White Flint TOD
A Case Study in Joint Implementation
Traffic Operations and Roadway Design Policy

May 9, 2013
Current State and County regulations require a high level of mobility assessed through analysis methodology considering only vehicles.

However, travel behaviors associated with TODs, (shorter trips, walkability and high transit use) are not well predicted by traditional forecasting models such as ITE and may over-predict vehicle trips and traffic congestion.

Additionally, current State and County roadway design codes limit the creation of a fine grained street grid with smaller block sizes, lower vehicle speeds and higher freedom of vehicle movement.

This leads to a potential overdesign of roadways that may inhibit travel by alternative modes, thus potentially limiting the full realization of benefits of the TOD.

This case study summarizes a interagency collaboration to address TOD transportation policy and implementation.
Outline

- Existing Land Uses and Transportation Network
- White Flint Sector Plan Envisioned Land Uses and Transportation Network
- Alternative Traffic Forecasting, Operation Standards and Roadway Design
- Interagency Collaboration
- New Policies and Procedures
- Transportation Network Monitoring
- Next Steps
Stakeholders

- Maryland Department of Transportation
- Maryland State Highway Administration
  - Access Management, Travel Forecasting, District 3, Office of Traffic, Regional Planning
- Montgomery County DOT
  - Transportation Engineering, Traffic Engineering, Transit Services
- Maryland–National Capital Park and Planning
  - Montgomery County Planning Department
- Montgomery County Executive, Council and Planning Board
- Private Sector
  - White Flint Partnership
  - North Bethesda Transportation Management Association
White Flint Location Context

- Central Montgomery County
- I-270 corridor
- Traditional suburban office/commercial and industrial including White Flint Mall with large set backs, long block lengths and surface parking lots
Existing Land Uses

- 430 acres
- Within 1 mile radius of White Flint Metro Station
Sector Plan Vision – Land Use

- 2010 Plan builds on 1978 and 1992 plans
- Higher densities
  - Increased employment
  - Increased housing

Table 1: Proposed Development and Jobs Housing Ratio

<table>
<thead>
<tr>
<th></th>
<th>Existing</th>
<th>Approved</th>
<th>Proposed</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential Units</td>
<td>2,321</td>
<td>2,220</td>
<td>9,800</td>
<td>14,341</td>
</tr>
<tr>
<td>Non-residential sf</td>
<td>5.49 M</td>
<td>1.8 M</td>
<td>5.69 M</td>
<td>12.98 M</td>
</tr>
<tr>
<td>Non-residential sf converted into jobs</td>
<td>22,800</td>
<td>6700</td>
<td>19,100</td>
<td>48,600</td>
</tr>
<tr>
<td>Jobs/Housing Ratio</td>
<td>9.85/1</td>
<td>3.0/1</td>
<td>1.9/1</td>
<td>3.4/1</td>
</tr>
</tbody>
</table>
Existing Transportation Network

- State Routes 355 (Rockville Pike) and Route 187 (Old Georgetown Road)
  - Principal Arterials
  - 55,000 to 60,000 Average Daily Traffic
- Served by Red Line Metrorail, and local Metrobus and Ride On
  - Peak hour service 20 to 30 minutes
- Limited Pedestrian and Bicycle Network
Finer grained roadway grid
- 5 miles of new streets
- 10+ new lane-miles
- <350’ block lengths
- 30’ Max curb radii
- Allows local trips to avoid Rockville Pike and Old Georgetown Road
Sector Plan Vision – Transportation

➢ **New Street Hierarchy**
  - Boulevards
  - Business streets
  - Private/ local streets Alleys
  - Promenades
  - Bike paths and trails
  - Recreation loop

➢ **New Roadway Design Standards**
  - 11’ travel lanes
  - Bicycle compatibility
  - Landscaped buffers
  - Minimum 5’ sidewalks

➢ Rockville Pike reconstructed as multi-modal Boulevard with bike lanes, wider sidewalks, on-street parking and median transitway
Bicycle/Pedestrian Network

- Trails/paths, wide sidewalks, bike lanes
- Connections to Bethesda Trolley Trail and Montrose Parkway Shared Use Path
Sector Plan Vision – Transportation

- Robust transit and mobility services
- New White Flint Shuttle with 10 minute headways
- Rockville Pike BRT
- New Metro Station entrance
- New Commuter Rail Station
Network Assumptions
Traffic Forecasts and Analysis

- Local Adequate Public Facilities Ordinance and Local Area Transportation Review Guidelines
  - Higher Congestion Standards (e.g. LOS F) in Metro Station Policy Areas
  - Higher allowable vehicle trip reductions for non-automobile trips (transit, pedestrian and bicycle)
  - Higher allowable internal capture

- State Highway Traffic Studies
  - Include 1% annual growth rate in background traffic
  - No internal capture
  - Limited freedom of movement (no assignment of traffic to new local streets)
Traffic Forecasting and Analysis

- **Trip Generation Sensitivity**
  - ITE / LATR rates are based largely on suburban sites
    - Limited sensitivity to transit coverage, walkability
  - ITE does not document AM pass-by
    - Most retail in mixed-use sites is internally supported
  - ITE has limited data on internal capture
    - Most White Flint developments are mixed-use
  - Non-auto access skewed by proximity to Metro
    - Sharply higher transit usage at station-adjacent properties

- **Recent research documents TODs averaged 44 percent fewer vehicle trips than those estimated by ITE (Arrington and Cervero 2008)**

- **ITE overestimated up to 148% vehicle trip rates for urban in-fill development (CalTrans and University of California – Davis, 2012)**

- **Redefining Internal Capture**
  - ITE (from parking lot to parking lot) within a contiguous site
  - Walking a few blocks in an urban street grid (agglomeration of multi-site activity)
## Proposed TOD Roadway Design Standards

<table>
<thead>
<tr>
<th></th>
<th>Current Standard</th>
<th>Variance</th>
<th>Proposal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Roadway classifications</strong></td>
<td>Freeways, Arterials, Collectors, Local roads</td>
<td>none</td>
<td>Develop and adopt new roadway classifications for TOD/urban infill zones to prioritize access over mobility based on either lower operating speeds (&lt;35 MPH) and/or ADT</td>
</tr>
<tr>
<td><strong>Number of Access Points</strong></td>
<td>limited to one, Prefer connections to local streets</td>
<td>none</td>
<td>One driveway or one private street per block, but all site access is preferred from local street or alley/service road</td>
</tr>
<tr>
<td><strong>Access Point Spacing</strong></td>
<td>750’ intersection spacing (arterials), 400’ driveway spacing (arterials)</td>
<td>none</td>
<td>350’ roadway (public or private) street spacing in TOD/urban infill on low speed arterials</td>
</tr>
<tr>
<td><strong>Signal Spacing</strong></td>
<td>Not less than ¼ mile preferred</td>
<td>None</td>
<td>Allow 750’ signal spacing on low speed arterials with supporting analysis Allow 350’ pedestrian signal spacing</td>
</tr>
<tr>
<td><strong>Speed Change Lanes</strong></td>
<td>Required for public streets/driveways &gt; 30 peak hour trips, 12 lots</td>
<td>None</td>
<td>Not required for low speed arterials but may consider volume-based warrant for left-turn lanes</td>
</tr>
<tr>
<td><strong>Turn Lanes</strong></td>
<td>Required for all new public street intersections</td>
<td>none</td>
<td>Not required for low speed arterials</td>
</tr>
<tr>
<td><strong>Sidewalk</strong></td>
<td>5’ required if pedestrian traffic expected</td>
<td>None</td>
<td>8’ minimum unobstructed width required in TOD/urban infill zones</td>
</tr>
<tr>
<td><strong>Lane Widths</strong></td>
<td>12’ on arterials</td>
<td>11’ under special circumstance</td>
<td>11’</td>
</tr>
</tbody>
</table>

Note: ADT stands for Average Daily Traffic.
### Proposed TOD Traffic Analysis/Operations Policy

<table>
<thead>
<tr>
<th>Category</th>
<th>Current Standard</th>
<th>Variance</th>
<th>Proposal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trip Generation</strong></td>
<td>ITE rates</td>
<td>Will consider use of local data</td>
<td>• For major TODs with multiple development sites and long horizon years, use regional travel model trip rates, household surveys, Current MDOT/ SHA efforts:  • EPA MXD model, UMD TOD research model • non-motorized trip generation research (NCHRP 08–78)</td>
</tr>
<tr>
<td><strong>Trip Reductions/Trip Credits</strong></td>
<td>Pass–by per ITE Internal capture per ITE</td>
<td>Will consider reductions for transit/ ped/ bike trips if local data exists</td>
<td>Use TAZ census data for HBW trips Develop transit proximity credit formula No ‘maximum’ trip reduction cap in order to encourage optimal development locations and programs Must be tied to parking requirements</td>
</tr>
<tr>
<td><strong>Performance Measure</strong></td>
<td>Auto LOS using CLV</td>
<td>Can follow local APFO</td>
<td>Highway Capacity Manual methodology  • Develop ‘tiered’ LOS based on TOD roadway class Arterial speed/travel time Multi-modal LOS (e.g. pedestrian delay) Current MDOT efforts:  • accessibility score  • Person–trip  • Mode share</td>
</tr>
<tr>
<td><strong>Transit and Mobility Services</strong></td>
<td>None</td>
<td>None</td>
<td>stop density (all portions of the TOD within 1 mile of a rail station or 1/4 mile of a bus stop) span of service (18 to 20 hours) frequency of service (10 minute peak period and 15 minutes off-peak)</td>
</tr>
</tbody>
</table>
## Transportation Demand Management

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Opportunities</th>
<th>Constraints</th>
<th>Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demand Management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce SOV mode share</td>
<td>Flexible, low capital cost</td>
<td>Operational costs, monitoring</td>
<td>High</td>
</tr>
<tr>
<td>Increase parking charges</td>
<td>Reduce traffic, provide revenue</td>
<td>PLD establishment, garage locations</td>
<td>Moderate</td>
</tr>
<tr>
<td>Metrorail Station North Entrance</td>
<td>Adds capacity, reduces walk access times</td>
<td>Capital cost</td>
<td>High</td>
</tr>
<tr>
<td>Shuttle services</td>
<td>Low capital cost</td>
<td>Operating cost</td>
<td>High</td>
</tr>
<tr>
<td>New MARC station</td>
<td>Capture long-distance riders</td>
<td>Coordination with CSX, Garrett Park</td>
<td>Moderate</td>
</tr>
<tr>
<td>Regional North Bethesda Transitway</td>
<td>Direct connection to Rock Spring Park activity center</td>
<td>Capital cost, particularly relative to current planned transway</td>
<td>Low</td>
</tr>
<tr>
<td>Add light rail to ML 355</td>
<td>High capacity service for moderate length trips</td>
<td>Right-of-way needs, capital cost/funding, competition with Metrorail</td>
<td>Low</td>
</tr>
<tr>
<td>Add local &quot;midblock&quot; streets</td>
<td>Provide alternate routes, reduce walking distances</td>
<td>Capital cost, definition of final alignment and implementation responsibilities</td>
<td>High</td>
</tr>
<tr>
<td>Left turn prohibitions</td>
<td>Reduce congestion</td>
<td>Circulous trips (cars and buses), public acceptance</td>
<td>Moderate</td>
</tr>
<tr>
<td>Add turn lanes</td>
<td>Reduce congestion</td>
<td>Increased pedestrian crossing distances, capital cost</td>
<td>High (for selected uses)</td>
</tr>
<tr>
<td>Grade separated interchanges</td>
<td>Reduce congestion</td>
<td>Capital cost, attractiveness, public acceptance</td>
<td>Moderate (for selected uses)</td>
</tr>
<tr>
<td>One-way streets</td>
<td>Reduce congestion, improve pedestrian crossing</td>
<td>Circulous trips (cars and buses), public acceptance</td>
<td>Moderate</td>
</tr>
<tr>
<td>Roundabouts</td>
<td>Urban design</td>
<td>Operations, right-of-way</td>
<td>Moderate</td>
</tr>
<tr>
<td>Reversible lanes</td>
<td>Address peak period congestion</td>
<td>Attractiveness, pedestrian crossing length, public acceptance</td>
<td>Low</td>
</tr>
<tr>
<td>New CSX track crossing</td>
<td>Provide alternate routes, Reduce walking distances</td>
<td>Capital cost, right-of-way</td>
<td>Low</td>
</tr>
<tr>
<td>Policies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accept higher congestion levels</td>
<td>Consistent with urbanizing area, no capital cost</td>
<td>Operating costs, public acceptance as part of quality of life</td>
<td>Moderate</td>
</tr>
<tr>
<td>Increase residential land use proportion</td>
<td>Addresses housing shortages, lower trip generation rates, 24-hour activity center</td>
<td>Economic feasibility</td>
<td>Moderate</td>
</tr>
<tr>
<td>Staging Plan</td>
<td>Provide services at time of development</td>
<td>None</td>
<td>High</td>
</tr>
</tbody>
</table>
Transportation Network Monitoring

- **TDM reports by developers**
  - # shared parking spaces
  - # car share spaces
  - # bike share memberships
  - # transit passes
  - # carpool/ flextime employees

- **TDM reports by the City**
  - # miles new bike facilities
  - LF of new/ rehabilitated sidewalk
  - # new intersections
  - # bus stops improved
  - # real-time traveler info devices deployed (inside or outside)
  - # blocks with public space improvements
  - # of registered cars per household

- **TDM reports by the County/ State/ Metro**
  - on-time surface transit performance
  - arterial slowness ratio (peak hour vs. free flow)
Development Staging

- Development approvals tide to
  - Funding/ construction of $314M roadway/ infrastructure improvements
  - Meeting area wide mode share goals
  - Tax Increment Financing used to contribute private sector funds to public works projects

- Mechanisms for local transit operations and major transit initiatives (Rockville Pike BRT) to be determined
Next Steps – White Flint TOD Implementation

- TOD Roadway Design and Traffic Operations Policy Adoption
- Design Waivers
- Transportation Management Plan
  - Demand Management Plan
  - System Management Plan
- Performance Monitoring Reports
Next Steps – MDOT/ SHA

- Separate TOD chapter in Access Manual
  - Internal SHA Inter-Office discussion
  - County and Municipal Traffic Engineer stakeholder coordination

- MDOT TOD codification/ definition
  - Overarching TOD policy
  - Define minimum transit infrastructure/ service characteristics to qualify