



Oversight Procedure 27 – Before-and-After Study Review

1.0 PURPOSE

The purpose of this Oversight Procedure (OP) is to describe the review, verification, analysis, and reporting requirements that the Federal Transit Administration (FTA) expects from the Project Management Oversight Contractor (PMOC) with regard to the adequacy of specific aspects of the Project Sponsor's Before-and-After (B&A) Study.

The specific aspects covered by this OP are the project scope and capital cost elements in the Project Sponsor's before-and-after materials. The other elements of the B&A Study are addressed by FTA's Office of Planning and Environment (TPE).

2.0 BACKGROUND

In the December 2000 Final Rule on Major Capital Investment Projects, FTA required that Project Sponsors receiving Section 5309 New Starts funding complete a B&A Study to document the actual outcomes of New Starts projects and to examine the accuracy of the predictions of those outcomes prepared during project planning and development. In 2005, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) amended Section 5309(g)(2)(c) to codify this regulatory requirement and to require that Project Sponsors, as a condition of receiving a Full Funding Grant Agreement (FFGA), assemble information on five project characteristics: (1) project scope; (2) capital costs; (3) transit service levels; (4) operating and maintenance (O&M) costs; and (5) ridership patterns. SAFETEA-LU also required FTA to use this information in preparing an annual report to Congress on B&A Studies completed each year.

In 2012, a new two-year transportation authorization, "Moving Ahead for Progress in the 21st Century (MAP-21), required that project sponsors complete B&A Studies for core capacity improvement projects.

3.0 OBJECTIVES

The overall goal of this OP is to confirm that the scope and capital cost elements of B&A Studies prepared by Project Sponsors are accurate and complete. To meet this goal, the OP has four specific objectives for the PMOC assignment:

- Objective 1: to confirm that project sponsors comply with the B&A Study requirements as they develop and implement the project;
- Objective 2: to confirm that the predictions archived by project sponsors at specified milestones are complete and accurate representations of the then-current expectations for the project's scope and capital cost;

- Objective 3: to confirm that the data and documentation of the as-built project's scope and capital cost are complete and accurate; and
- Objective 4: to confirm that the final report from the B&A Study provides useful documentation of the actual scope and capital cost of the project and highlights the key findings on the accuracy of predictions on project scope and capital cost.

4.0 REFERENCES

The following are the principal references to Federal legislation, codification, regulation, and guidance that the PMOC should understand regarding the Project Sponsor's work that the PMOC will review under this OP:

4.1 Legislative

- The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), Pub.L. 109-59
- Moving Ahead for Progress in the 21st Century, or MAP-21, Pub.L. 112-141

4.2 Guidance

- FTA's "Before-and-After Study Qs and As" webpage (http://www.fta.dot.gov/12304_2613.html)
- "Summary of FTA Technical Guidance on Before-and-After Studies," FTA, June 2012
- "The Work-plan", FTA, May 2012
- "Standard Outline of the Final Report from Before-and-After Studies," FTA, October 2012.

5.0 PROJECT SPONSOR SUBMITTALS

The Project Sponsor is responsible for developing and providing to FTA all materials supporting the B&A Study. While this section identifies all of those materials, PMOC assignments under this OP relate only to a subset of topics (project scope and capital cost) and a subset of items (comprising items 5.2, 5.4, and 5.5, but not items 5.1 or 5.3).

5.1 Plan for the Before-and-After Study

FTA now requires that the Project Sponsor prepare a draft of the study plan as an initial task after entry into project development (PD) for all projects. In coordination with FTA, the Project Sponsor can make subsequent adjustments as the project advances. FTA and the Project Sponsor must come to agreement on a final plan before the grant agreement or grant for the project so that the FTA-approved plan can be incorporated by reference in the funding document. TPE handles review and approval of the draft and final plans; consequently, the PMOC has no review responsibilities for the contents of the plan. However, once the PMOC is assigned to the project, the PMOC will use the draft and final versions of the plan to monitor the Project Sponsor's progress on the various requirements over the course of project development, implementation, and opening to service.

5.2 Documented and Archived Predictions at Prediction Milestones

Under MAP-21, the prediction milestones for New Starts projects are Entry into Engineering and the FFGA. For Small Starts, the single milestone is the Small Starts Grant Agreement (SSGA), or the grant (for projects entirely funded in one year). For New Starts projects developed previously under SAFETEA-LU procedures, the prediction milestones were Entry into Preliminary Engineering (PE), Entry to Final Design (FD), and the FFGA. PMOCs reviewing B&A documents from these earlier projects will encounter the former sequence of milestones.

FTA requires that, at each prediction milestone, the Project Sponsor document and archive the predictions of project scope, capital costs, and other outcomes so that the predictions are available for later use in the study. The documentation includes an analysis and explanation of any significant changes in the predictions since the previous milestone (except at the initial milestone where no previous milestone exists). The PMOC assignment under this OP includes review of the project scope and capital cost elements of the predictions documented by the Project Sponsor at each of these milestones.

5.3 Documented and Archived Data on Actual Conditions “before” the Project

FTA requires that the Project Sponsor collect, document, and archive data on actual transit service levels, O&M costs, and transit ridership before implementation of the project disrupts these conditions. These data establish the basis for before-versus-after analysis of project impacts and outcomes. Since there are no actual project scope or capital costs before project implementation (only predictions of those outcomes), the data requirement at this milestone does not involve these two elements. Consequently, the PMOC assignment under this OP includes no activity at the “Before” milestone.

5.4 Documented and Archived Data on Actual Impacts “after” the Project

FTA requires that the Project Sponsor collect, document, and archive data on the actual outcomes of the project after it has opened to service. These data support the presentation in the final report of actual project impacts and the comparison of those impacts to predictions made development of the project. The as-built project scope and capital costs are largely known within several months of project opening; consequently, data collection on those elements can proceed straightaway. Adjustments to transit services and consequent impacts on O&M costs and ridership may continue for some time; consequently the nominal target for data collection on those elements is two years after project opening. The PMOC assignment under this OP includes review of the project-scope and capital-cost elements of the as-built data collection and documentation by the Project Sponsor at this milestone.

5.5 The Final Report from the Before-and-After Study

FTA requires that the Project Sponsor prepare documentation of the actual outcomes of the project and examine the accuracy of predictions of those outcomes. FTA strongly recommends that the Project Sponsor first prepare a technical memorandum on each of these two topics and

then summarize the key finding in a concise (15-20 pages) final report with the memoranda attached as appendices.

FTA has also engaged the services of a separate on-call contractor to assist with the preparation of B&A Study final reports. At the discretion of and as directed by TPE, this contractor may either assist the Project Sponsor with preparation of the final report or prepare the draft of the document in collaboration with the Project Sponsor.

In either case, the PMOC assignment under this OP includes review of the project-scope and capital-cost elements of both analyses and the presentation of the project-scope and capital-cost findings in the B&A Study final report.

6.0 PMOC SCOPE OF WORK

The scope of work for this OP includes technical reviews at all but one of the milestones in a B&A study. The “before” milestone is the single exception because the data collection at the “before” milestone does not involve any aspects of the project scope or capital costs. The milestones are:

Type of Milestone	PMOC Review under OP 27?	Milestones under MAP-21		Milestones under SAFETEA-LU	
		New Starts	Small Starts	New Starts	Small Starts
Prediction	Yes	Entry into Engr.	-	Entry into PE Entry into FD	Entry into PD
Prediction	Yes	FFGA	SSGA/grant	FFGA	SSGA/grant
Data	No	“Before” Opening	“Before” Opening	“Before” Opening	“Before” Opening
Data	Yes	“After” Opening	“After” Opening	“After” Opening	“After” Opening
Conclusion	Yes	Final Report	Final Report	Final Report	Final Report

For most projects, these milestones will span many years. During that span, turnover may occur in the PMOC assigned by FTA to the project. Consequently, documentation prepared by the PMOC under this OP must be sufficient to convey PMOC insights and conclusions about the project to a possible successor PMOC who will be responsible for later assignments under this OP.

In this OP, project scope means the physical elements of the project -- along with associated acquisition, procurement, construction, and professional services -- organized by FTA Standard Cost Categories (SCCs). Capital cost includes: (1) the constant-dollar costs of the project organized by the FTA SCCs; (2) the schedule for project development, construction, and opening to service; and (3) the year-of-expenditure (YOE) dollar costs.

6.1 Review the Predictions Archived by the Project Sponsor at the Entry-to-Engineering Milestone

Under OP 33 and OP 51, the PMOC will have recently dealt with the proposed project for the first time in PMOC reviews of the predicted capital cost of the project and of its readiness to enter Engineering. These reviews will have given the PMOC an understanding of the project and its predicted capital cost that are crucial to the initial assignment under this OP on B&A Studies.

Under this OP, the PMOC will receive from the Project Sponsor draft copies of the archived predictions and the technical memorandum documenting the predictions. The PMOC will review the materials related to the predicted scope of the project and its predicted capital costs, and prepare a memorandum conveying to FTA the findings from the review. The findings will address three topics:

- The completeness of draft archive materials related to predicted scope and capital cost;
- The usefulness of the technical memorandum in documenting the contents of the archived materials on predicted scope and capital cost; and
- The accuracy of the technical memorandum in characterizing the current predictions of project scope and capital cost – areas of significant uncertainty, work done thus far to address and reduce those uncertainties, allowances for other outcomes, and other observations likely to be useful in later work to examine the accuracy of predictions at this milestone compared to the as-built scope and capital cost of the project.

6.2 Prepare for and Undertake the Review of Predictions at the FFGA/SSGA/Grant Milestone

Under OP 25, the PMOC will already have assignments to monitor and report on progress by the Project Sponsor to develop the project. This on-going oversight of Project Sponsor progress will enable the PMOC to address effectively the two objectives related to the B&A Study during Project Development and Engineering: to confirm that the Project Sponsor prepares for the upcoming milestone during the course of Project Development and Engineering and to confirm that the project-scope and capital-cost materials archived by the Project Sponsor at the milestone are complete and accurately documented.

Under this OP, the PMOC will (1) make Project Sponsor preparation for the FFGA/SSGA/grant milestone a routine element of the PMOC's ongoing monitoring of Project Sponsor progress and (2) review the draft materials on predicted scope and capital cost of the project that are assembled by the Project Sponsor for archiving at the FFGA/SSGA/grant milestone.

For item (1), the PMOC will include in the agenda for quarterly review meetings:

- (a) Project Sponsor progress with respect to activities identified in the plan for the B&A Study,
- (b) Recent Project Sponsor documents on project scope and capital cost that will be flagged for inclusion in the milestone archive, and
- (c) Steps necessary to maintain records on key decisions and outstanding issues that will need to be documented in the archive.

For item (2), the PMOC will review the materials related to the predicted scope of the project and its predicted capital costs, and prepare a memorandum conveying to FTA the findings from the review. The findings will address the same three topics as the memorandum prepared under 6.1 above, plus a fourth topic. These four topics are:

- The completeness of draft archive materials related to predicted scope and capital cost;

- The usefulness of the technical memorandum in documenting the contents of the archived materials on predicted scope and capital cost;
- The accuracy of the technical memorandum in characterizing the current predictions of project scope and capital cost – areas of significant uncertainty, work done thus far to address and reduce those uncertainties, allowances for other outcomes, and other observations likely to be useful in later work to examine the accuracy of predictions at this milestone compared to the as-built scope and capital cost of the project; and
- The accuracy of the technical memorandum in documenting and explaining the causes of any significant changes in the predicted project scope and capital cost since the Entry-to-Engineering milestone.

6.3 Review the Data Archived by the Project Sponsor at the “After” Milestone

Under OP 25 the PMOC will already have assignments to monitor and report on progress by the Project Sponsor to construct the project and open it to revenue service. This on-going oversight of Project Sponsor progress will enable the PMOC to address effectively the two objectives related to the B&A Study leading to and at the “After” milestone: to ensure that the Project Sponsor prepares for the upcoming milestone during project construction and the two years of operation immediately following project opening, and to confirm that the project scope and capital cost materials archived by the Project Sponsor at the “After” milestone are complete and accurately documented.

Under this OP, the PMOC will (1) make Project Sponsor preparation for the “After” milestone a routine element of the PMOC’s ongoing monitoring of Project Sponsor progress and (2) review the draft materials on predicted scope and capital cost of the project that are assembled by the Project Sponsor for archiving at the “After” milestone. For item (1), the PMOC will include in the agenda for quarterly review meetings (a) an update by the Project Sponsor on progress with respect activities specified in the plan for the B&A Study and (b) recent documents on project scope and capital cost that will be flagged for inclusion in the milestone archive. For item (2), the PMOC will review the materials prepared by the Project Sponsor to document the as-built scope of the project and its actual capital costs, and prepare a memorandum conveying to FTA the PMOC’s findings from the “After” review. The PMOC’s findings will address three topics:

- The completeness of Project Sponsor’s draft of the archive materials related to as-built scope and capital cost;
- The usefulness of the Project Sponsor’s documentation of the contents of the archived materials on as-built scope and capital cost; and
- The accuracy of the Project Sponsor’s documentation in characterizing the actual outcomes regarding project scope and capital cost.

6.4 Review the Project Sponsor’s Analyses and Final Report

Under this OP, the PMOC will review and comment on the Project Sponsor’s analyses and final documentation for the B&A Study. The Project Sponsor is required to prepare documentation that summarizes the project, documents its actual outcomes, and presents the key findings on the accuracy of predictions prepared during project development.

FTA strongly recommends that the Project Sponsor prepare two technical memoranda to document the Project Sponsor's in-depth analyses of:

- (a) The as-built scope of the project, its capital and O&M costs, and its impacts on transit service and ridership; and
- (b) The accuracy of predictions of those outcomes at the project-development milestones and the causes of any significant differences from the actual outcomes.

The technical memoranda are intended to provide the necessary detail to present the analyses and support the findings. The memoranda will be included in the final report appendices.

If the Project Sponsor chooses to prepare the memoranda, the PMOC will review drafts of the sections dealing with project scope and capital costs and prepare a memorandum to convey comments to FTA on the completeness and accuracy of the analyses.

The PMOC will review a draft of the final report – written by either the Project Sponsor or by FTA's on-call contractor for B&A Study Reports -- and prepare a memorandum to convey comments to FTA on the accuracy and usefulness of the findings. If the Project Sponsor did not prepare the recommended technical memoranda, the PMOC's review will include a review of the sufficiency of the documentation provided in the final report to support the findings.

7.0 PMOC REPORT, PRESENTATION, RECONCILIATION

For each milestone review, the PMOC will prepare a memorandum to FTA that will be a concise presentation of the PMOC's findings and conclusions. The purpose of the memorandum is to convey the value-added analysis by the PMOC rather than merely to summarize the materials prepared by the Project Sponsor. The memorandum will identify any shortcomings in the draft archive and technical memorandum and recommend remedies to be undertaken by the Project Sponsor. If necessary, the PMOC will participate with FTA staff in discussions with the Project Sponsor regarding the findings and recommendations. Once the Project Sponsor has updated the materials, the PMOC will review the changes to confirm that they respond adequately to the comments.

	DESIRED OUTCOME	PERFORMANCE REQUIREMENT	CHECK LIST	ACCEPTABLE QUALITY LEVEL	PERFORMANCE MEASURE	MONITORING METHOD
1	The PMOC shall assess the reliability of the elements of the Project Sponsor's B&A Study program.	R1a. The PMOC shall develop and document a process for review and analysis of the Project Sponsor's preservation of project scope, schedule, and capital cost forecasts and its B&A Study Plans and Reports.		Q1a. PMOC provides documentation of the process.	M1a. Review of the process documentation.	MM1a. Periodic review by FTA or its agent.
		R1b. The PMOC shall use its process and project management judgment to validate the thoroughness of the Project Sponsor's B&A Study Plan and the Project Sponsor's preservation of project scope, schedule, and capital cost data at all phases of the project.		Q1b. Review must be made and PMOC provides internal verification that the process as documented has been followed.	M1b. Documented review and analysis of Project Sponsor's B&A Study Plan, preservation of project data and capacity to develop a Federally-assisted Project.	MM1b. Periodic review by FTA or its agent and the PMOC's internal verification.
2	The PMOC shall provide continuous review and evaluation of Project Sponsor's B&A Study program to confirm project scope, schedule, and capital cost forecasts and data are being preserved such that complete and accurate B&A Study comparisons and analyses can be performed.	R2a. The PMOC shall assess if the Project Sponsor has preserved the necessary project scope, schedule, and capital cost information and the reliability of such information for use in the predicted versus actual analysis for the Before and After Study.		Q2a. Professional findings and opinions of the reliability of the Project Sponsor's preservation of project scope, schedule, and capital cost data.	M2a. Documented evidence of a review of the Project Sponsor's preserved project scope, schedule, and capital cost information demonstrates sound management and engineering practices and professional experience.	MM2a. Periodic review by FTA or its agent.
		R2b. The PMOC shall assess if the Project Sponsor has adequately analyzed and explained the causes of changes in project scope, schedule, and capital cost forecasts from last project milestone.		Q2b. Professional opinion of the adequacy of the Project Sponsor's explanations of deviations in project scope, schedule, and capital cost forecasts from last project milestone.	M2b. PMOC's review and opinion as to the Project Sponsor's explanations for deviations in project scope, schedule, and capital cost forecasts demonstrates sound management and engineering practices and professional experience.	MM2b. Periodic review by FTA or its agent.
		R2c. During Construction, the PMOC shall confirm the Project Sponsor preserves the actual (as-built) project scope, schedule, and capital cost data as it becomes available in order to sufficiently document changes between projected scope/costs and as-built scope/costs.		Q2c. Professional findings and opinions of the reliability of the Project Sponsor's preservation of actual (as-built) project scope, schedule, and capital cost data during construction of the project.	M2c. Documented evidence of a review of the Project Sponsor's preservation of actual project scope and capital cost information demonstrates sound management and engineering practices and professional experience.	MM2c. Periodic review by FTA or its agent.
		R2d. The PMOC shall review and assess the Project Sponsor's B&A Study Plan and provide FTA with its determinations on whether (1) the Project Sponsor properly identified work to be performed in its B&A Study, (2) the Plan provides for capturing what has occurred to date, (3) the Plan reflects project characteristics and (4) the Plan captures all known issues which have influenced project scope and costs.		Q2d. Professional findings and opinions of the adequacy and completeness of the Project Sponsor's B&A Study Plan.	M2d. Documented evidence of a thorough review of Project Sponsor's B&A Study Plan, supported by professional opinion	MM2d. Periodic review by FTA or its agent.

	DESIRED OUTCOME	PERFORMANCE REQUIREMENT	CHECK LIST	ACCEPTABLE QUALITY LEVEL	PERFORMANCE MEASURE	MONITORING METHOD
		R2e. The PMOC shall review and assess the completeness and reasonableness of the analyses contained in the Project Sponsor's Interim B&A Study Reports.		Q2e. Professional findings and opinions of the completeness and reasonableness of the Project Sponsor's Interim B&A Study Reports.	M2e. Documented evidence of a thorough review of the Project Sponsor's Interim B&A Study Report, supported by professional opinion	MM2e. Periodic review by FTA or its agent.
		R2f. The PMOC shall review and assess the completeness and reasonableness of the analyses contained in the Project Sponsor's Final B&A Study Report.		Q2f. Professional findings and opinions of the completeness and reasonableness of the analyses contained in the Project Sponsor's Final B&A Study Report.	M2f. Documented evidence of a thorough review of the Project Sponsor's Final B&A Study Report, supported by professional opinion	MM2f. Periodic review by FTA or its agent.
3	The PMOC shall provide FTA with a written report of its findings, analysis, recommendations and professional opinions.	R3. The PMOC shall present its findings, analysis, recommendations and professional opinions to FTA in a written report and, when so directed by FTA, seek to reconcile its findings with Project Sponsor to the extent possible. A supplemental report shall be filed describing the results of reconciliation attempts.		Q3. Reports and presentations are professional, clear, concise, and well written. The findings and conclusions have been reconciled with other PMOC reports and have been reconciled with the Project Sponsor to the extent possible.	M3. Review of the PMOC's presentation of findings, analysis, recommendations and professional opinions by the FTA.	MM3. Periodic review by FTA or its agent.