STRATEGIC PLAN FOR THE DEVELOPMENT OF THE TPB TRAVEL DEMAND MODEL

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Overview

- Current uses of the TPB travel demand model
- TPB models development program
- Strategic plan for models development
  - Formulation
  - Benefits

Photo credit: Andreas Levers

Current uses of the TPB travel model

TPB Staff	TPB Members and Partners
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

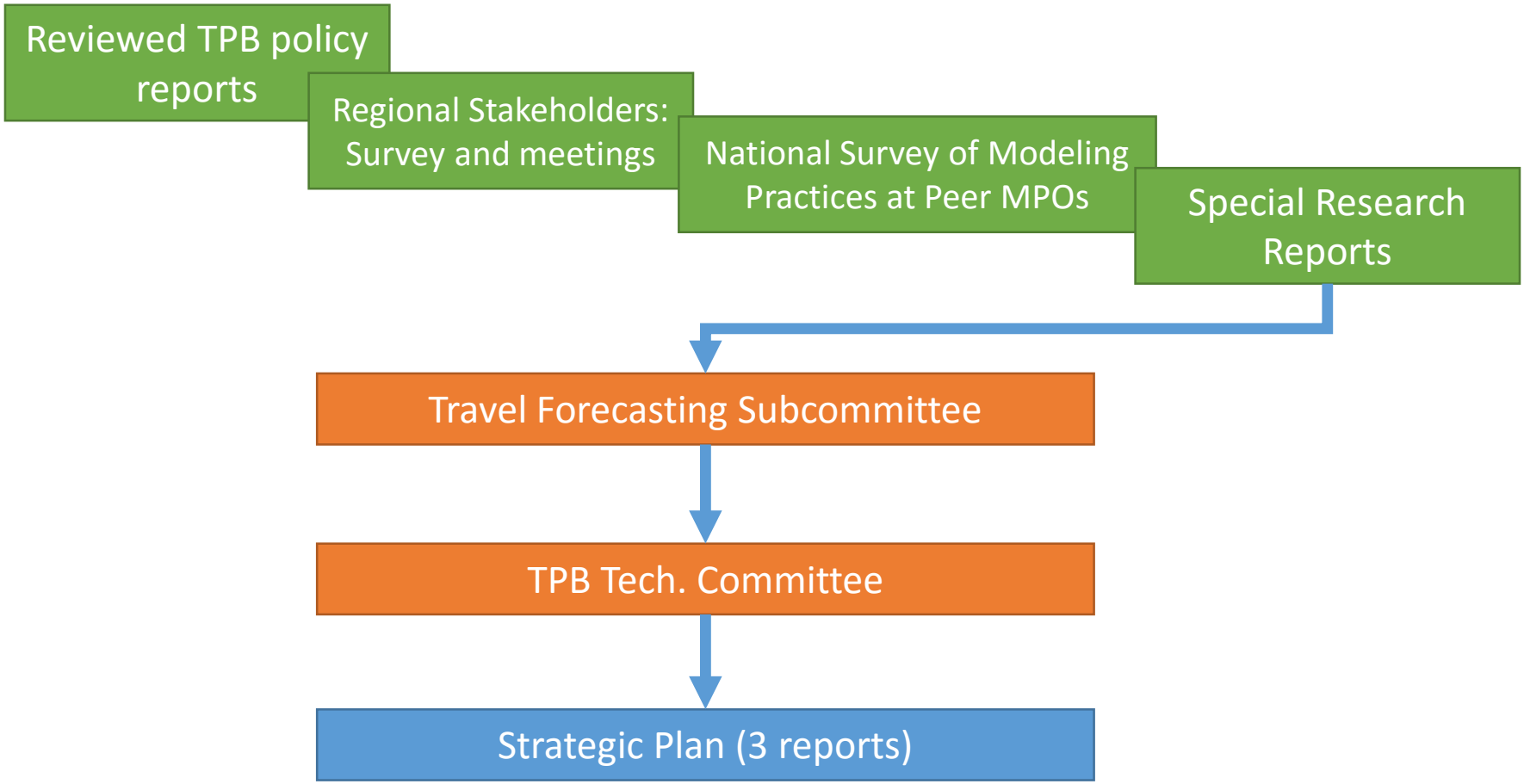
TPB Models Development program

- Focused on maintenance, development and research
- Oversight: Travel Forecasting Subcommittee (TFS)
  - Representatives of state and local agencies
  - Consultants supporting project planning
  - Interested members of the public
- Since FY 2006, staff has maintained a consultant-assisted project to help improve the model

Features of the current TPB model

- Aggregate, trip-based model ("4-step" model)
- Developed & maintained largely by TPB staff
- Refined and updated each year
- Calibrated and validated with local data reflecting observed travel behavior
- Modeled area
  - Very large (22 counties/jurisdictions)
  - Multi-state (DC, MD, VA, one county in WV)
- Fully documented and transparent

Strategic Plan Formulation



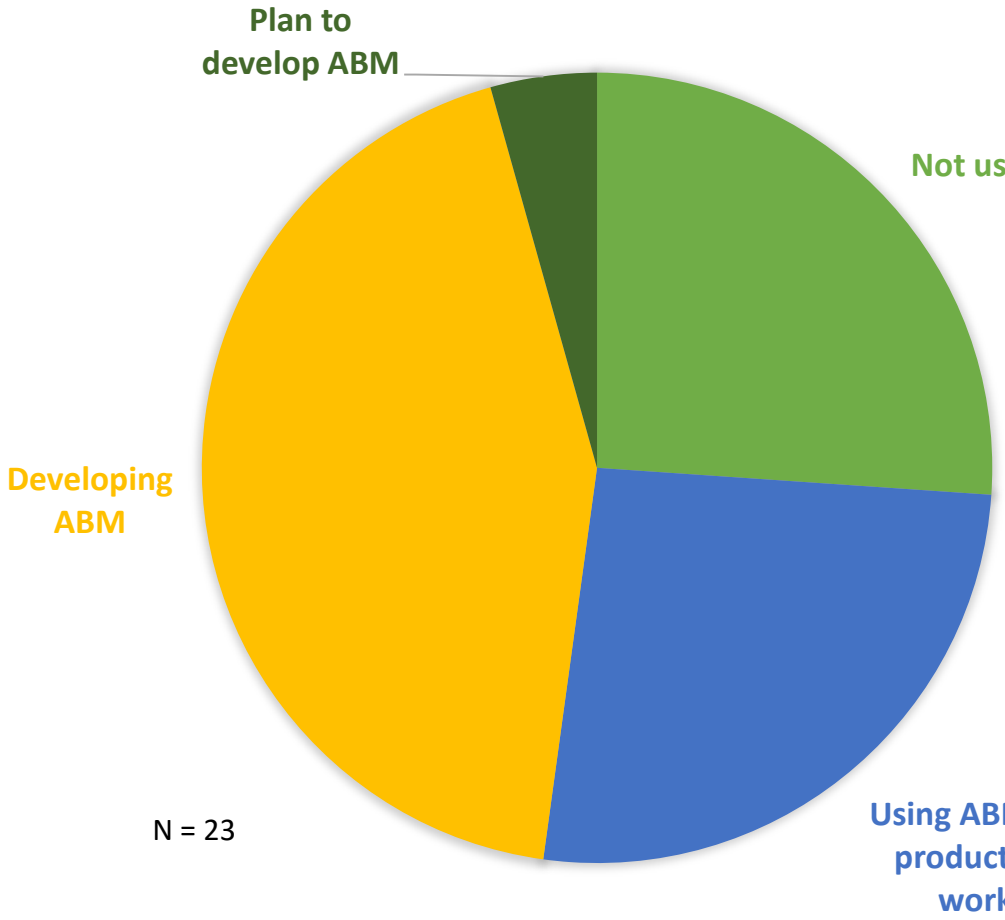
Comparison of modeling approaches

Trip-Based Model (current TPB model)	Activity-Based Model (ABM)
Trips are generated from zonal aggregations of households	Trips are generated based on the simulation of individual households and persons
Each trip is independent of every other trip	Trips are chained into tours, which allows continuity of information
Timing/direction of trips is not an explicit choice (fixed factors)	Starting and ending time of activities are modeled choices
Geographic scale: zone/TAZ	Geographic scale: Parcel and zone/TAZ

Outwater, Maren, and Joel Freedman. "Activity-Based Modeling, Session 1: Executive Perspective." Travel Model Improvement Program (TMIP) Webinar Series, February 2, 2012.

- It is not expected that an ABM will alter regional metrics (e.g., VMT, mode choice).
- Key advantage of ABM: More detailed information about travelers
  => better understanding of policy options

National survey of peer MPOs: ABM Usage



- 26% not using an ABM
- 26% using ABM in production
- 43% developing an ABM

- Thus, ca. 70% of peer MPOs are using or developing an ABM

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

- Provides a workable, federally approved model for annual TPB work activities
- Provides time and funding needed to develop the new model and collect new data
- Key improvements
  - 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 Phases 2 & 3

- 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 strategic plan)
- Stakeholders will be brought along with us
- 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.
- ***Strategic Plan for Model Development**, Task Order 15.2, **Report 3 of 3***. Oct. 15, 2015.

These reports can be found at the following page:

https://www.mwcog.org/documents/tfs/consultant-end-of-fiscal-year-reports/

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