

residential sites within a half mile of a metro station have an average auto mode share of 36.5% as shown in Table 1. Therefore, a 65% reduction rate was applied to the peak hour vehicular trip generation to reflect the non-auto modes for the proposed development. Table 2 shows the vehicular trips expected to be generated by the proposed project based on the original program.

Table 1: Non-Auto Mode Share for Residential Sites near Metro Station

Mode Share for All Trips by Residential Site				
Residential Site	Metrorail	Metrobus & Other Transit	Auto	Walk & Other
Ballston Station Area				
Lincoln Towers	50%	2%	38%	11%
Randolph Towers	45%	1%	40%	15%
Courthouse Station Area				
Arlington Courthouse Plaza	58%	0%	29%	14%
Courtland Towers	46%	0%	39%	15%
Average	49.8%	0.8%	36.5%	13.8%

*From Table 9 from WMATA 2005 Development Related Ridership Survey

Table 2: Trip Generation (Adjacent Street Peak Hour)

Land Use	ITE Code	Size	----- Weekday -----							
			AM Peak Hour			PM Peak Hour			Daily	
			In	Out	Total	In	Out	Total	Total	
Proposed Use										
Apartment Building 1	220	247	DU	25	100	125	97	57	154	1,620
Apartment Building 2	220	234	DU	24	94	118	92	54	146	1,542
Apartment Building 3	220	103	DU	11	43	54	47	27	74	748
Specialty Retail	826	1.295	kSF	6	7	13	11	14	25	93
<i>Proposed Site Trips (without reductions)</i>				<i>66</i>	<i>244</i>	<i>310</i>	<i>247</i>	<i>152</i>	<i>399</i>	<i>4,003</i>
<i>Transit Reduction (Residential)</i>				<i>65%</i>	<i>-39</i>	<i>-154</i>	<i>-193</i>	<i>-153</i>	<i>-90</i>	<i>-2,542</i>
<i>Transit Reduction (Retail)</i>				<i>75%</i>	<i>-5</i>	<i>-5</i>	<i>-10</i>	<i>-8</i>	<i>-11</i>	<i>-30</i>
<i>Total Site Trips</i>				<i>22</i>	<i>85</i>	<i>107</i>	<i>86</i>	<i>51</i>	<i>137</i>	<i>1,431</i>

Based on the May 2015 TIS/TMP, the proposed residential and retail development was anticipated to generate approximately 107 auto trips in the AM peak hour and 137 auto trips in the PM peak hour.

Revised Trip Generation

The trip generation calculations presented above have been updated to reflect the current development program and modified parking ratio of 0.5 spaces per unit proposed for the site.

The original TIS/TMP provided a breakdown of the auto and non-auto trips based largely on the 2005 WMATA Ridership Survey results for comparable sites in the Ballston and Courthouse areas, as summarized in Table 1 above. In order to provide a further breakdown of the various travel modes to and from the site, additional census data was reviewed for the tract where the Clarendon West site is located, and for the Rosslyn-Ballston corridor.

Table 3 and Figure 1 below show a comparison of the census data, the 2005 WMATA Ridership data, and the original and revised mode split assumptions. While there is a relationship between parking ratio and trip generation, it is not a direct

correlation. It is reasonable to assume that a lower parking ratio will result in some decrease in auto trips during the peak hour. Therefore, the multimodal reduction of 65% from the original TIS/TMP was increased to 70% based on the proposed parking ratio. The resulting drive alone share of 30% is lower than is currently seen from the census data for nearby tracts; however, it represents a lower parking ratio than currently seen in many buildings within the Rosslyn-Ballston corridor, and is consistent with the drive alone share seen in other parts of the County, such as Crystal City.

Although it is difficult to quantify specifically for this area, recent trends show an overall decrease in parking demand in urban areas. This is due in part to parking spaces that had historically been used for vehicle storage no longer being needed as more transportation options such as carsharing, bike sharing, ridesharing and other alternatives have become available.

Table 3: Mode Split Comparison

Mode	Census Tract 1015 (1)	Rosslyn-Ballston Average (1,2)	2005 WMATA Ridership Survey (3)	Original TIS/TMP Assumptions (Approx.)	Revised TIA Assumptions
Drove Alone	45%	41%	37%	35%	30%
Public Transportation	36%	38%	51%	43%	45%
Walk	7%	9%	6%	10%	11%
Bike	2%	2%	1%	2%	3%
Other (Carpool, Worked at Home, Other)	10%	10%	6%	10%	11%

Notes:

1. 2012-2016 American Community Survey Means of Transportation to Work (B08301)
2. Rosslyn-Ballston census tracts included in average: 1014.03, 1014.04, 1015, 1016.02, 1016.03, 1017.01, 1017.02, 1018.01, 1018.02, 1019, 1020.02
3. Walk, Bike and Other percentages estimated

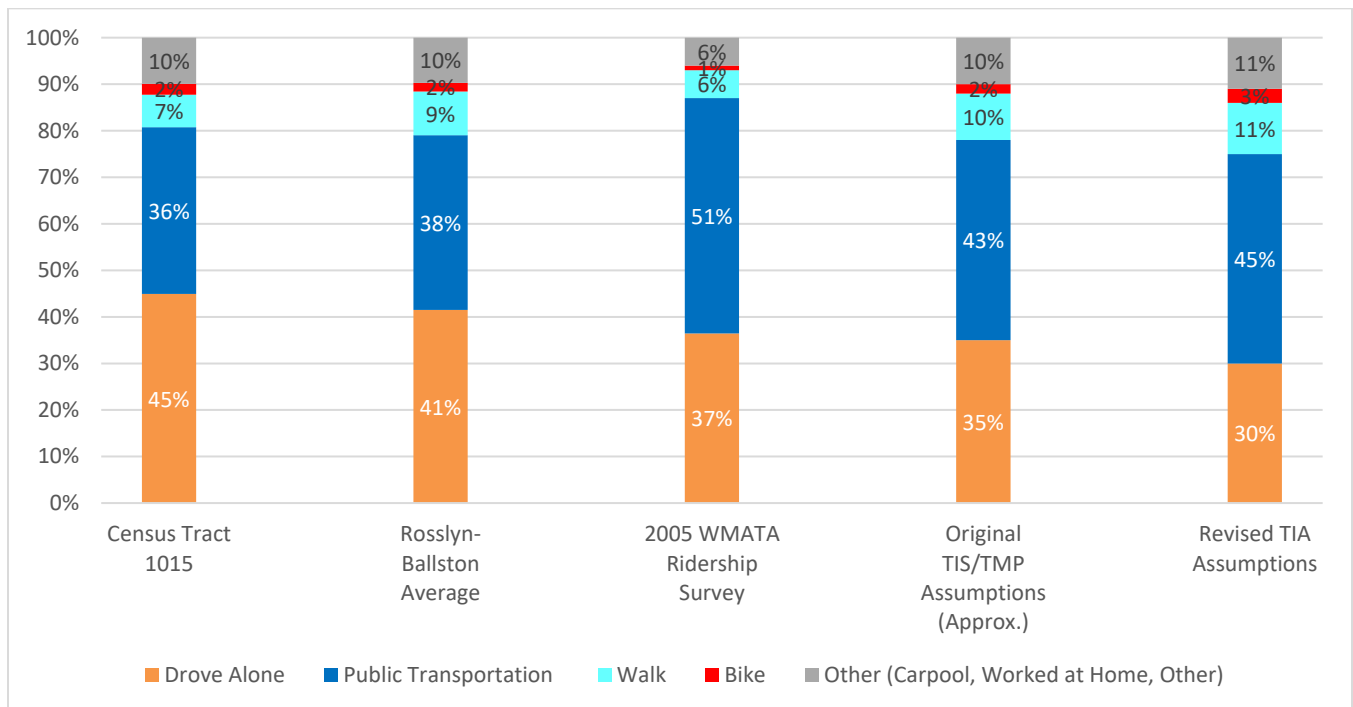


Figure 1: Mode Split Comparison

The revised mode split assumptions for the residential and retail land uses are outlined in Table 4 below. The revised trip generation calculations based on the Institute of Transportation Engineers (ITE) Trip Generation, 9th Edition, for the approved development program and revised mode split assumptions are provided in Table 5. The number of residential units and retail square footage changed slightly during the original approval process after the May 2015 TIS/TMP was developed. Since it was a minor change, the TIS/TMP was not updated at that time, but the trip generation table below has been updated to reflect the approved program. Based on the approved program and mode split assumptions, the proposed residential and retail development is anticipated to generate approximately 93 auto trips in the AM peak hour and 118 auto trips in the PM peak hour. This represents a decrease of 14 auto trips in the AM peak hour and 19 auto trips in the PM peak hour compared to the original TIS/TMP. A multimodal trip generation table showing the anticipated number of trips by each mode is provided in Table 6.

Table 4: Mode Split by Land Use

Land Use	Mode				
	Auto	Transit	Walk	Bike	Other
Residential	30%	45%	11%	3%	11%
Retail	25%	25%	40%	5%	5%

Table 5: Revised Trip Generation

Land Use	ITE Code	Size	----- Week day -----						Daily Total	
			AM Peak Hour			PM Peak Hour				
			In	Out	Total	In	Out	Total		
Proposed Use										
Apartment Bldg 1	220	247 DU	25	100	125	97	57	154	1,620	
Apartment Bldg 2	220	233 DU	24	94	118	92	54	146	1,536	
Apartment Bldg 3	220	100 DU	11	42	53	46	27	73	730	
Specialty Retail	826	3,477 kSF	7	8	15	13	17	30	186	
<i>Proposed Site Trips (without reductions)</i>			<i>67</i>	<i>244</i>	<i>311</i>	<i>248</i>	<i>155</i>	<i>403</i>	<i>4,072</i>	
<i>Multimodal Reduction (Residential)</i>			<i>42</i>	<i>-165</i>	<i>-207</i>	<i>165</i>	<i>-97</i>	<i>-262</i>	<i>-2,720</i>	
<i>Multimodal Reduction (Retail)</i>			<i>-5</i>	<i>-6</i>	<i>-11</i>	<i>-10</i>	<i>-13</i>	<i>-23</i>	<i>-36</i>	
<i>Total Site Trips</i>			<i>20</i>	<i>73</i>	<i>93</i>	<i>73</i>	<i>45</i>	<i>118</i>	<i>1,316</i>	

Table 6: Multimodal Trip Generation

Mode	Land Use	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	Total
Auto	Residential	18 veh/hr	71 veh/hr	89 veh/hr	71 veh/hr	41 veh/hr	112 veh/hr	1166 veh/hr
	Retail	2 veh/hr	2 veh/hr	4 veh/hr	3 veh/hr	4 veh/hr	8 veh/hr	47 veh/hr
	Total	20 veh/hr	73 veh/hr	93 veh/hr	74 veh/hr	46 veh/hr	119 veh/hr	1212 veh/hr
Transit	Residential	27 ppl/hr	106 ppl/hr	133 ppl/hr	106 ppl/hr	62 ppl/hr	168 ppl/hr	1749 ppl/hr
	Retail	2 ppl/hr	2 ppl/hr	4 ppl/hr	3 ppl/hr	4 ppl/hr	8 ppl/hr	47 ppl/hr
	Total	29 ppl/hr	108 ppl/hr	137 ppl/hr	109 ppl/hr	66 ppl/hr	175 ppl/hr	1795 ppl/hr
Walk	Residential	7 ppl/hr	26 ppl/hr	33 ppl/hr	26 ppl/hr	15 ppl/hr	41 ppl/hr	427 ppl/hr
	Retail	3 ppl/hr	3 ppl/hr	6 ppl/hr	5 ppl/hr	7 ppl/hr	12 ppl/hr	74 ppl/hr
	Total	9 ppl/hr	29 ppl/hr	39 ppl/hr	31 ppl/hr	22 ppl/hr	53 ppl/hr	502 ppl/hr
Bike	Residential	2 ppl/hr	7 ppl/hr	9 ppl/hr	7 ppl/hr	4 ppl/hr	11 ppl/hr	117 ppl/hr
	Retail	0 ppl/hr	0 ppl/hr	1 ppl/hr	1 ppl/hr	1 ppl/hr	2 ppl/hr	9 ppl/hr
	Total	2 ppl/hr	7 ppl/hr	10 ppl/hr	8 ppl/hr	5 ppl/hr	13 ppl/hr	126 ppl/hr
Other¹	Residential	7 ppl/hr	26 ppl/hr	33 ppl/hr	26 ppl/hr	15 ppl/hr	41 ppl/hr	427 ppl/hr
	Retail	0 ppl/hr	0 ppl/hr	1 ppl/hr	1 ppl/hr	1 ppl/hr	2 ppl/hr	9 ppl/hr
	Total	7 ppl/hr	26 ppl/hr	33 ppl/hr	27 ppl/hr	16 ppl/hr	43 ppl/hr	437 ppl/hr

1. Other mode includes carpool, worked at home, other means.

Improvements

A number of transportation improvements were committed to in the original approval for Clarendon West, including:

- Realigning the intersection at Washington Boulevard and 13th Street N
- Providing two new segments of 12th Street N to connect Washington Boulevard and N Irving Street per the Clarendon Sector Plan
- Providing a new access roadway connecting 13th Street N to N Johnson Street
- Constructing three new blocks of streetscape and sidewalks at current County standards
- Providing a net increase of 25 on-street parking spaces

The updated calculations outlined above show minimal changes to the multimodal trip generation for the Clarendon West site. These minor changes to the trip generation would not indicate the need for new Transportation Demand Management (TDM) elements or transportation improvements beyond those that have already been identified for this site.

Conclusions

The original TIS/TMP prepared for the Clarendon West site included a multimodal reduction of 65% for the residential use, and 75% for the retail use. The original parking ratio for the residential component was 0.79 spaces per unit for Buildings 2 and 3 and 0.80 spaces per unit for Building 1. The proposed development was anticipated to generate approximately 107 auto trips during the AM peak hour and 137 auto trips during the PM peak hour.

The breakdown of auto and non-auto trips in the original TIS/TMP was based largely on the 2005 WMATA Ridership Survey results for comparable sites in the Ballston and Courthouse areas. In order to provide a further breakdown of the various travel modes to and from the site, additional census data was reviewed for the tract where the Clarendon West site is located, and for the Rosslyn-Ballston corridor.

While there is a relationship between parking ratio and trip generation, it is not a direct correlation. It is reasonable to assume that a lower parking ratio will result in some decrease in auto trips during the peak hour. Therefore, the multimodal reduction of 65% from the original TIS/TMP was increased to 70% based on the proposed parking ratio. The resulting drive alone share of 30% is lower than is currently seen from the census data for nearby tracts; however, it represents a lower parking ratio than currently seen in many buildings within the Rosslyn-Ballston corridor, and is consistent with the drive alone share seen in other parts of the County, such as Crystal City.

Although it is difficult to quantify specifically for this area, recent trends show an overall decrease in parking demand in urban areas. This is due in part to parking spaces that had historically been used for vehicle storage no longer being needed as more transportation options such as carsharing, bike sharing, ridesharing and other alternatives have become available.

Based on the revised program and mode split assumptions, the proposed residential and retail development is anticipated to generate approximately 93 auto trips in the AM peak hour and 118 auto trips in the PM peak hour. This represents a decrease of 14 auto trips in the AM peak hour and 19 auto trips in the PM peak hour compared to the original TIS/TMP.

The Clarendon West project includes a number of transportation improvements, such as realignment of the Washington Boulevard / 13th Street N intersection, three new street segments, three new blocks of streetscape and sidewalks, and a net increase of 25 on-street parking spaces.

The updated calculations outlined above show minimal changes to the multimodal trip generation for the Clarendon West site. These minor changes to the trip generation would not indicate the need for new Transportation Demand Management (TDM) elements or transportation improvements beyond those that have already been identified for this site.