Status of Transportation Modeling Enhancements

ICG, January 4, 2017

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Expanding the Region's Toolset

- BRTB Funded Activity
  - PopGEN 2.0
  - **In**itiate to **S**imulate **I**ndividual Travel **E**vents (InSITE) – Advanced ABM/Tour Based, Disaggregate Model and Person Trip Tour Roster
- Joint SHA/BRTB SHRP2 Grants
  - C20 – Freight Modeling System – Disaggregate Model, Tour Based and Freight Trip Tour Roster
  - C10 – Activity Based Model & Dynamic Traffic Assignment Integration – Route Choice
  - L04 – Incorporation of Reliability Within Travel Simulation

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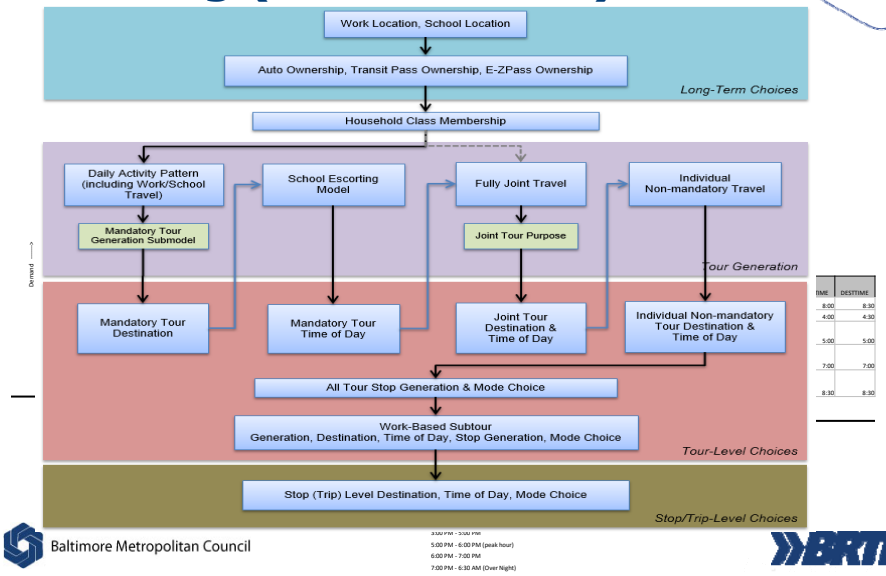
Aggregate/Disaggregate Modeling (InSITE & C20)



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Route Choice – C10

- Three Levels
  - Macro – Static Highway Assignment
  - Meso – Dynamic Traffic Assignment (DTA)
  - Micro – Synchro (deterministic), VISSIM (simulation)
- C10 – InSITE & DTALite Integration
  - Assign Vehicles in 15 minute packs – Vehicle Trajectories
    - Improve
      - Simulation Capacity in Estimation Duration and Location of Delay
      - Travel Time Estimates by TOD
      - Volume and LOS Measurements – Abandoning V/C Ratios
      - Travel Demand Management Policies (Especially Pricing)
      - Transportation Systems Management and Operations

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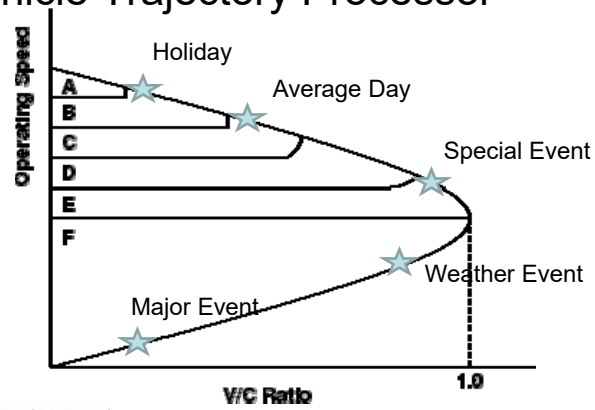
Reliability – LO4

- Scenario Manager
- Vehicle Trajectory Processor



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MOVES Emission Impact?

InSITE Household VMT
InSITE HPMS Factor VMT
C20 Freight Modeling System VMT

Vehicle Population - MDE

2025
17-20 TIP

	Total VOC	Running and Crank Case Running Emissions	Start and Crankcase Start Exhaust	Evaporative Permeation, Fuel Vapor Venting, and Fuel Leaks	Crankcase and Extended Idle Exhaust and Auxiliary Power Exhaust		Total NOx	Running and Crank Case Running Emissions	Start and Crankcase Start Exhaust	Crankcase and Extended Idle Exhaust and Auxiliary Power Exhaust
Motorcycle	0.84	0.21	0.02	0.60			0.21	0.21	0.00	
Passenger Car	6.81	0.43	2.60	3.79			3.81	2.04	1.77	
Passenger Truck	5.59	0.73	2.46	2.41			5.51	3.62	1.89	
Light Commercial Truck	1.45	0.19	0.67	0.59			1.59	1.03	0.56	
Intercity Bus	0.05	0.05	0.00	NA			1.03	1.03	0.00	
Transit Bus	0.01	0.01	0.00	0.00			0.22	0.22	0.00	
School Bus	0.04	0.04	0.00	0.00			0.50	0.50	0.00	
Refuse Truck	0.00	0.00	0.00	0.00			0.08	0.08	0.00	
Single Unit Short-haul Truck	0.67	0.32	0.19	0.16			2.98	2.63	0.35	
Single Unit Long-haul Truck	0.02	0.02	0.00	0.00			0.17	0.16	0.01	
Motor Home	0.03	0.01	0.01	0.01			0.05	0.05	0.00	
Combination Short-haul Truck	0.10	0.09	0.00	0.00			2.09	2.09	0.00	
Combination Long-haul Truck	1.09	0.49	0.00	NA	0.60		13.70	10.32	NA	3.38
Total	16.70	2.59	5.95	7.56	0.60		31.94	23.98	4.59	3.38

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Status

- InSITE
  - Validation Completed
  - Model Sensitivity Test (January)
- C20 – Freight Modeling System
  - Software Code (January)
- C10 – Integrated Model
  - Software Code (January)
- L04 – Project Start – March

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Schedule/Timeline

- Maximize 2045 (2019) – Support using TBM – Project Prioritization and Air Quality Conformity
- InSITE
  - Round 9 Demographic Scenarios
    - Aging of the Population, Household Structure (childless and no Worker Households)
  - Private Public Partnership
    - Simulated Value of Time
  - Rail Transit Market Analysis
    - Mandatory Tour Patterns/Schedule, Household Interactions
- C20 – SHA Freight Plan
  - Long Distance Supply Chain
  - Intermodal Transfer
  - Pick-up/Delivery, Tour Scheduling, Last Mile
- L04 – Too Early

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