archiving folder template (G:\All Project Archive-Current\Project_Archive_Template), with all members of your project team.
- Inform Finance and Operations staff about the project tasks and discuss associated budgets to set up in Deltek, the software program CTPS uses to track project expenditures and time. Deltek's features make it possible to set up charge codes specific to project tasks.
- Establish which tools or systems will be used to track progress. Deltek can be a valuable resource but typically other tools are needed, such as Asana, which all staff may access. See suggestions under the section titled "Monitoring Progress."

Hold a Project Kick-off Meeting

- Confirm the collective understanding about timeline, budget, and deliverables.
- Develop and affirm project check-in and communications protocols with the project funder, project partner, and project staff team, including frequency, content, and forum for updates.
- Ask for any additional data or information needed and discuss any general questions team members may have before starting work on the project.
- Identify key decision points from external stakeholders (project funders or others) to ensure that a project will stay on schedule.

During the Project

During the course of the project, a project manager leads the project team; monitors progress to ensure that the project stays on time and within budget; maintains effective communication with the project funder or partner, project team, and others; and identifies and addresses any challenges that threaten the successful completion of the project. This section describes tips and best practices in managing the work flow for your project.

Leading Your Team

An essential role of project managers is leading their project team. Effective project managers do the following:

- Provide guidance, motivation, and leadership in establishing the approach to the project, determining the technical methods and data sets to be employed, and taking ownership over the deliverables.
- Set expectations for, communicate with, and coordinate the activities of the project team. Team members should clearly understand their role in the project, how it relates to the work of others, the overall goal of the project, what is expected of them, and when it is expected
- Hold regular meetings with the project team, which may include meetings with the entire team or with individuals or subsets of the team.

Monitoring Progress

Review and Track the Project Scope and Schedule

CTPS does not currently require project managers to use a specific tool to track the progress of a project according to scope, schedule, and budget. While a project manager may still use a personalized tool, consider using Asana, which is now made available to all staff. Some additional, supportive tools and resources are listed here:

- Deltek "Project Status for Project Managers" report. This report can be set to show the number of hours each staff member worked on a project in the prior week by setting the "week end date" to the previous Saturday. It also shows the number of hours worked for the month and the life of the project. Running this report each week allows a project manager to check if anything unexpected was charged the prior week that would require follow-up with an individual.
- Deltek "Person Hours by Project" report. This report can be set to show the number of hours each staff member worked on a project for a user-specified time frame.
- Self-developed or borrowed Excel spreadsheets or tools, such as this example for the production of the UPWP.
- GANTT charts

Complete Monthly Progress Reports

Project managers are responsible for filling out monthly progress reports using the progress report template in Deltek Vision. For instructions for submitting a project report log into the CTPS intranet (intranet.ctps.org) and go to Submit a Progress Report. Progress reports will vary based on the level of detail most useful for the project manager and the project funder. These reports include the percent of budget expended and the percent of work completed, which may not necessarily be the same. The "Project Status for Project Managers" report in Deltek is useful when writing progress reports. For more information and training on monthly progress reports, reach out to the project principal or Finance and Operations staff.

Ensuring Ongoing Communication

Successful project managers keep everyone up to date on the status of the project, with that time budgeted for as necessary in the scope of work.

As defined in the project kick-off meeting, a project manager should hold ongoing, mid-point, and/or milestone check-in meetings with the project team, a project funder, or both, to review how tasks have progressed and to identify and troubleshoot project issues. The amount and frequency of meetings can be adjusted as necessary as the project gets underway. The following are best practices to consider:

- Review and communicate project status and priorities regularly with the project principal and other supporting staff (including Data Resources, Editorial, and Graphics) for the project.
- Carry out regular, ongoing communication with the project principal with an eye to issues that may warrant discussions with CTPS directors, such as the relationship between the project and broader policies and positions of the MPO board, or items of a politically sensitive nature. When in doubt, do not hesitate to reach out to the directors for guidance and support.
- Engage other parties who play a role or have an interest in the project, such as technical advisory committee members, specific MPO members, consultants (those working for CTPS and those working for the project funder on the same project), advocates, members of the public, or other employees of public agencies. The project principal, group manager, and communications and outreach staff in the Certification Activities group may have suggestions about the appropriate times and methods to engage these stakeholders.
- Ensure that the project funder receives regular and transparent updates on the project status, issues and problems that may have arisen and how they are being addressed, and when the next deliverable can be expected. This may be accomplished by regular meetings, documentation of meeting notes and action items, and the submission of progress reports.

In addition to coordinating with the project team, a group manager, and project principal, a project manager may also have to report to

- Finance and Operations staff, who provide regular reports on CTPS project activities to MassDOT OTP staff;
- the MPO board; and/or
- another agency funding the project.

Responding to Challenges

It can be helpful to think of the major constraints on a project—budget, available time, and the quality of deliverables—as the legs of a triangle. More detail is available here. If one of these constraints is affected, one or both of the other two aspects of the project may need to be adjusted to respond and keep the project on track. For example, if the time available to complete a project is truncated or time is running out, hypothetical responses include dedicating more resources and/or downscaling the project tasks to ensure that the project is completed on time.

Assessing risks to the project and thinking of possible responses at the outset of a project may help project managers address some of these problems later. The sections below describe some possible challenges and how to manage them.

Scope Creep and Shifting Expectations

When the project funder requests additional work that was not in the original scope or when project staff identify other work that would support the scope of work but was not budgeted for, you run the risk of scope creep. In addition, expectations or understanding of a project scope may evolve as the work evolves in a way that could affect the schedule or budget. The following are a few tips for addressing scope creep and navigating shifting expectations:

- Review the project schedule, budget, and scope on a weekly (or more frequent) basis to detect potential problems early. Communicate early internally and, if necessary, externally if there are indications that the project work will exceed the initial scope and budget or delay completion of the project.
- If the project funder requests work that is not in the scope, explore whether there is an ability to either obtain more funds or reduce other aspects of the scope. A project principal may be helpful when brainstorming potential solutions that could be discussed with project funders and other stakeholders.
- Document agreed upon changes to the scope, budget, or schedule in an email at a minimum and follow the processes below in the Modifying Project Plans section.

Delays, Overruns, and Other Obstacles

Many of the same strategies that apply to scope creep and shifting expectations apply to communicating and addressing cost overruns, delays, and other obstacles. Ongoing communication and early notification of potential issues helps all parties respond. A project manager should always work collaboratively with a project funder's preferences for adhering to or adjusting the budget, timeline, or project specifications. The role of a project principal is to help project managers brainstorm and find solutions.

If a project's budget, timelines, or tasks are likely to change, the entire team at all stages of the project should be kept informed—including the Graphics and Editorial staff. They should also be consulted about how their roles in the project may change.

Modifying Project Plans

If a project manager deems it necessary and acceptable to the project funder to change a project's scope, budget, or schedule to accommodate changing needs, the project manager should do the following:

- Determine whether the changes constitute a major change and what approvals are required with the project principal's support, if necessary.
- Continue to keep Finance and Operations staff updated on the progress of the project. As previously mentioned, Finance and Operations staff relay information about the status of projects to the MassDOT OTP.

CTPS's processes for changing the scope, budget, or schedule of a project depends on who is funding the project.

Processes for Agency-funded Projects and Other Projects Funded by Municipalities or Other Entities

- For relatively small changes that do not affect the project budget, send an email that spells out the task(s) that will be deleted, the task(s) that will be added, and any change to the schedule that will need to occur. Correspondence like this should be saved in the project folder/archive.
- For major changes, or changes that will require more money and/or a significant change to the project schedule, a scope amendment should be completed. The amended scope may have to be presented to the MPO board if the board reviewed the original scope. The project principal and the Certification Activities Group manager can help determine if this is necessary.

Processes for MPO-funded Projects

In all the cases described below, a project manager must keep the project principal, group manager, Finance and Operations staff, and the UPWP manager informed.

- The MPO periodically adjusts the budgets of MPO-funded projects and programs in the UPWP, based on MPO staff recommendations. If a project is expected to exceed its existing budget, the budget may be adjusted through this process, if appropriate.
- Major changes to MPO-funded projects may warrant review by the MPO board, and the board may require modifications to the work scope or UPWP. These changes may require an amendment, which will require a public comment period, MPO approval, and final approval by federal agencies.
- If a project is likely to continue beyond the UPWP year in which it was programmed (even if the project budget or scope is not changing), the UPWP manager must be informed that your project is likely to continue into the upcoming fiscal year. Your request would be discussed as budgets for the upcoming UPWP year are developed in the spring. (Note that this is an

extenuating circumstance—projects scheduled for one federal fiscal year should be completed within that year.)

Creating Project Deliverables

Deliverables for CTPS projects typically include memoranda, reports, and/or presentations, although they may take other forms, such as certification documents, web applications, or guidebooks. Early in the scoping process, the project manager should consult with the project team (including editorial and graphics staff, as well as communications and outreach staff) and the project funder to determine the most effective format for deliverables.

During the project, deliverable outlines can be created and discussed with staff to get input and communicate what is expected of them. In addition, a project manager may share those outlines with project funders to get feedback as well as establish consensus that the deliverables will meet project needs.

An intermediate check-in with graphics and editorial staff at some point in the process will help ensure that those staff are prepared for the work, up to date on any changes to the work, and have the opportunity to provide insight.

Reports and Memoranda

The process and guidance for writing reports and memoranda are documented in the CTPS Production Guide. The project manager should always start with a freshly downloaded template that is preformatted to meet ADA requirements to make accessible all text and documents. When writing, staff should refer to the Editorial Style Guide for tips on structuring the document, writing for an audience, word usage, and navigating the editorial process.

When deciding whether to use the memorandum or report format, consider the audience and the content being communicated. Memoranda are less visual, typically have a defined audience, and typically should not be longer than 25 pages. Reports are appropriate for delivering findings to the public in an engaging format with visual elements, and documents for this purpose should be in the report template regardless of length. In consultation with Editorial and Graphics, modifications can be made to the report template for shorter documents.

The following summarizes some additional guidance for interim or final technical writing in reports or memoranda:

- Any tables in the document must be based on the table template and instructions on the Templates page of the intranet. The table templates are preformatted to meet ADA requirements to make accessible all text and documents.

- Follow the CTPS Accessible-Document Production Process. If questions regarding accessibility arise, refer to the Accessible Document FAQ which can be found on the Accessible Document Production page of the intranet. Graphics staff can also provide information about accessibility procedures.

A project manager may determine that a modified memorandum or report format may be appropriate or needed to realize project goals. To produce a custom report, project managers must consult with Editorial and Graphics during early planning stages to establish expectations and to allocate sufficient budget to create a custom document.

Other Deliverables

Projects may also involve deliverables other than memoranda or reports. For example, a project may involve creating a guidebook or web application, or there may be a need for an interim memorandum as the project progresses. In these cases, it is particularly important to maintain regular communication with Graphics, Editorial, and possibly Data Resources staff so that your deliverable meets accessibility and other CTPS standards.

If a project involves producing marketing materials or surveys, project managers should engage outreach and communications staff in the Certification Activities group. Those staff would advise on developing appropriate survey questions within CTPS standards. They can also suggest effective media and channels for reaching out to the intended audience, as well as optimal times to share information.

Document Review Process

While in a draft state, deliverables should be reviewed by at least one another party, ideally someone with additional technical expertise and political awareness. The review may be completed by the project principal or another identified staff member. In most cases, it is prudent to share stages of the deliverables, from outline to final draft, with a project funder or other key project partner to incorporate their feedback prior to producing the final document.

Unless there are extenuating circumstances, after a deliverable is reviewed by appropriate technical staff, the draft version should be submitted to the Editorial group for further review. The editorial process is described in Chapter 2 of the Editorial Style Guide, which can be found on the Document Procedures and Guidelines page of the intranet. Your editor will work with you to prepare a draft version of the document—a "client review draft"—that you can send to external reviewers.

The next stage is to share the reviewed and edited deliverable with the appropriate external party, which will depend on the project's funding source. All work funded by the MPO must be reviewed by MassDOT OTP staff (who represent the Secretary of Transportation as the chair of the MPO board) before the document is finalized by Editorial and Graphics and sent to the MPO board. Typically, OTP staff expect to receive a document three weeks before it is expected to be finalized. If work is not MPO funded, the established project manager on the funder's side should review the deliverable.

Finalizing and Presenting Project Deliverables

The following information summarizes the process for developing presentations to the MPO board:

- Timing:
  - Consult the Tentative MPO Meeting and Document Review schedule and the Certification Activities group manager to determine deadlines for finalizing deliverables and presentation materials for the board. Materials for MPO meetings are typically posted by 5:00 PM on the Thursday before the MPO meeting. Remember to allow sufficient time before this deadline for Editorial and Graphics to finalize your materials (including creating accessible versions) and send them to Certification Activities staff for posting to the MPO meeting calendar.
  - Develop an estimate of how much time on the MPO meeting agenda is needed for your presentation in collaboration with the Certification Activities Group manager.
- Create presentations using an MPO Presentation template or the Virtual MPO Presentation template, which can be downloaded from the Templates page of the intranet. Graphics staff can advise on an appropriate template if the project will be presented in another forum.
  - For tips on how to organize and present materials, use the CTPS Effective Presentations guide, which can be downloaded from the Document Procedures and Guidelines page of the intranet.
  - Typically, Graphics staff reviews presentations before they are sent to Editorial. However, if additional assistance is needed to write and/or organize the text for the slides, a project manager or staff person can work with Editorial and then send the presentation to Graphics for assistance with the layout.
  - The staff person creating the presentation is responsible for sending it to Editorial after Graphics has reviewed it.
  - The final presentation (after editorial review) must be sent to Graphics so that it can be included in the MPO meeting slide deck at the latest by noon the Wednesday before the meeting.

As previously mentioned, staff presenting at the MPO board will be asked to do an internal dry run of the presentation one or three Thursdays prior to the MPO meeting at which it will be presented. These dry runs are typically attended by the Certification Activities group manager, the staff manager and/or project principal, and CTPS directors. These dry runs are designed to help staff refine their message and prepare for questions from MPO members and others in attendance at MPO meetings. Here are a few tips for dry runs:

- While the presentation may not be final at the time of the dry run, staff should bring as complete a version of a presentation as possible.
- Identify specific aspects of the presentation for which feedback is requested. For example, a presenter may ask for help making certain material easier to understand or deciding what material could be eliminated to stay within the allotted presentation time.
- Invite other CTPS employees if their feedback might help improve the presentation and anticipate questions from the audience.

Publicizing a Project

A presentation at an MPO meeting is one of many ways to share findings and recommendations with interested parties in the Boston region. Other ways are through use of the MPO's website and presentations at other meetings and events.

Staff leading work funded by the MPO will be asked to create a summary for a web page specific to the project, which will be linked to the Publications Page on the MPO website. Projects funded by agencies or other entities may also be posted to the website and linked to this page, with approval of the funder. More extensive projects, such as the production of certification documents, may warrant development of more complex web pages, which requires early collaboration with Data Resources staff. Data sets or a web application will be linked to the Data Catalog and Interactive Applications pages of the MPO website.

Public outreach and communications staff in the Certification Activities group work with staff to publicize work and reach the intended audiences. If appropriate (and approved by any external funder), they will work with project managers to identify MPO-hosted meetings or other events where the project work can be presented. They may also draft an article about a project and work with the project manager to get it posted on the MPO's Blog.

Agency funders may request that work be shared with other audiences. If these presentations were not anticipated during the project scoping phase, a project manager should work with appropriate staff and the funder to identify funding for this additional work.

CLOSING OUT A PROJECT

There are several steps to close out your project, described in this section.

Wrapping Up with the Project Team and Funders

Project managers should schedule project debriefing meetings with internal CTPS staff on the project team as well as with external funders or stakeholders as soon as possible after a project is complete. The project manager may determine which staff or external parties would make these conversations most helpful to guiding future project management. At these meetings, attendees can be asked to identify successes, challenges, and next steps that may include future opportunities to work together.

Archiving Materials

Every project must be archived so that staff can access key elements of the work in the future. Project managers are responsible for following the instructions on the Archive a Project page of the CTPS intranet. Project managers should consider the costs of archiving the project early in project scoping and incorporate those costs in the budget if appropriate.

For MPO-funded projects, project managers should also fill out the UPWP Study Tracking Database input spreadsheet provided by the UPWP manager. This process enables Certification Activities staff to track projects that have been completed with federal planning dollars and to monitor whether recommendations made by MPO staff have been implemented by municipalities or other entities.

Reflecting on Experiences and Lessons Learned

Project managers benefit from taking time to reflect on their own experience managing a project. In this process, a project manager may identify skills that they would like to learn through professional development. As previously mentioned, CTPS periodically offers project management training. Project managers can reach out to project principals and group managers to discuss the desired skills and investigate training options that may address these skills.

RESOURCES BY TOPIC AREA

Project Management for the Unofficial Project Manager (book)

Coursera Series: Project Management Principles and Practices Specialization (free version): https://www.coursera.org/specializations/project-management#enroll

Project Trade-offs Scope Triangle: https://www.projectsmart.co.uk/project-management-scope-triangle.php

Appendix A: Project Funding Sources

Projects conducted by Central Transportation Planning Staff (CTPS) have various funding sources. The federal government funds studies, Metropolitan Planning Organization (MPO) programs, and technical assistance projects through the Boston Region MPO's Unified Planning Work Program (UPWP). Other agencies and municipalities pay for CTPS's services as well. Occasionally, CTPS management will assign funds for special initiatives. These funding sources and the types of work they support are described below.

THE UNIFIED PLANNING WORK PROGRAM

The Boston Region MPO receives funding from the Federal Highway Administration and Federal Transit Administration to carry out the federally mandated responsibilities of the MPO and to support planning studies, data collection, and related activities. Each year, CTPS staff work with the MPO to determine how those dollars will be spent on various tasks in the upcoming federal fiscal year and document that plan in the UPWP. Projects may be initiated under established MPO programs that are described in the UPWP, or they may be standalone tasks.

Ongoing MPO Programs

The MPO funds several ongoing programs to accomplish federally mandated tasks, including the development of the Long-Range Transportation Plan, the Transportation Improvement Program, or the UPWP itself. Other programs, such as the Transportation Equity Program and the Congestion Management Program, may include limited-term tasks (such as the formation of a task force or development of a database) to support the overall program. Each year, program managers of these ongoing MPO programs identify tasks within their programs to meet new requirements, needs, or opportunities, and they carry them out while accounting for deadlines and annual (or multi-year) budgets.

Discrete Studies

Through the UPWP development process, CTPS identifies funding available to take on new, limited-term studies, referred to as discrete studies. Ideas for these studies can come from staff, MPO members, or members of the public, and the studies are defined in broad terms at the outset. The Study Proposal template, shown in Figure 1, shows the information collected at the start of the UPWP process. MPO staff and the MPO's UPWP Committee take these ideas and refine them by gathering additional input, and the MPO board ultimately selects several studies from a list of candidate projects and documents them in the UPWP. These projects may be managed by the CTPS employees who suggested them, or they may be managed by other employees who have, or are building, expertise in the study areas. These studies, which generally require further scope refinement, have defined budgets, last one to several years, and generate products such as research reports, guidebooks, or data analysis tools.

Technical Assistance Programs

CTPS uses some of its MPO dollars to support technical assistance programs: the Community Transportation Technical Assistance Program and Regional Transit Service Planning Technical Support Program. Through these programs, representatives of municipalities, regional transit authorities, or other stakeholders in the Boston region request support to meet local planning needs. CTPS’s response to each request constitutes a project, shaped by a description of the work to be accomplished, a schedule, and a budget, which may be part or all of the budget for that technical assistance program for a given year.

Staff-Generated Research

In recent years, the MPO board has allocated a small amount of its funding to a Staff-Generated Research Program for studies identified by staff members throughout the year. CTPS directors invite staff to submit ideas for research projects and staff members can access this funding to explore a topic that interests them and that might generate useful information for the MPO board. These activities are not as extensive as typical discrete studies, they are likely limited to one federal fiscal year, and they have a limited budget depending on the funds available in the Staff-Generated Research Program budget.

NON-MPO SOURCES

Partner agencies such as the Massachusetts Department of Transportation, the Massachusetts Bay Transportation Authority, or a municipality in the Boston region may also engage CTPS to analyze the impacts of a proposed project, support planning efforts, design a new process or tool, or provide some other service for a fee. Their funds may come from federal, state, local, or private sources, including the MassDOT Statewide Planning and Research or On-Call contracts. While these projects are not funded with MPO dollars, they are documented in the UPWP when feasible.

MANAGEMENT INITIATIVES

Sometimes, CTPS directors or managers will organize a group of staff members to focus on completing a specific task, such as developing a new employee evaluation process. If these initiatives have a specific end goal, time frame, and budget, they are considered a project. A CTPS director or manager may lead this type of project, or other staff may be asked to do so.