



The **Travel** Model  
*Improvement*  
Program

# TMIP Peer Review Process Guide

How to Get the Most Out of Your TMIP Peer  
Review

*Helping Agencies Improve Their Planning Analysis Techniques*

# TMIP

Travel Model Improvement Program

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16. Abstract  <p>A peer review is an excellent way for an agency to get feedback on its current travel model and to receive recommendations on how to proceed with model improvements. However, as anyone who has hosted a peer review knows, it is not a minor undertaking. The decisions and tasks involved in a peer review require careful consideration and a commitment to spending the resources necessary to conduct the best possible peer review. To help agencies make decisions when considering, planning, conducting, or following up on a peer review, the FHWA Travel Model Improvement Program engaged the U.S. DOT Volpe Center to develop the Peer Review Process Guide: How to Get the Most out of Your Peer Review. This guide, developed in consultation with several travel modeling experts, contains practical "how to" information for agencies considering or planning a peer review. The Guide describes the necessary steps and decisions in the peer review process and offers instructions and advice on how to complete each step. Modelers, planners, and managers in agencies that are considering travel model improvements will find this Guide a tremendous help as they make their way through the peer review process, from considering whether to have a peer review to evaluating progress on implementing recommendations.</p>					
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# Peer Review Process Guide:

## How to Get the Most Out of Your TMIP Peer Review

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## ABBREVIATIONS

DOT	Department of Transportation
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
ITE	Institute of Transportation Engineers
MPO	Metropolitan Planning Organization
NHI	National Highway Institute
TMIP	Travel Model Improvement Program
TRB	Transportation Research Board
UPWP	Unified Planning Work Program
US	United States

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## PREFACE

The purpose of the Travel Model Improvement Program (TMIP) is to advance the state of the practice of travel modeling. The program's goals are to:

- Help planning agencies build their institutional capacity to develop and deliver travel-related information to support transportation and planning decisions;
- Develop and improve travel modeling techniques that respond to the needs of the planning and environmental decisionmaking processes; and
- Develop mechanisms to ensure the quality of travel modeling results used to support decisionmaking and to meet local, state, and Federal program requirements.

TMIP provides services to support planning agencies that have Federal responsibility to build and maintain travel models, typically state departments of transportation and metropolitan planning organizations. One of these services is the Peer Review Program.

TMIP's Peer Review Program gives transportation planning agencies the opportunity to have their model reviewed by modeling experts from around the country. These experts make recommendations on how to proceed with model enhancements to ensure that the techniques being developed or implemented meet the current and future needs of the agency.

## **I. INTRODUCTION**

### **Purpose of the Guide**

Travel models help in making well-informed transportation policy decisions by showing the likely effects of policy changes on the transportation network. They can also show how changes in employment, population, land use, and development patterns, as well as investments in transportation infrastructure, might affect travel in a region. A model's data and design have to be sufficient to generate reasonable forecasts under a variety of scenarios. A peer review is one of the best ways to assess a model's capabilities and to get advice on how to address the modeling requirements necessary to support informed policy decisions.

The purpose of this TMIP Peer Review Guide is to help agencies:

- Understand what a peer review is;
- Decide if a peer review is appropriate for their agency;
- Understand how to plan and conduct a successful peer review; and
- Understand how to develop an action plan for implementing the peer panelists' recommendations.

This Guide contains descriptions and checklists of the main steps in deciding whether to have a peer review, planning and hosting a peer review, and developing an implementation plan for recommendations.

### **Organization of the Guide**

This guide has eight sections:

- I. Introduction
- II. Overview of TMIP Peer Review Process—Describes the basic elements of a peer review and what to expect in conducting one.
- III. Deciding Whether to Have a Peer Review—Presents a series of questions an agency should consider when deciding to host a peer review and implement its recommendations.
- IV. Initiating a Peer Review—Identifies and describes the steps an agency should take once it has decided to conduct a peer review, beginning with defining the peer review purpose through to submitting the application to TMIP.
- V. Planning a Peer Review Meeting—Describes the decisions and tasks that should be addressed before conducting a peer review such as choosing panelists, preparing presentations for peer review meeting, and setting the meeting agenda.

- VI. Conducting a Peer Review—Explains activities and responsibilities in conducting a peer review such as host agency presentations of model details and peer panelists presentation of recommendations.
- VII. Developing an Implementation Plan—Describes how to prepare a plan for implementing recommendations by using information from the post-event report, post-event teleconference with panelists, and tools for prioritizing recommendations.
- VIII. Evaluating Progress—Describes the peer review evaluation and contains a table and set of questions to be used in the evaluation.

## II. OVERVIEW OF TMIP PEER REVIEW PROCESS

A peer review is an objective assessment of a travel model with respect to state of the practice and agency modeling goals. It gives an agency the opportunity to receive comments and recommendations for addressing its current key modeling challenges and those expected to arise in the future due to growth or transportation policy changes. A peer review can provide:

- Assistance from peer experts to improve the model in high-priority areas;
- Advice on how to proceed with model improvement activities;
- Recommendations on known modeling weaknesses; and
- Comments and advice for modeling prospective policy initiatives.

What to Expect from a Peer Review	
It is:	It is not:
<ul style="list-style-type: none"> <li>• <b>An objective assessment</b> of the model with respect to the state of the practice and the modeling goals of the agency.</li> <li>• <b>A tool</b> to help the agency decide how to proceed in model improvement activities.</li> <li>• <b>An opportunity</b> for all attendees to expand their professional network.</li> <li>• <b>An educational opportunity</b> for all attendees to learn from each other.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>A rubber stamp</b> that can be used to “prove” that the model is sufficient</li> <li>• <b>A regulatory activity.</b> Peer panelists do an objective assessment of the model; they do not provide an official commentary on the adequacy of the model.</li> <li>• <b>A review meant to address only FTA New Starts modeling requirements</b> without additional substantive goals.</li> <li>• <b>Free services of a consultant.</b> Peer panelists volunteer their time. Host agencies should be mindful of this so they do not ask too much from panelists.</li> </ul>

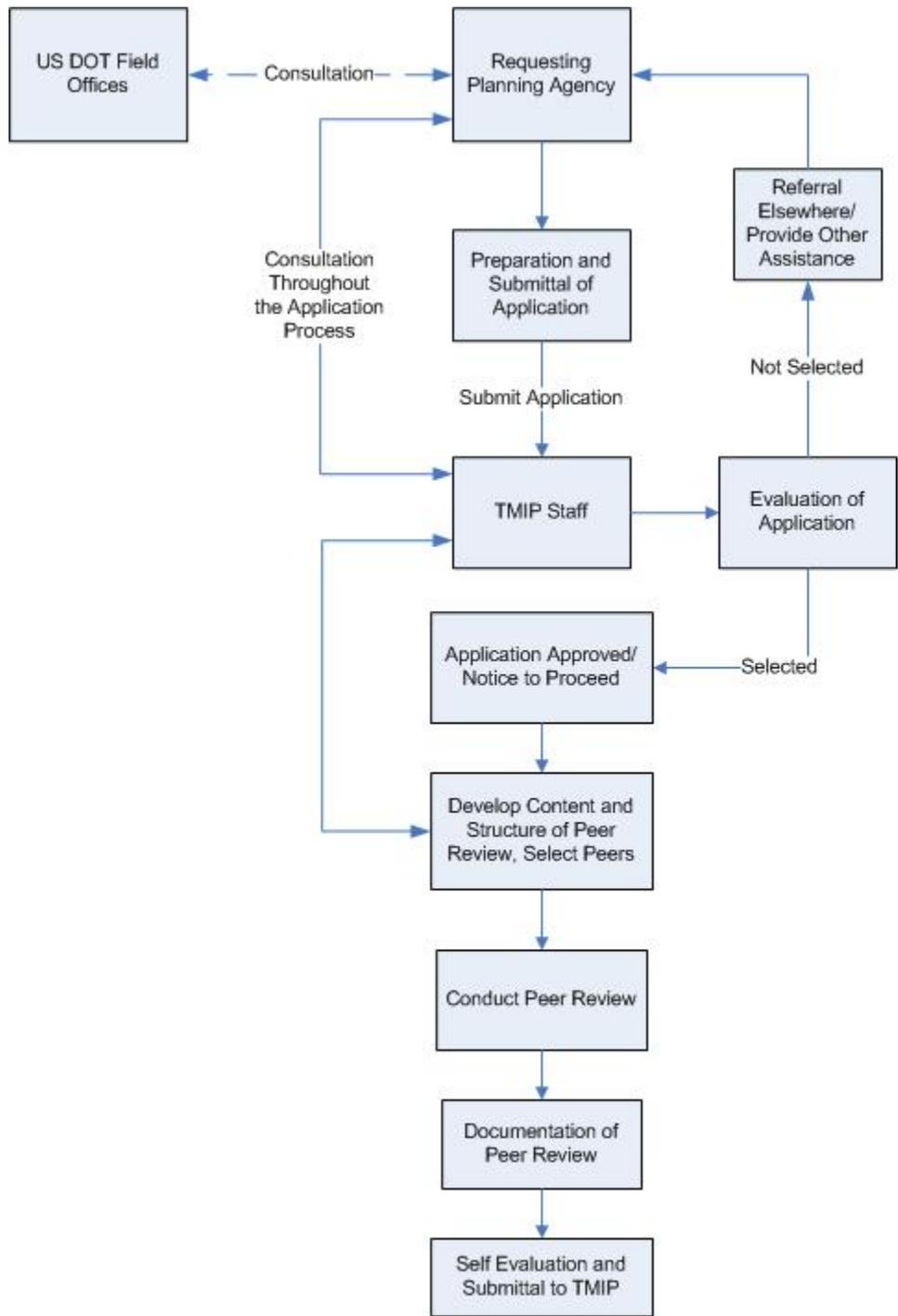
Although peer reviews are customized to meet the specific needs of the host agency, most peer reviews consist of the following elements:

- A one- to two-day meeting with four or five travel modeling experts, host agency planning staff, and other stakeholders;
- Documentation of the agency's model for panelists to review before the meeting;
- Questions or issues for peer panelists to address in their recommendations;
- A final report on the peer review meeting;
- Development of an action plan by the host agency to respond to peer recommendations;
- Implementation of recommendations; and
- Evaluation of progress.

The peer panelists' recommendations are suggestions, not mandates. While TMIP strongly encourages host agencies to act on the recommendations, it is ultimately each agency's prerogative to decide whether and how to address them.

Figure 1 is a flow chart depicting the steps for a typical TMIP Peer Review.

Figure 1. TMIP Peer Review: Process Overview



### III. DECIDING WHETHER TO HAVE A PEER REVIEW

A peer review is a very effective tool to help agencies improve their travel forecasts and support more informed transportation decisionmaking. Peer reviews also provide an opportunity for all attendees—host agency, panelists, consultants, and attendees from other agencies—to expand their network of modeling professionals. This is especially important for agencies located in small metropolitan areas where there is no community of modelers.

While the peer review offers significant benefits, there are many responsibilities for the agency hosting a peer review. Before deciding to host a peer review, an agency should have a clear understanding of the process. Following are some questions an agency should ask to determine whether a peer review is appropriate.

“A TMIP peer review could benefit any agency starting or working on a model. It empowers MPO staff.”

#### *Is your agency eligible for a peer review?*

Any agency that has a Federal responsibility to conduct modeling as part of the statewide and metropolitan planning processes is eligible to receive a TMIP grant to conduct a peer review. This includes regional planning agencies, councils of governments, metropolitan planning organizations (MPO), and state departments of transportation (DOT).

#### *What issues should the model address?*

As policymakers consider changes in transportation-related policies, they must have the information necessary to make well-informed decisions. To support this, the agency should identify the policy, planning, design, and operations issues that it is likely to face in the coming years and determine what types of travel-related measures would be most useful in addressing them. The agency should consider three key questions:

- Do the current methods in use at the agency provide sufficient information to support decisionmaking requirements?
- Do the current methods sufficiently address the range of transportation alternatives that are important today or that are likely to be important in the future?
- Do the current methods provide sufficiently detailed forecasts for the evaluation of transportation investments?

In answering these questions, the agency should identify the types of issues or alternatives the model will be expected to evaluate, as well as the necessary

accuracy and detail. The answers to these questions will help agencies develop the objectives of the proposed peer review.

***Are you at the best stage of model development for conducting a peer review?***

When evaluating applications, TMIP gives preference to peer reviews that are conducted at a point when new model improvements are being considered. This might be during the model specification or design phase of a significant model development project or at the beginning of a model update project when there is still opportunity to incorporate recommendations. One agency conducted a peer review immediately after completing a model improvement effort with the intent to begin formulating ideas for the next round of model improvements.

The peer review is prospective, focusing on the future of the agency's travel model. It is not intended to validate past modeling efforts. It draws on the past only to inform the panel's recommendations for the future of the model.

"If you are really thinking of revamping your transportation model, get the peer review as early as possible, before important decisions have already been made."

***Does your agency have the commitment and resources to host a peer review and implement its recommendations?***

TMIP gives preference to applications that demonstrate the agency's commitment to model enhancements, including implementing the peer review's recommendations. This includes a demonstrated commitment to enhance modeling techniques. Section IV of this Guide describes how to build support for a peer review within an agency and with outside stakeholders and how to estimate the resources required for a peer review.

***Are you able to prepare the documentation necessary to conduct a peer review?***

To be most effective, peer reviewers should have detailed information about the existing model before the meeting. Agencies should send this information to panelists approximately two weeks before the peer review, although they should consult panelists to be sure that this schedule will work for them given their other commitments.

Panelists should receive technical details of the model sufficient for them to understand the model's fundamentals. They should have more details about aspects of the model that will be the main topics of the peer review. Panelists should have enough detail to understand how the model currently works and how to address the questions proposed for the peer review. The level of detail and length of this information has varied substantially. Some agencies have sent out dozens of pages with substantial technical details. Other agencies have sent out ten or so pages of

text with a general description of their model. A few agencies have made their code available to panelists in advance of the meeting.

Many agencies have sufficient documentation of their model and can send it to panelists with minor revisions. In other cases, the agency should create this documentation before the peer review. While this is a substantial task, agencies should consider that, once created, the documentation can be used for other purposes such as including it with a request for proposals when hiring a consultant.

*Are you prepared to conduct a peer review? Are there other learning opportunities available?*

If, after answering these questions and consulting with TMIP staff, an agency feels it is not prepared to host a peer review, TMIP has a variety of other technical assistance opportunities. The TMIP website (<http://tmip.fhwa.dot.gov/>) contains information on other learning opportunities, which are described in Appendix B.

#### **IV. INITIATING A PEER REVIEW**

Once an agency has decided to conduct a peer review, it should define the specific modeling issues the peer review will address. This is determined in part by the model's current capabilities, the agency's most important policy issues, and the staff time and money available to conduct the peer review and implement its recommendations.

##### **Defining the Purpose of the Peer Review**

Because of resource and model capability limitations, a travel model cannot address every issue facing the agency. Modelers should work with agency senior management and policymakers to decide the agency's highest priority policy issues. Together, they should then determine the role a travel model might play in assessing each of these policies.

When deciding which policy questions to address, modelers should advise senior management and decisionmakers of issues such as:

- The capabilities and limitations of the model;
- The implications of a model improvement program for agency staff and budget;
- The risk involved in model changes that would involve untested techniques; and
- The versatility of model enhancements.

##### **Building Support for the Peer Review**

Planners in an agency cannot mount a successful peer review without the support of senior managers and policymakers who control agency policy and resources. Agency

management should not only approve of the peer review but should also be committed to making modeling changes based on peer review recommendations. Modelers should be prepared to explain the model and peer review in non-technical terms easily understood by non-modelers.

The purpose of the peer review should be consistent with what managers and policymakers view as agency priorities, thus making them more likely to dedicate resources to model improvement. The long-range transportation plan—which identifies the state’s or region’s goals, policies, strategies, and objectives over the next 20 years—can serve as a basis for identifying possible model improvements necessary to respond to planning policies and objectives.

Potential questions to address when approaching decisionmakers include:

- How will the peer review fit into the agency’s overall planning work program?
- How will the agency benefit from a review by expert travel modelers?
- Are there any legal or regulatory issues that should be considered? The agency may wish to consult with its legal counsel for help answering this question.
- What other planning activities will be conducted during this timeframe? It may be best to produce a timeline that shows the proposed schedule for updates to the long-range transportation plan, the transportation improvement program, the air quality conformity determination, and any major investment studies, for example.
- What are the financial implications of the model improvement effort? How can this expenditure help the agency better meet its planning mandates?

### **Determining Agency Budget and Staffing Needs**

Similar to other major planning activities undertaken by the agency, it is important to develop a project scope and budget for a proposed TMIP peer review. This includes estimating the financial and staffing resources necessary to plan and conduct the peer review and to implement its recommendations.

Table 1 shows the tasks involved in developing, hosting, and documenting a TMIP peer review. For each activity or decision, the chart designates a responsible party, other parties that should be consulted with or informed, and the party responsible for approving actions or decisions. This can be a basis for estimating staff time and the money necessary to complete each of the steps.

**Table 1. Tasks in the TMIP Peer Review Process**

**Legend**

- C = Consult (before decision)
- A = Approve
- I = Inform (after activity)
- R = Responsible
- O = No role

Task	TMIP Staff	FHWA, FTA Field Staff	Agency Staff	Peer Panelists
<b>Develop Application</b>				
Complete draft application	C	O	R	O
Review application; send comments to agency	R	C	O	O
Identify peer review goals	C	O	R	O
Identify planning initiatives occurring in timeframe of peer review	O	O	R	O
Determine best stage in model development to host peer review	C	O	R	O
Build support for peer review within agency	O	O	R	O
Build support for peer review from other agencies	O	O	R	O
Determine agency budget and staffing needs for peer review	C	O	R	O
Refine application, submit to TMIP	I	I	R	O
<b>Review Application</b>				
Review application; approve, deny, return for modification	A	C	I	O
If necessary, refine application, submit to TMIP for approval	C	O	R	O
<b>Plan Peer Review Meeting</b>				
Choose panelists	A	C	R	A
Conduct pre-peer review conference call	R	C	C	C
Develop agenda	C	O	R	C
Invite attendees	O	O	R	O
Identify specific issues and questions for peer panelists to address	C	I	R	C
Prepare and distribute background material	C	C	R	C
Complete meeting logistics	O	O	R	C
Develop presentations for peer review meeting	O	O	R	O
<b>Host Meeting</b>				
Present model details	O	O	R	O

### Legend

- C = Consult (before decision)
- A = Approve
- I = Inform (after activity)
- R = Responsible
- O = No role

Task	TMIP Staff	FHWA, FTA Field Staff	Agency Staff	Peer Panelists
Take notes	R	O	O	O
Develop and present recommendations	O	O	I	R
<b>Document Meeting</b>				
Write first draft of report; distribute to peers and host agency for review	R	O	I	I
Send report comments to author	I	O	R	R
Incorporate changes	R	O	C	C
Submit final report to host agency and peers for approval	R	I	A	A
Create HTML and PDF versions of report; post on TMIP website	R	O	O	O
<b>Develop Plan to Implement Recommendations</b>				
Conduct post-peer review conference call	R	C	C	C
Analyze recommendations; develop implementation plan	C	O	R	C
<b>Evaluate Progress</b>				
Conduct self-evaluation; submit report to TMIP	C	O	R	O

### Completing and Submitting the Application

Applications are available on the TMIP website

[http://tmip.fhwa.dot.gov/resources/clearinghouse/docs/tmip/peer\\_review/application\\_package/](http://tmip.fhwa.dot.gov/resources/clearinghouse/docs/tmip/peer_review/application_package/)

The package explains the application review process. The application should identify the important planning issues facing the agency; present goals for model improvement; describe factors that make the peer review an urgent priority; and, if the agency has identified potential panelists, the names of these panelists. Appendix B contains an example of a completed application.

Before submitting an application, an agency should:

- Identify the current and future major policy and planning issues it faces;
- Obtain support from agency senior management and policymakers;
- Determine that the model is at an appropriate stage in the development process for a peer review to be useful; and
- Determine that it has sufficient budget and staff time to host a peer review and implement its recommendations.

TMIP staff are available for consultation throughout the application process. Questions should be addressed to TMIP at 202-493-0071. In addition, potential applicants are strongly encouraged to work with staff at their states' Federal Highway Administration (FHWA) Division Offices and Federal Transit Administration (FTA) Regional Office before submitting the application.

## V. PLANNING A PEER REVIEW MEETING

### Selecting the Specific Modeling Topics to Be Addressed

Once the purpose of the peer review has been determined, it should be narrowed down to several specific questions or issues that reflect the agency's highest modeling priorities. These should be provided to panelists as the specific areas of focus for their comment and recommendations. Common topics and questions posed to peer panelists include:

"You get responses to what you present to the panel and what you identify as a problem. The panel can't identify everything that you should be addressing. We got input and feedback on the problems we identified."

- Comment on the model with respect to the state of the practice;
- Address specific technical questions; and
- Make suggestions on how to proceed with model enhancement.

### Selecting Panelists

Selecting panelists is a one of the most important steps in planning a peer review. Most peer reviews have four or five peer reviewers. The host agency should work with the FHWA TMIP Team to select possible peer panelists. The TMIP Program has a list of peers who have participated in past peer reviews or who have expressed interest in participating as a peer expert. TMIP can usually provide some background

"We wanted to take advantage of the panelists' breadth of experience—land use, policy, technical expertise—to make sure that [we were] not being too narrow in thinking or arriving at a decision."

on each person's experience and expertise. There should be at least one alternate in case one of the potential panelists is not able to participate. Once potential panelists have been identified, TMIP staff will contact them to discuss the possible of participating in a peer review.

When deciding on panel members, the agency should consider:

- Does the potential panelist have experience or expertise in modeling factors important to the host agency such as model type or characteristics of the urban area?

- Is there a potential conflict of interest for the potential panelist?
- Do any of the potential panelists have experience reviewing travel models?

### **Setting the Meeting Agenda**

Most peer review meetings last one or two days. Agencies should choose the length of the peer review based on the goals, scope, and the panelists' availability. For a one-day meeting, during the morning and early afternoon, the host agency staff generally make presentations describing its model and presenting details about the specific questions posed to the peer review panel. After the presentations, the peer panelists meet in private to discuss these questions and develop recommendations for how to proceed in model improvements. The panel presents these recommendations to peer review attendees, providing an opportunity for questions about the recommendations to ensure that the agency has a good understanding of the recommendations.

The process is much the same for a two-day meeting except that host agency presentations usually last the whole first day and the peer panelists' private meeting and presentation of recommendations generally take place in the morning of the second day. Appendix C contains examples of peer review agendas. In addition, the peer review reports on the TMIP website contain the agenda for each peer review.

In some cases, an agency may want to conduct more than one peer review. This will allow the agency to review and act on the recommendations from the first peer review. The second peer review can be used to assess progress on addressing the recommendations from the first peer review and to generate additional recommendations for model improvement.

### **Publicizing the Meeting**

The host agency should invite its most important stakeholders to the meeting. This might include planners or modelers from the state DOT, transit agencies, demographic and economic forecasting agencies, FHWA Division Office, FTA Regional Office, municipal and county governments, and other local stakeholders. In addition, some agencies have chosen to publicize the peer review meeting more broadly to reach additional stakeholders such as environmental groups, human-services transportation providers, and transportation-related advocacy groups. Meeting attendance policies should be consistent with applicable "open meeting" rules.

### **Preparing Information for Panelists to Read before Peer Review**

The host agency should prepare detailed documentation of its travel model for distribution to peer panelists and other attendees approximately two weeks before the event. This information typically includes:

- History and overview of model;

- Planning region characteristics such as socio-economic status, growth patterns, transit use, and geography;
- Explanation of economic and demographic forecasting;
- Details about individual model components; and
- Information about validation and calibration.

### Conducting the Pre-Peer Review Conference Call

TMIP will arrange a pre-peer review conference call to discuss issues and address questions. This conference call—conducted approximately one week before the peer review—should include host agency staff, peer panelists, and TMIP staff. It might also include other important stakeholders such as a modeler from the state DOT.

The conference call should address outstanding comments and questions about the model and the peer review. This might include questions about the model documentation sent to panelists, explanations about what the agency hopes to get out of the peer review, and clarification of the specific questions the agency is asking the panelists to address. The conference call should also include discussion about the roles and responsibilities of the host agency staff, the TMIP staff person who will be writing the peer review report, and the panelists. The panelists should designate a chair who will be responsible for managing time and keeping the discussion focused. Finally, the call should include verification of meeting logistics such as a start and end time, directions to the meeting location, and reimbursement of travel costs.

### Preparing Presentations for the Peer Review Meeting

The host agency is responsible for preparing and delivering presentations that will serve as the basis for discussion during the peer review meeting. These presentations should address:

- Purpose, questions, and expected outcomes of the peer review;
- Description of the planning area;
- History and overview of the current model; and
- Detailed information about model components and inputs that will be the focus of the discussion and recommendations of the peer review.

#### Travel Expenses for Peer Panelists

TMIP will reimburse peer panelists for pre-approved travel expenses. TMIP will provide details on travel planning and reimbursement of expenses at the time of the peer review. Travel rules and procedures are governed by Federal Travel Regulations ([www.gsa.gov/federaltravelregulation](http://www.gsa.gov/federaltravelregulation)).

## **Managing Meeting Logistics**

The host agency is typically responsible for:

- Meeting location;
- Audio-visual equipment;
- Handouts and presentations;
- Plan for attendees' lunch; and
- Hotel suggestions for panelists.

TMIP is responsible for:

- Coordination of pre-peer review conference call;
- Reimbursement of panelists' travel expenses;
- Meeting documentation; and
- Post-peer review report.

## **VI. CONDUCTING THE PEER REVIEW MEETING**

### **Presenting Meeting Background and Purpose**

During the first portion of the peer review, host agency staff present information about the model, modeling process, and the specific questions to be addressed in the peer review. These presentations should build upon the materials prepared in advance of the meeting and distributed to the peers and other attendees. By the conclusion of this portion of the peer review meeting, the peers and audience members should understand the agency's current travel forecasting practices and have a clear understanding of why the host agency requested a peer review.

### **Presenting Model Details and Topics for Discussion**

Following upon the discussion of background and purpose, the meeting should shift to explore in depth the specific modeling topics agreed upon in the pre-event teleconference. Presentations should clearly state the details of each topic and provide enough material to allow the peer experts to understand the topic sufficiently to make recommendations about it.

Panelists have found it more useful for the presentations to be delivered in stages to allow for questions and discussion during and after the presentations rather than reserving all discussion for the end of the day.

### **Documenting Proceedings**

TMIP is responsible for documenting the peer review proceedings, taking notes during the meeting and writing a post-peer review report. The report contains details about the demographic and geographic characteristics of the planning area, a description of

the agency's current model, the purpose of the peer review, and the peer panelists' recommendations. It has two main purposes:

- *Documenting the peer review for host agency use*—The host agency can use the report to educate its staff, board members, and other stakeholders, including the public, about the status of the agency's modeling efforts and on the recommendations of the peer panel. The report can also serve as a benchmark against future actions taken in response to the panel's recommendations.
- *Providing reference material for other planning agencies to help them learn about travel modeling and peer reviews*—The reports can provide valuable information and insight to other agencies that are thinking about the direction of their travel forecasting efforts.

For each peer review, TMIP staff write a first draft of the report, distribute it to host agency staff and peer panelists for review and comment, and incorporate these comments into the final version of the report. TMIP then posts an HTML and a PDF version of the report on its website within two to four months of the peer review meeting. Final peer review reports are available on the TMIP website at [http://tmip.fhwa.dot.gov/resources/peer\\_review/status](http://tmip.fhwa.dot.gov/resources/peer_review/status)

Some agencies have produced audio recordings of their peer review meeting. The host agency, peer panelists, and TMIP staff can refer to this recording to better understand the details of the discussion and recommendations from the meeting.

### **Determining Dissemination Methods for Proceedings**

The host agency is not required to disseminate information from the peer review beyond posting it on the TMIP website. However, TMIP strongly encourages agencies to disseminate information from the peer review more widely to reach more stakeholders and other interested parties. Additional outreach efforts could include an article in the agency's newsletter or a local newspaper or including a brief description in transportation-related newsletters such as those produced by the American Planning Association and the Transportation Research Board. The host agency might also consider presenting peer review details to other planners in the region, such as localities, those in other MPOs, and the state DOT.

## **VII. DEVELOPING AN IMPLEMENTATION PLAN**

After the peer review, the host agency should evaluate the recommendations and develop a plan for their implementation. This is important not only to lay out tasks and a schedule for their completion but also because the implementation plan can be used to support a request for additional funding, if necessary.

TMIP strongly encourages agencies to implement their peer review recommendations. However, they are suggestions, not mandates; and agencies are not obligated to implement them.

### **Conducting the Post-Peer Review Conference Call**

Approximately two months after the peer review, TMIP will schedule a teleconference so that the host agency and panelists can discuss the issues and questions that have arisen since the peer review. This discussion should concentrate on questions from host agency staff to panelists to clarify agency staff's understanding of the recommendations. Also, the host agency staff can take advantage of this opportunity to get input from panelists on developing an implementation plan, including information such as:

- Tasks involved;
- Order in which the recommendations should be implemented;
- Approximate staff time and money required;
- Skills necessary; and
- Approximate duration of tasks.

### **Preparing an Action Plan for Implementing Recommendations**

To develop an implementation plan, the agency should compile information for each recommendation—tasks, order of implementation, necessary skills, and level of effort. It should also include a description of which aspects of the model each recommendation will improve and the likely impacts of the improvement on the overall model. The agency should then compare each recommendation against its modeling priorities, available resources, and limitations. This can be done formally using analysis tools such as a Gantt chart or a prioritization approach or informally through discussions among agency staff and managers. It is likely that some combination of the formal and informal is necessary to make well-informed decisions about how to implement the recommendations.

Many implementation plans will have short-, mid-, and long-term phasing for implementing the recommendations. Short-term recommendations would typically be included in annual or biennial work programs. Mid- and long-term recommendations would be reserved for future work programs.

After deciding how to address each recommendation and developing an approximate budget and schedule, the agency should determine how the work will be funded. Where there is sufficient in-house staff with the necessary skills, work can usually begin right away. Where the work will be done by a consultant, a funding request must usually be made through the agency's formal funds-allocation procedures. Where there is a time lag between submitting requests for funding and receiving the

funds, it is important for agencies to begin working on their implementation plan as early as possible after the peer review.

## **VIII. EVALUATING PROGRESS**

Six to eight months after the peer review, the agency should evaluate the peer review. The goals of the evaluation are to:

- Provide agency planning staff and decisionmakers with information to help them monitor the progress of implementing recommendations, determine the effectiveness of the peer review, and set a course of action for future modeling work; and
- Provide the TMIP program with information it can use in its ongoing effort to make the peer reviews as effective as possible for host agencies.

### **What questions should the peer review evaluation answer?**

The evaluation should answer the following questions:

- Did we (or do we plan to) implement the recommendations as outlined in the implementation plan? If not, why?
- Did these recommendations help us achieve the goals of the peer review? If not, why?
- What other outcomes resulted from the peer review (e.g., raised awareness about the importance of modeling; strengthened relationships among planners from different agencies, etc.)?
- What lessons did you learn from the peer review and the work conducted since the peer review, both for your agency and for the TMIP program as a whole?

### **How should your agency conduct the evaluation?**

The evaluation contains two distinct parts:

- A. Assessing progress on implementing the recommendations; and
- B. Understanding the effectiveness of the peer review in meeting your agency's goals, identifying major outcomes, determining key success factors, and summarizing lessons learned.

A copy of the Peer Review Evaluation Form is provided in Appendix D and is also available on the TMIP website.

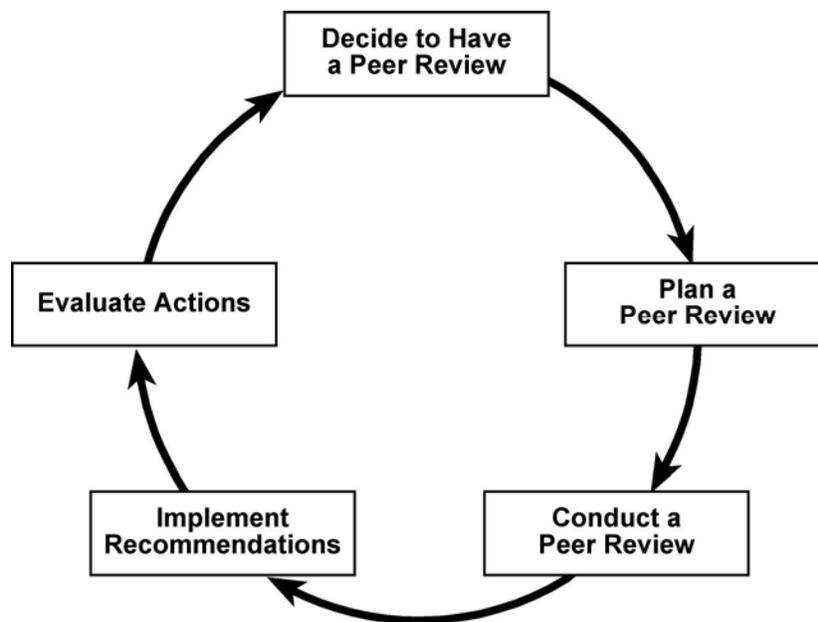
### What does your agency do when the evaluation is complete?

Once completed, the agency should submit the evaluation to TMIP. The peer review evaluation will allow the TMIP program to better understand the value of each individual peer review and to improve the program so that it better responds to the needs of agencies requesting assistance.

### What next?

Model development is an ongoing process. Models should be updated in response to significant changes in public policy or travel behavior. Incremental enhancements can be done between major model upgrade projects. An evaluation of the model should look back at previous model modifications, both major and incremental. At the same time, the evaluation should look forward, allowing the evaluation results to be used to determine the next steps. Figure 2 shows how evaluations can both assess the past and lead the way to the future. An agency can use this evaluation process to look forward and begin to consider when to conduct their next peer review. A copy of the Peer Review Evaluation Form is provided in Appendix D and is also available on the TMIP website.

Figure 2. Evaluation Cycle



## APPENDIX A. ADDITIONAL LEARNING OPPORTUNITIES AVAILABLE

The TMIP website (<http://tmip.fhwa.dot.gov>) lists additional technical assistance opportunities available, including:

- *Conferences*—The TMIP website contains information on upcoming conferences that are of interest to the modeling community.
- *Contact Lists*—The website contains a list of US Department of Transportation (US DOT) modeling experts who offer individual technical assistance.
- *Courses*—The website contains list of courses available through the TMIP program, the FHWA National Highway Institute, and the FTA National Transit Institute.
- *Document Clearinghouse*—The document clearinghouse has over 200 documents that might be of interest to the modeling community. The user can browse through the clearinghouse or can locate relevant documents using the search function.
- *Email Lists*—TMIP maintains several email lists dedicated to discussion on general modeling topics, educational aspects of TMIP, TRansportation ANalysis and SIMulation System (TRANSIMS), and FTA New Starts forecasting.
- *List of Model User Groups*—TMIP maintains a list of geographically based independent model user groups throughout the country.
- *Peer Exchanges*—When TMIP becomes aware of a “hot” and complex topic among modelers, it has occasionally sponsored peer exchanges that provide an opportunity for modelers to meet and discuss the topic over the course of one or two days. The main purpose of the peer exchange is to generate ideas about how to address the topic to advance the state of the art and state of the practice.
- *On-line Discussions*—TMIP periodically facilitates discussions on specific topics relating to planning analysis.
- *Peer Review Reports*—The website contains the summary reports for each of the peer reviews that TMIP has sponsored.
- *Technical Syntheses*—TMIP staff occasionally summarize “hot topics” being discussed on the TMIP email discussion list.
- *Virtual Mentoring and Technical Support Center (VMTSC)*—The Virtual Mentoring and Technical Support Center offers virtual office sessions using the TMIP web conferencing system. These sessions facilitate the exchange of technical knowledge among modelers, provide opportunities for new travel modelers to learn from their more experienced peers, and share the breadth of experiences within the travel modeling community.

- *Webinars*—TMIP frequently conducts webinars on topics of interest to the modeling community. The website contains information on upcoming webinars and proceedings of past webinars.

In addition to TMIP, the US DOT has two training programs that provide education and technical assistance on transportation planning and modeling:

- *Transportation Planning Capacity Building Program*—Sponsored by FHWA and FTA, this program offers a wide variety of learning opportunities—reports, educational documents, courses, peer events—addressing a wide variety of planning topics. <http://www.planning.dot.gov/default.asp>
- *National Highway Institute*—Part of FHWA, the National Highway Institute offers over 100 courses on transportation-related issues, including “Introduction to Travel Demand Modeling” and several other courses applicable to planning and modeling. <http://www.nhi.fhwa.dot.gov/>

Professional organizations also provide learning opportunities for modelers, for example:

- *Transportation Research Board (TRB)*—TRB sponsors conferences, conducts studies, and has committees that address modeling. <http://www.trb.org/>
- *Institute of Transportation Engineers (ITE)*—ITE offers professional development through courses, conferences, and publications. <http://www.ite.org/>

## APPENDIX B. SAMPLE PEER REVIEW APPLICATION

### AGENCY APPLICATION

Request for TMIP Peer Review

Contact: Agency Representative

Agency

Address

Phone Number

Contact E-mail address

#### 1. Purpose of TMIP Review

The agency is the Federally designated Metropolitan Planning Organization (MPO) for the metropolitan area. It has served as the MPO for the area since 1973. As the region has grown, the Metropolitan Statistical Area (MSA) expanded to the current five counties. For the agency's 2035 Plan Update that is under development, the modeling area has been expanded to the five counties in the MSA.

To support the agency's decisionmaking process, the modeling department maintains and applies a regional travel model for the long-range plan updates. The current validated model (1997 model) is a traditional four-step model for a 24-hour period. Additionally, the agency has a two-hour AM peak model that was developed based on diurnal factors from the 1997 household survey. We are currently in the process of developing a 2005 base year model that covers the full MSA and will be using survey data collected in 2005 and 2006. These surveys include external station, commercial vehicle, workplace, airport, and household surveys. Additionally, the main transit agency performed an on-board survey in 2005. The agency is improving its model by implementing a speed feedback loop-to-trip distribution, making toll a route choice decision in traffic assignment, and adding a demographic allocation tool for dual track growth scenarios for the 2035 Plan Update, scheduled for adoption in June 2010.

With the advancements being made in the transportation modeling industry, agency staff feel that it is time to have a peer review to assess the processes that have been implemented in the agency model stream and make recommendations for the next model update. Additionally, with the growth of our region and completion of toll roads, it is important to the agency and its member jurisdictions that we move forward with the model in an appropriate direction and make the best use of the limited funds available for updating and running the model for future planning and air quality efforts.

## 2. The Region

The agency's five county modeling area was estimated to have 1,459,000 people and 698,000 jobs in 2005. The agency board in 2004 approved the population and employment totals to be 3,251,000 and 1,643,000, respectively, for 2035. The five-county regional daily vehicle miles of travel (VMT) reported by the state DOT in 2005 was 37,261,000. This includes on- and off-system roadways. The regional VMT is expected to grow by about 2.7 percent per year. The agency modeling area is comprised of 1,413 internal traffic analysis zones (TAZ) and 49 external stations.

## 3. The Models

The first regional travel model for the metropolitan area was developed in 1984 by a consultant for the 2020 Plan. The first (1980) model was a four-step model. The city and state departments of highway and public transportation (future state DOT) staff jointly recalibrated the 1980 model to develop the 1985 model in TRANPLAN. The 1985 model contained eight trip purposes for a 24-hour period with a total of 635 TAZs. The mode choice included single occupancy vehicle (SOV), carpool, local and express bus, and fixed-guideway transit.

The 1997 model was jointly developed by and the state DOT in TransCAD. The modeling area expansion resulted in an increase in the number of TAZs to 1,074. A three-way cross-classification model using workers per household, household size, and median income was developed for three home-based work trip purposes: home-based work (HBW) direct, HBW strategic, and HBW complex. The 1997 model had a total of 15 trip purposes and 10 modes of travel. Toll travel was considered a mode in the nested logit model. The 1997 model was applied twice for the agency's 2025 and 2030 Plan Updates. The four-step procedures were performed in a combination of FORTRAN programs and TransCAD functions. As stated earlier, several improvements are being developed or added for implementation in the 2005 model.

The current (2005) model being developed is implemented in TransCAD 5.0. In trip generation and trip distribution, it uses TripCAL5 and ATOM2. These programs are used by the state DOT-TPP, which does the modeling for the majority of the modeling for the MPO in the state. These two programs are FORTRAN based, but the agency has used GISDK code to set up the input files from both static file locations and to call from the TAZ and network geographic files that are in TransCAD format. The main mode choice program is a replication of a former FORTRAN program that the agency's consultant has converted into TransCAD. We have progressed from our previous model in using a barrier file (used to identify areas that were not crossable because, for example, it would have crossed a lake) and straight line transit connectors to using the highway network for transit access. With this implementation, we have also updated to a process of creating ¼ mile and ½-mile radius for transit access. This process is now automated and will be updated with each model run. Previously, this

was a manual process. Also being implemented is a feedback loop, as stated earlier, using a successive measure of averages. The setup includes the options of converging either at a certain number of iterations or a predetermined value. Previously, the mode choice model determined the toll-eligible trips. The toll mode has not been removed, but those trips are added together with the non-toll trips; and this decision is now being made during the assignment run. In addition to the daily model run, we will also have an AM and a PM peak model runs. These peak-period runs will largely be developed based on the diurnal factors from the 2005 household survey.

The 2005 model will have the following 15 trip purposes: home-based work complex, home-based work direct, home-based work strategic, home-based non-work retail, home-based non-work other, education-1 (school), education-2 (university), non-home-based work, non-home-based other, non-work airport (ABIA), truck/taxi, non-home-based external local, external-local auto, and external-local truck. In trip generation, the three home-based-work trip purposes use a three-way cross classification using household size, median family income, and workers per household. All other purposes use a two-way cross classification of household size and median family income. All purposes except for education-2 are balanced to productions. In trip distribution, a gravity model is used. In this step, all purposes except education-2, UT, and ABIA are balanced to productions. The highway assignment is set up as a capacity-constrained, multi-class user equilibrium assignment method. A route choice function for toll traffic will be implemented for forecast years.

The agency has undertaken another new effort on developing a replicable and quantitative method for demographic forecasting along with the development of the 2005 model. Previously, a modified Delphi method was used for the allocation of county control totals to TAZs. With assistance from the agency's consultant, a menu-driven program using GISDK code was implemented for allocating both population and employment to TAZs. The tool will facilitate the forecasting work of dual tracks of growth scenarios for the agency board to select a preferred scenario for the 2035 Plan update.

#### **4. Plans for Model Improvement**

The agency's overall goal for model improvement and motivation for seeking a TMIP peer review is to continuously maintain and apply a model that is representative of the state of the practice in travel demand forecasting and equips the agency, its policy board, and local jurisdictions the support that is needed for our rapidly growing region. Questions that the agency staff would like to have answered through this peer review are:

1. Additional improvements to the current feedback loop
2. How can our model keep up with time-of-day questions?

3. Do peak spreading and induced travel need to be emphasized more? If so, how?
4. How can our mode choice model be improved?
5. Assessment of the reasonableness of toll traffic forecasting
6. Visualization techniques for better communications to the board and public
7. Should we consider a micro simulation model and how can our current model assist with that implementation?
8. Are there better techniques for handling trip generation and trip distribution for the size and diversity of our region?
9. How can the effects of gas prices or parking cost be better implemented into the agency's model stream?
10. What are ways that the agency's model can be improved to better answer questions related to environmental justice?
11. Should we start a freight model? If so, how?
12. Should we consider transitioning into an activity-based or tour-based model? If so, should we maintain parallel tracks of modeling?
13. If either of the two model types from the previous question is recommended, how will this affect air quality modeling?
14. What recommendations are there for improving the current demographic allocation tool or for pursuing a new land-use forecasting model for alternative growth scenario testing?
15. Are there improvements that could be implemented immediately with limited funds (under \$120K) or implemented in a two to three year period for an overall model development?

## 5. Response to TMIP Selection Criteria

The agency's area is a diverse and rapidly growing region. The members of our local jurisdictions and of our policy board understand the changing dynamics of the region and the need to maintain and update the agency's model to be able to answer the ever-growing questions that are being asked of the model. The agency's staff are in the process of bringing the full model in-house. Currently, the state DOT-TPP maintains control over trip generation and trip distribution and works cooperatively on the traffic assignment phase. At this point, the agency's staff also retain a consultant to assist with the development of the mode choice model. Maintenance and applications of the developed model are performed by the agency's staff. The streamlining of the four-step modeling process at the agency's office was one of the recommendations made in the agency's peer review done in 2001.

Model improvement activities, as well as regular communication, are kept with the local jurisdictions through modeling group meetings. These meetings are held

periodically depending on the needs of the modeling group and that of the agency's staff.

The agency has previously demonstrated its commitment to support innovative model techniques with the integration of the speed feedback loop. This was recommended from a previous review of the agency's modeling efforts.

Currently, the agency has funding identified in its FY 2009 Unified Planning Work Program (UPWP) for model improvements. These funds are intended to be used to help implement some of the recommendations from this peer review. Also, the agency staff are very interested in completely updating the mode choice model during the 2010 update. This will be a very beneficial time for this process since, for the first time, we will have local data for calibration of toll roads and a commuter rail line that have or will come on-line in 2006 and 2009, respectively.

## **6. Proposed Panel and Availability**

Due to the agency staff's time constraints with ongoing work, we request the assistance of TMIP staff to put together the members of the peer review panel. The make up of this panel will hopefully consist of the following types of backgrounds: mode choice specialists, toll traffic forecasting, land use modeling integration, and tour-based/activity-based modeling.

## **7. Schedule and Cost**

After researching, it appears that the peer review panel will have sufficient time to accomplish the goals of the committee with a one-day meeting. Agency staff proposes that the Peer Review Committee members meet with agency staff and discuss their findings during the mid-May to early July 2009 time frame.

Agency documentation will be provided to the panel members prior to the meeting, with sufficient time for them to go over the material and ask any questions of agency staff before the panel gathers in the suggested time frame. On the day of the meeting, agency staff will provide a quick introduction to the model and its processes during the morning. Panelists will be encouraged to ask agency staff for specific topics for this presentation. The afternoon will be reserved for the panelist discussion that will form the basis for the final documentation. The final report will provide recommendations for short- and long-term steps with which agency staff should proceed.

The agency requests that our consultant staff attend the peer review to evaluate the process and assist in documenting the review.

The estimated cost for travel, lodging, and per diem for the peer review panel is \$4,190 as shown in the following budget.

## Task Description

Peer Review Panel Expenses - 5 Members	Per Estimate	Total
Travel	\$500	\$2,500
Lodging (2 nights)	\$117	\$1,170
Miscellaneous	\$104	\$520
Grand Total		\$4,190

## APPENDIX C. EXAMPLES OF PEER REVIEW AGENDAS

### Typical Agenda for One-Day Peer Review

9:00–10:00	Introductions, MPO Background and Overview of Long-Range Planning, Including Travel Model Input - Socioeconomic Data
10:00–10:15	Break
10:15–12:00	Presentation of Existing Travel Forecasting Techniques: Three-Step Process - Distribution, Assignment, and Validation
12:00–12:15	Break and Distribute Lunches for Next Working Session
12:15–2:45	Proposed Efforts for Next Plan Update: Data Sources, Model Software, and Other Tools
2:45–3:00	Break
3:00–4:00	Panel Caucus: Review/Critique and Comment on Practices (Peer Review Panelists meet to discuss information)
4:00–5:00	Panel Report and Discussion (Peer Review Panelists present to MPO and others)

### Typical Agenda for Two-Day Peer Review

<b>Day One</b>	
9:00	Welcome, Purpose of Meeting, Introductions, Schedule, Travel Model Applications (MPO, State DOT, Transit Agency, presenters to be determined)
9:30	Introduction to Model Enhancement Project: Description of Zonal System and Data Requirements (Contractor No. 1)
10:30	Break
10:45	Highway and Transit Networks (MPO Contractor No. 1)
11:45	Trip Generation
12:30	Working Lunch (Mode Choice) (MPO Contractor No. 2)
1:45	Trip Distribution (MPO Contractor No. 1)
2:45	Break
3:00	Highway and Transit Assignment (MPO Contractor No. 2)
4:00	Model Sensitivity Testing and Validation (MPO Contractor No. 2)
5:00	Adjourn
<b>Day Two</b>	
8:30	Panel Deliberations
11:30	Panel Presentation of Recommendations and Findings
12:00	Discussion of Recommendations
12:30	Adjourn

## APPENDIX D. TMIP PEER REVIEW EVALUATION FORM

Organization name:

Current date:

Date of peer review:

Name of person filling out form:

Phone number of person filling out form:

### *Part A. Status of Implementation of Peer Review Recommendations*

Please complete the following table, according to the recommendations from your peer review. See the highlighted first row for an example of how to complete the table. Please add rows as necessary.

No.	Recommendation	Agree with Recommendation?	Action Taken	In UPWP?	Comments
1	<i>Model should be modified to capture trip-chaining behavior</i>	Yes	<i>Agency has hired consultant to help develop this part of model</i>	Yes	<i>Work began June 1, 2009</i>
2					
3					
4					
5					
6					

### *Part B. Effectiveness of Peer Review:*

Please answer the answer the following questions:

1. What were the key drivers that led you to request a peer review?

2. What were the major outcomes you wanted from the peer review?

How effective was the peer review in achieving these outcomes?

1	2	3	4	5
<input type="checkbox"/>				
Not at all effective	Minimally effective	Somewhat effective	Effective	Very effective

What were the most important factors in achieving desired outcomes? What were the most important barriers to not achieving your desired outcomes?

3. Were there any outcomes (positive or negative) that you did not anticipate? If yes, what were they and how did they affect your experience of the peer review?

4. a. Were the panelists effective in addressing your needs?

1	2	3	4	5
<input type="checkbox"/>				
Not at all effective	Minimally effective	Somewhat effective	Effective	Very effective

What worked well and did not work well in terms of the panelists?

b. How effective was the format in helping address your objectives?

1	2	3	4	5
<input type="checkbox"/>				
Not at all effective	Minimally effective	Somewhat effective	Effective	Very effective

What elements of the format were most effective?

5. a. What suggestions do you have for improving the effectiveness of the various peer review components (application process, choice of panelists, peer review session, post-peer review report, etc.)?

b. What advice do you have for other agencies interested in conducting a peer review? (e.g., what types of agencies are most likely to benefit from a peer review? What can agencies do to maximize the benefits from their peer review peer review?)

Thank you for providing your feedback on the TMIP Peer Review process. Please email or fax this completed form to:

Sarah Sun  
 1200 New Jersey Ave SE  
 HEPP-30  
 Washington DC 20590  
 Phone: 202-493-0071  
 Fax: 202-493-2198  
 sarah.sun@dot.gov

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