

Strategic Plan for the development of the TPB travel demand model

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TPB Technical Committee (and proposed presentation to the TPB on July 20, 2016)

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“(Now is) the toughest time to be in the forecasting racket... I’m glad I’m not doing it.”

Alan Pisarski’s comment regarding current technology influences on transportation at the TPB's 50th Commemorative Event (November 18, 2015)



Briefing topics

- Background of the TPB Models Development program
- Current uses of the travel model
- Formulation of the Strategic Plan (SP)
- Benefits of the SP



TPB Models Development program

- Addresses concurrent activities focused on maintenance, development and research
- Oversight: Travel Forecasting Subcommittee (TFS)
 - State and local agencies representatives
 - Consultants supporting project planning
 - Interested members of the public
- Since FY 2006, staff has maintained a consultant-assisted project to help improve the TPB travel demand forecasting model



Features of the adopted travel model

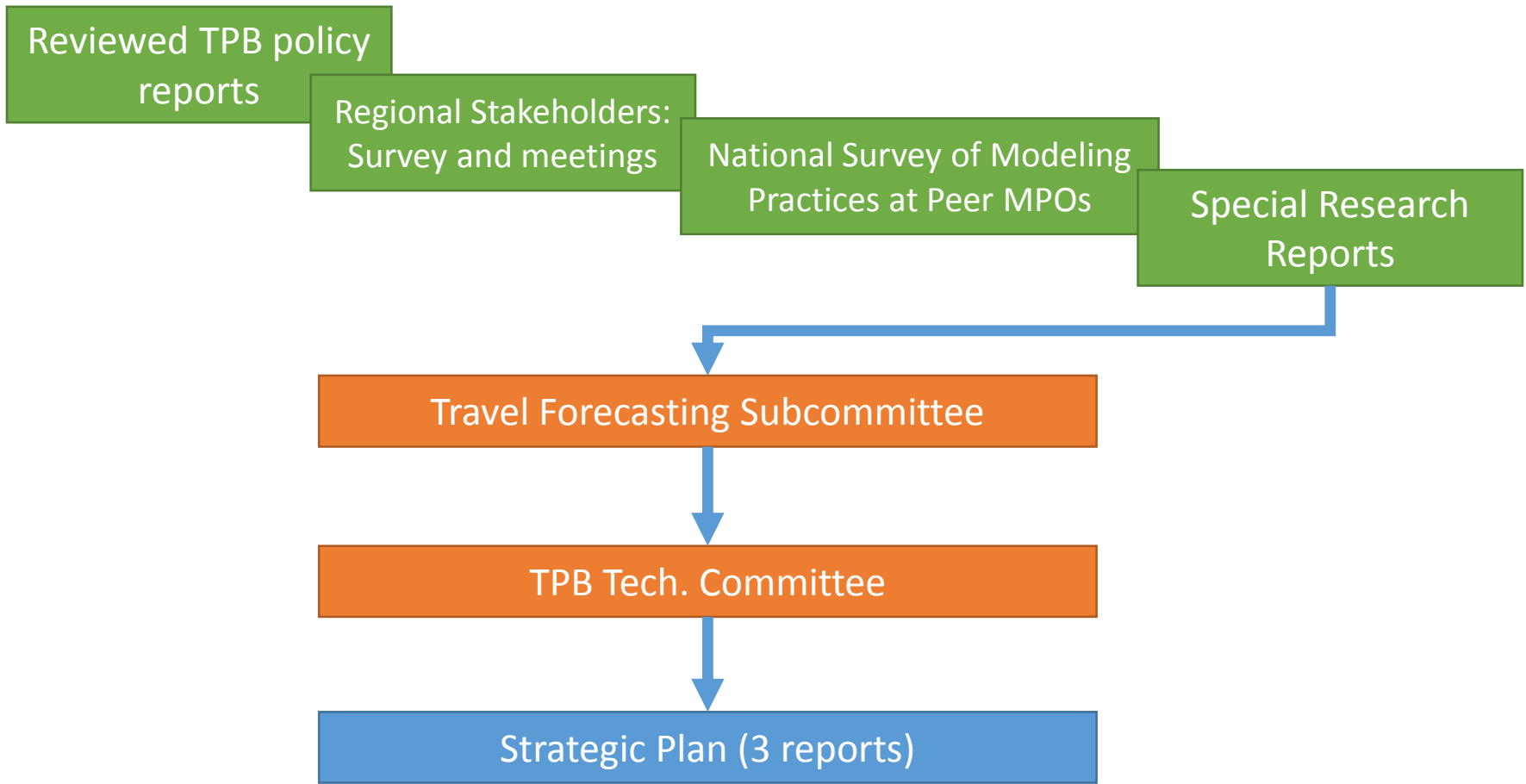
- Largely developed & maintained by TPB staff
- Calibrated and validated with local data reflecting observed travel behavior
- Operates on a 22-jurisdiction study area
- Fully documented and transparent
- Aggregate, trip-based model (“4-step” model)
- Refined and updated each year



Current uses of the travel model

TPB Staff Activities	TPB Member Activities
CLRP Evaluation	Project Planning/Evaluation
Air Quality Conformity Determination	Site Development Review
Mobile Emissions Inventories	County Planning
Environmental Justice	Alternatives Analysis
Regional Scenario Analysis	Corridor Planning
Project Planning (Technical Assistance)	Statewide Planning

Strategic Plan Formulation



Types of travel demand models

Four-step model (FSM)	Activity-based model (ABM)
Trip based	Tour based (Tours are ordered sequences of trips)
Mostly aggregate in nature	Mostly disaggregate in nature
Model estimates demand for travel	Model estimates demand for travel, which, in turn, is assumed to be derived from the need to participate in activities
Current model: TPB Version 2.3.57a Travel Model	Future TPB travel model



Key findings of national survey/peer MPOs

- About 70% are using or developing an ABM
- About 25% use an ABM for production work, but the same share do not use an ABM for production work
- Only 2 (9%) reported using dynamic traffic assignment (DTA) in production work



Strategic plan overview

- Three phases over seven years

	Description	Fiscal Years
1	Updates to the existing FSM	2016-2017
2	Development of an ABM with existing data	2018-2020
3	Development of an ABM with new data *	2021-2022

* New household travel survey to be conducted in FY 17; ready for use in FY 20



Benefits of Phase 1 improvements

- Continues the use of well-known four-step model
- Improved ability to model transit sub-modes
- Improved modeling of HOV & priced facilities
- Improved treatment of non-motorized travel
- Updated treatment of non-resident travel in the region



Benefits of Phase 2 & 3 improvements

- Migration to an ABM (in line with peer MPOs)
- Improved ability to model how individuals make travel decisions
- Better able to study the behavior of traveler sub-populations
- Improved capabilities & sensitivities for modeling transportation pricing & environmental justice
- More detailed travel metrics



Conclusions

- We continue to monitor model development efforts at our peer MPOs, including the Baltimore Metropolitan Council
- Staff focus at present is to complete immediate trip-based modeling work (Phase 1 of SP)
- Strategic plan allows for flexibility
- Improved methods are not a substitute for modeling data/ongoing data collection



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Technical reports

- *Review of Consultant Recommendations from FY 2012-2014 of the COG/TPB Travel Demand Modeling Consultant-Assistance Project, Task Order 15.1.* Oct. 15, 2015.
- *Review of Transit Modeling with Respect to FTA Guidance, Task Order 15.3.* Oct. 15, 2015.
- [**Identifying Potential Opportunities for Model Improvement**](#), Task Order 15.2, **Report 1 of 3.** Oct. 15, 2015.
- [**Status of Activity-Based Models and Dynamic Traffic Assignment at Peer MPOs**](#), Task Order 15.2, **Report 2 of 3.** Oct. 15, 2015.
- [**Draft Strategic Plan for Model Development**](#), Task Order 15.2, **Report 3 of 3.** Oct. 15, 2015.



Peer MPOs for TPB*

1. Southern California Association of Governments (SCAG)
2. New York Metropolitan Transportation Council (NYMTC)
3. The Chicago Metropolitan Agency for Planning (CMAP)
4. Metropolitan Transportation Commission (MTC)
5. North Jersey Transportation Planning Authority (NJTPA)
6. North Central Texas COG (NCTCOG)
7. Houston-Galveston Area Council (H-GAC)
8. Delaware Valley Regional Planning Commission (DVRPC)
9. **National Capital Region Transportation Planning Board (TPB)**
10. Atlanta Regional Commission (ARC)
11. Southeast Michigan COG (SEMCOG)
12. Maricopa Association of Governments (MAG)
13. Puget Sound Regional Council (PSRC)
14. Boston Region MPO
15. San Diego Association of Governments (SANDAG)
16. Metropolitan Council
17. Denver Regional COG (DRCOG)
18. Baltimore Regional Transportation Board (BRTB)
19. Southwestern Pennsylvania Commission (SPC)
20. East-West Gateway Council of Government (EWGCOG)
21. Sacramento Area COG (SACOG)
22. Portland METRO
23. Mid-Ohio Regional Planning Commission (MORPC)

*20 largest MPOs (based on 2010 population in the MPO planning area) plus three smaller MPOs known for innovation in travel demand modeling

