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# WVDOT *Travel Demand Modeling Handbook*

*presented by*

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# Overview

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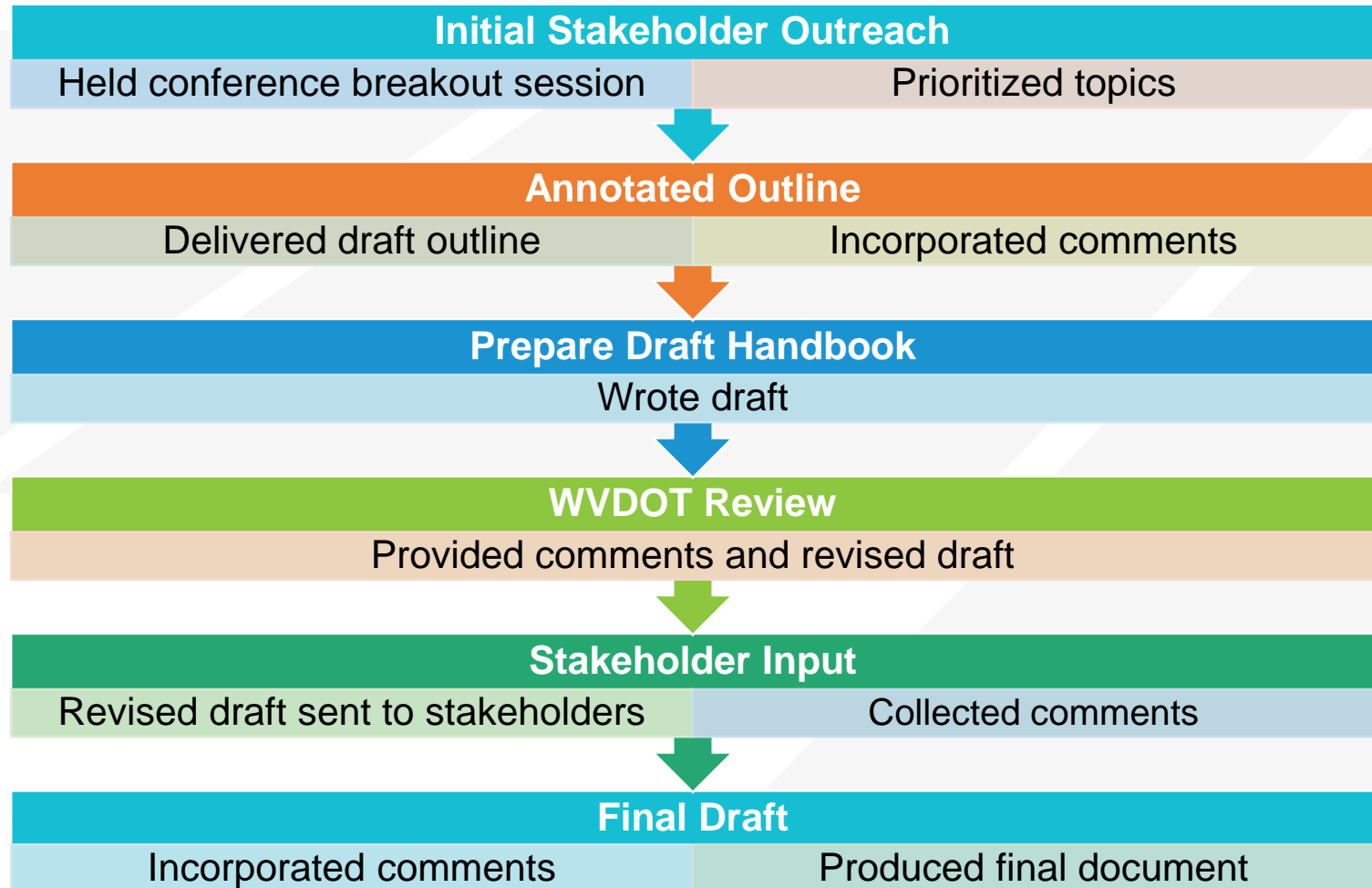
- Purpose of the Handbook
- Project Process
- Chapter Overview
  
- Questions

# Purpose of the TDM Handbook

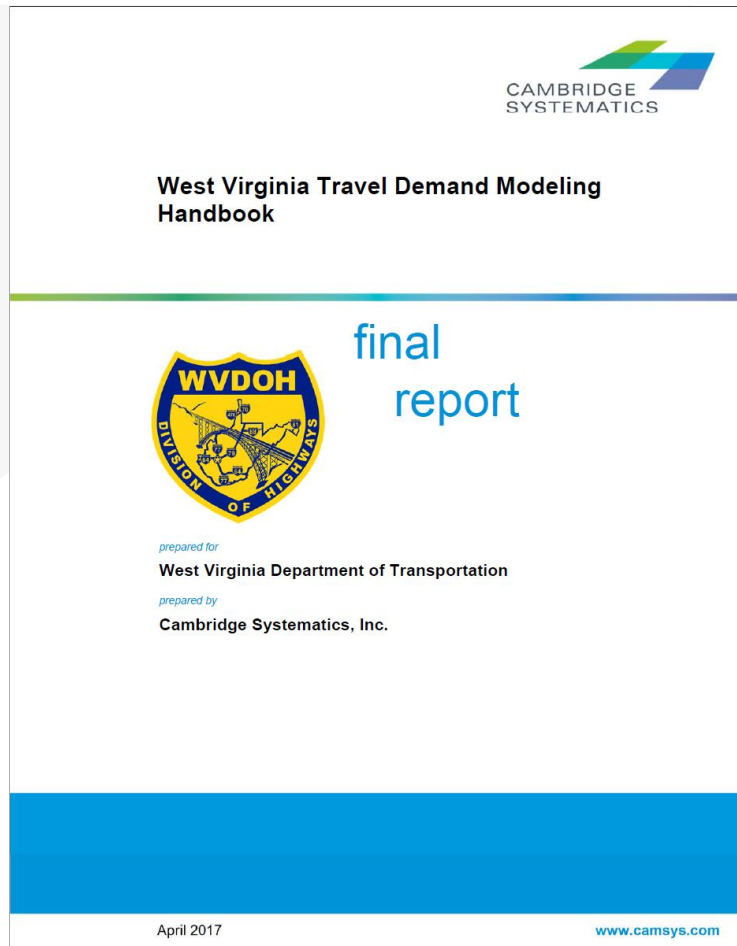
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- Why develop a TDM Handbook?
  - » Produce easy to reference guidelines for the developing, validating, and applying travel demand models
  - » Provide a resource for public agency staff (MPOs) and consultants
  - » Clarify expectations and requirements
  - » Encourage and share good practice

# Project Process



# Tour of Delivered Handbook



- Completed in April 2017
- Provides coverage, guidance, and recommendations over a spectrum of modeling topics relevant to WV practice

# Chapter 1 - Introduction

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- Handbook usage and intent
- Acceptable practice
  - » Minimal standard for modeling in WV
  - » Defined to accommodate most current practices
- Recommended practice
  - » Desired standard for modeling in WV
  - » Defined to align with the state of the practice

# Chapter 2 – Travel Demand Model Usage in West Virginia

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- Summary of eight WV MPO models
- Discussion on desirable frequency and type of model improvements
- Guidelines provide some flexibility to align with special requirements (e.g., accommodate other-state requirements in multi-state MPO areas)

# Chapter 3 – Validation Process and Guidelines

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- All individual models should be evaluated
  - » Issues with upstream model components can propagate through the model system
- Validation is not determined by pass/fail or some target values alone
  - » Based on model purpose, timeframe, intended use
- Models should be reasonably sensitive



# Chapter 4 – Data Needed for Modeling

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- Recommended practice
  - » TAZ definition
  - » Socioeconomic data assembly
  - » Network data assembly
- Validation and calibration data
  - » Survey practices
  - » Emerging sources

# Chapters 5 – 8 – Typical Model Component Guidance

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➤ Trip Generation

➤ Trip Distribution

➤ Mode Choice

➤ Trip Assignment

➤ Tailored to WV, recognizing unique requirements

➤ Provides specific validation guidance for modeled versus observed VMT and RMSE by facility type



# Chapter 9 – Truck and Freight Models

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- Regional and statewide tools
- Recommended practice
- Common data sources
  - » Vehicle registration data
  - » Commercial vehicle surveys
  - » Vehicle classification counts
  - » Truck GPS data (e.g. ATRI, StreetLight)
  - » Commodity flow data

# Chapter 10 – Statewide Travel Demand Models

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- Types of statewide models
  - » Passenger: common approach is four-step with similar trip purposes and long-distance trips segmented
  - » Freight: several approaches (e.g., four-step; commodity)
- How are states using statewide models?
  - » Air quality, tolling, intercity demand, and project evaluation
- Potential data sources
  - » Public, commercial, and/or emerging data
- Model validation
  - » Aggregate trip rates; % by trip purpose; avg. trip length; avg. auto occupancy for recent implementation examples

# Chapter 11 – Microscopic Simulation Models

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- Data from regional models can seed a microscopic simulation model application
- Subarea extraction method highlighted



- Chapter highlights some WV examples

# Chapter 12 – Model Application and Analysis

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- Typical planning applications
  - » Long-range transportation planning
  - » Air quality conformity analysis
  - » Evaluation of transportation system
- Data from regional travel models
  - » Traffic volumes and origin-destination flows
  - » System performance (e.g., VMT, VHT)
  - » Travel time and speeds
  - » Need for post-processing for project forecasts
- Analysis when no travel demand model

# Future of the Handbook

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- Structured to permit updates as regulations, requirements, or practice changes
- Includes chapters that address features that could be desirable to have in the future
  - » Statewide model
  - » Detailed truck/freight models
  - » Mode choice
- Recognizes that one size does not fit all – flexibility is written into it



# Questions/Contacts

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