LATR and TPAR Study Status Update

Planning Board Roundtable

12/3/15

Today's discussion

- Study overview
- Four specific topics:
  1. Function and relationship of transportation funding mechanisms (LATR, TPAR, transportation impact taxes)
  2. Pro-rata share concept consideration for Downtown Bethesda Plan
  3. TPAR refinement Update
  4. Trip generation study update
- Next steps and schedule

Study basics

Initial *Subdivision Staging Policy* Work Program

Element	LATR	TPAR
Scope	Full consideration of options (similar to 2012)	More robust transit performance calculations
Working group	~30-member TISTWG (monthly meetings)	Technical staff
Timeframe	Initial recommendations fall 2015 followed by Planning Board and Council review through fall 2016	

Coordinated with

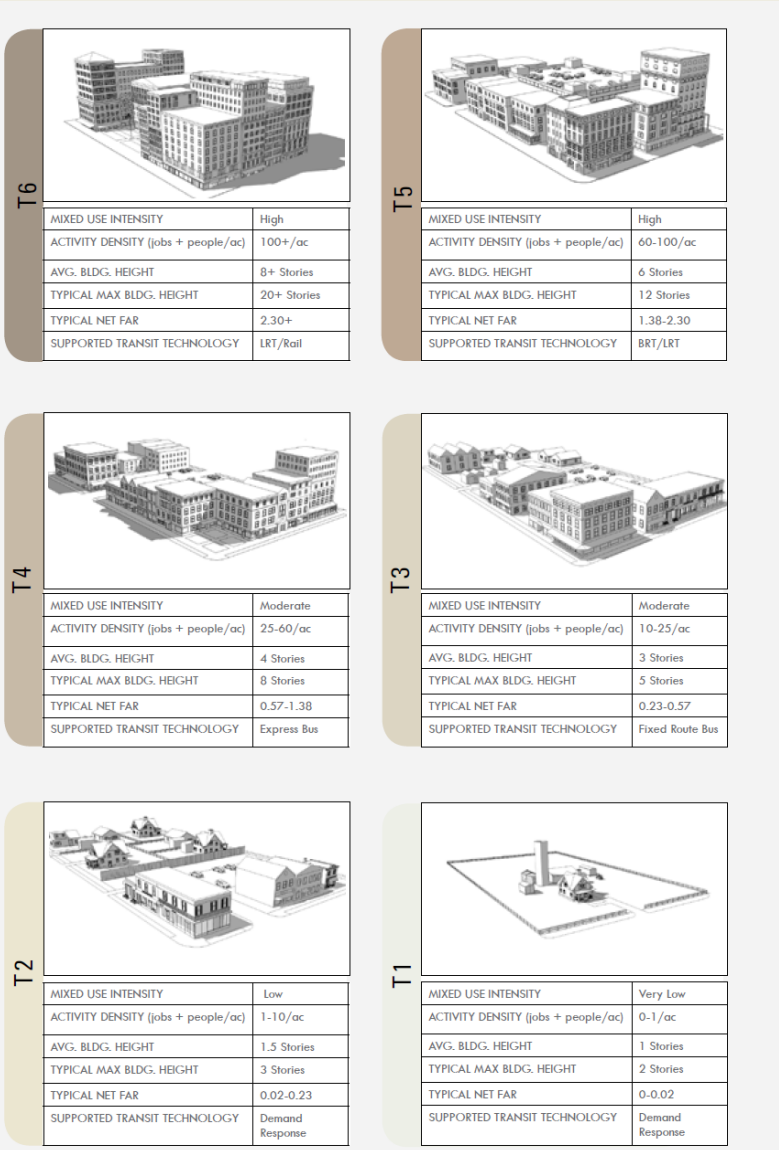
- PHED/Council consideration of SSP Amendment #14-02 for White Oak
- Development of new trip generation rates
- Exploration of new forecasting measures and tools

Board direction to staff

- Explore opportunities to combine LATR / TPAR / tax requirements
- Consider new approaches and tools such as accessibility and VMT
- Incorporate parking as a trip generation indicator

Key Considerations

- Three primary LATR objectives
  - Improve multimodal analysis,
  - Increase predictability,
  - Streamline implementation
- Synergy between LATR, TPAR, and impact taxes
- Multiple land use contexts



T6

MIXED USE INTENSITY	High
ACTIVITY DENSITY (jobs + people/ac)	100+/ac
AVG. BLDG. HEIGHT	8+ Stories
TYPICAL MAX BLDG. HEIGHT	20+ Stories
TYPICAL NET FAR	2.30+
SUPPORTED TRANSIT TECHNOLOGY	LRT/Rail

T5

MIXED USE INTENSITY	High
ACTIVITY DENSITY (jobs + people/ac)	60-100/ac
AVG. BLDG. HEIGHT	6 Stories
TYPICAL MAX BLDG. HEIGHT	12 Stories
TYPICAL NET FAR	1.38-2.30
SUPPORTED TRANSIT TECHNOLOGY	BRT/LRT

T4

MIXED USE INTENSITY	Moderate
ACTIVITY DENSITY (jobs + people/ac)	25-60/ac
AVG. BLDG. HEIGHT	4 Stories
TYPICAL MAX BLDG. HEIGHT	8 Stories
TYPICAL NET FAR	0.57-1.38
SUPPORTED TRANSIT TECHNOLOGY	Express Bus

T3

MIXED USE INTENSITY	Moderate
ACTIVITY DENSITY (jobs + people/ac)	10-25/ac
AVG. BLDG. HEIGHT	3 Stories
TYPICAL MAX BLDG. HEIGHT	5 Stories
TYPICAL NET FAR	0.23-0.57
SUPPORTED TRANSIT TECHNOLOGY	Fixed Route Bus

T2

MIXED USE INTENSITY	Low
ACTIVITY DENSITY (jobs + people/ac)	1-10/ac
AVG. BLDG. HEIGHT	1.5 Stories
TYPICAL MAX BLDG. HEIGHT	3 Stories
TYPICAL NET FAR	0.02-0.23
SUPPORTED TRANSIT TECHNOLOGY	Demand Response

T1

MIXED USE INTENSITY	Very Low
ACTIVITY DENSITY (jobs + people/ac)	0-1/ac
AVG. BLDG. HEIGHT	1 Stories
TYPICAL MAX BLDG. HEIGHT	2 Stories
TYPICAL NET FAR	0-0.02
SUPPORTED TRANSIT TECHNOLOGY	Demand Response

Figure 27 - Illustrations of Typical Block Types by Transect Zone.

LATR Type Hierarchy

Pro-rata share

- Where do we know what we want to build (both public and private)?
- Apply special districts

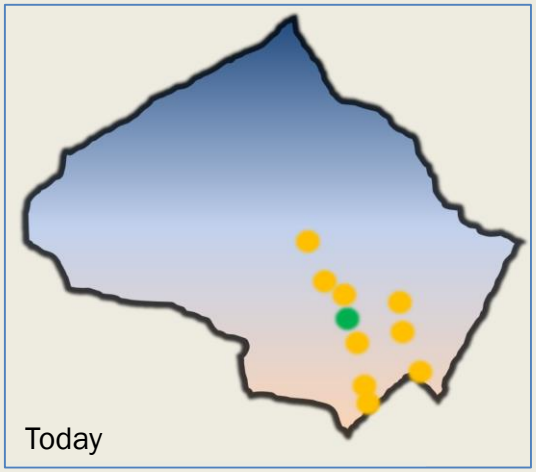
Negotiated Exaction

- Where do we want to emphasize ped, bike, transit?
- Apply equivalent mitigation approaches

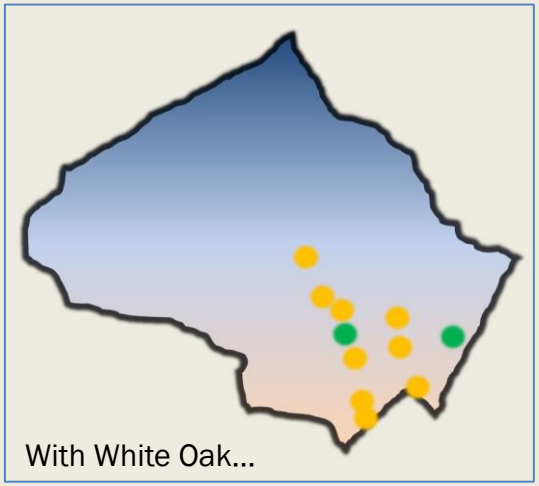
Impact Mitigation

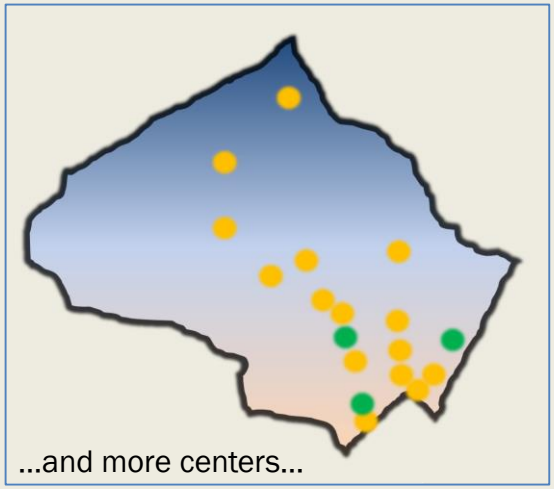
- Where do we want to achieve L/QOS standards (for any or all modes)?
- Apply modal tests

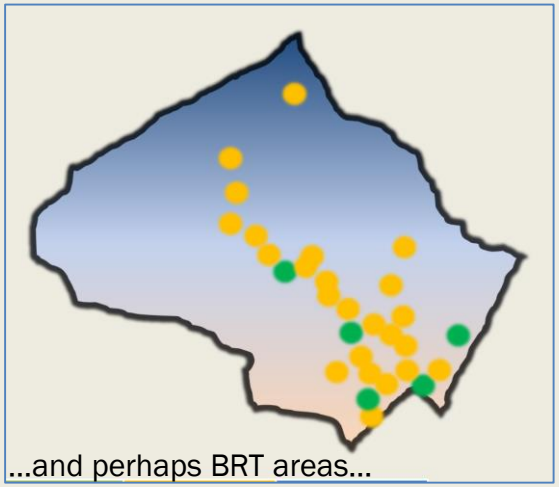
LATR Evolution



- Today, White Flint is the only pro-rata share district and many CBDs/MSPAs have a negotiated exaction approach
- White Oak pro-rata share district is underway
- Over time, both currently defined policy areas and future areas like some BRT stations may change to reflect local needs.







Pro-rata share	Negotiated Exaction	Impact Mitigation

1. Transportation funding mechanisms

Why have tests, exactions, and fees?

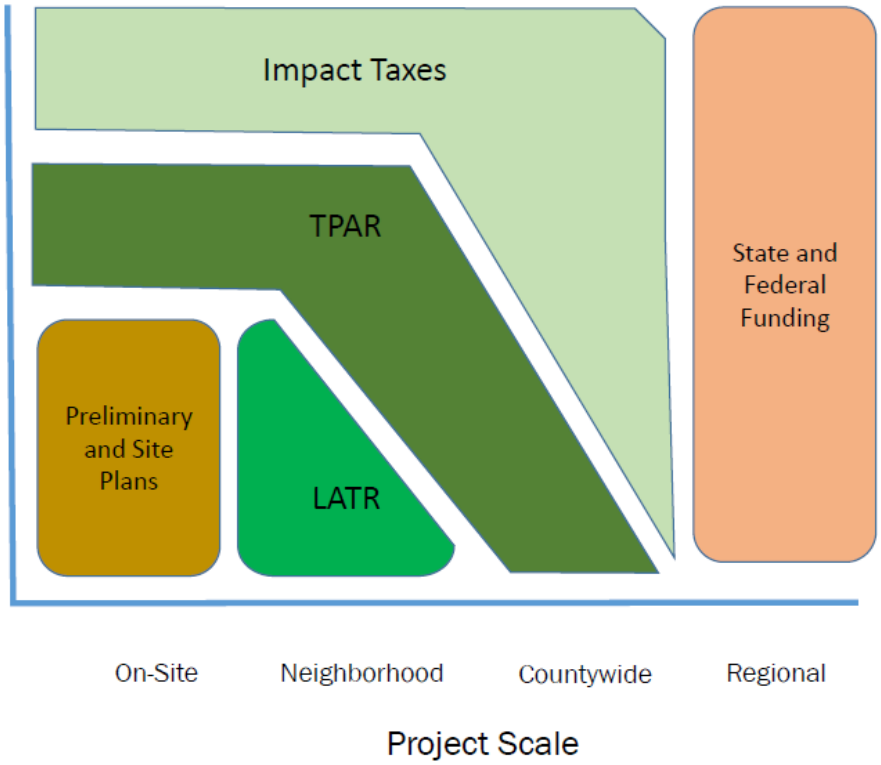
The overarching objectives of the full suite of LATR, TPAR, and impact tax programs is to:

- Ensure master planned public facilities are being implemented in a timely manner consistent with master planned economic growth
- Have new development contribute a fair share of the planned public facilities

Approach has fiscal, legal, and societal equity perspectives (i.e., many constituents want to see tangible public facility or service benefits associated with welcoming new neighbors)

Transportation funding relational concept

Project Scope	Time Horizon	Level of Detail
Master Planning	20+ years	Alignment
Facility Planning	~10 years	Number of stations
Design	~5 years	ROW acquisition
Operations	Now	Shelter upgrades



Boundaries aren't this clear (often on purpose)
Legal processes (SSP and Section 52 of Code) are different
Policies are designed to credit overlaps (and often do)

Transportation funding relational concept

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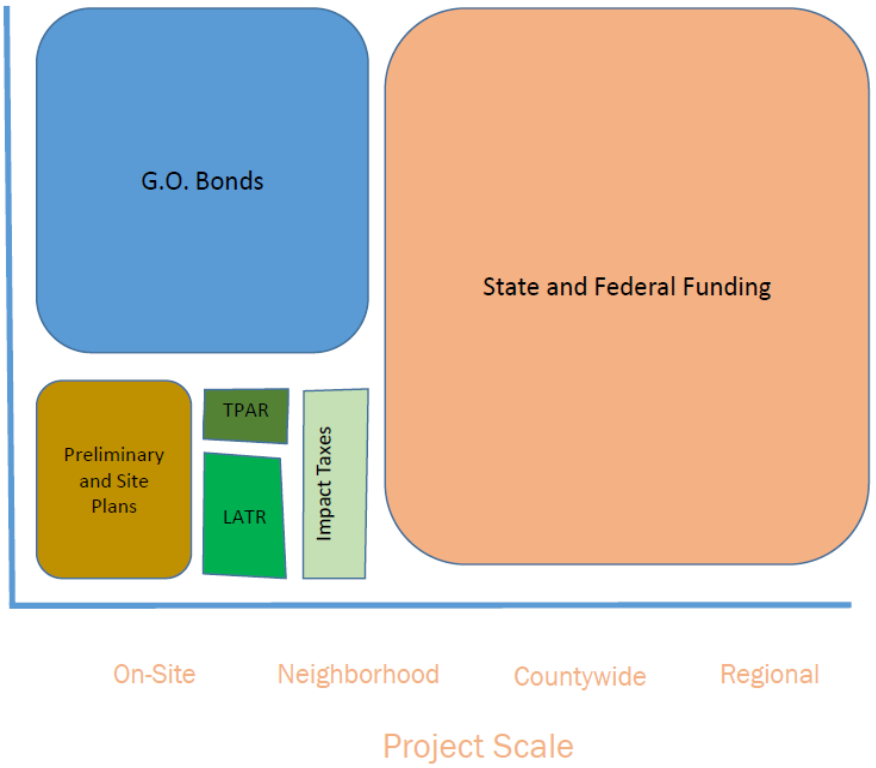
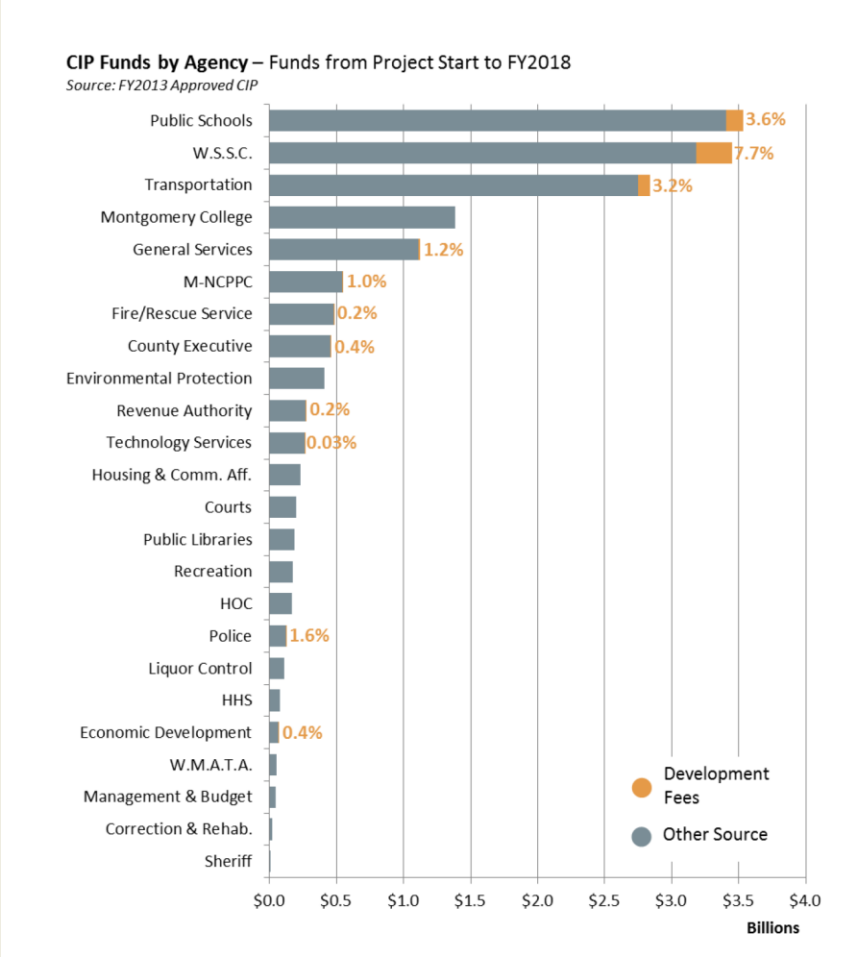


If the blobs were made proportional to capital funding they'd probably look somewhat closer to this….

CIP revenues



Source: 2012-2016 Subdivision Staging Policy Appendix 3

A small portion of the County's Capital Improvement Program is funded by development fees. This reflects:

- The fact that many capital projects are life-cycle replacements
- County policy that private and public sectors should partner in implementing master planned projects

Impact Tax Calculation

The last transportation impact tax calculations date to 2009

Table 3.1. Derivation of Recommended Transportation Impact Tax Rates

	Single-family residential	Multi-family residential	Office	Retail	Industrial	Other commercial
A. Forecast growth, 2005-2030	26,645 DU	67,655 DU	119,533 jobs	18,232 jobs	12,208 jobs	20,027 jobs
B. Square footage of commercial space			29,883,250	7,292,800	5,493,600	10,013,500
C. Vehicle trip generation rates	9.57 per DU	6.72 per DU	3.30 per job	21.47 per KGSF[3]	2.77 per job	2.77 per job
D. Daily vehicle trip ends by land use type	254,993	454,642	394,459	156,577	33,816	55,475
E. Percentage of total daily vehicle trip ends	18.9%	33.7%	29.2%	11.6%	2.5%	4.1%
F. Proportional allocation of $1,182M estimated local capital cost for facility expansion, 2005-2030	$223M	$398M	$345M	$137M	$30M	$49M
G. Resultant unit impact tax rates	$8,380 per DU	$5,884 per DU	$11.56 per GSF	$18.80 per GSF	$5.39 per GSF	$4.85 per GSF

Source: 2007-2009 Growth Policy Infrastructure Financing Chapter

Impact Tax Calculation

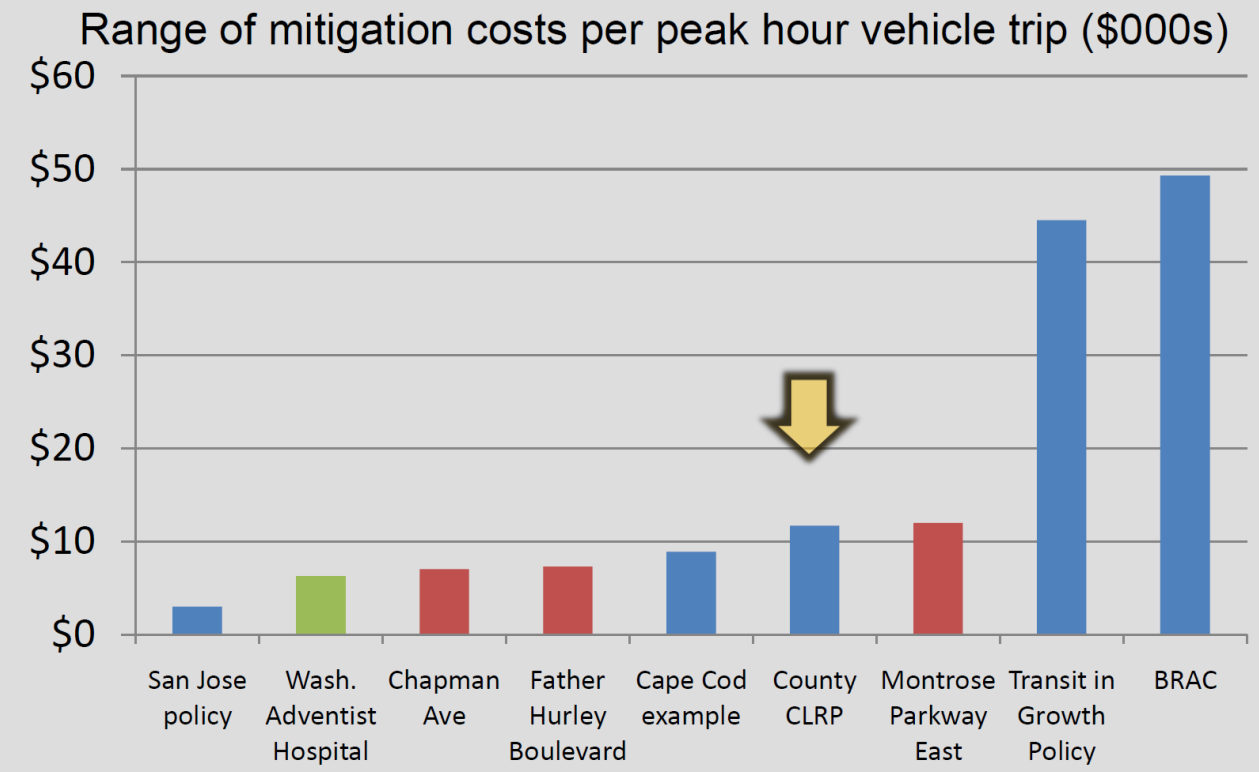
The same analysis led to the $11,000 / peak hour vehicle trip value (since adjusted for inflation) used in LATR.

Sources:

LATR mitigation

Facility Planning studies

Policy judgment



Trips	n/a	900	1700	2600	30	101K	4300	30	900
Cost	n/a	$6M	$12M	$22M	$270K	$1.2B	$51M	$1.3M	$45M

Next Steps

Opportunities for combining LATR/TPAR/impact tax other than in new pro-rata share districts:

- Consideration of policy objectives – what to incent:
  - Development types?
  - Geographic location?
  - Development size?
- Contemplation of broad policy adjustments: might certain MSPAs replace LATR/TPAR/taxes with a *non pro-rata* (defined contribution rather than defined benefit) ad valorem tax?
- Coordination on SSP and Section 52 amendment proposals
- Collaboration with other constituents

2. Bethesda pro-rata share concepts

Pro-Rata Concept

$$\text{PRO RATA SHARE} = \frac{\text{private sector funding for total system supply}}{\text{unit of development demand}}$$

Simple, powerful, flexible concept.

Requires fairly extensive context-sensitive development:

- What functional objectives should the system achieve (i.e., how to define supply and demand)?
- Geographic area?
- Type/timeframe of improvements?
- Interim monitoring / measurement?

Once established, private-sector participation is streamlined.

Pro-rata share elements

Successful pro-rata share district elements:

- Compact geographic area
- Common stakeholder interests
- Inventory of unbuilt transportation system and private development
- Reflects needs and interests of constituents
- Coordinated with state, regional, and local implementers and operators
- Includes regular monitoring and revision processes and schedules

Examples: Delaware TID, Florida MMTDs, special districts in Baltimore, MD and Portland, OR.

Customizing pro-rata share

Characteristic	White Flint	White Oak	Bethesda?
Funded by	Special taxing district	LATR fee in lieu	TBD
Applies to	All commercial properties	New development	New development?
Funding for	Agreed upon set of multimodal projects	Intersection improvements TBD	Bikesharing? Streetscaping? Buffered bike lanes? One-way streets? Purple Line?
Calculation basis	Capital cost of projects	Capital cost of projects	Capital cost of projects?
Payment basis	Annual ad-valorem tax	One-time vehicle trip generation fee	One-time person trip generation fee?
Replaces	LATR, TPAR, and impact tax	LATR	LATR, TPAR and impact tax?
Includes transit facilities?	Yes, as negotiated	No	BRT?
Includes operations?	No	No	TMD/parking? Transit?
Extends beyond plan area?	No	TBD	355 North?
Interim monitoring?	Staging plan, TMD biennial reports, mode shares	TMD biennial reports, other?	TMD biennial reports, other?
Costs updated?	Never?	TBD	Every 4 years?

3. TPAR transit test refinement

TPAR transit refinement

Transit Adequacy Analysis TPAR 2012				
Policy Areas	**Number of Bus Routes**	**Coverage** Area within 1 mile of rail; 1/3 mile of bus (percent)	**Peak Headway** by Bus in PM Peak Hour (minutes)	**Span** Duration of Weekday Bus Service (hours)
"Urban"				
Silver Spring/Takoma Park	35	96%	18.2	18.9
North Bethesda	15	87%	21.3	17.7
Kensington/Wheaton	29	82%	20.7	18.5
Bethesda/Chevy Chase	17	81%	20.4	17.4
Rockville City	16	80%	21.2	17.8
Derwood	7	70%	21.1	18.8
Inadequate versus the Standards shown	**xx.x**	**minimum 80%**	**maximum 14.0 ***	**minimum 17.0**
		* = 20.0 if Metrorail is present		
"Suburban"				
R & D Village	5	76%	25.8	15.6
Gaithersburg City	10	75%	20.0	17.6
Fairland/White Oak	14	48%	19.1	18.8
Germantown West	9	48%	21.8	18.6
Montgomery Village/Airpark	9	47%	21.0	17.9
Aspen Hill	11	44%	19.9	19.3
Germantown East	5	39%	21.4	17.8
Cloverly	2	30%	26.5	8.0 **
North Potomac	7	29%	24.3	17.0
Olney	5	26%	25.0	22.3
Potomac	10	23%	21.1	16.4
Clarksburg	2	16%	30.0	14.1
Inadequate versus the Standards shown	**xx.x**	**minimum 30%**	**maximum 20.0**	**minimum 14.0**
"Rural"				
Rural West	1	*8%*	*30.0*	6.3 **
Damascus	1	*7%*	*20.0*	15.7
Rural East	1	*7%*	*20.0*	15.7
Inadequate versus the Standards shown	**xx.x**	**minimum 5%**	**maximum 30.0**	**minimum 4.0**
** Span includes Peak Period Routes because of absence of All Day Routes				

- Current transit measures of effectiveness are coverage, headway, and span of service for a 10-year forecast period
- Development in areas found inadequate (in yellow) pay a Transportation Mitigation Payment defined as a proportion of the transportation impact tax
- Benefit: links directly to County transit service policies
- Limitation: does not reflect benefit of moving transit vehicles faster, which is a primary benefit of master planned BRT and LRT facilities on exclusive right-of-way

TPAR transit refinement

- Two new measures of transit system adequacy under review.
- Both compare transit and auto performance relative to each other
- Both are viewed as an addition to the TPAR definition of adequacy, not a replacement for the current definitions
- Option 1 (Mobility): How much County transit riders can bypass traffic delays
- Option 2 (Accessibility): How many regional jobs are available to County residents by transit or by car?

TPAR transit refinement

TPAR Option 1: Mobility

- Considers Person Miles of Travel (PMT) by auto and by transit
- Focuses on non-regional, surface facilities (excludes Metrorail and MARC as well as freeways)
- Examination of transit Quality of Service is one of several metrics under consideration

Sample Concept for TPAR Multimodal/Transit MOEs
August 31, 2015 Discussion

AM Peak Period

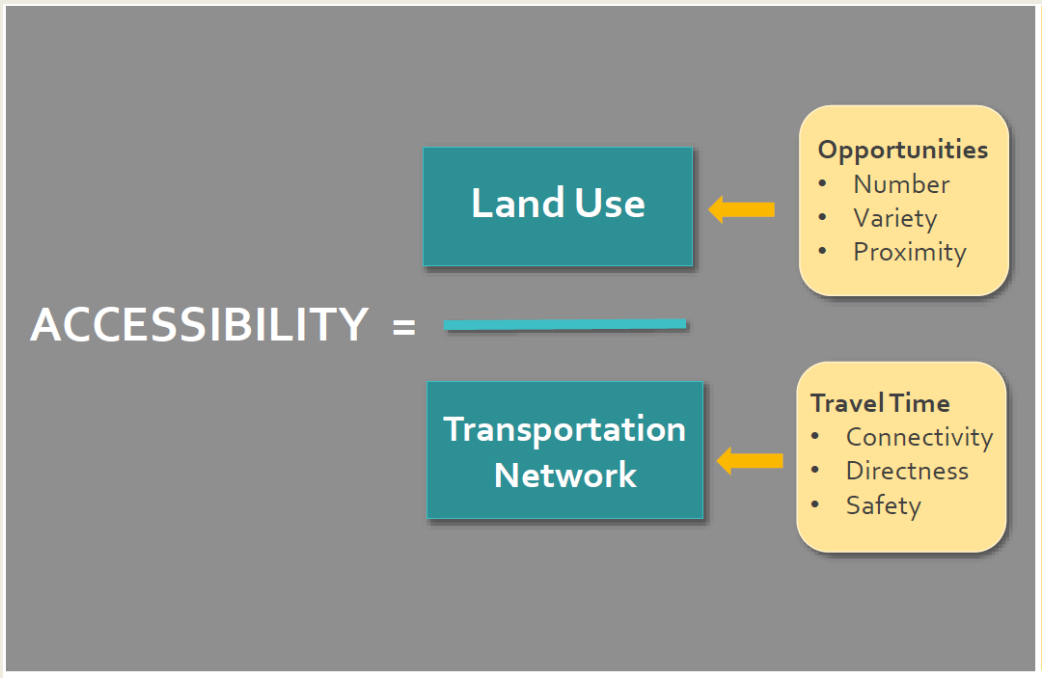
	Auto Info									Transit Info						Multimodal Efficiency							
Policy Area	VMT	VHT (FF)	VHT (Cong)	PMT	PHT	Average Vehicle Occupancy	Speed (FF)	Speed (Cong)	TTI	VMT	VHT	PMT	PHT	Average Vehicle Occupancy	Speed	Total VMT	Total VHT	Total PMT	Total PHT	Transit Mode Share	Transit QOS (Speed)	Multimodal Travel Speed	Average Vehicle Occupancy
Sample Exurban	40000	1200	1500	44000	1650	1.1	33.3	26.7	1.25	180	14.4	1000	80	5.6	12.5	40180.0	1514.4	45000.0	1730.0	2.2%	0.47	26.01	1.12
Sample Suburban	60000	2000	3000	66000	3300	1.1	30.0	20.0	1.50	250	20.8	3000	250	12.0	12.0	60250.0	3020.8	69000.0	3550.0	4.3%	0.60	19.44	1.15
Sample Urban	30000	1200	3000	33000	3300	1.1	25.0	10.0	2.50	125	15.0	2000	240	16.0	8.3	30125.0	3015.0	35000.0	3540.0	5.7%	0.83	9.89	1.16
Freeways	20000	350	500	22000	550	1.1	57.1	40.0	1.43	100	2.5	2000	50	20.0	40.0	20100.0	502.5	24000.0	600.0	8.3%	1.00	40.00	1.19
Metrorail	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	20	1.6	5000	400	250.0	12.5	20.0	1.6	5000.0	400.0	100.0%	#DIV/0!	12.50	250.00
MARC	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	6	0.2	1000	40	166.7	25.0	6.0	0.2	1000.0	40.0	100.0%	#DIV/0!	25.00	166.67
Total	150000	4750	8000	165000	8800	1.1	31.6	18.8	1.68	681	54.6	14000	1060	20.6	13.2	150681.0	8054.6	179000.0	9860.0	7.8%	0.70	18.15	1.19

Notes:
Input values from MWCOG model in blue cells
May need to infer PMT for autos (1.1 coded in example above) or use a regional approach to address average occupancy
Transit VMT based on individual route coding with headway info expanded to 3 hour peak
Transit QOS / Speed expected to be a primary policy area objective linked to TRB's TCQOS; one key is to know how much it improves with BRT (CCT and Purple Line are 2040 CLRP indicators)

TPAR transit refinement

TPAR Option 2: Accessibility

- Considers Multimodal Accessibility (MMA)
- Auto and transit accessibility to regional jobs, considering decay-weighted value of travel time by each mode.
- Relationship between auto and transit accessibility (Transit/Auto Ratio, or TAR) can be converted to a transit Quality of Service letter grade:



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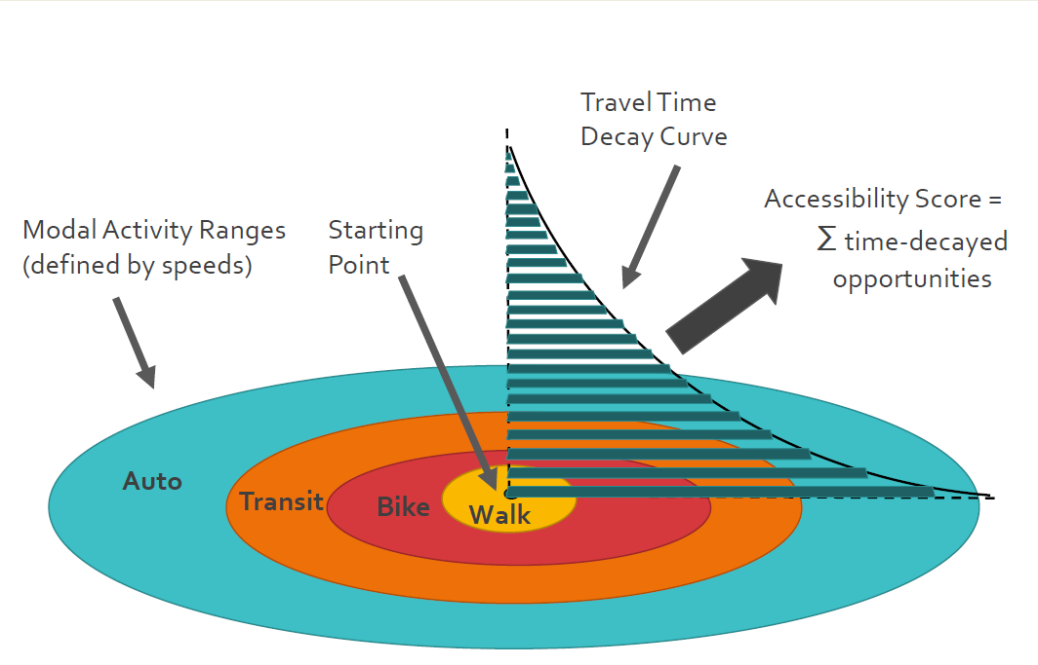
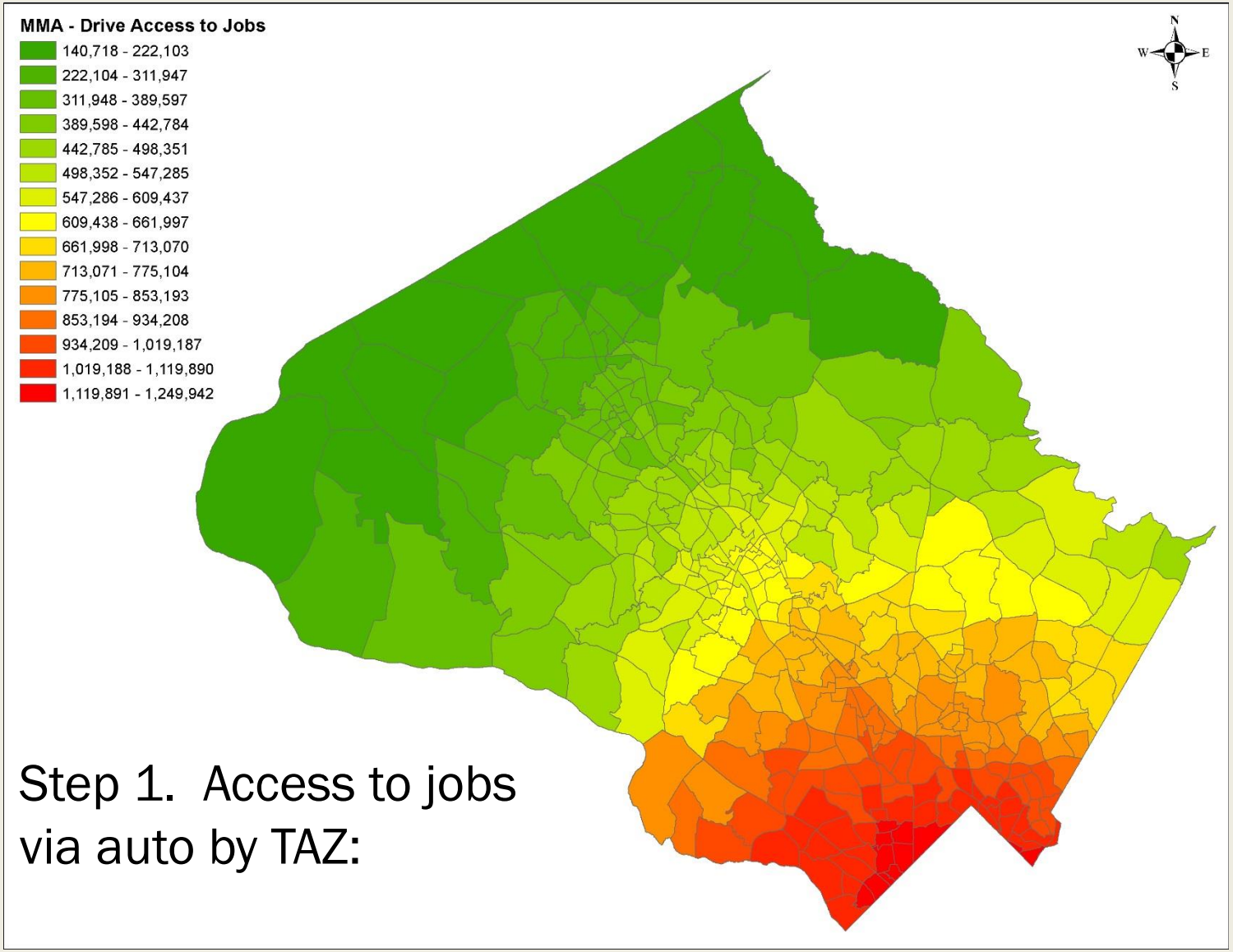
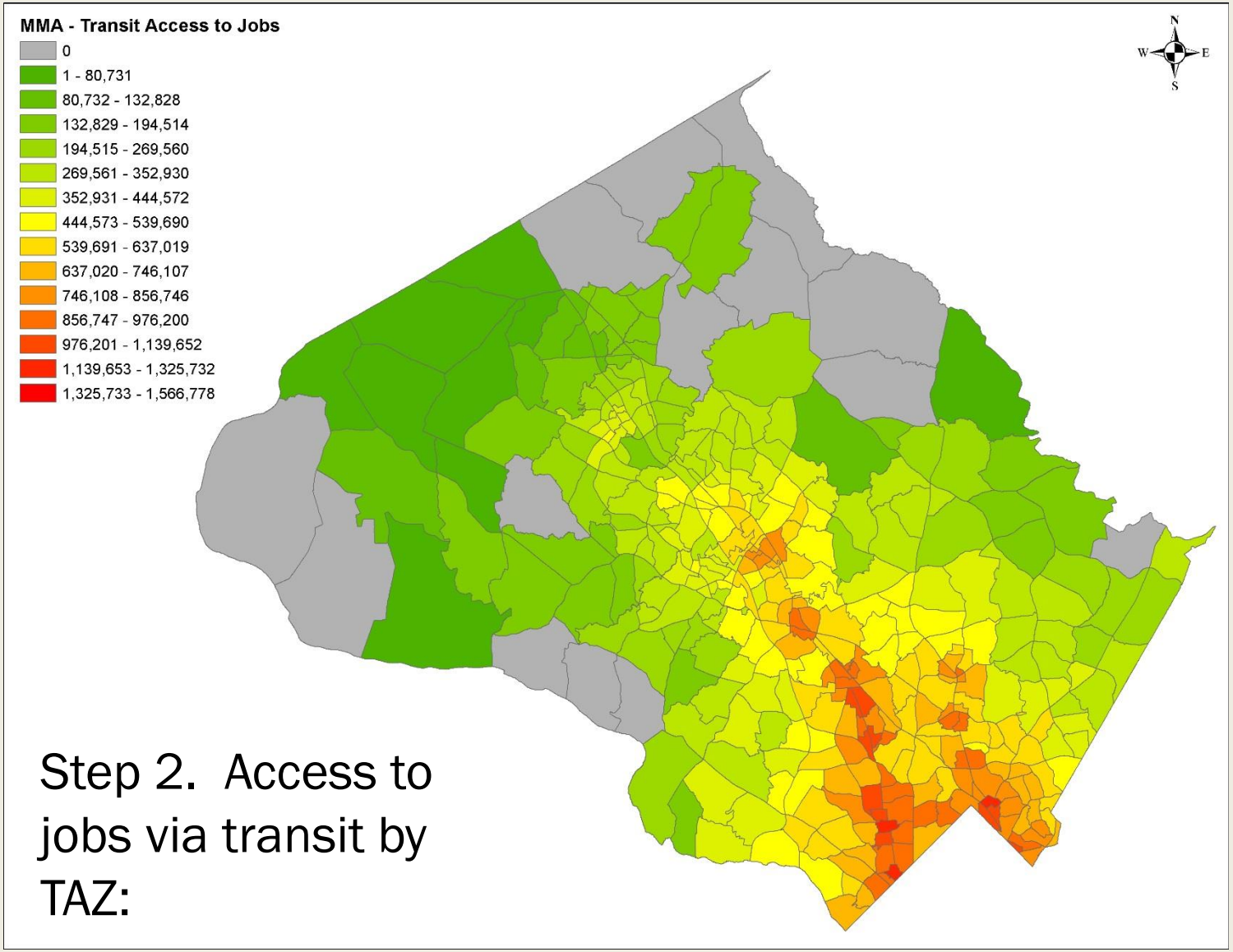


TPAR transit refinement



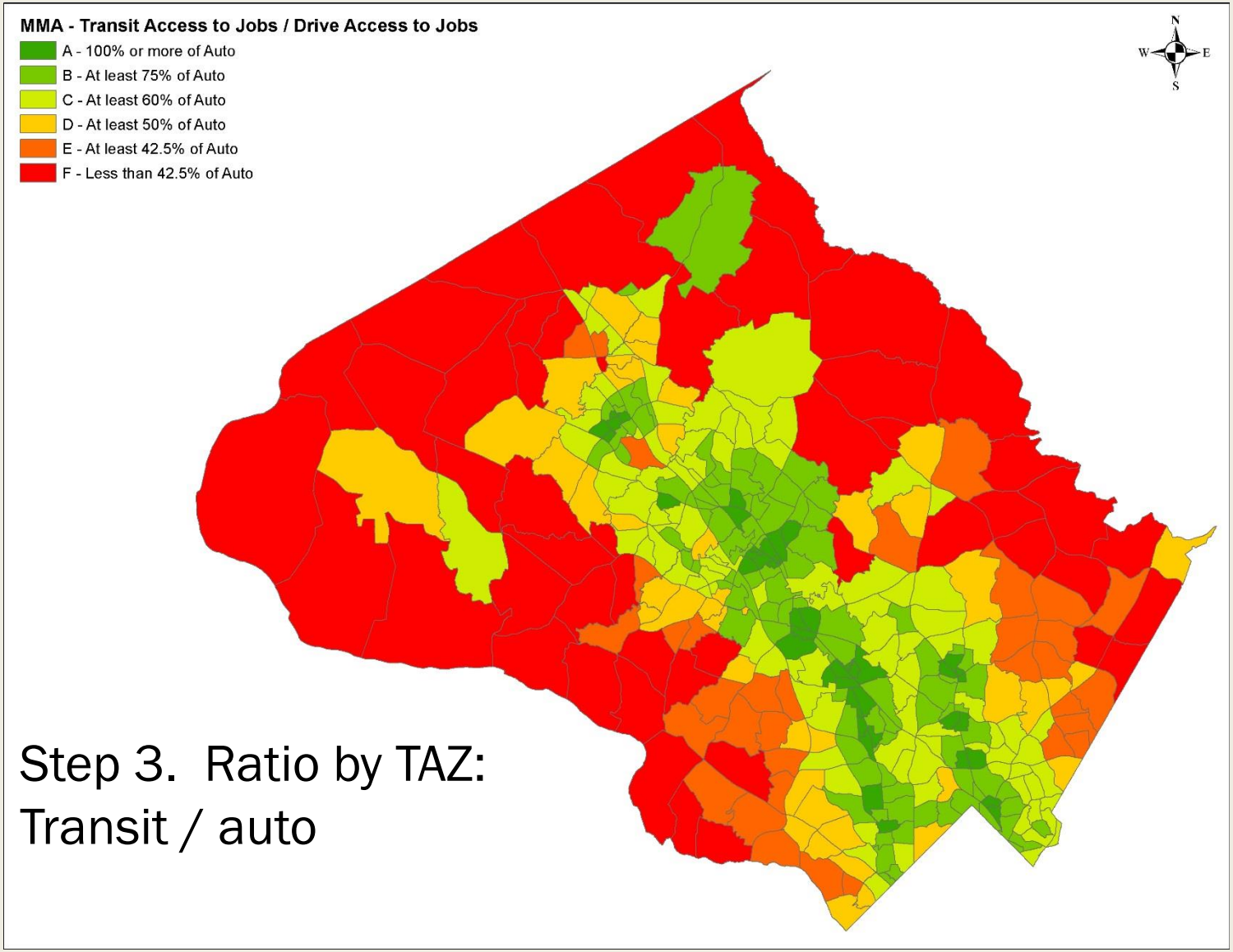
Step 1. Access to jobs via auto by TAZ:

TPAR transit refinement



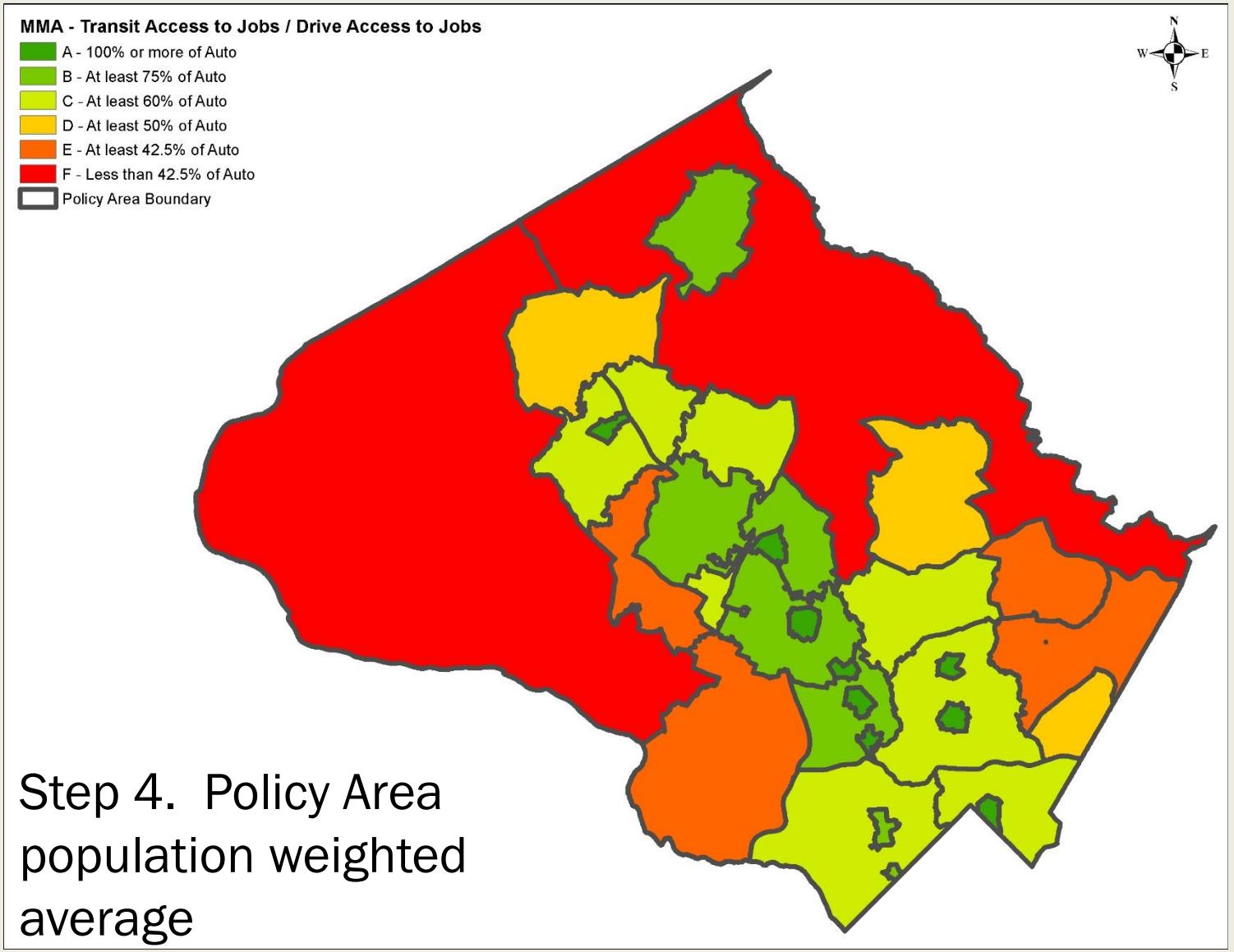
Step 2. Access to jobs via transit by TAZ:

TPAR transit refinement



Step 3. Ratio by TAZ: Transit / auto

TPAR transit refinement



Step 4. Policy Area population weighted average

4. Trip generation

Trip generation update

Table 2-1: Number of Weekday Peak Hour Trips Generated by General Office

General		
Bldg Size	Weekday	
(SF of GFA)	Peak-Hour Trips	
	AM	PM
5,000	7	11
10,000	14	22
15,000	21	34
20,000	28	45
25,000	35	56
30,000	43	63
40,000	60	78
50,000	77	92
60,000	94	106
70,000	111	121
80,000	128	135
90,000	145	150
100,000	162	164
110,000	179	178
120,000	196	193
130,000	213	207
140,000	230	222
150,000	247	236
160,000	264	250
170,000	281	265
180,000	298	279
190,000	315	294
200,000	332	308
220,000	366	337
240,000	400	366
260,000	434	394
280,000	468	423
300,000	502	452
320,000	536	481
340,000	570	510
360,000	604	538
380,000	638	567
400,000	672	596
420,000	706	625
440,000	740	654
460,000	774	682
480,000	808	711
500,000	842	740

Equations Used
AM peak-hour trips = 1.38(GFA/1000)
PM peak-hour trips = 2.24(GFA/1000)

25,000 sf and over
AM peak-hour trips = 1.70 (GFA/1000) – 8
PM peak-hour trips = 1.44(GFA/1000) + 20

Special Cases		
If a building is within 1,000 feet of a Metrorail station and outside the Beltway, reduce weekday peak-hour trips from chart at left.		
Straight Line Distance to Station (in feet)	Percent Reduction in Trips	
	AM	PM
0	50%	40%
50	50%	38%
100	50%	36%
150	50%	34%
200	50%	32%
250	50%	30%
300	50%	28%
350	50%	26%
400	50%	24%
450	50%	22%
500	50%	20%
550	50%	18%
600	50%	16%
650	50%	14%
700	50%	12%
750	50%	10%
800	50%	8%
850	50%	6%
900	50%	4%
950	50%	2%
1,000	50%	0%
Bldg Size	Weekday	
(SF of GFA)	Peak-Hour Trips	
	AM	PM
5,000	7	11
10,000	14	22
15,000	21	34
20,000	28	45
25,000	35	56
30,000	43	63
40,000	60	78
50,000	77	92
60,000	94	106
70,000	111	121
80,000	128	135

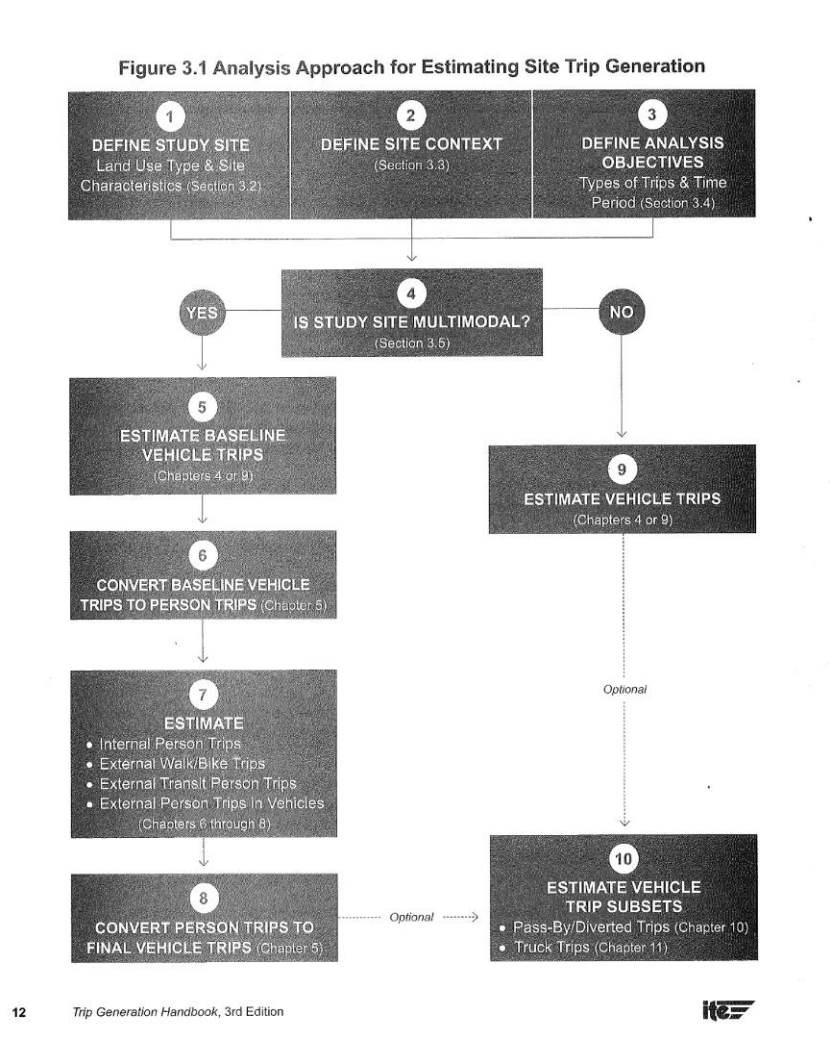
Equations Used
AM peak-hour trips = 1.70(GFA/1000) + 115
PM peak-hour trips = 1.44(GFA/1000) + 127

Note: Trip generation rates are calculated using the size of individual buildings, not the combined size of a group.

Current LATR trip generation rates:

- For vehicles only
- Reflect proximity to Metrorail for office buildings only
- Reflect “unique” urban environments in Bethesda, Friendship Heights, and Silver Spring CBDs
- Based on outdated local observations for common land uses
- Can be replaced with ITE Trip Generation data, which is also vehicles only, suburban, and sometimes dated
- May result in over-designed roadways and unwarranted exaction of development

Trip generation update



National trends include movement toward mode-specific and context sensitive trip generation rates:

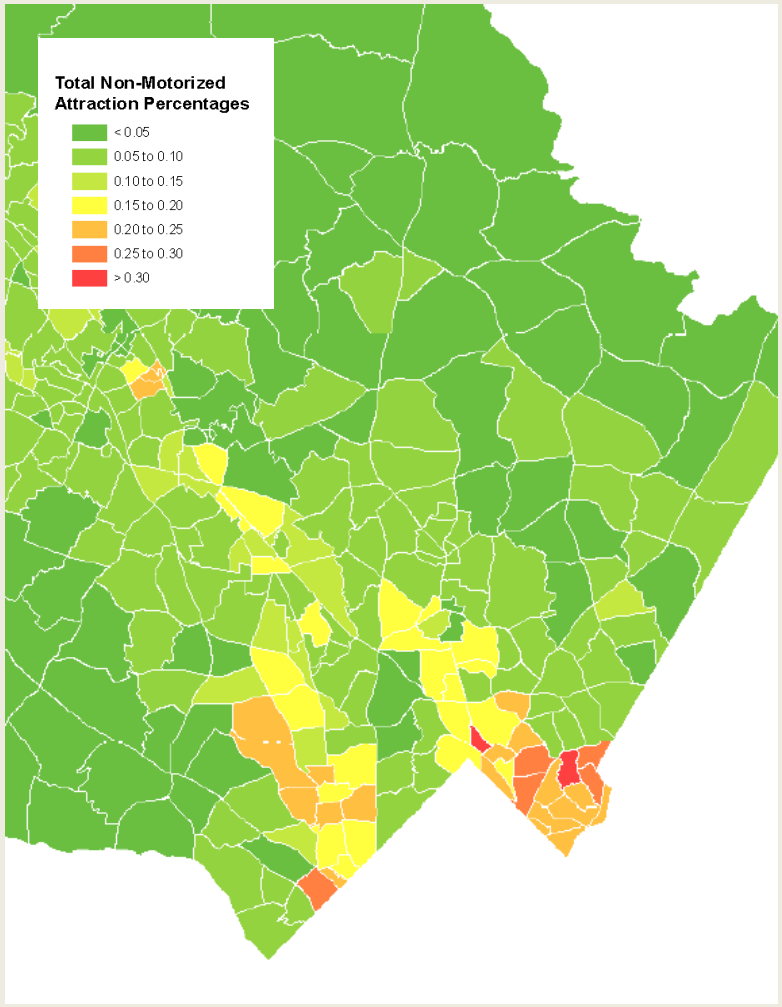
- ITE Trip Generation Handbook "thinking" in person trips
- Jurisdiction-specific guides and studies such as New York City and Washington, DC
- Data collection techniques that entail intercept surveys in addition to counts
- Trip generation estimation tools modules that reflect local environment based on national database relationships for D's (density, diversity, design, etc.)

Trip generation update

Mode-specific trip generation rates will support mode-specific LATR analysis requirements. Fewer applications will conduct any type of study; only the largest applications will conduct quantitative ped or transit studies.

	Overall			Auto	Transit	Bicycle	Pedestrian
Proposed Thresholds	75			75	50	100	100
	persons	Auto drivers plus passengers	Average Vehicle Occupancy	vehicles	riders	persons (in places with bike propensity)	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

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

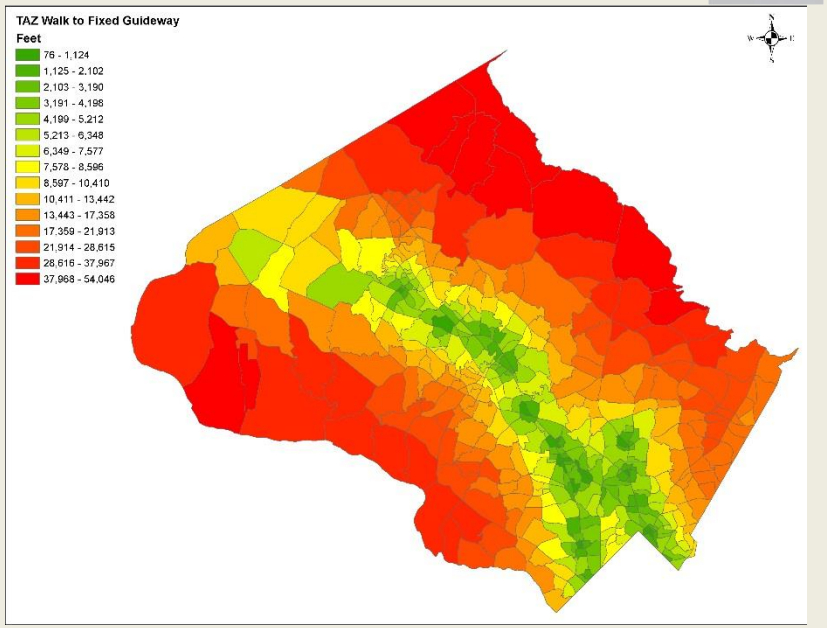
		ITE Vehicle Trip Reduction Factors			
		Residential	Office	Retail	Other
1	Aspen Hill	97%	98%	99%	97%
2	Bethesda CBD	79%	63%	61%	62%
3	Bethesda/Chevy Chase	87%	81%	85%	79%
4	Cloverly	99%	100%	100%	100%
5	Damascus	100%	100%	100%	100%
6	Derwood	94%	94%	87%	94%
8	Gaithersburg City	88%	86%	74%	85%
9	Germantown 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%

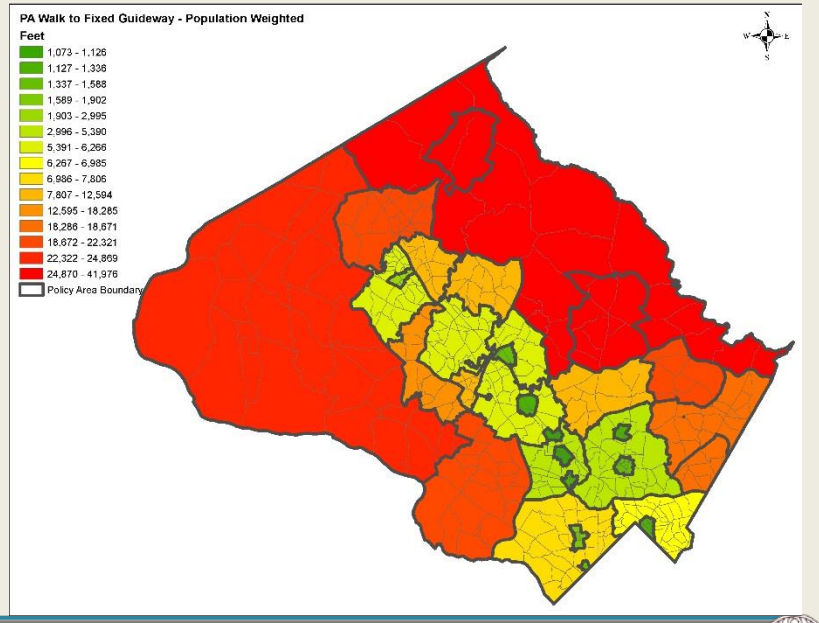
Basic lookup table in LATR Guidelines for baseline vehicle trip reduction from ITE rates

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

Trip generation update



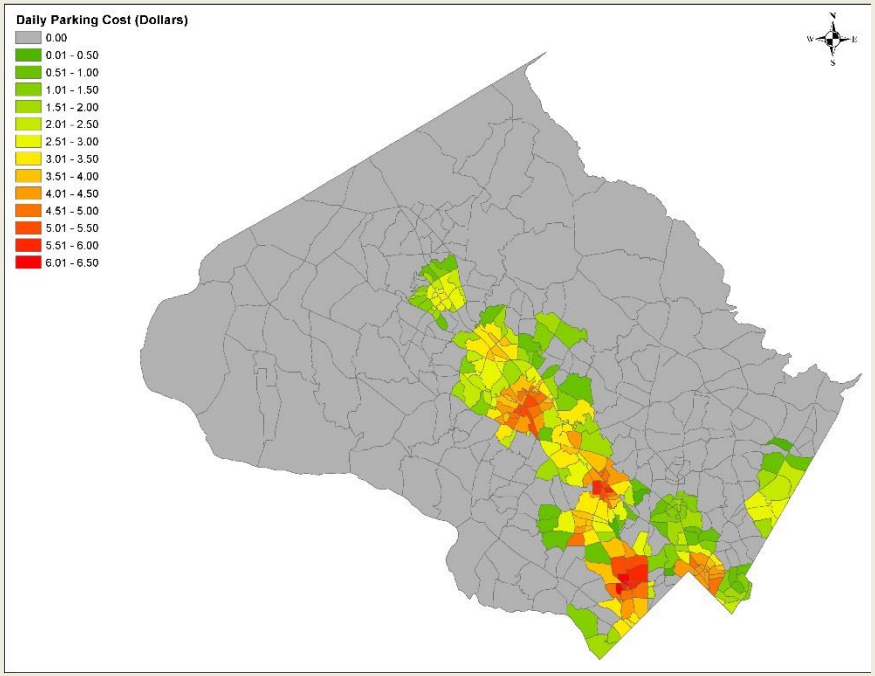


Transit proximity factor

- 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 MWCOG 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

Next steps

LATR

- Develop draft changes to LATR Guidelines (summer 2015)
- Review / refine with TISTWG (fall 2015)
- Develop final recommendations/report (winter 2015)
- Present to Planning Board (early 2016)*

TPAR

- Assess changes (summer 2015)
- Review/refine with partner agency staff (fall 2015)
- Develop final recommendations/report (winter 2015)
- Present to Planning Board (early 2016)*

Trip Generation

- Develop/refine approach (summer 2015)
- Review/refine with partner agency staff (fall 2015)
- Develop final recommendations/report (winter 2015)
- Present to Planning Board (early 2016)*

* - additional status roundtable discussions to be held in 2015