

SCOPE OF WORK

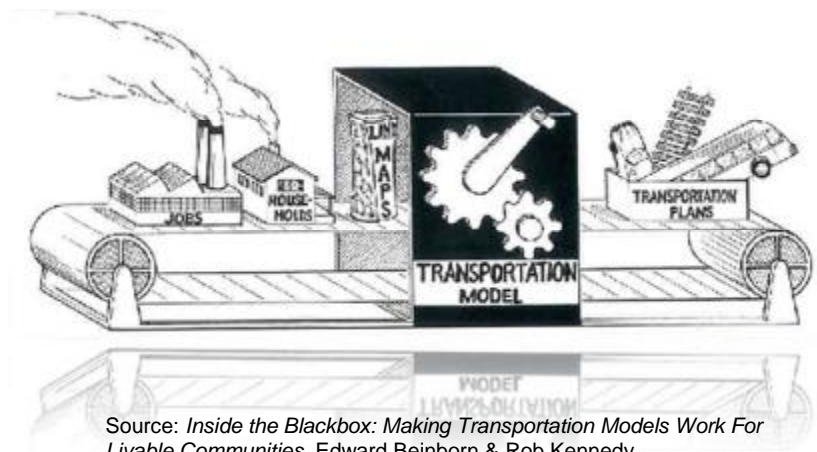
ADDITIONAL TASK NOT INCLUDED IN ORIGINAL PROPOSAL

This scope provides a fifth task that was not included in the original VMIP2 proposal and provides a significant enhancement to training compared to the training included in the original scope. The theoretical understanding of travel modeling, experience using models at the MPO level, allocation of time for applying the model, and typical uses vary between MPO modelers and often even within a single MPO. This task provides the overview and purpose of travel models, theoretical formulation and specific implementation within the SJV MIP models, translation of theory into modeling code, and provides sample data for each component for use in hands-on application. This scope presents an overview of the training approach but specific training methodologies in the form of a syllabus will be discussed in greater detail in coordination with MPO staff.

TASK 5 – ENHANCED TRAINING

Task 5.1 – OVERVIEW AND PURPOSE OF TRAVEL MODELS

Fehr & Peers will develop a presentation outlining, at a high level, the purpose of travel models and the describing the modeling process from trip generation to trip assignment. Data needs, staff resources, and related operational information will also be reviewed in this section of the training. We will also discuss how models can be



used to answer various policy and technical questions, and evaluate when other methods of analysis may be more appropriate. The presentation will be customized to use examples from each MPO. This presentation will be given via conference call/web meeting and will be open to any MPO staff. Copies of the presentation will be given to staff electronically for reference. Additionally, Fehr & Peers will develop “cut sheets” that will describe the features of each MPO model and convey the importance, capabilities, and limitations of travel models to decision makers and the public.

Ø *Deliverable: Presentation, recording, and model cut sheet for decision makers and public.*

Task 5.2 – THEORETICAL FORMULATION AND IMPLEMENTATION

This portion of the training goes one level deeper than that of Task 5.1 and delves into the theoretical construct of travel models in general and the specific method of implementation within the SJV MIP models. Rather than re-creating learning material, and in order to maximize the specific training to the SJV MIP models, a copy of the textbook *Modelling Transport* will be provided for each MPO. This book not only covers the theory behind travel models, but has exercises and examples that can be completed without the need for modeling software. The latest edition includes activity-based models and dynamic traffic assignment in addition to the four-step trip based models.



Each component of the model from land use and socio-economic classifications through trip generation, distribution, mode choice, and assignment will be evaluated in terms of data collection methods, model estimation, calibration, and validation. Participants in the training will be given reading assignments to be completed prior to each training session. This will allow them to read the material and perform the sample exercises individually and develop questions they can bring to the training sessions. During the training sessions, questions will be addressed along with reviews of the examples and exercises given in the book.

The training sessions will occur prior to key stages of the model development and update described in Tasks 2-4. This will provide time for MPO staff to learn and provide input on the theoretical formulation and data needs of their model before implementation. These training sessions will, once again, be conducted via conference call/web meeting.

- Ø *Deliverable: Modelling Transport by Juan de Dios Ortuzar, Luis G. Willumsen (2011) for each MPO. Single overview memo summarizing theoretical construct and implementation for each MPO model for quick comparison by Caltrans, ARB, etc.*

Task 5.3 – TRANSLATION OF THEORY INTO CODE

Citilabs has partnered with the authors of *Modelling Transport* to develop modeling tutorials for users based on the examples given in the book. Once participants have understood the theoretical basis behind the modeling methodology, this task will allow them to translate that theory into application via scripting.



Taking the example of Citilabs in their development of the “Cube Town” training resource, we will develop a “Valley Town” (VTown) subarea model to be used for training purposes. The benefit of developing the VTown model is that it will be based on the VMIP modeling structure and, therefore, will be a learning resource for all MPOs. It will also eliminate any differences in results due different model calibration, capabilities, or inputs. Another key benefit is the run time will be dramatically reduced compared to the full MPO scale model. Fehr & Peers will provide exercises for the MPO staff to review, along with documented solutions to check their work. These exercises will allow users to quickly test different scenarios and better understand how modifying inputs or the model structure can affect the model process and output results.

Fehr & Peers will set up a conference call/web meeting once MPO staff complete the exercises to review the VTown model and answer any outstanding questions.

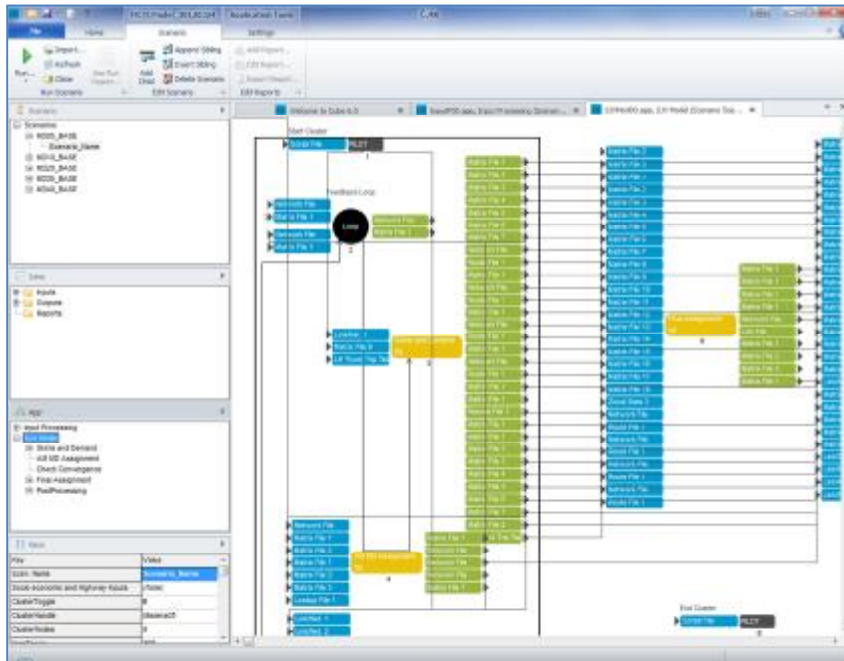
Ø *Deliverable: VTown files, exercises, solutions documentation, and presentation recording.*

Task 5.4 – HANDS-ON TRAINING

This task focuses on the individual models and provides a conceptual overview and step-by-step guidance on performing the most common tasks the MPO staff are asked to do. In some cases multiple approaches exist, and the pros/cons for each will be discussed. After the model structure updates and the first draft of model estimation and calibration have been completed, in-person individual training for each MPO model will be conducted. We have proposed that one full day training sessions occur for each MPO over the course of the project at the MPO offices, but Fehr & Peers can host if that is preferred. All other training sessions will be by web/video conference and recordings will be made available for future review.

Although the primary focus of the training will be model application, creating scripts, performing calibration and validation tests, or other topics can be covered if desired.

- Ø Deliverable: Individual User Guide (including the theoretical construct) and hands-on training files for each MPO model. Recordings, presentations, etc of training sessions.



SCHEDULE

This task will be completed concurrently with Tasks 1-4.

BUDGET

See attached

Detailed Budget - San Joaquin Valley Model Improvement Plan Phase 2 Additional Task		FEHR & PEERS							Direct Cost	Total Labor	
		Ronald T. Miam	Mike Wallace	Senior Advisors	Senior Modelers	Modelers		Hours		Cost	
		Principal in Charge	Project Manager Senior Associate	Jerry Walters Richard Lee Robert Sicko	Kevin Johnson Mackenzie Watten Jennifer Ziebarth	Leon Raykin Amy Smith Kristen Camarius	Graphics/ Admin				
Hourly Rate		\$93.27	\$60.10	\$102.88	\$39.18	\$31.73	\$31.73				
Overhead Cost	56.11%	\$52.33	\$33.72	\$57.73	\$21.98	\$17.80	\$17.80				
Fringe Cost	121.01%	\$112.87	\$72.73	\$124.50	\$47.41	\$38.40	\$38.40				
Fringe + Overhead	177.12%	\$165.20	\$106.45	\$182.22	\$69.40	\$56.20	\$56.20				
Total Cost		\$258.47	\$166.55	\$285.10	\$108.58	\$87.93	\$87.93				
Profit/Overhead	10.00%	\$25.85	\$16.65	\$28.51	\$10.86	\$8.79	\$8.79				
Total Hourly Rate		\$284	\$183	\$314	\$119	\$97	\$97				
TASKS											
Task 5: Basic to Advanced Training											
Task 5.1: Overview and Purpose of Travel Models		8	16	8	40	4	20.75		97	\$66,034	
Task 5.2: Theoretical Formulation and Implementation		4	24	4	40	16	13.5	\$ 800	102	\$14,886	
Task 5.3: Translating Theory into Code		4	20	4	40	16	13.25		97	\$13,662	
Task 5.4: Hands-on Training		8	20	8	40	80	21.75		178	\$23,066	
Totals		24	80	24	160	116	69.25	\$ 800	473.3	\$66,034	

FP Labor	\$66,034	
FP Travel/Direct Costs	\$5,894	(\$800 training material cost and \$5,094 other direct costs i.e. travel, communications, and reproduction cost.)
Total FP Cost	\$71,928	
Subconsultant Labor	\$0	
Subconsultant Direct Cost	\$0	
Subconsultant Total	\$0	
PROJECT TOTAL	\$71,928	