

Status of ongoing refinement activities for the Version 2.3 Travel Model

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Presentation to the
Travel Forecasting Subcommittee

Version 2.3 refinement activity: Examining the highway network

- Staff is examining the base-year highway network coding over aerial photography, specifically:
 - Zonal area-type codes
 - Link facility-type coding
 - Placement of centroid connectors
- The result of this exercise will be:
 - Zonal area-type “overrides”
 - Refined facility-type coding in the base-year network that will be carried forth to future year networks
 - Refined centroid connector placement
- Shapiro Transportation Consulting is assisting in this effort
- This presentation includes preliminary findings of the examination

Why is this necessary?

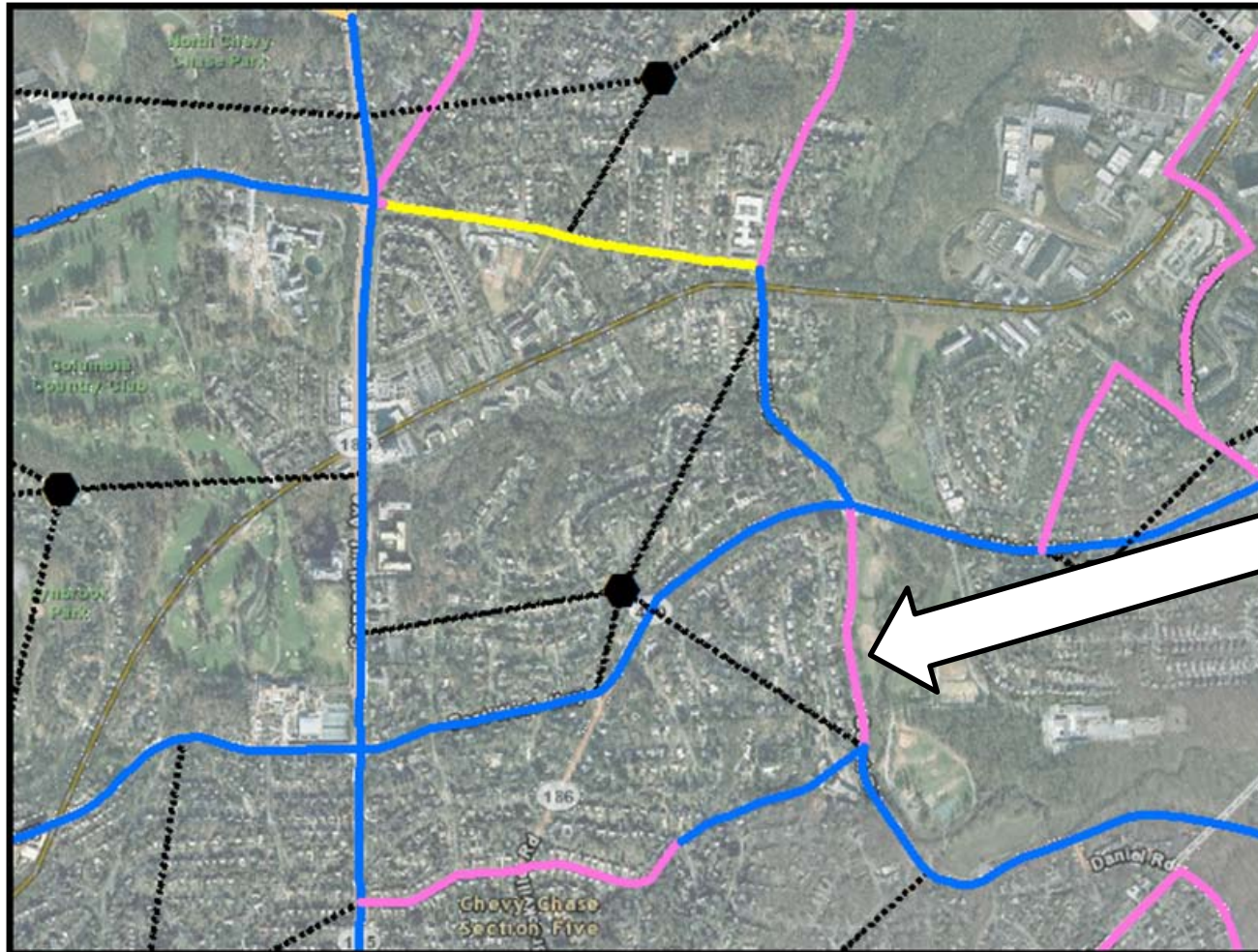
- Validation problems are typically due to simple network coding errors.
- Area-type codes are mechanically assigned to zones based on floating land activity density. The assignment is quick, but may not always be appropriate.
- TPB staff did not focus on accuracy of facility type coding of *added* links in the 3,722-TAZ network. Added links were simply assumed to be collectors with the thinking that refinement will occur in the future.
- Aerial photography greatly aides in identifying network coding problems. Google maps has really helped network development in recent years.

A note about facility-type coding

- Facility –type codes are: 1/ Freeway, 2/ Major art., 3/ Minor art., 4/ Collector, 5/Expressway, and 6/Ramp
- TPB staff has historically used the Federal Functional Classification (FFC) system maps as a basis for coding facility types in the highway network.
- Our current FFC maps are in paper form and are rather dated (2001).
- A request to the states: We desire your latest Federal Functional Classification (FFC) system maps- preferably in electronic form.

Examples of Facility-Type Discontinuities

Beach Drive in Montgomery County, NW of DC line

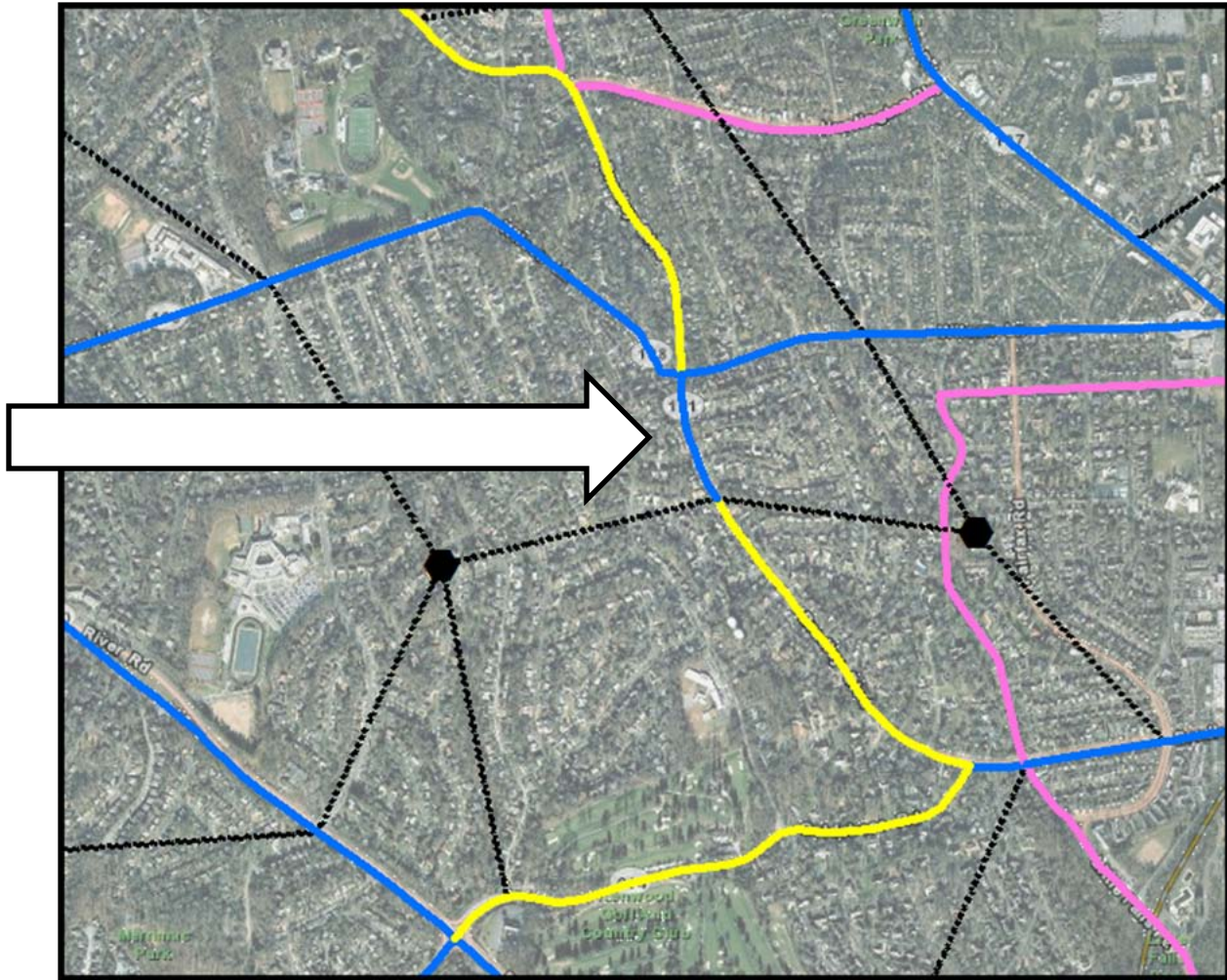


Section of Beach Drive coded as a collector, but adjacent links are major arterials

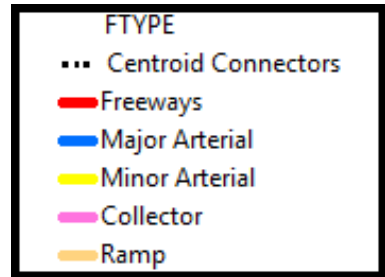


FTYPE	
...	Centroid Connectors
—	Freeways
—	Major Arterial
—	Minor Arterial
—	Collector
—	Ramp

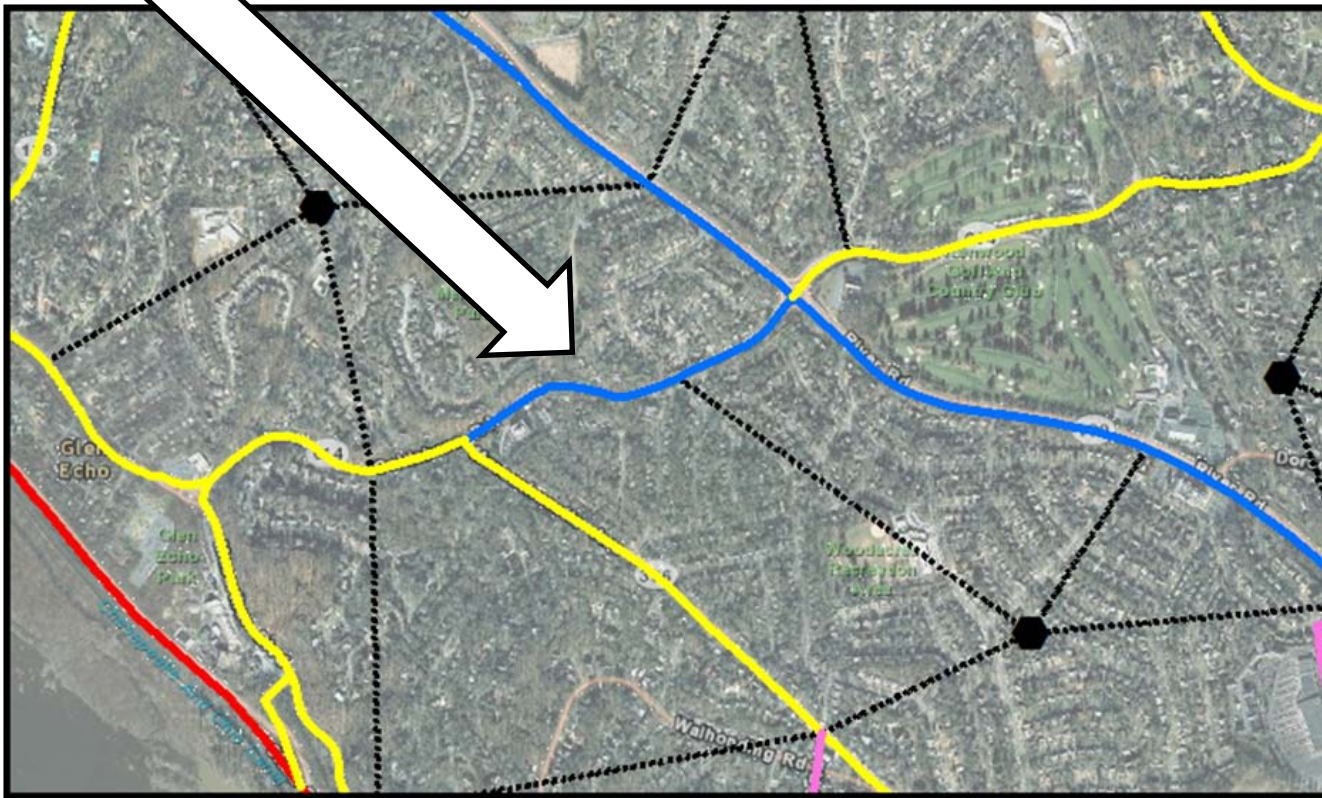
Bradley Boulevard – Montgomery County



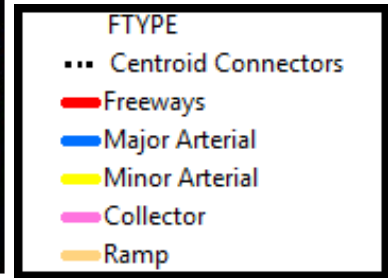
One Bradley Blvd. link is coded as a major arterial, but adjacent links are minor arterials



Goldsboro Road –Montgomery County



Section of Goldsboro Road coded as a major arterial, but adjacent links are minor arterials



Review of area-type link coding procedure

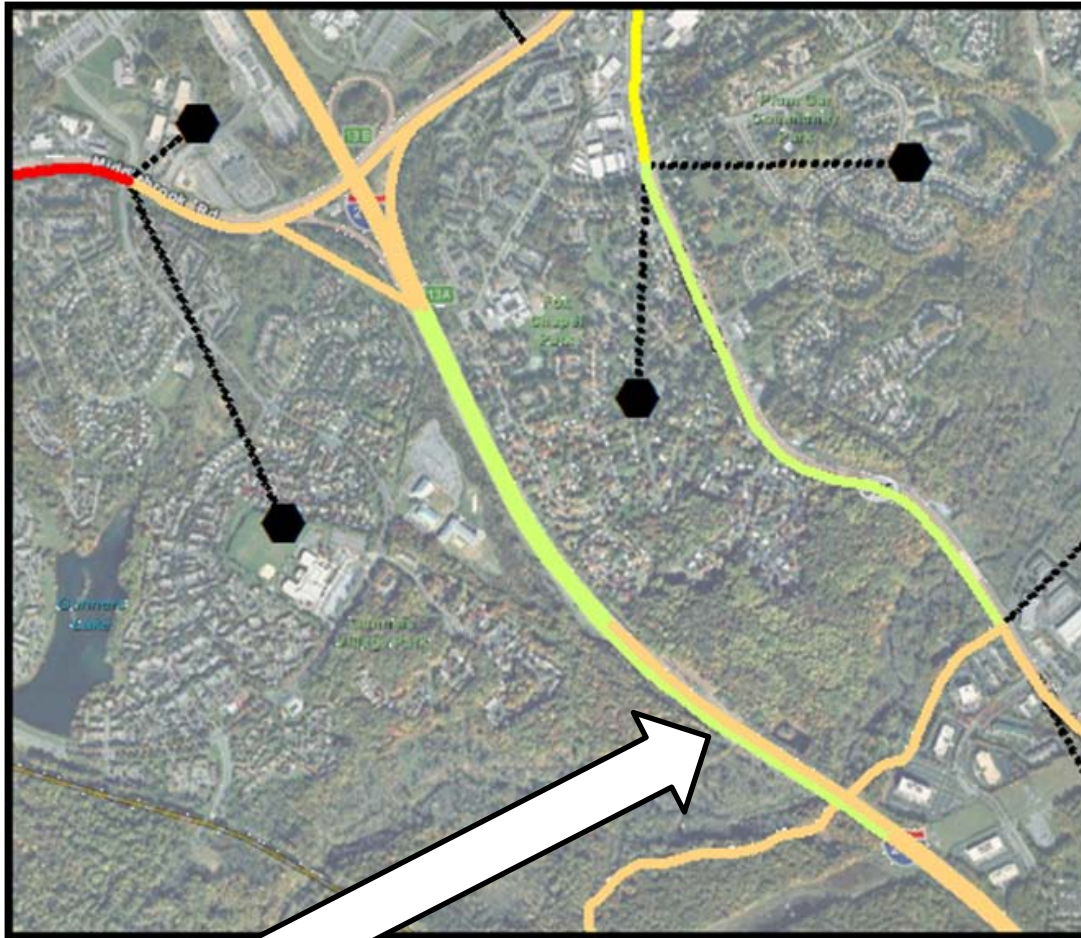
- Zonal one-mile “floating” densities are computed
- Area type class code (1-6) is assigned based on population and job density ranges.
- Directional links are related to nearest zone
 - based on the minimum distance between centroid and link midpoint
- Area type of the nearest zone centroid is assigned to the link to determine link capacity and free-flow speed.
- Staff notes some problems exist with this approach on directional freeway links

Area-type code specifications

Area Type	Name	One-Mile "Floating" Population Density (Pop/Sq mi)	One- mile "Floating" Employment Density (Emp/Sq mi)						
			0-100	101- 350	351- 1,500	1,501- 3,550	3,551- 13,750	13,751- 15,000	15,001 +
1	High mixed employment and population density								
2	Medium/high mixed density								
3	Medium employment density								
4	Medium population density	0-750	6	6	5	3	3	3	2
5	Low density	751-1,500	6	5	5	3	3	3	2
6	Rural	1,501-3,500	6	5	5	3	3	2	2
		3,501-6,000	6	4	4	3	2	2	1
		6,001- 10,000	4	4	4	2	2	2	1
		10,000- 15,000	4	4	4	2	2	2	1
		15,001+	2	2	2	2	2	1	1

Examples of Assigned Area Type Coding Problems

I-270–Montgomery County south of Middle Brook Road



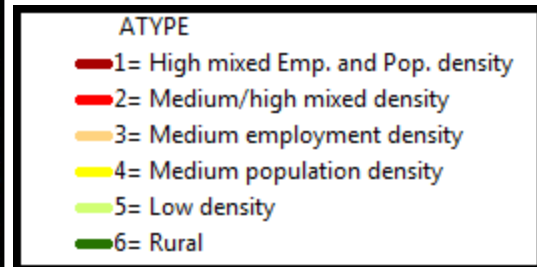
Adjacent directional freeway links are assigned different area type codes

ATYPE	
1	High mixed Emp. and Pop. density
2	Medium/high mixed density
3	Medium employment density
4	Medium population density
5	Low density
6	Rural

Capital Beltway / I-495 -Montgomery County east of Old Georgetown Road



Adjacent directional freeway links are assigned different area type

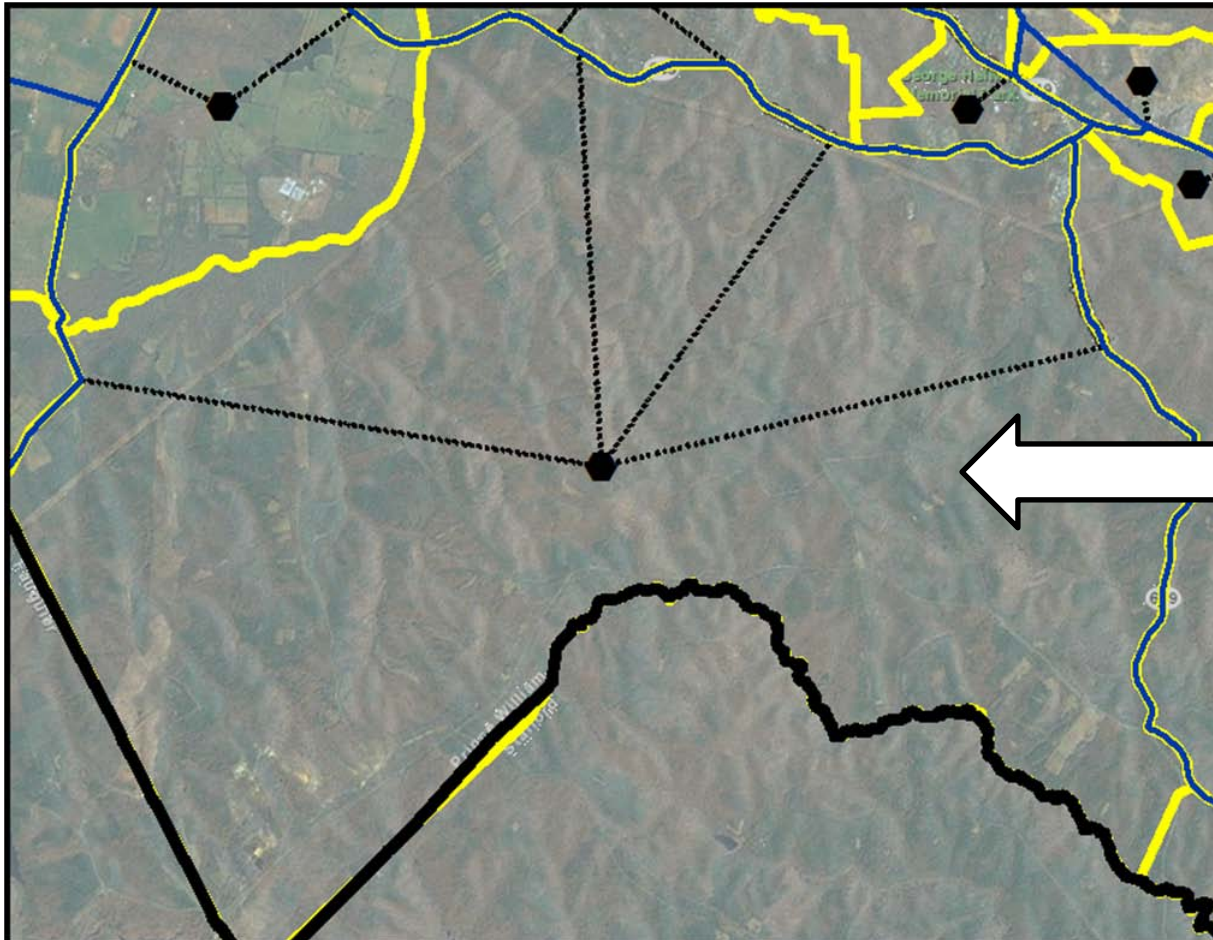


Centroid connectors review

- Centroid connectors review includes:
 - adding centroid connectors, or
 - removing centroid connectors

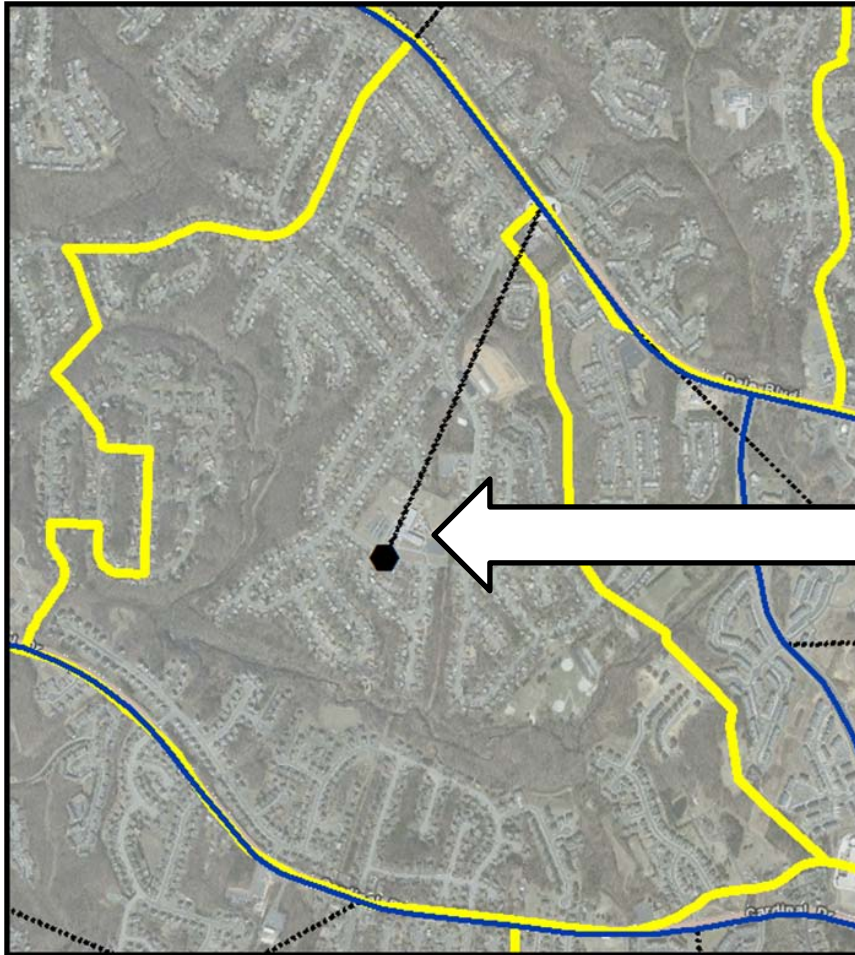
Example of Centroid Connector Problems

TAZ- 2816 @ the boarder of Prince William County and Stafford County



Sparsely populated TAZ (8 HHs) with excessive number of centroid connectors assigned. Consider removing connectors.

TAZ- 2733 Prince William County



Well populated TAZ
(1,339 HHs) with
one centroid
connector assigned.
Consider adding one
or more connectors.

Next Steps

- Prepare plots of year-2007 regional highway network links superimposed over aerial photography for each jurisdiction:
 - Maps will identify area type and facility type codes assigned to each link.
- Obtain the latest FFC system maps from state DOTs.
- Refine facility-type codes to rectify discontinuity problems.
- Determine where zone area-type code “overrides” are warranted.
- Area type discontinuity problems on links will not be easy to fix. Consider rethinking the mechanical process for assigning zonal area types to links.
- Check existing centroid connectors against aerial photography .