

2045 LONG-RANGE TRANSPORTATION PLAN: CONNECTED AND AUTONOMOUS VEHICLES MODELING ASSUMPTIONS



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REGIONAL TRAVEL DEMAND MODEL UPDATE



Per Federal Regulations, base year data must be updated every 10 years

Improvements:

- Model Area Expanded to Include Franklin and Southampton County
- Updated TAZs, highway, transit networks
- Improved Toll Choice Model
- New/Planned Modes: **Connected/Autonomous Vehicles**, Ride Sharing
- Environmental Justice analysis
- Improved Post-Processing Efficiencies



UPDATED HRTPO MODEL



Hampton Roads Transportation Planning Organization, Regional Travel Demand Model V2 Technical Documentation

DRAFT REPORT

December, 2019

Prepared for: Virginia Department of Transportation

Prepared by: Whitman, Requardt & Associates, LLP (WRA)
Resource Systems Group (RSG)



Hampton Roads Transportation Planning Organization, Regional Travel Demand Model V2 User Guide

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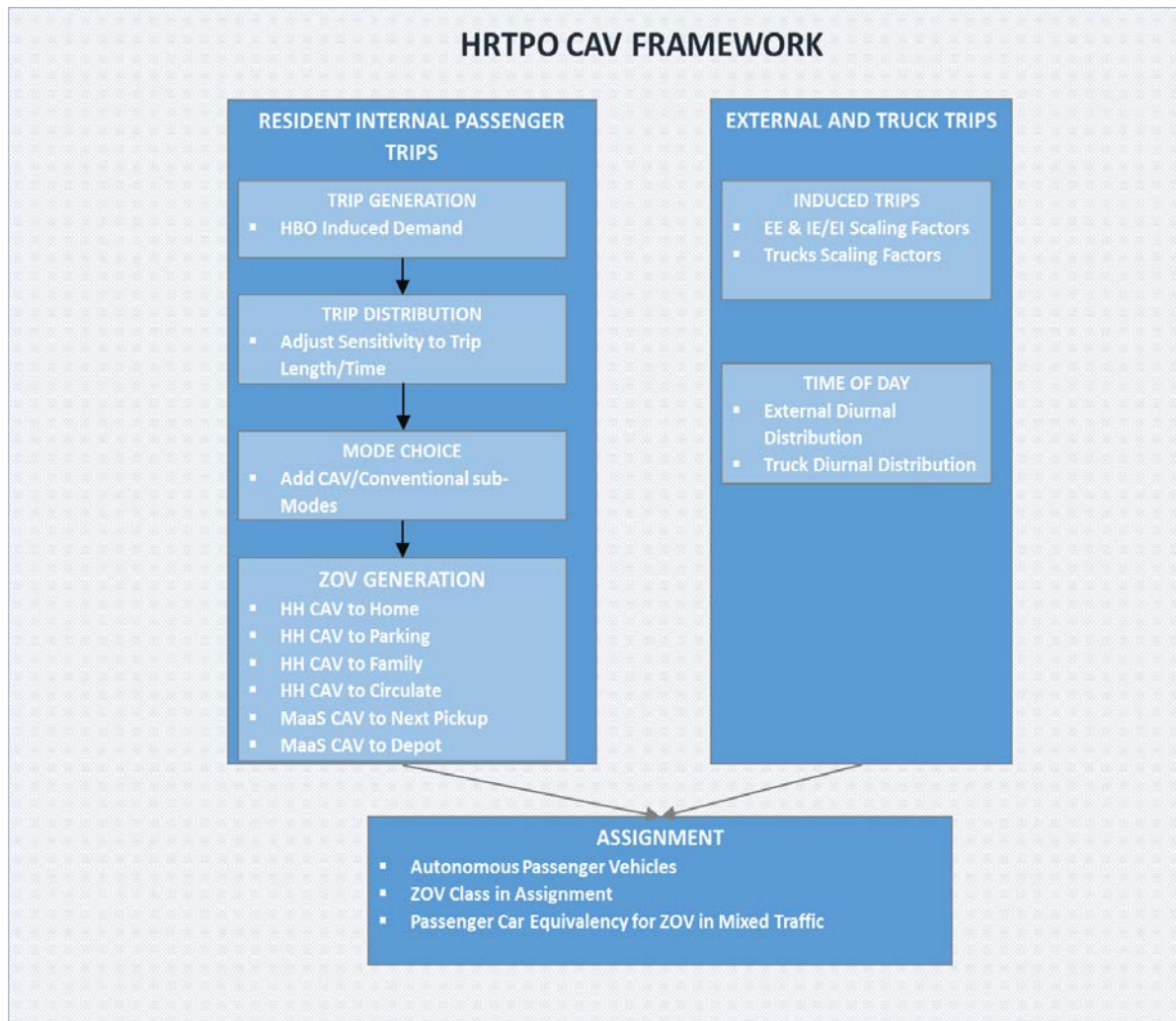


- HRTPO TDM enhanced to include a framework for addressing Connected and Autonomous Vehicles (CAVs)
- Support exploratory model analysis and scenario planning
 - As data on CAV use becomes more available and reliable, it will better support traffic forecasting

- Uncertainties in both transportation demand and supply in modeling CAVs

DEMAND SIDE	SUPPLY SIDE
Market Penetration	CAV Capacity and Speed
Level of Car Sharing and Ride Sharing as a substitute for Private Vehicle Use	SMART Infrastructure (signals, dedicated lanes)
Zero Occupant Vehicle (ZOV) Trips	Fleet Size
Parking Location and Behavior Changes	Depot Locations of Transportation Network Companies (offering Mobility as a Service)
Decrease in Disutility of Travel Time	
Induced Trip Making	

HRTPO CAV MODELING FRAMEWORK



RECOMMENDED ACTION



- Form a Working Group
 - Review CAV modeling parameters
 - Modify as needed for LRTP modeling/scenario planning

Example of HRTPO CAV Modeling Parameters

Split between CAV and Conventional auto types

Time of Day factors

Induced Demand

ZOV trips by occupancy, trip purpose, and time period

ZOV parking assumptions (CAV returns home, circulates, etc.)

Depot capacities for shared CAVs by TAZ



Thank You!