

ADVANCED TRANSPORTATION TECHNOLOGY AND INNOVATION PROGRAM (ATTAIN)  
FUNDING RECIPIENT EVALUATION PLAN TEMPLATE

The purpose of this template is to assist grantees in developing their evaluation plans for the Advanced Transportation Technologies and Innovative Mobility Deployment program, also known as the Advanced Transportation Technology and Innovation (ATTAIN) program. The contents of this template do not have the force and effect of law and are not meant to bind the public in any way.

This template is a tool for summarizing key evaluation-related information at a high level. Evaluation plans should address all of the questions provided in this template, but this document should not be completed as a form. Grantees are expected to produce a formatted report.

For additional guidance, please see the Advanced Transportation and Congestion Management Technologies Deployment (ATCMTD) program's Evaluation Methods and Techniques Document at <https://ops.fhwa.dot.gov/publications/fhwahop19053/fhwahop19053.pdf>.

If you have any questions about this template, please contact Margaret Petrella, social scientist, at the Volpe National Transportation Systems Center, at [margaret.petrella@dot.gov](mailto:margaret.petrella@dot.gov).

This template has six parts:

- Part 1 of 6: Introduction and Project Overview
- Part 2 of 6: Project Goals, Objectives, and Evaluation Questions
- Part 3 of 6: Performance Measures
- Part 4 of 6: Evaluation Methodology
- Part 5 of 6: Data Collection Procedures and Data Management
- Part 6 of 6: Wrap-Up



## **PART 1 of 6: INTRODUCTION AND PROJECT OVERVIEW**

The title page and/or introduction should include:

- Project Title
  - Grant Award Recipient
  - Fiscal Year of the Award as Stated in the Award Agreement
  - Organization(s) Preparing the Evaluation Plan
1. Provide a description of your current project, including:
    - The technologies being deployed
    - The geographic area<sup>1</sup>
    - The intended beneficiaries
    - What constitutes end-of-project successes
    - Any other information that may be relevant
  2. Briefly describe the purpose of this project. What need or problem was identified, and why were the deployments in this project selected to provide the solution? Does the project have unique challenges? Were other strategies considered? Is a historical context relevant to this project? Are there related projects?
  3. Summarize the project evaluation process and include a list of the project stakeholders (project team, collaborators, evaluation team) and their roles and responsibilities, particularly with respect to data collection and completion of the evaluation. In addition, provide a deployment and evaluation schedule in terms of months and years, with project milestones.

Schedule elements should include but are not limited to:

- Data collection for the baseline; and
- Piloting or testing; and
- Project deployment; and
- Data collection following deployment; and
- Analysis and reporting

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<sup>1</sup>Maps, diagrams, and photos are helpful.

**PART 2 of 6: PROJECT GOALS, OBJECTIVES, AND EVALUATION QUESTIONS**

1. Provide a description of the relevant use case(s) for your current project.<sup>2</sup> Each use case should describe:
  - The expected location and scope of the deployment (e.g., intersection, corridor, and regional); and
  - A list of the relevant technologies for each use case; and
  - A description of how individuals will interact with a technology or group of technologies (i.e., the affected individuals) to achieve a specific goal or set of goals

**Example Use Case**

Use Case 1 deploys integrated corridor management strategies on State Route Alpha from milepost 1 to milepost 2 to reroute drivers following an incident and improve travel time during peak congestion so as to reduce travel times and improve safety. The two key technologies being deployed are intersection movement count technology to adjust traffic signal timing in realtime and traffic signal priority technology for local buses, with the goal of improving travel time reliability.

2. Based on the aforementioned use cases, is any historical data currently available that could be used to inform project goals, performance measures, or performance targets? Provide a high-level summary of the data and how those data have informed the evaluation plan.

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<sup>2</sup>Visual aids such as diagrams or photos are helpful.

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3. Complete the following table regarding current project goal areas, objectives, and evaluation questions. If your project has multiple use cases, complete this table separately for each use case.

For each goal area that is applicable to the project use case, provide a list of the specific objectives and related evaluation questions. The objective should clearly indicate the expected direction of change or level (e.g., reduce travel speeds or achieve a minimum of 85-percent detection rate). Develop at least one evaluation question for each objective; multiple specific evaluation questions are better than a few general ones.

Project goals should be connected to the goals stated in Section 13006 of the Infrastructure Investment and Jobs Act (IIJA) (Pub. L. No. 117-58, also known as the “Bipartisan Infrastructure Law” (BIL)). The list of goals is provided at the end of this document. Output-based goals may be used to supplement outcome-based goals, but they generally address technical performance or intermediate targets that serve as indicators for outcomes.

Use Case 1: \_\_\_\_\_

Goal Area	Objectives	Evaluation Questions
Example row: Improved mobility	Improve travel time reliability in the corridor during different operational scenarios (e.g., peak hours and incidents)	To what extent has travel time reliability improved in the integrated corridor management corridor during different operational scenarios?
Improved safety		
Improved mobility		
Reduced environmental impacts		
Effectiveness of realtime transportation information		
Improved access to transportation alternatives		
Reduced costs		
Economic benefits		
Improved network performance		
Other goals (Please specify):		

**PART 3 of 6: PERFORMANCE MEASURES**

1. For each evaluation question provided previously, organized by use case, list one or more performance measures.<sup>3</sup> Ensure measures are sufficiently detailed. This organization should link the performance measures to current project goals.

When selecting performance measures, consider the unit of analysis (metric) needed for your analysis. For projects that aim to affect user experience, consider supplementing quantitative metrics with survey data. For metrics that depend on the level of exposure, such as crashes, consider using rates rather than frequencies.

Example		
Use Case 1: Integrated Corridor Management		
Goal	Evaluation Questions	Performance Measures
Effectiveness of realtime transportation information	What proportion of drivers rated the routing information as helpful?	<ul style="list-style-type: none"> <li>• The proportion of drivers that rated the routing information as helpful</li> </ul>
Improved mobility	Did integrated corridor management deployment improve travel time reliability through the corridor?	<ul style="list-style-type: none"> <li>• Average travel time through the corridor</li> <li>• Average peak travel time through the corridor</li> <li>• Average travel time through the corridor between an incident and an hour after the incident has been cleared</li> </ul>
Improved mobility	Did technology service providers' technologies on the corridor improve bus travel times?	<ul style="list-style-type: none"> <li>• Travel time of buses traveling in the corridor</li> </ul>

2. Have performance targets been set for any of the performance measures? If so, list the targets by measure and briefly describe how the target was developed.

<sup>3</sup>For additional guidance on performance measures, please see the ATCMTD *Evaluation Methods and Techniques* document at <https://ops.fhwa.dot.gov/publications/fhwahop19053/fhwahop19053.pdf>.

**PART 4 of 6: EVALUATION METHODOLOGY**

1. Describe the method(s) the current project will use to address each evaluation question (likely a mix of quantitative and qualitative methods), and if your project includes multiple use cases or technologies, be clear about how each will be evaluated if methods differ. List project data sources and key modeling tools (if relevant) for each performance measure. Ensure the evaluation design enables the measurement of the proposed performance measures (i.e., the specific data elements that are required).

The description should include the experimental design, as appropriate (e.g., before-and-after and treatment-and-control).<sup>4</sup> For a time series, the description should include how many observations will compose your comparison groups. (Will the baseline and postdeployment periods include data points from multiple years or quarters?) If relevant, discuss the control group or untreated comparison corridor.

Describe any potential confounding factors, limitations, or risks associated with the method or the data elements. Include strategies to mitigate these concerns.

Example:  
Use Case 1: Integrated Corridor Management (ICM)

<b>Evaluation Questions</b>	<b>Performance Measures</b>	<b>Source/ Method</b>	<b>Experimental Design</b>	<b>Limitations/ Constraints</b>
To what extent has the ICM deployment reduced traffic crash rates at intersections through the project corridor?	Traffic crash rates at intersections through the project corridor	Public safety data on crashes	A comparison of 2 years of baseline data to 1 year of postdeployment data	A low crash rate in the baseline, prior to deployment, would make a reduction in crash rates difficult to measure

2. Describe all assumptions made in the evaluation. If any of the analyses in the evaluation rely heavily on assumptions, do sensitivity tests exist that could be conducted to bolster results?
3. Will the evaluation address equity? If so, describe the methodology.

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<sup>4</sup>A treatment-and-control design would compare the performance of the project corridor to a similar but unaffected corridor.

**PART 5 of 6: DATA COLLECTION PROCEDURES AND DATA MANAGEMENT**

1. Describe how the data will be collected for the baseline and following deployment, including any plans for a pilot.

Summarize plans for data management (e.g., data logging and transmission to the evaluation team if applicable; data storage; data access and privacy protection; data fusion if applicable; and data quality checks). Note, for existing systems, less detail may be needed.

For surveys, the description should include the general method of recruitment, the sample size, and potential survey topics. For field studies, the description should include the location, data collection frequency, and data collection period.

2. Provide a brief overview of how, throughout the duration of the project, the project team will collect challenges, lessons learned, and suggestions for future deployers.

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**PART 6 of 6: WRAP-UP**

1. Do you expect to update this evaluation plan? At what point in the project timeline do you expect to be able to revise this evaluation plan?
2. Provide a table with any relevant technical terms or abbreviations and their definitions.



## Goals Derived from the Selection Criteria and Reporting Requirements in the BIL

### Outcome-related goals:

- **Improved safety:** Reduction in the number and severity of traffic crashes and an increase in driver, passenger, and pedestrian safety
- **Improved mobility:** Improve the mobility of people and goods (e.g., congestion, travel time reliability)
- **Reduced environmental impacts:** Protect the environment and deliver environmental benefits that alleviate congestion and streamline traffic flow (e.g., emissions, fuel use)
- **Effectiveness of realtime transportation information:** Collect, disseminate, and use real-time traffic, work zone, weather, transit, paratransit, parking, and other transportation-related information to improve mobility, reduce congestion, and provide for more efficient, accessible, and integrated transportation and transportation services
- **Improved access to transportation alternatives**
- **Reduced costs:** Reduce costs and improve return on investments, including through optimization of existing transportation capacity
- **Economic benefits:** Deliver economic benefits by reducing delays, improving system performance, and providing for the efficient and reliable movement of goods and services

### Output-based goals:

- **Improved network performance:** Measure and improve the operational performance of the applicable transportation network (including optimized multimodal system performance)
- **Extended asset life:** Improve the durability and extend the life of transportation infrastructure
- **Enhanced monitoring of assets:** Monitor transportation assets to improve infrastructure management, reduce maintenance costs, prioritize investment decisions, and ensure a state of good repair
- **Incentivized travelers to share or shift trips:** Incentivize travelers to share trips during periods in which travel demand exceeds system capacity; or to shift trips to periods in which travel demand does not exceed system capacity

### Other goals stated in BIL:

- **Facilitated account-based payments:** Facilitate account-based payments for transportation access and services and integrate payment systems across modes
- **Accelerated the deployment of connected- and autonomous-vehicle technologies:** Accelerate the deployment of vehicle-to-vehicle, vehicle-to-infrastructure, vehicle-to-pedestrian, autonomous vehicles, and other technologies