

Iowa Standardized Model Structure (ISMS) Policy and Procedure Manual



Midwest Travel Model Users Group

Summer/Fall 2015 Meeting
Wednesday September 2nd, 2015

Agenda

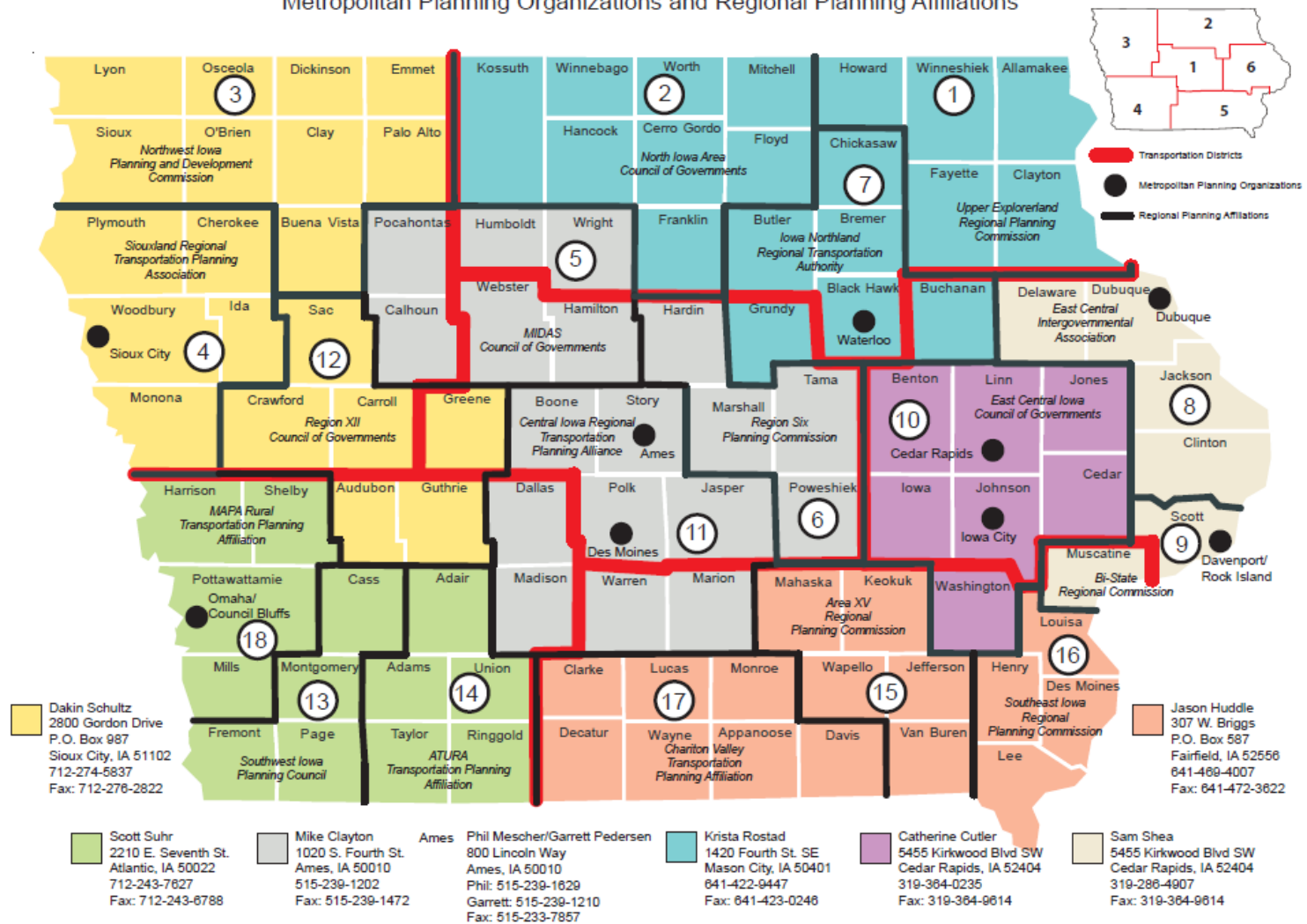
- Project Background
- Project Scope and Schedule
- Literature Review
- Surveys
- Mission Statement
- Questions/Discussion

Project Background/Scope

Background

District Transportation Planners' Areas of Responsibility Metropolitan Planning Organizations and Regional Planning Affiliations

IOWA DOT
December 2013



Project Tasks and Deliverables

Tasks:

- Definition of Modeling/Forecasting Protocols and Procedures
- Develop Standard Model Architecture
- Develop Model Standards
- Develop Model Application Guidance
- Assemble Policies and Procedures Manual

Deliverables:

- Technical Memorandums
- Model Architecture/GUI Prototypes
- Policies and Procedures Manual

Key Team Members



- Iowa DOT
 - Phil, Adam, Darla, Eric, Jeff, Steve
- HNTB
 - Jerry, Chris, Bill
- Michael Baker
 - Bill, Tony
- HR Green
 - Andy, Marcus

Team Member Roles



- Iowa DOT
 - Client, Project Management
- HNTB
 - Prime, Project Management, Protocols/Procedures, Architecture, Standards, Manual Assembly
- Michael Baker
 - Sub, Literature Review, Scenario Testing, TransCAD User Interface, User Guide
- HR Green
 - Sub, Application Guidance

Project Schedule

Task	2015					2016							
	August	September	October	November	December	January	February	March	April	May	June	July	
Definition of General Travel Demand Modeling/Forecasting Protocols and Procedures													
Development of a Standard Model Architecture Prototype													
Development of Guidance on Model Standards													
Development of Model Application Guidance													
Assembly of Travel Demand Model Policy and Procedure Manual													

Meetings

Client Kickoff:

- ✓ August 17th-18th

MTMUG Meetings:

- ✓ September 2nd
- Winter 2015
- Spring 2016

MPO Directors' Meeting:

- December 1st, 2015

Progress Meetings (in person):

- ✓ September 2nd
- October 2015
- January 2016
- April 2016
- June 2016

Bi-Weekly Project Management Team Meetings (Conference/Web Calls)

Collaboration thru Sharepoint

The screenshot shows a web browser window with the address bar displaying <https://www.hntbdashport.com/clients/iowadot/modeling/SitePages/Home.aspx>. The browser's taskbar at the bottom contains various application icons including Chrome, Firefox, and several social media and utility apps.

The SharePoint interface features a top navigation bar with 'Site Actions' and 'Browse' buttons. Below this is a breadcrumb trail: 'Modeling > Home'. A left-hand navigation pane is visible, containing the following sections:

- Modeling** (selected)
- Project Overview
- Project Teams
- Project Organizations
- Team Calendar
- Libraries**
- ISMS Manual
- Literature Review
- Models
- Schedule
- Help and Support**
- Recycle Bin
- All Site Content

The main content area is titled 'IOWA DOT MODELING' and includes the following text: 'The project will standardize the process of travel demand modeling in Iowa, both from a policy and implementation perspective.'

Below this is an 'Announcements' section. It features a table header with columns for 'Title' and 'Modified'. The table is currently empty, with a message stating: 'There are no items to show in this view of the "Announcements" list. To add a new item, click "New".' A link with a plus icon and the text 'Add new announcement' is provided below the table.

Task: Definition of Modeling/Forecasting Protocols and Procedures

- Iowa DOT and MTMUG Surveys
- Literature Review
- Mission Statement
- Introduction and Purpose
- Outline
- Executive Summary

Task: Develop Standard Model Architecture

- Architecture Defined:
 - Model/Data Organization
 - Model Structure
 - TransCAD Implementation
- Current Architecture Survey
 - 10 DOTs/MPOs Outside of Iowa
 - Multiple (4) Options to Consider
- Recommended Model Architecture
 - List of Desired/Required Features
- Scenario Testing to Evaluate Options

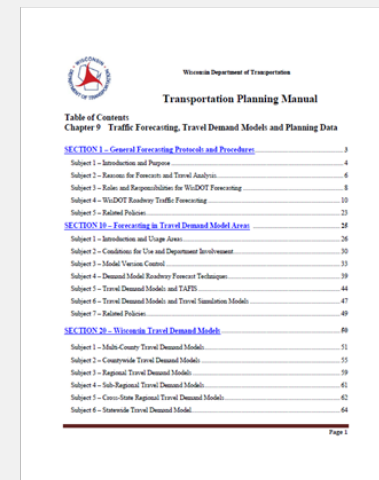
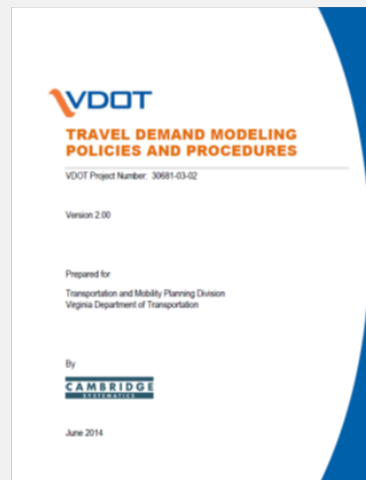
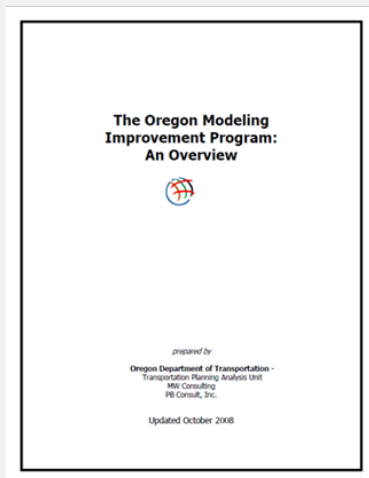
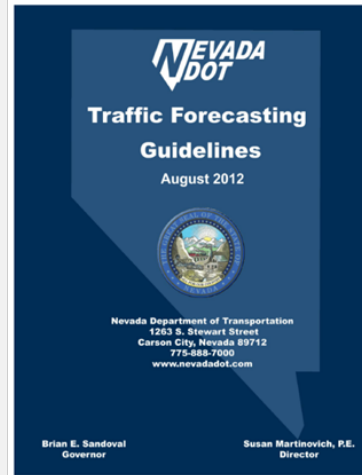
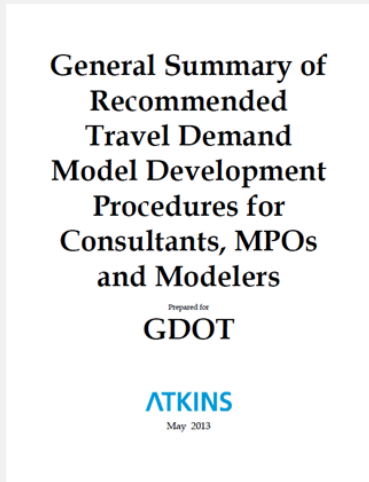
Task: Develop Model Standards

- Define Data Sources, Practices, and Procedures
- Define Roles and Responsibilities for Modelers
- Develop Guidance on Calibration Processes and Validation Standards
- Model Documentation Standards
- Recommendations for Training and Versioning Standards
- Develop TransCAD Model Prototype
 - TransCAD User Interface
 - Standard Model Structure and Coding Conventions
 - Model Users Guide

Task: Develop Model Application Guidance

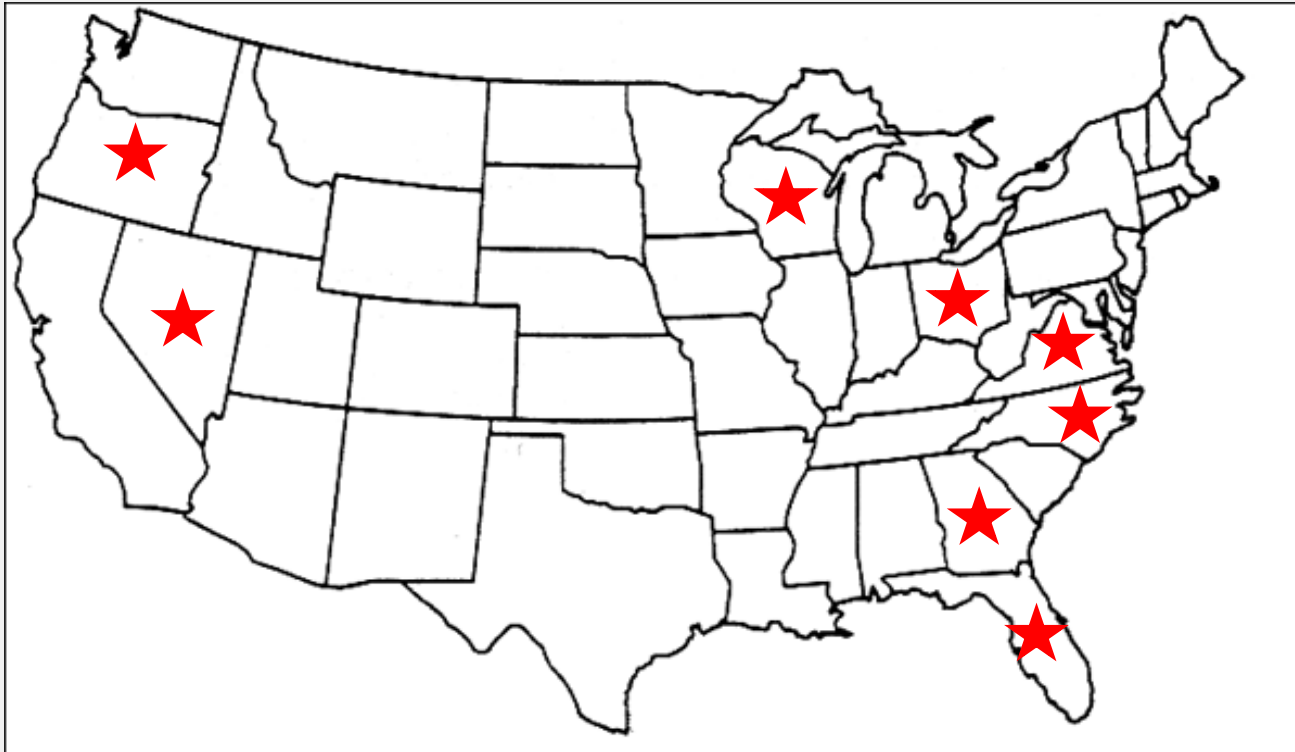
- Use of Models in Forecasting
- Use of Models in Long Range Planning
- Use of Models in Corridor/Sub-Area Analysis
- Integration of Travel Demand Models with Other Models/Tools:
 - Microsimulation
 - Air Quality
 - Land Use
 - Benefit/Cost

Task: Assemble Policies and Procedures Manual



Literature Review

Literature Review



- Florida
- Georgia
- Nevada
- North Carolina
- Ohio
- Oregon
- Virginia
- Wisconsin

Literature Review

- Reviewed existing policy and procedure manuals, and traffic forecasting guidelines implemented by seven (7) other states
- Reviewed four (4) national policy and guidelines manuals
 - FHWA Travel Model Validation and Reasonableness Checking Manual
 - NCHRP Report 716 - Travel Demand Forecasting: Parameters and Techniques
 - NCHRP Report 765 - Analytical Travel Forecasting Approaches for Project Planning and Design
 - FTA Travel Forecasting for New Starts

Literature Review

Points of Comparison

1. State and MPO policy on forecasting
2. Role of DOT or Agency
3. Purpose and Use of Modeling
4. Data Distribution and Standardization
5. Land Use and Socioeconomic Data
6. Transportation Network Data
7. TAZ Structure
8. Surveys
9. Trip Generation

Literature Review

Points of Comparison

10. Trip Distribution
11. Mode Choice
12. Auto/Truck Trip Assignment
13. Transit Trip Assignment
14. Feedback
15. Truck/Freight Models
16. Model Validation Procedures
17. Forecast Development
18. Off-Model Forecasting Methods

Comparison Point		Literature Sources					
		Virginia Transportation Modeling Policies and Procedures Manual (2014)	Wisconsin DOT Transportation Planning Manual (2015)	Florida Standard Urban Transportation Model Structure (FSUTMS)	Oregon DOT Travel Demand Model Development and Application Guidelines (1995)	GDOT Summary of Recommended Travel Demand Model Development Procedures (2013)	Nevada Traffic Forecasting Guidelines (2012)
1	State and MPO policy on forecasting	Modeling affected by VEC policy, federal metropolitan planning regulations, federal transportation conformity regulations and FTA requirements.	WisDOT policies and forms listed throughout the manual.	FDOT policies and standards listed in multiple separate documents developed over the last than 10 years. Also provides references to national guidelines.	Federal conformity rule, state conformity rule, transportation planning rule	GDOT requests that models developed in the state follow these guidelines.	Provides a list Nevada policies and statutes upon which the guidelines are structured.
2	Role of DOT or Agency	Outlines roles and responsibilities among VDOT and MPO staff.	Discusses roles, responsibilities, and mission of WisDOT.	FDOT roles discussed briefly in relation to developing standards and overseeing model development and updates. Institutional framework discussed in FDOT Model Calibration/Validation Report.	Discussed in relation to policies mentioned above.	GDOT provides guidance and review of model development, and in some cases develops models.	Review and approval of forecasting documentation and deliverables.
3	Purpose and Use of Modeling	Applications of modeling in transportation planning listed.	Describes usage areas, conditions for use, and department involvement.	Purpose of modeling discussed in the FDOT Project Traffic Forecasting Handbook.	Discussed in relation to policies mentioned above.	Not discussed.	Addresses traffic forecasting requirements for planning projects, environmental analysis projects, design projects, and operational analysis projects.
4	Data Distribution and Standardization	Data standards mentioned for sources of TAZ data and content of highway network data.	No recommendations provided.	Data standards outlined in various documents such as the FSUTMS Data Dictionary and the Data Framework for FSUTMS Report.	No recommendations provided.	Standards listed for highway network variables and file naming conventions.	No recommendations provided.
5	Land Use and Socioeconomic Data	Developed by local agencies and consistent with VEC and census	Should be consistent with LRPs and/or Wisconsin Department of Administration's Center for Demographic Services. This section of the manual is still under development.	Detailed land use and socioeconomic data standards provided in the Data Framework for FSUTMS Report.	Based on census data, tax assessors, planning and zoning, utility records, and field surveys. Provides a summary of variables and their use in models.	Recommended data and sources discussed as well as review procedures.	Base year refinement methods recommended for study area analysis.

Literature Review

Preliminary Observations

- Scope of guidance varies state to state
- Survey requirements and frequency generally not codified
- Prevalent trip generation and distribution methods have not changed
- Only “glancing” references to activity-based models
- No state guidance with regard to data distribution among MPOs

Literature Review

Preliminary Observations

- Analytical land use development and/or feedback not addressed
- States largely silent on guidance for use of feedback
- Equilibrium trip assignment prevalent
- Truck-based freight models prevalent
- Mature guidance of model validation procedures and standards

Mission Statement

Mission Statement

Provide a consistent comprehensive and standardized framework of best practices for the development and application of travel demand modeling and traffic forecasting tools. The tools will facilitate collaborative use in planning and designing transportation systems and facilities for the State of Iowa, promote sharing, and encourage continuing cooperation and good practice across the state.

Surveys

Surveys

- Iowa DOT and MPO/MTMUG Surveys
- 15 – 20 Open Ended Questions
 - General Nature of MPO Models
 - Current/Anticipated Application Needs
 - Future Challenges
- Tabulate/Summarize Results
- Walk Through MPO/MTMUG Survey Questions
 - Return Instructions

MPO/MTMUG

Survey Questionnaire

1. Do you work for a public or private agency?
2. What portion of your and/or your agency's time is allocated to demand modeling?
3. Describe your agency's level of proficiency in travel demand modeling and associated software. For example, does your agency have dedicated staff who work with and maintain the travel model on a regular basis, or does your agency exclusively rely on external resources (i.e., IDOT staff or consultants) to perform model-related tasks and projects, or is your agency's level of proficiency somewhere in between?
4. What problems or issues have you observed in the use of the demand model? For example, have you experienced socio-economic data errors, network errors, problems using TransCAD, policy issues, communication with end user, or other problems or issues?

MPO/MTMUG

Survey Questionnaire (2)

5. What do you see as your agency's role in the development and application of the model?

6. Describe your process for developing and evaluating potential projects for inclusion in your long-range transportation plan and/or transportation improvement program. Do you use the model to help in the project evaluation process?

7. Describe your process for developing the base year housing and employment data and future projections for your model. Describe the process for developing forecast data at the zonal level as well as regional control totals.

8. How often do you update your model data and projections?

MPO/MTMUG

Survey Questionnaire (3)

9. What survey data do you utilize in model development?

10. What are the sources of your traffic count data and how do you process it for use in the model framework?

11. How do you currently use the model? What other analyses are conducted using the data from your model? For example, do you use the model for analyzing new road scenarios and/or new development proposals, long-range plan development, microsimulation, peak hour/period forecasting, air quality analysis, transit project development, transit passenger development planning, construction staging, environmental justice analysis, planning for non-motorized modes, or other applications?

12. How would you like to be able to use your model in the future?

MPO/MTMUG

Survey Questionnaire (4)

13. What functionalities do you feel would aid in the accuracy/application of your model?

14. How might you use model data from intermediate forecast year model scenarios?

15. How do you prefer to interact with TransCAD? For example, do you prefer flowcharts, graphical user interfaces, scripts, or other interfaces?

16. In what ways are your technical and policy boards included in the travel demand modeling process? Do your boards approve the base model and updates?

MPO/MTMUG

Survey Questionnaire (5)

17. How do you educate your member jurisdictions about how to the model can be utilized?

18. What training/resources would you like to see that would improve your agencies use or understanding of the model?

19. How do you expect to benefit from the ISMS project?

20. In general, how can travel demand modeling in the state be improved to better support your agency's needs?

21. Please provide any additional comments or information that you think would be pertinent to the development of ISMS.

Questions/Discussion