

# Subdivision Staging Transportation Recommendations

Planning Board  
Worksession  
March 31, 2016

# DISCUSSION TOPICS

Background and context  
Recommended approach  
Next steps and schedule



# RECOMMENDED APPROACH INFLUENCED BY

Literature review

Speakers series

TISTWG

Public meetings

Planning Board guidance

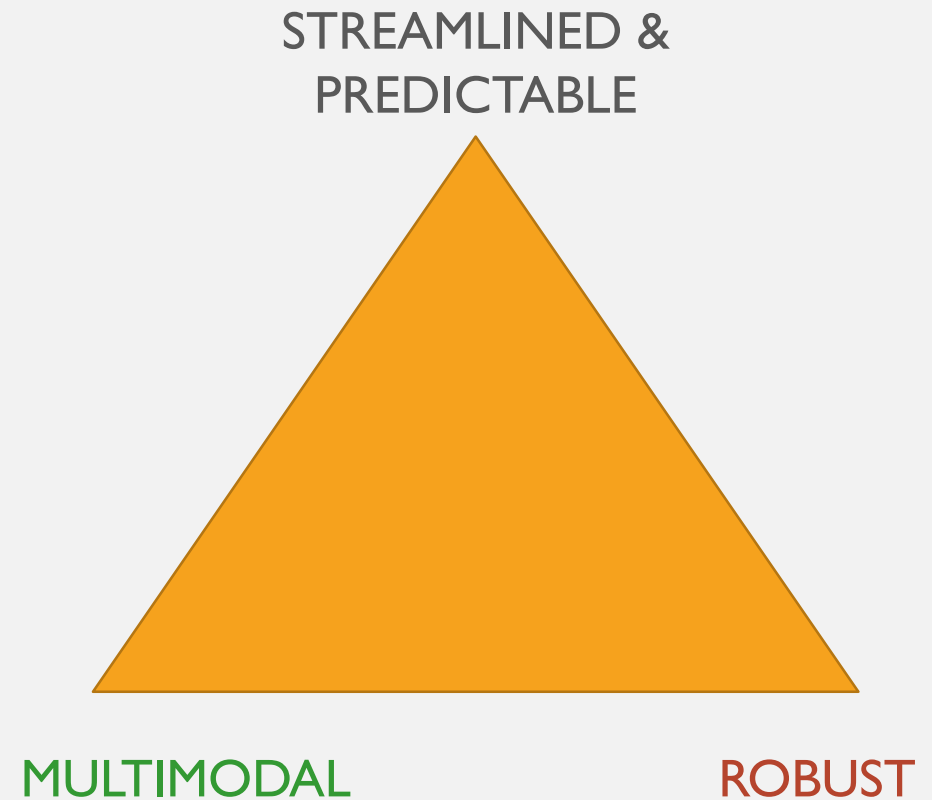


## TISTWG OBJECTIVES FOR LATR

Streamlined &  
predictable

Less auto-centric, more  
multimodal

More robust technical  
analysis (delays, not CLV)



# COUNTYWIDE CONCEPTS

## Streamlined & predictable

LATR streamlined to allow payment in lieu implementing mitigation

Fewer studies – core area payment in lieu, new tripgen rates, and person-trip thresholds

## Less auto-centric, more multimodal

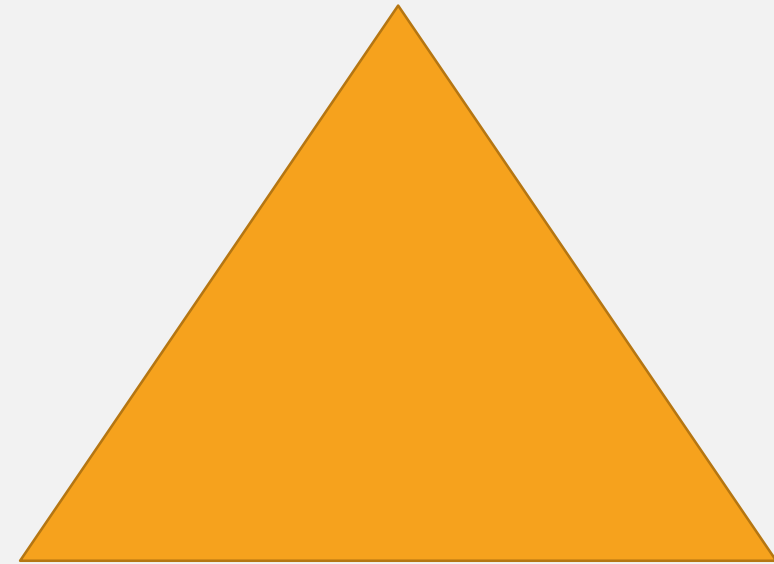
Transit accessibility as areawide measure of adequacy considering sensitivity BRT performance

## More robust technical analysis

Greater reliance on operations rather than CLV

VMT and NADMS as tools for non-regulatory areawide monitoring and study inputs; case-specific monitoring for regulatory review if applicant requests

STREAMLINED &  
PREDICTABLE



MULTIMODAL

ROBUST

# NEW POLICY AREA IDEAS

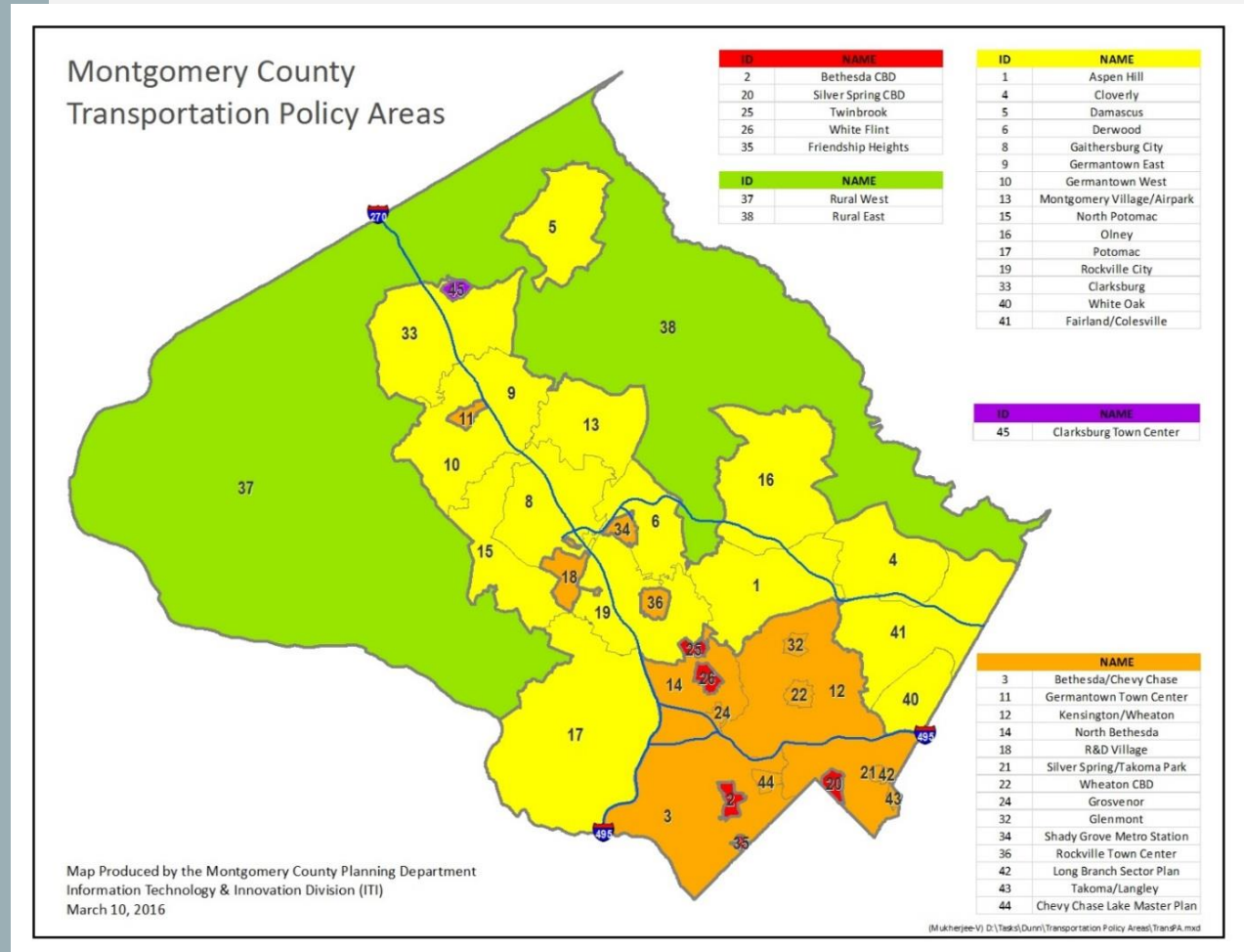
February 18 discussion on policy area groups:

Core

Corridor

Residential

Rural



## NEW POLICY AREA IDEAS

What matters where?

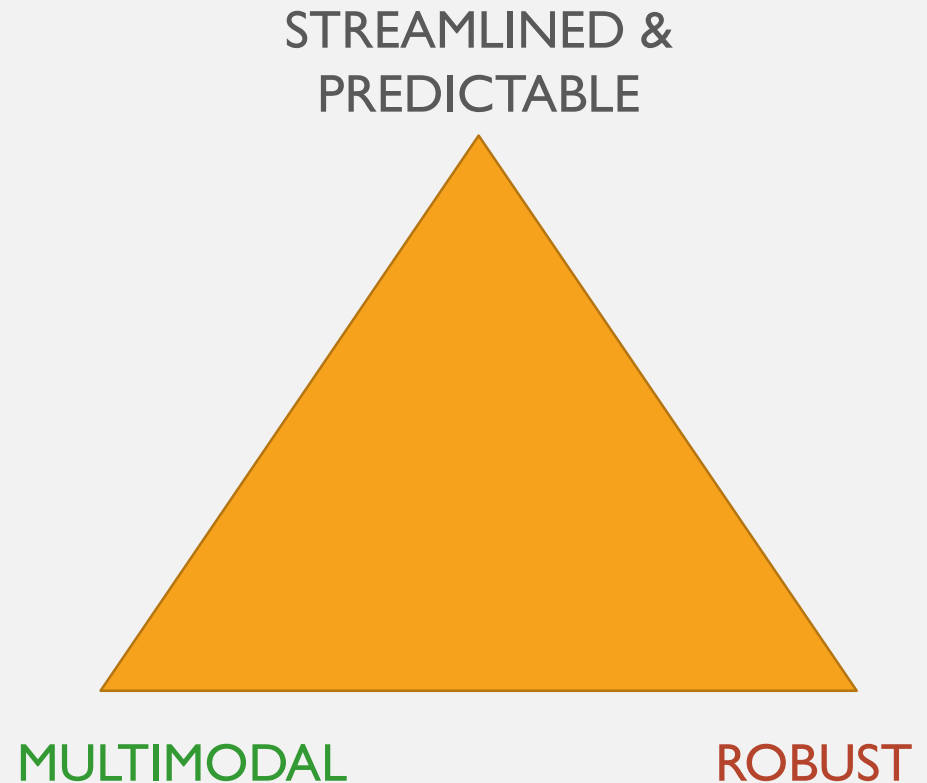
Core

Corridor

Residential

Rural

Challenge: The importance of attaining all three objectives is highest in core areas and lowest in rural areas. For core areas, proposal is to streamline private sector participation and conduct robust and multimodal public sector monitoring.



## AREAWIDE MEASURES

### Options:

Transit Accessibility

NADMS

VMT

### Considerations:

Sensibility

Ability to forecast

Relevance to master  
plan implementation

## Examination

How does each option compare across:

- Locations (policy areas)
- Timeframes (current/future)
- **Additional Transit Facilities** (test sensitivity to presence or absence of Purple Line and Corridor Cities Transitway in 2040 forecasts)



# SYNTHESIS OF APFO POLICY LEVERS

## Policy Levers:

Areawide test

LATR

Mitigation payments and impact taxes

## Considerations:

“Adequacy”

Efficient resource allocation

Relevance to master plan implementation

## Where have we been?

- Defined context by categorizing policy areas
- Considered policy objectives
- Discussed areawide measures/metrics
- Established conceptual framework based on a new areawide test

## Where are we now?

- Forecasting metrics – how sensitive are the proposed areawide metrics to change over time? How sensitive are they to LRT/BRT?

## Where are we headed?

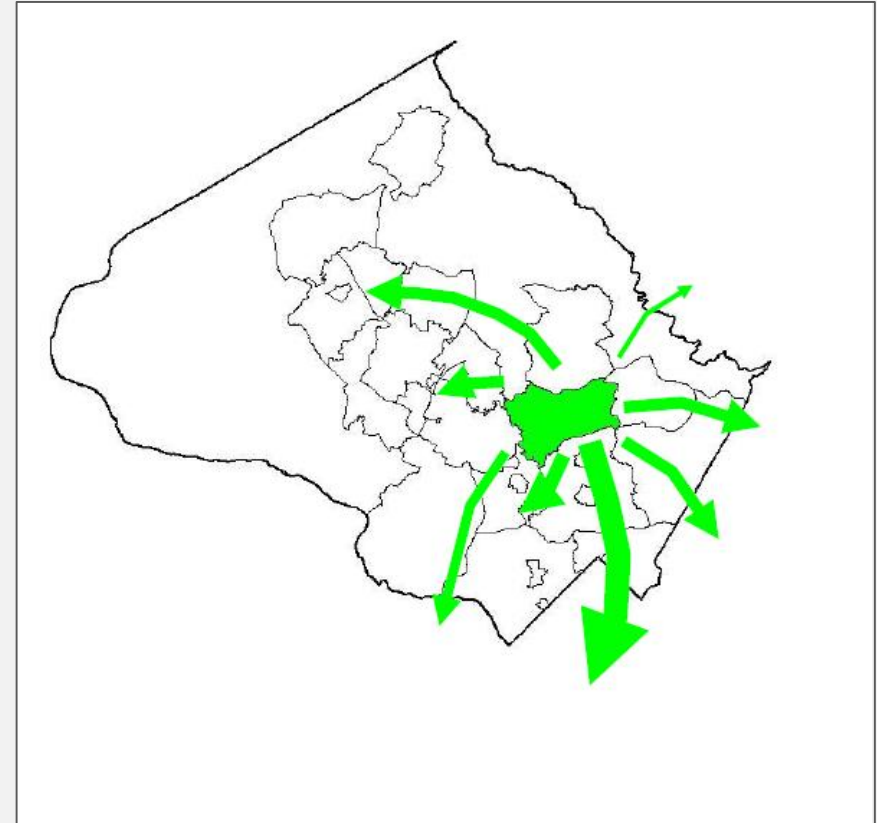
- Select areawide metric(s)
- Define adequacy
- Consider reasonable areawide payments (local + areawide + impact tax)

## METRICS DEFINITION

### **Transit Accessibility to Jobs Within 45 minutes**

Number of regional jobs  
available within 45 minutes by  
walk-access transit from  
households in each Policy Area

Travel/4 model TAZ data  
aggregated to Policy Area totals

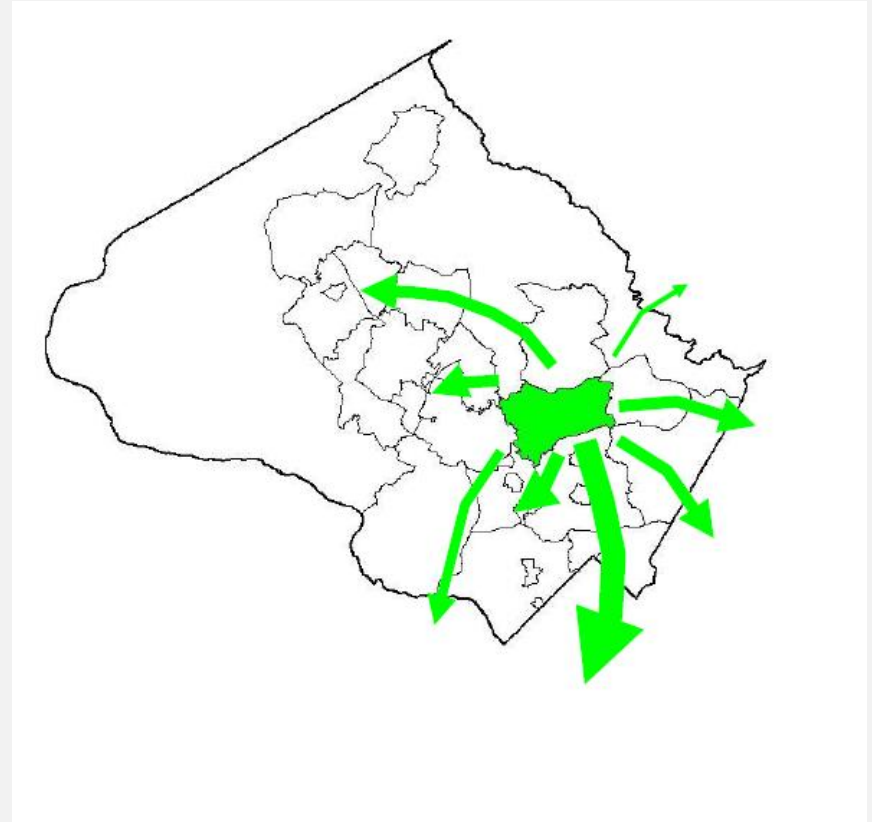


## METRICS DEFINITION

### Non-Auto Driver Mode Share (NADMS)

Percentage of trips to work by walk, bike, transit, auto passenger from households in each Policy Area

Travel/4 model TAZ data aggregated to Policy Area totals

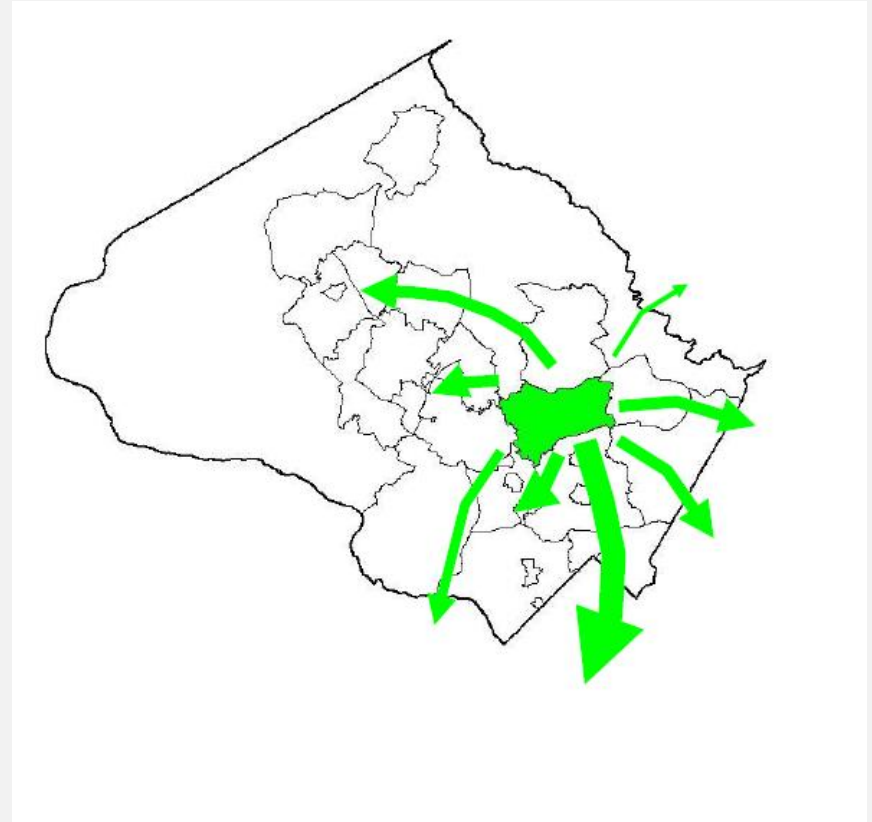


## METRICS DEFINITION

### Vehicle Miles of Travel (VMT)

Average trip length by auto drivers from households within each Policy Area

Travel/4 model TAZ data aggregated to Policy Area totals



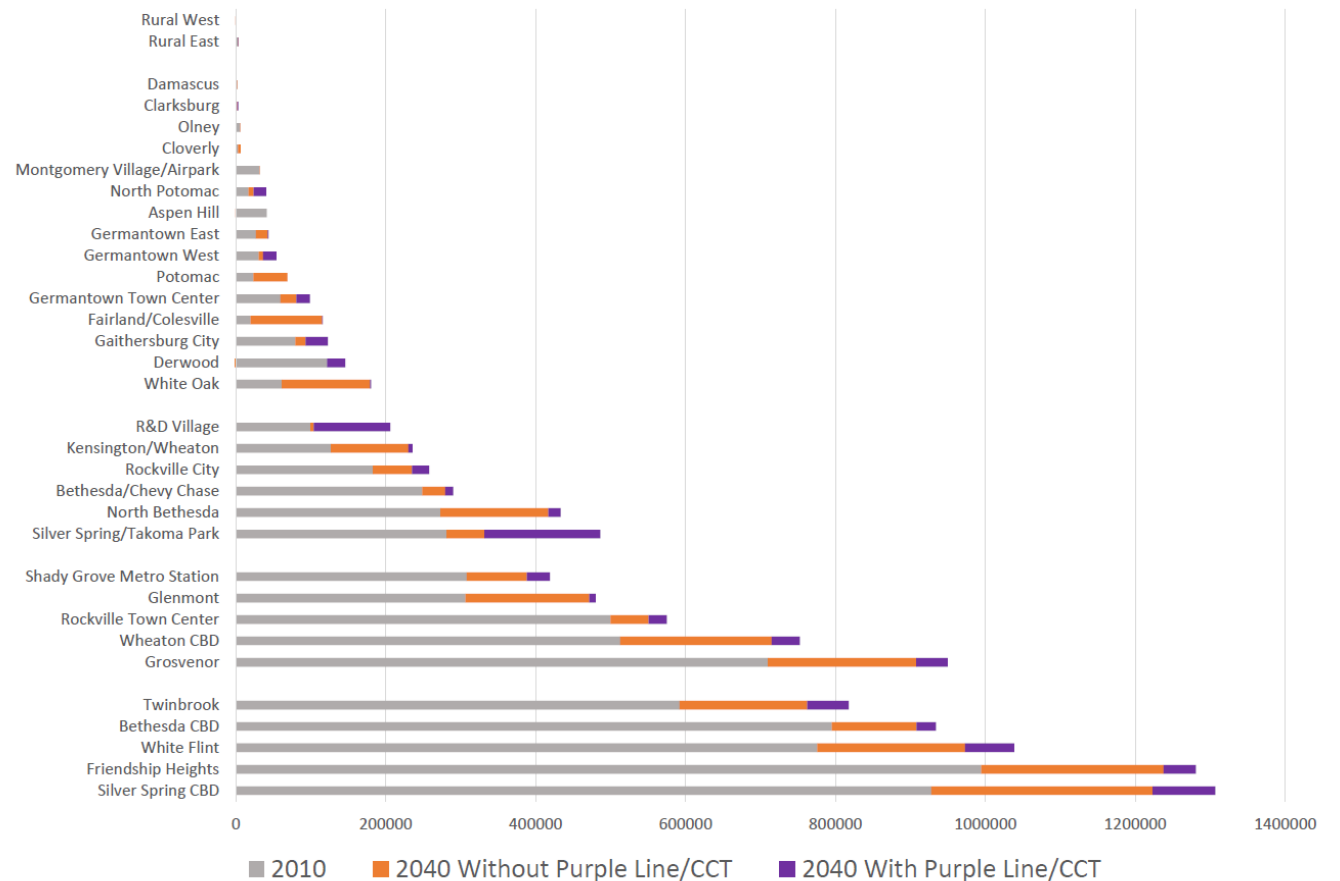
# TRANSIT ACCESSIBILITY

**Sensible:** Logically and highly responsive to both land use and transportation changes

**Ability to forecast:** Related to model inputs rather than outputs (not subject to latent demand)

**Relevant:** Measures progress towards transit system implementation

Transit Accessibility to Jobs Within 45 Minutes by Policy Area



# NADMS

**Less sensible:** Mildly responsive to land use and transportation changes

**Lower ability to forecast:** Travel/4 model “lumpiness” in CBDs, latent demand concerns

**Less relevant:** Only measures progress towards plan implementation/adequacy where NADMS specified by policy

Policy Area	Name	NADMS (Productions)				NADMS (Attractions)			
		2010	2040 Without PL/CCT	2040 With PL/CCT	Effect of PL/CCT	2010	2040 No PL/CCT	2040 Base	Effect of PL/CCT
1	Aspen Hill	32.09%	35.26%	35.28%	0.02%	14.59%	16.75%	16.81%	0.06%
2	Bethesda CBD	58.73%	64.04%	64.38%	0.34%	46.77%	54.98%	55.47%	0.49%
3	Bethesda/Chevy Chase	42.18%	40.15%	40.33%	0.17%	34.73%	42.68%	42.85%	0.17%
4	Cloverly	26.16%	27.92%	27.98%	0.07%	9.01%	10.46%	10.50%	0.03%
5	Damascus	21.61%	27.83%	27.81%	-0.02%	7.86%	8.43%	8.45%	0.02%
6	Derwood	30.55%	33.48%	34.26%	0.78%	16.64%	20.33%	20.71%	0.38%
8	Gaithersburg City	32.56%	38.34%	39.40%	1.07%	17.50%	21.59%	22.53%	0.94%
9	Germantown East	27.55%	32.20%	32.83%	0.63%	14.06%	17.70%	18.29%	0.59%
10	Germantown West	28.07%	32.48%	33.55%	1.06%	14.01%	17.65%	18.79%	1.15%
11	Germantown Town Center	32.89%	38.68%	39.95%	1.27%	16.62%	20.77%	21.50%	0.73%
12	Kensington/Wheaton	40.88%	45.78%	45.83%	0.05%	19.49%	24.22%	24.36%	0.14%
13	Montgomery Village/Airpark	29.76%	33.42%	33.79%	0.37%	13.85%	15.45%	15.59%	0.13%
14	North Bethesda	41.36%	45.08%	45.18%	0.10%	22.27%	29.81%	29.93%	0.12%
15	North Potomac	23.19%	26.22%	27.66%	1.44%	9.81%	12.30%	12.91%	0.61%
16	Olney	25.77%	27.71%	27.80%	0.09%	9.82%	10.95%	10.98%	0.03%
17	Potomac	26.28%	26.93%	27.08%	0.15%	13.83%	18.94%	19.05%	0.11%
18	R&D Village	32.47%	37.28%	40.63%	3.35%	18.20%	23.65%	26.43%	2.78%
19	Rockville City	35.54%	38.38%	39.43%	1.05%	18.04%	23.58%	25.17%	1.59%
20	Silver Spring CBD	61.34%	68.19%	68.57%	0.38%	50.20%	56.41%	56.89%	0.48%
21	Silver Spring/Takoma Park	49.74%	57.14%	57.15%	0.00%	33.71%	41.47%	41.93%	0.46%
22	Wheaton CBD	51.82%	57.26%	57.30%	0.04%	26.28%	31.81%	31.95%	0.14%
24	Grosvenor	50.49%	55.77%	55.98%	0.21%	24.49%	30.34%	30.50%	0.16%
25	Twinbrook	45.35%	56.63%	56.88%	0.25%	28.42%	34.50%	34.63%	0.13%
26	White Flint	49.55%	53.86%	54.04%	0.18%	28.86%	35.48%	35.61%	0.13%
32	Glenmont	46.63%	50.75%	50.76%	0.01%	23.77%	28.55%	28.60%	0.05%
33	Clarksburg	22.07%	27.49%	28.24%	0.75%	7.30%	11.38%	11.48%	0.09%
34	Shady Grove Metro Station	39.35%	48.15%	51.02%	2.88%	21.25%	24.62%	25.25%	0.63%
35	Friendship Heights	64.27%	66.00%	66.05%	0.05%	48.83%	57.51%	57.56%	0.05%
36	Rockville Town Center	44.95%	50.10%	50.29%	0.19%	26.42%	31.76%	31.87%	0.11%
37	Rural West	18.99%	21.33%	21.88%	0.54%	7.56%	10.57%	10.69%	0.12%
38	Rural East	22.95%	26.57%	26.77%	0.20%	8.70%	10.29%	10.33%	0.03%
40	White Oak	40.03%	46.71%	46.86%	0.14%	15.58%	21.28%	21.43%	0.15%
41	Fairland/Colesville	29.87%	35.24%	35.39%	0.15%	13.42%	18.70%	18.82%	0.11%
99	County	35.98%	39.88%	40.37%	0.48%	25.19%	30.91%	31.53%	0.62%

## Preliminary VMT results

# VMT

**Less sensible:** Site-level monitoring an option but reduces applicant predictability

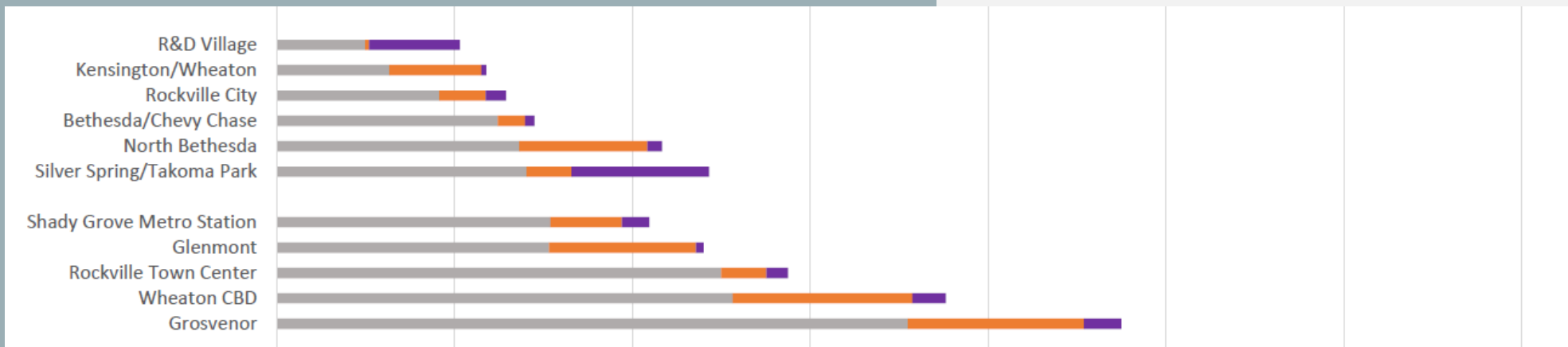
**Lower ability to forecast:** Travel/4 model “lumpiness” in CBDs, latent demand concerns

**Mixed relevance:** Related to congestion concerns, part of national interest led by California’s SB 743, but not related to master plan implementation/adequacy

Policy Area	Name	2010	2040 Without Purple Line/CCT	2040 With Purple Line/CCT	Effect of Purple Line/CCT
3	Bethesda/Chevy Chase	24.4	25.7	25.8	0.1
35	Friendship Heights	18.1	9.2	9.3	0.0
2	Bethesda CBD	19.7	8.3	8.3	0.0
21	Silver Spring/Takoma Park	24.5	15.2	15.1	0.0
20	Silver Spring CBD	20.6	7.0	6.9	0.0
12	Kensington/Wheaton	27.0	21.5	21.5	0.0
22	Wheaton CBD	24.4	12.5	12.4	0.0
32	Glenmont	25.9	19.6	19.6	0.0
14	North Bethesda	25.3	20.9	21.0	0.0
24	Grosvenor	23.9	14.4	14.3	0.0
26	White Flint	22.1	10.1	10.1	0.0
25	Twinbrook	20.5	9.9	9.9	0.0
19	Rockville City	25.9	20.7	20.6	0.0
36	Rockville Town Center	23.5	13.7	13.7	0.0
6	Derwood	27.4	29.9	30.1	0.2
34	Shady Grove Metro Station	23.6	16.3	16.1	-0.1
10	Germantown West	35.6	33.9	33.7	-0.2
11	Germantown Town Center	32.8	24.3	24.1	-0.2
1	Aspen Hill	29.4	22.3	22.4	0.1
4	Cloverly	36.3	38.7	38.7	0.0
5	Damascus	47.1	49.9	50.0	0.1
8	Gaithersburg City	28.5	25.5	25.5	-0.1
9	Germantown East	33.2	33.1	33.0	0.0
13	Montgomery Village/Airpark	30.9	30.3	30.4	0.1
15	North Potomac	31.2	39.2	38.8	-0.4
16	Olney	36.6	40.6	41.2	0.5
17	Potomac	30.5	39.6	39.6	0.0
18	R&D Village	28.3	21.0	20.6	-0.4
33	Clarksburg	40.6	44.4	44.6	0.1
37	Rural West	47.5	59.8	59.8	0.0
38	Rural East	47.3	50.8	51.0	0.2
40	White Oak	28.1	19.1	19.0	-0.1
41	Fairland/Colesville	32.9	26.7	26.6	0.0
99	Total	29.6	25.9	25.9	0.0

## EMPLOYING A NEW AREAWIDE METRIC

- Need to define adequacy
  - Organize by policy area groupings (like Corridor areas below)
  - Set threshold based on accessibility goal (do we expect R&D Village to achieve the same accessibility as Wheaton CBD?)
  - Compare current accessibility to forecast accessibility (in 10 years to forecast accessibility in 2040?)
- Establish relationship to impact tax





## COMBINING AREAWIDE AND LOCAL AREA EVALUATION CONCEPTS

	<b>Core</b>	<b>Corridor</b>	<b>Residential – Streets</b>	<b>Residential – Roads</b>	<b>Rural</b>
<b>New Areawide Test</b>	Monitoring	Applies	Applies	Applies	Does not apply
<b>LATR using mode-specific trip generation with multimodal intersection delay or CLV</b>	Monitoring	Applies multimodal intersection delay	Applies multimodal intersection delay	Applies CLV	Applies CLV
<b>Development required to:</b>	Impact Tax	Provide local area study, check policy area adequacy, make mitigation payment, if applicable, and pay impact tax	Provide local area study, check policy area adequacy, make mitigation payment, if applicable, and pay impact tax	Provide local area study, check policy area adequacy, mitigate, if applicable, and pay impact tax	Provide local area study, mitigate, if applicable, and pay impact tax

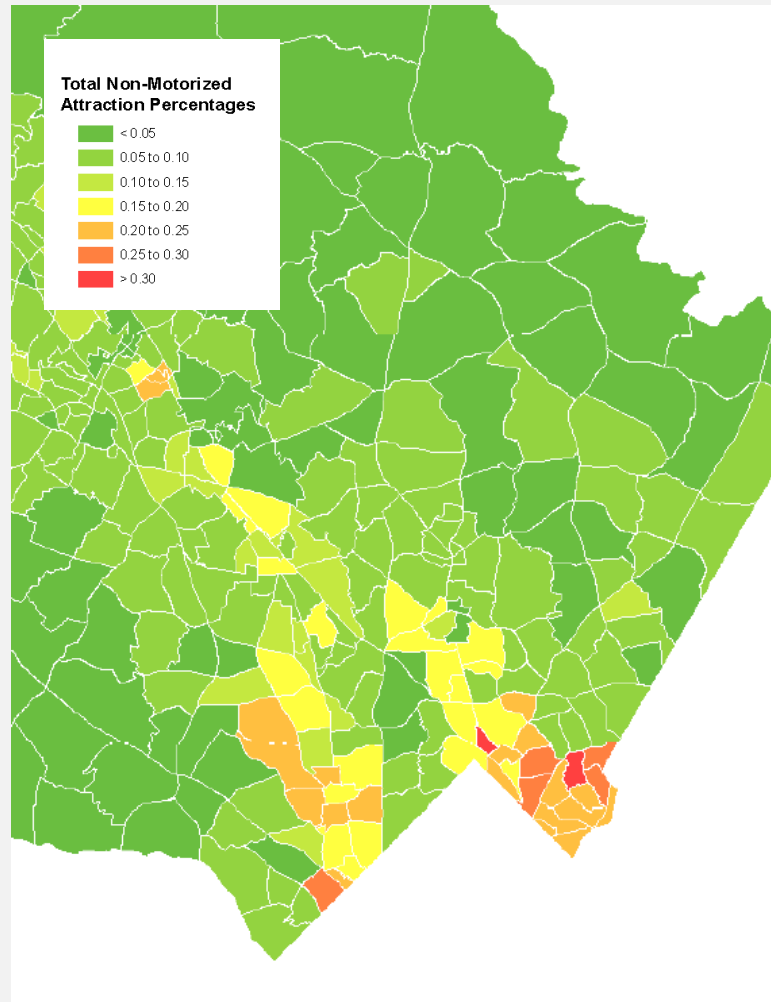
Note: Option to exempt residential applicants with minimal on-site parking based on VMT reduction remains applicable in Core areas to reduce or eliminate payment.

## NEXT STEPS

- Planning Board discussion and guidance today
- April 6 TISTWG meeting
- April 12 Community meeting
- April 14 Planning Board guidance
- Early May Working Draft

RESOURCE SLIDES

# Trip generation update



## Analytic approach

- Based on Transportation Research Board guidance (NCHRP 758)
- Utilizes TRAVEL/4 model relationships to develop context-sensitive mode shares by policy area and land use type (LATR Guidelines lookup table)
- Applies post-processing approach to apply additional mode shift factors for proximity to fixed-guideway transit stations and unbundled parking

# Trip generation update

## Policy Area specific vehicle trip generation rate adjustments

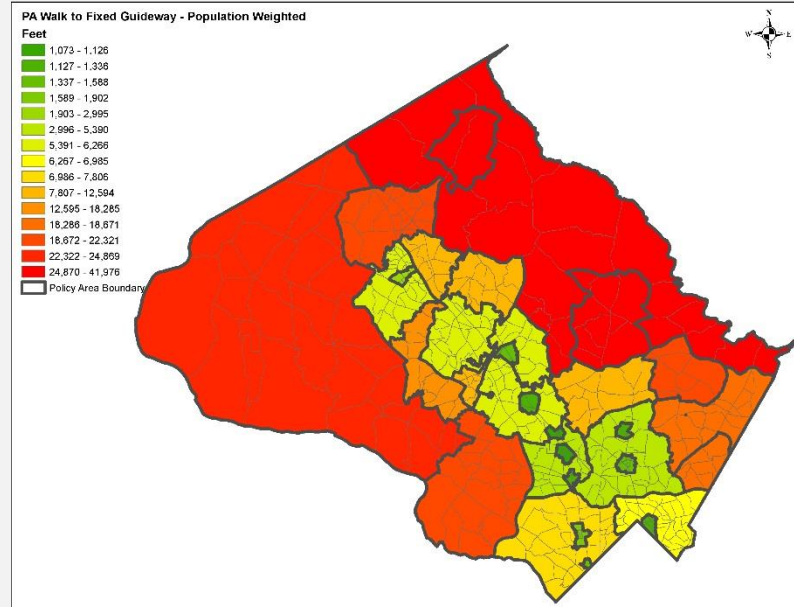
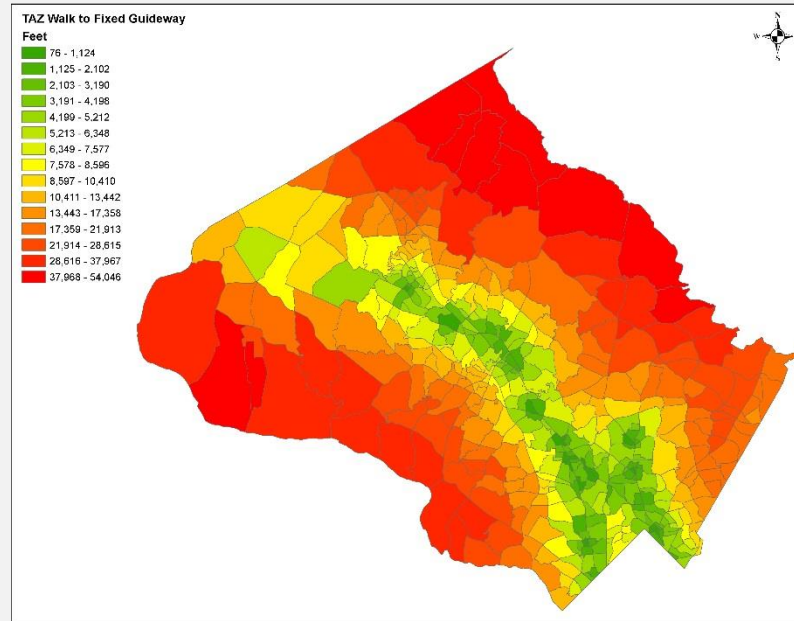
- Based on identifying mode splits by land use type by trip purpose type
- Reflects reduction from basic ITE rate (assumed applied to Rural West policy area)
- Results in adjustment factor lookup table as indicated at left

		ITE Vehicle Trip Reduction Factors			
		Residential	Office	Retail	Other
1	Aspen Hill	97%	98%	99%	97%
2	Bethesda CBD	79%	63%	61%	62%
3	Bethesda/Chevy Chase	87%	81%	85%	79%
4	Cloverly	99%	100%	100%	100%
5	Damascus	100%	100%	100%	100%
6	Derwood	94%	94%	87%	94%
8	Gaithersburg City	88%	86%	74%	85%
9	Germantown East	95%	90%	95%	91%
10	Germantown West	93%	87%	92%	88%
11	Germantown Town Center	85%	89%	77%	88%
12	Kensington/Wheaton	91%	92%	96%	92%
13	Montgomery Village/Airpark	93%	100%	93%	100%
14	North Bethesda	83%	87%	71%	82%
15	North Potomac	97%	100%	100%	100%
16	Olney	99%	100%	99%	100%
17	Potomac	97%	98%	96%	98%
18	R&D Village	89%	88%	80%	90%
19	Rockville City	88%	94%	87%	98%
20	Silver Spring CBD	77%	65%	58%	65%
21	Silver Spring/Takoma Park	83%	83%	82%	84%
22	Wheaton CBD	85%	85%	76%	84%
24	Grosvenor	81%	84%	75%	80%
25	Twinbrook	81%	80%	74%	79%
26	White Flint	79%	78%	72%	78%
32	Glenmont	90%	91%	96%	91%
33	Clarksburg	100%	100%	100%	100%
34	Shady Grove Metro Station	89%	88%	77%	88%
35	Friendship Heights	78%	70%	73%	70%
36	Rockville Town Center	79%	80%	70%	79%
37	Rural West	100%	100%	100%	100%
38	Rural East	99%	99%	98%	100%
40	White Oak	89%	90%	91%	88%
41	Fairland/Colesville	96%	96%	99%	97%

# Trip generation update

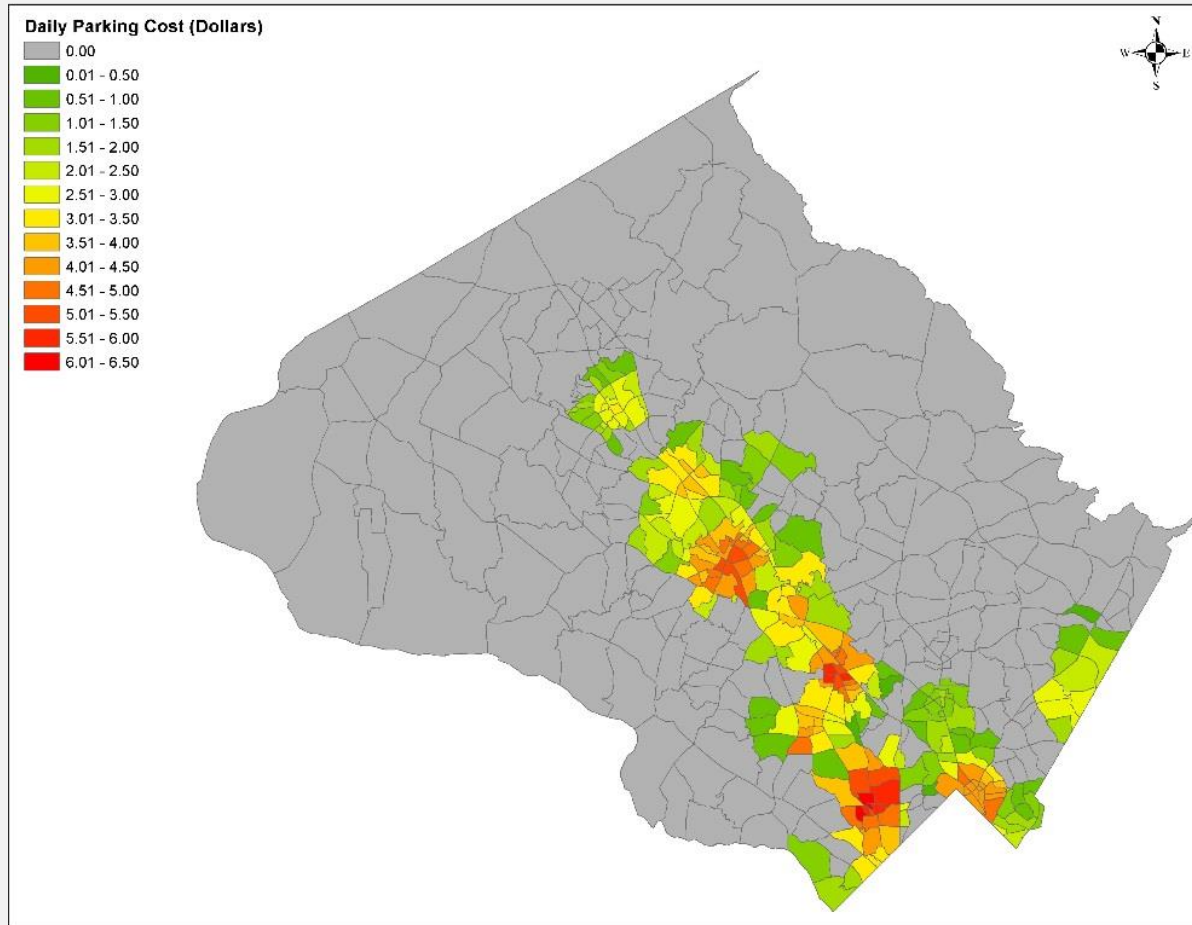
## Transit proximity factor

- Pivots from basic trip adjustment factor as starting point
- Allows individual site to compare proximity to Metrorail/MARC against policy area average



Shift in transit mode from WMATA survey data to be applied in selected policy areas. For instance, in CBDs, would need walking distance within ~1,000 of Metrorail feet to get further discount based on pivoting from MWCOCG model rates.

# Trip generation update



## Parking management factor

- Pivots from basic trip adjustment factor as starting point
- Allows individual site to reduce vehicle trip rates based on parking reduction
- Would apply in areas where land use densities suggests parking management may be effective at changing mode share
- May be limited to areas with Transportation Management Districts to aid with management and monitoring
- Not applicable in Parking Lot Districts

# MODE SPECIFIC TRIPGEN AND ANALYSIS

## 1. For a prototypical MSPA application

Proposed Thresholds	Overall 75 persons	Auto drivers plus passengers	Average Vehicle Occupancy	Auto 75 vehicles	Transit 50 riders	Bicycle 100 persons (in places with bike propensity)	Pedestrian 100 persons
Example peak hour modal splits		68%	1.2	57%	14%	2%	16%
Office - person trips by mode at various levels of development intensity:				Vehicle trips	Transit trips	Bicycle trips	Pedestrian trips
25000 GSF	55	37		31	8	1	9
75000 GSF	165	112		94	23	3	26
125000 GSF	276	188		156	39	6	44
175000 GSF	386	262		219	54	8	62
225000 GSF	496	337		281	69	10	79
275000 GSF	607	413		344	85	12	97
325000 GSF	717	488		406	100	14	115
375000 GSF	827	562		469	116	17	132
425000 GSF	938	638		532	131	19	150
475000 GSF	1048	713		594	147	21	168



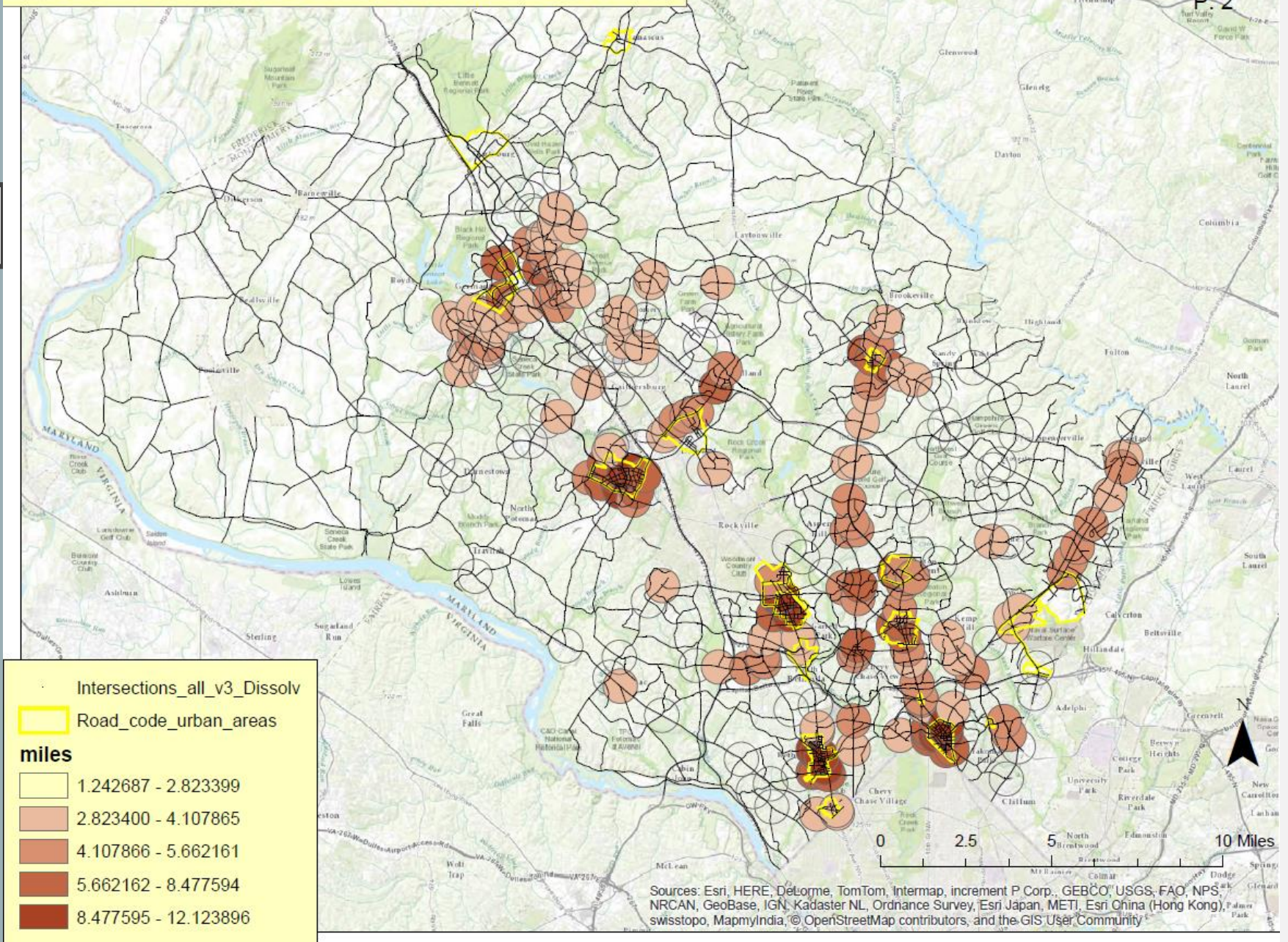
## VMT SCREENING

Type of Development	VMT effect	Qualified as	Effect on existing tests
Type 1: Zero VMT Development	Reduces areawide VMT (only residential applications in Bethesda/Silver Spring with very limited on site parking)	Defined by lookup table in Planning Board Guidelines	No action under LATR, TPAR, or transportation impact taxes
Type 2: Very Low VMT Development	Limited VMT (only residential applications in Bethesda/Silver Spring with relatively limited on site parking)	Defined by lookup table in Planning Board Guidelines	No action under LATR
Type 3: Mitigated VMT Development	Reduction of site VMT by 50% as negotiated in “hard” Traffic Mitigation Agreement	Negotiated Traffic Mitigation Agreement	No action under LATR/TPAR; additional transportation impact tax



# Miles of Road within 0.5 Miles of Major Intersections

DISPERSED GRID INTERSECTIONS



Intersections\_all\_v3\_Dissolv  
Road\_code\_urban\_areas

**miles**

1.242687 - 2.823399
2.823400 - 4.107865
4.107866 - 5.662161
5.662162 - 8.477594
8.477595 - 12.123896

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community