Maryland Department of Transportation
The Secretary's Office

Larry Hogan
Governor

Boyd K. Rutherford
Lt. Governor

Pete K. Rahn
Secretary

November 1, 2016

The Honorable Edward J. Kasemeyer
Chair
Senate Budget and Taxation Committee
The Senate of Maryland
3 West Miller Senate Office Building
Annapolis MD 21401

The Honorable Maggie McIntosh
Chair
House Appropriations Committee
The Maryland House of Delegates
121 House Office Building
Annapolis MD 21401

Dear Chairs Kasemeyer and McIntosh:

The attached report regarding the New Hampshire Avenue Corridor Economic Development Potential is in response to the 2016 Joint Chairmen's Report that states:

> "SHA is requested to submit to a report to the budget committees by November 1, 2016, which includes:
>
> - An estimate of the potential tax revenue to the State of Maryland and the potential increase in the number of jobs that would result from property redevelopment in the New Hampshire Avenue Corridor under current county zoning and sector plans, and the City of Takoma Park's New Hampshire Avenue Corridor Concept Plan if MD 650 right-of-way improvements are made as envisioned in the plans;
> - A review of the cost of road, stormwater, and utility infrastructure needs within the MD 650 right-of-way to facilitate the redevelopment envisioned by the plans, including construction of the multi-way boulevard; and
> - The status of planning for bus rapid transit in the corridor and its coordination with plans for the Purple Line light rail development."

If you have any questions regarding the report, please contact Mr. Eric Beckett, SHA Office of Planning and Preliminary Engineering Chief, at 410-545-5666 or via email ebeckett@sha.state.md.us. Of course, you may always contact me directly.

Sincerely,

Pete K. Rahn
Secretary

cc: Gregory C. Johnson, P.E., Administrator, SHA
Mr. Eric Beckett, Chief, Regional and Intermodal Planning Division, Office of Planning and Preliminary Engineering, SHA
Ms. Sarah Albert, Mandated Reports Specialist, DLS

A Report to the Maryland General Assembly

regarding

New Hampshire Avenue Corridor Economic Development Potential
(2016 Joint Chairmen's Report, page. 55)

Maryland Department of Transportation State Highway Administration
The Secretary's Office of Office of Planning and Capital Programming
Maryland Department of Planning
Maryland Department of Commerce

November 1, 2016

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Introduction

This report was prepared in response to a Fiscal Year 2017 Budget Report request by the Chairs of the Senate Budget and Taxation Committee and House Appropriations Committee to the Maryland Department of Transportation's State Highway Administration (SHA). Specifically, the report requested (pg. 55):

> *"New Hampshire Avenue Corridor Economic Development Potential: The committees are interested in the potential for economic development in the New Hampshire Avenue (MD 650) Corridor in Prince George's and Montgomery counties between Piney Branch Road (MD 320) and the Washington, D.C. border. The Maryland Department of Commerce (Commerce), the State Highway Administration (SHA), and the Maryland Department of Planning (MDP) are therefore requested to submit a report to the budget committees by November 1, 2016, which includes:*
>
> - *an estimate of the potential tax revenue to the State of Maryland and the potential increase in the number of jobs that would result from property redevelopment in the New Hampshire Avenue Corridor under current county zoning and sector plans, and the City of Takoma Park's New Hampshire Avenue Corridor Concept Plan if MD 650 right-of-way improvements are made as envisioned in the plans;*
> - *a review of the cost of road, stormwater, and utility infrastructure needs within the MD 650 right-of-way to facilitate the redevelopment envisioned by the plans, including construction of the multi-way boulevard; and*
> - *the status of planning for bus rapid transit in the corridor and its coordination with plans for the Purple Line light rail development."*

This report will address the items noted above and will briefly describe other Maryland Department of Transportation (MDOT) projects and studies underway in the study area (see Figure 1) of MD 650 (New Hampshire Avenue), from Washington, D.C. (Eastern Avenue NE) to MD 320 (Piney Branch Road).

Background

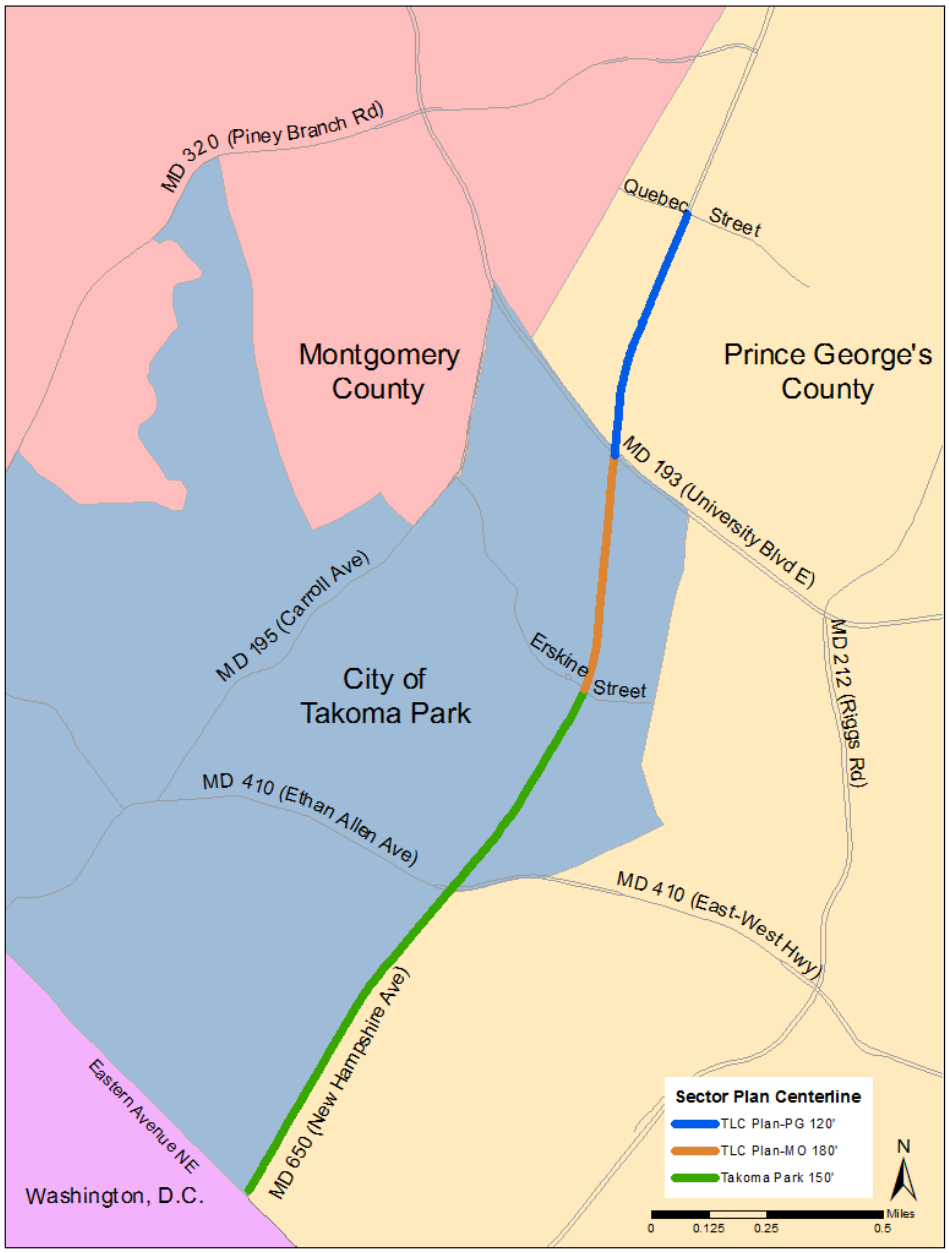
The SHA, MDOT Office of Planning and Capital Programming, Maryland Department of Planning (MDP), and Maryland Department of Commerce (Commerce) jointly prepared this report in response to the request from the Chairs of the Senate Budget and Taxation Committee and House Appropriations Committee.

Study Area

The study area is approximately 2.8 miles long, between Washington, D.C. (Eastern Avenue NE) and MD 320 (Piney Branch Road). The MD 650 (New Hampshire Avenue) corridor is a key commuter corridor connecting Washington, D.C. to northeast Montgomery County, and the I-95 and US 29 corridors. It is also a vibrant commercial corridor with small-independent and larger-national retail and service providers, and office space.

The MD 650 (New Hampshire Avenue) corridor south of MD 410 (Ethan Allen Ave/East-West Hwy) is the boundary between Prince George's County to the east and the City of Takoma Park, Montgomery County to the West. It is entirely within the City of Takoma Park between MD 410 (Ethan Allen Ave/East-West Hwy) and MD 193 (University Blvd E). North of MD 193 (University Blvd E) to the study area northern limit at MD 320 (Piney Branch Road) is entirely within Prince George's County.

Figure 1: Map – MD 650 (New Hampshire Avenue) from Washington, D.C. (Eastern Avenue NE) to MD 320 (Piney Branch Road)



Source: Maryland Department of Transportation, Maryland Department of Planning, Maryland-National Park and Planning Commission

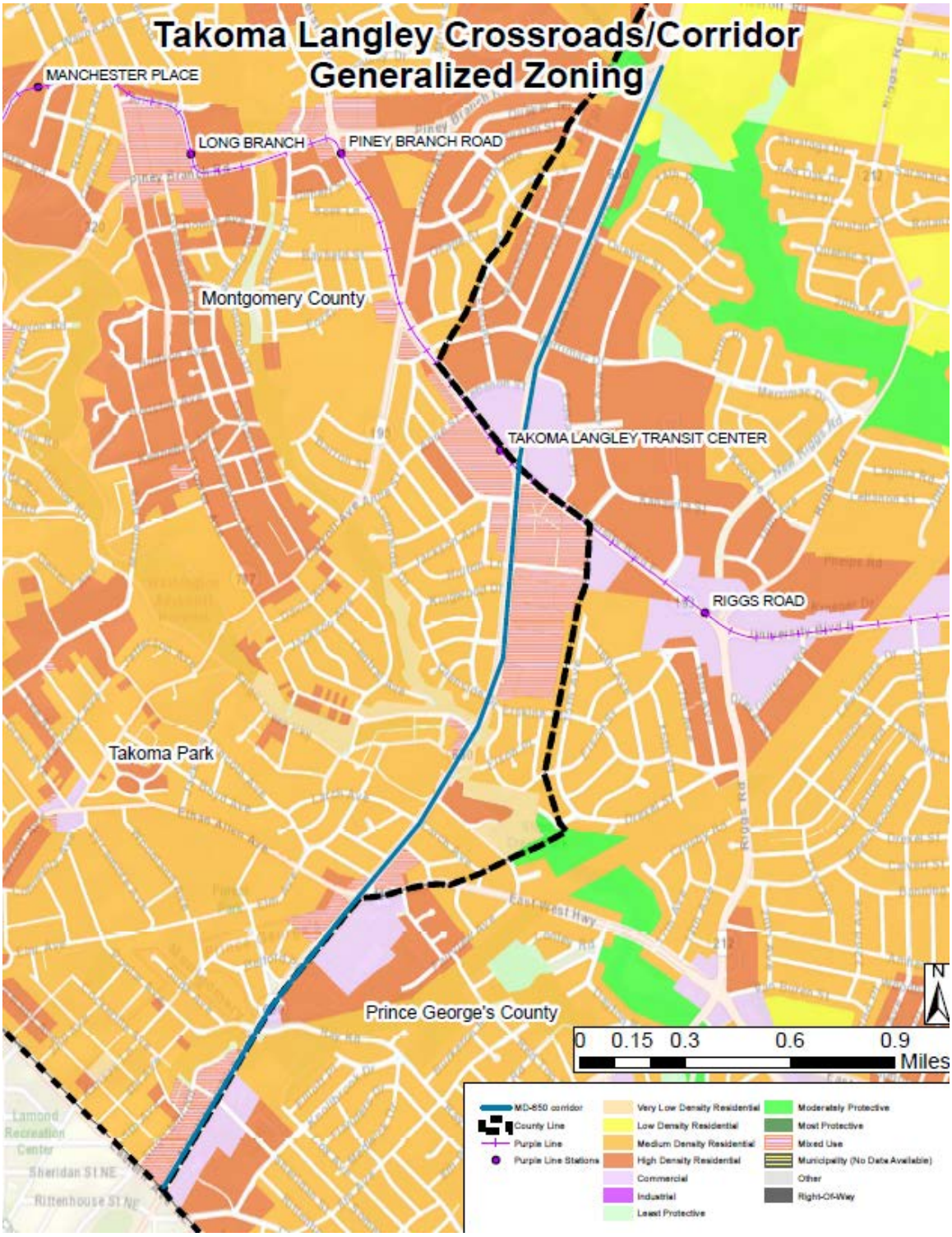
MD 650 (New Hampshire Avenue) Existing Conditions

MD 650 (New Hampshire Avenue) within the 2.8-mile study area is an urban other principal arterial roadway with three lanes in each direction and a median or center turn lane. Between Lebanon Street and Ruatan Street there are service roads with one travel lane and on-street parking on each side. As a result, the right-of-way width varies throughout the corridor. There are 16 signalized intersections within the corridor including those serving business entrances. The corridor carries an annual average daily traffic (AADT) volume of 30,000 to 40,000 vehicles including commuter and commercial traffic.

Existing Zoning

Figure 2 (Below) is a generalized map of existing zoning within the study area. The northern one-mile segment of the study area, from MD 320 (Piney Branch Road) to MD 193 (University Blvd E), is in Prince George's County. It is zoned *High Density Residential* north of Lebanon Street and *Commercial* between Lebanon Street/Edwards Place and MD 193 (University Blvd E). The middle one-mile segment of the study area, from MD 193 (University Blvd E) to MD 410 (Ethan Allen Ave/East-West Hwy), is in the City of Takoma Park section of Montgomery County. Current zoning along this segment is *Mixed Use* adjacent to MD 193 (University Blvd E) and extending south on the east side of MD 650 (New Hampshire Avenue) to just north of Erskine Street, and at the intersection with MD 410 (Ethan Allen Ave/East-West Hwy). Residential zoning in the City of Takoma Park along MD 650 (New Hampshire Avenue) is primarily *Medium Density*. South of MD 410 (Ethan Allen Ave/East-West Hwy) MD 650 (New Hampshire Avenue) serves as the boundary between Prince George's County on the east and the City of Takoma Park, Montgomery County on the west. Zoning within the City of Takoma along MD 650 (New Hampshire Avenue) is primarily *Medium Density Residential*, except for areas zoned *Mixed Use* adjacent to MD 410 (Ethan Allen Ave) and between Sligo Mill Road and MD 650 (New Hampshire Avenue) just north of Eastern Ave NE. Prince George's County zoning adjacent to the southern 0.8-mile segment of MD 650 (New Hampshire Avenue) from MD 410 (East-West Hwy) is primarily *Commercial*, surrounded by *High Density Residential*.

Figure 2: Map – Takoma Langley Crossroads/Corridor Existing Zoning



Source: Maryland Department of Planning

Area Concept and Sector Plans

The Budget language specifically directed state agencies to base the analysis on potential development and road improvements envisioned in locally-adopted plans for each jurisdiction within the study area. The plans used for this analysis, listed below, and summarized in the Appendix, were prepared by the City of Takoma Park and Maryland-National Capital Park and Planning Commission, respectively.

- City of Takoma Park, New Hampshire Avenue Corridor Concept Plan (2008)
- Maryland-National Capital Park and Planning Commission (M-NCPPC), Takoma/Langley Crossroads Sector Plan (TLC Plan)
  - Montgomery County Planning Department (2012)
  - Prince George's County Planning Department (2009)

The local jurisdictions collaborated on the three different plans, ensuring they complemented each other regarding land use along the corridor. As shown in Figure 1, the 2.8-miles of MD 650 (New Hampshire Avenue) within the study area extend from the Washington, D.C. boundary (Eastern Avenue NE) north to MD 320 (Piney Branch Road).

- The City of Takoma Park Concept Plan (2008) proposes MD 650 (New Hampshire Avenue) be a 4-lane divided boulevard with on-street parking and sidewalks within a 150-foot right-of-way from the District line to Erskine Street.
- The Maryland-National Capital Park and Planning Commission (M-NCPPC) Takoma/Langley Crossroads Sector Plan for Montgomery County (2012) from Erskine Street to MD 193 (University Blvd E) proposes MD 650 (New Hampshire Avenue) be a 6-lane divided boulevard with service roads, sidewalks, and on-street parking within a 180-foot right-of-way.
- The M-NCPPC Takoma/Langley Crossroads Sector Plan for Prince George's County (2009) from MD 193 (University Blvd E) to Quebec Street proposes MD 650 (New Hampshire Avenue) be a 6-lane divided boulevard with service roads, sidewalks, and on-street parking within a 120-foot right-of-way.

Current and Planned Maryland Department of Transportation Projects

The status of planning for bus rapid transit in the corridor and its coordination with plans for the Purple Line light rail development.

The MDOT currently does not have any studies underway to identify necessary right of way (ROW), alignments, or treatments for a BRT system on MD 650 (New Hampshire Avenue) within the study area.

The Purple Line is a proposed 16-mile light rail line extending from New Carrollton in Prince George's County to Bethesda in Montgomery County, including an alignment along MD 193 (University Blvd E) through Takoma/Langley Park. It would provide a direct connection to the Washington Metropolitan Area Transit Authority (WMATA) Red, Green, and Orange Metrorail Lines. The Purple Line would also connect to MARC Train, Amtrak, and local bus services, including a light rail station directly across from the newly built Takoma Langley Crossroads Transit Center. In addition to constructing the Purple Line, safety and geometric improvements will be constructed to accommodate the Purple Line and to improve bicycle and pedestrian safety in the Takoma/Langley Park area. Highlights of the Purple Line include:

- **Links the DC region.** Today the MD 650 (New Hampshire Avenue) corridor within Prince George's and Montgomery counties does not have convenient access to the WMATA Metrorail system. The only access to Metrorail for corridor residents and employees is from local bus routes where service

and on-time performance is highly unreliable. With the Purple Line, the corridor will have easy and frequent access to the entire Metrorail system.

- **Improves access to jobs.** The surrounding community relies heavily on public transportation. The Purple Line will enhance travel and connections by transit within the corridor and to the entire Washington, D.C. region. The Purple Line will also connect the Takoma Langley corridor to major activity and employment centers in Montgomery and Prince George's counties.
- **Creates new jobs.** The final design, construction, and operations and maintenance for the Purple Line will generate thousands of new jobs. Based on Purple Line project disadvantaged business enterprise (DBE) participation goals of 26 percent for the design phase and 22 percent for the construction phase, small construction and design firms within the Takoma Langley corridor will have the opportunity to secure contracts on the project. The Workforce Development DBE/minority business enterprise (MBE) program required of the private/public partnership (P3) concessionaire, Purple Line Transit Partners, will target areas such as the Takoma Langley corridor for work on the project.
- **Contributes to a safer pedestrian and bicycle experience.** The intersection of MD 193 (University Blvd E) at MD 650 (New Hampshire Avenue) historically has a higher pedestrian crash rate than the statewide average. The Purple Line project will implement pedestrian improvements such as new/wider crosswalks, countdown signals, and fencing to control mid-block crossings in sensitive areas. The Purple Line also will provide new on-street bike lanes along the project's alignment on MD 193 (University Blvd E). These pedestrian and bicycle enhancements will improve travel safety in the area.
- **Improves quality of life and increase social equity.** The Purple Line station and the Takoma Langley Crossroads Transit Center will be new landmarks for the community and will improve access and mobility. The Purple Line will provide travelers with transportation alternatives, support transit-oriented development in the Takoma/Langley Crossroads corridor, and contribute to regional economic development goals.
- **Brings business and customers to the area.** The Takoma Langley area is part of the International Corridor, an area branded by Prince George's County and the City of Takoma Park for the ethnic diversity of its residents and visitors as well as for the strong presence of small businesses. The Purple Line will encourage the establishment of new businesses in an already active commercial area. There are four shopping centers at the intersection of MD 193 (University Blvd E) and MD 650 (New Hampshire Avenue). The Purple Line is expected to bring more customers to these existing businesses.

Corridor Transit Plans

The M-NCPPC Countywide Transit Corridors Functional Master Plan (2013) (CTCFMP) for Montgomery County identifies MD 650 (New Hampshire Avenue) as a commuter corridor with activity centers, including Takoma/Langley Crossroads at the intersection with MD 193 (University Blvd E). For the portion of the corridor within the study area of this analysis, the CTCFMP recommends bus rapid transit (BRT) in dedicated lanes. The CTCFMP also recognizes area Concept and Sector Plans for this corridor recommend different rights-of-way and would need to be revised to ensure consistency for the corridor across jurisdictions. No current studies are underway to identify necessary ROW, alignments, or treatments for a BRT system on MD 650 (New Hampshire Avenue) within the study area.

Review of Redevelopment Potential

Estimate of the potential tax revenue to the State of Maryland and the potential increase in the number of jobs that would result from property redevelopment in the New Hampshire Avenue Corridor under current county zoning and sector plans, and the City of Takoma Park's New Hampshire Avenue Corridor Concept Plan if MD 650 right-of-way improvements are made as envisioned in the plans.

Maryland Department of Planning

The MDP developed estimates of potential tax revenue that would result from property redevelopment in the MD 650 (New Hampshire Avenue) corridor, from Washington, D.C. (Eastern Avenue NE) to MD 320 (Piney Branch Road). The study area encompasses portions of Montgomery County, Prince George's County, and the City of Takoma Park.

The MDP took the following steps to assess the potential increase in property tax revenues:

- **Identified and confirmed redevelopment sites, goals for future development.** The MDP identified 15 redevelopment sites, based on the plans prepared by/for the local governments, as well as feedback and input from local government staff. Eleven sites are in Montgomery County and four sites are in Prince George's County. All of the Montgomery County sites are also within the City of Takoma Park.
- **Calculated potential future development capacity for each redevelopment site.** Capacity was estimated through a combination of zoning and local government input. Future development potential reflects loss of area necessary for expanded typicals, as shown in adopted plans, and 1.06 acres associated with the Takoma/Langley Park Transit Center.
- **Identified model sites and applied their assessed value per acre to the redevelopment sites.** The MDP identified prototype sites, recently redeveloped nearby, with development characteristics envisioned for the corridor, based on discussions with local governments.
- **Estimated potential future real property taxes generated by redevelopment sites.** Potential future redevelopment was calculated in two ways. One included a simple 50/50 residential and commercial land use split, and the other included a 96 percent residential and 4 percent commercial Floor Area Ratio (FAR) split. Either method represents a plausible approximation of future conditions.

According to current County assessments for 2013-2015, the 15 redevelopment sites have a combined total assessed value of $274.15 million, or $2.13 million per acre (see Table 1). Collectively, they generated $3.46 million annually in property taxes, of which $0.31 million is state tax revenue, $2.37 million is county tax revenue, and $0.78 million is municipal tax revenue.

If the redevelopment sites were redeveloped with a 50/50 mix of commercial and residential land uses, using the model sites' assessed per acre value, the total assessed value is estimated to be $2.39 billion, or $18.57 million/acre. They would generate an estimated $29.80 million in property taxes annually, of which $2.67 million would be state tax revenue, $20.98 million would be county tax revenue, and $6.14 million would be municipal tax revenue. The net result is that property values and tax revenues would increase approximately by a factor of 7.7 (see Table 1).

If the redevelopment sites were redeveloped with 96 percent residential and four percent commercial land uses, using the model sites' assessed per acre value, the total assessed value is estimated to be $2.06 billion, or $16.03 million/acre. They would generate an estimated $25.72 million in property taxes

annually, of which $2.31 million would be state tax revenue, $18.10 million would be county tax revenue, and $5.32 million would be municipal tax revenue. The net result is that property values and tax revenues would increase approximately by a factor of 6.5 (see Table 1).

Table 1: Comparative Property Values and Tax Revenues (Current/Prospective Future) for 15 Redevelopment Sites

Property Value ($ millions)		Property Tax ($ millions)				Total Percent Increase from
Total	per Acre	Total	State	County	Municipal	Current
Current						
$274.15	$2.13	$3.46	$0.31	$2.37	$0.78	-
Potential future - 50 percent residential and 50 percent commercial land uses						
$2,388.86	$18.57	$29.80	$2.67	$20.98	$6.14	771%
Potential future - 96 percent residential and 4 percent commercial land uses						
$2,061.26	$16.03	$25.72	$2.31	$18.10	$5.32	652%

Source: Maryland Department of Planning

Maryland Department of Commerce

The Maryland Department of Commerce (Commerce) analyzed the corridor based upon the potential number of commercial square feet that could be developed in the study area along with estimates of the number of workers generated per square foot by various commercial land uses. Commerce used the per-square-foot estimates to create a range of potential employment numbers, and used them as a base for calculating a range for the potential worker payroll that could be generated by a fully-maximized redeveloped corridor.

Current Employment Conditions in the Study Area

As of early 2016, there were 203 establishments employing 1,713 workers in the study area. In total, these workers earned almost $53 million in payroll during the 12 months between the second quarter of 2015 and the first quarter of 2016, the most recent data available. The majority of these workers were employed in the retail trade and accommodation and food services sectors.

Table 2: Existing Study Area Employment and Payroll Estimate, Second Quarter 2015 – First Quarter 2016

NAICS	Sector	Firms	Employment	Payroll	Average Payroll
23	Construction	7	58	$2,752,145	$47,451
31	Manufacturing	2	*	*	*
42	Wholesale Trade Sectors	6	14	$684,956	$48,925
44-45	Retail Trade Sectors	64	599	$17,512,438	$29,236
48-49	Transportation and Warehousing Sector	7	31	$1,002,791	$32,348
51	Information	3	*	*	*
52	Finance and Insurance	12	82	$3,350,748	$40,863
53	Real Estate and Rental and Leasing	10	66	$2,288,594	$34,676
54	Professional, Scientific, and Technical Services	19	78	$3,633,010	$46,577
56	Admin & Support & Waste Mgmt & Remediation Srvcs	2	*	*	*
61	Educational Services	1	*	*	*
62	Health Care and Social Assistance	31	218	$11,053,310	$50,703
71	Arts, Entertainment, and Recreation	1	*	*	*
72	Accommodation and Food Services	27	457	$8,252,753	$18,059
81	Other Services, except Public Administration	11	69	$1,421,551	$20,602
	TOTAL	203	1,713	$52,964,728	$30,919

* Data suppressed to protect confidentiality

Source: Analysis of DLLR QCEW data (Average of 2015 Q2 to 2016 Q1) by Maryland Department of Commerce

Employment by Square Feet of Development

Different industries have different average employment numbers per building size, and even businesses within a single industry can have variations based on their actual activities at a specified location. There have been various studies that have calculated average employment rates for different land use types, including a 2008 study by the U.S. Green Building Council. The data below (Table 3) shows the differences by land use type, and how some surveys can have different results for the same land use. Based on these averages, development in the study area could generate as many as one employee per 70 square feet of development for a fast food restaurant, to as few as one employee per 1,124 square feet for lodging establishments. A more comprehensive market analysis and economic development plan would be needed to more accurately identify target industries and business recruitment and retention strategies for the study area and corresponding employment projections.

Table 3: Building Area per Employee, by Business Type

		Square Feet per Employee		
Land Use Type	ITE Land Use Code	Institute of Traffic Engs	U.S. Dept. of Energy	San Diego Assoc of Govmnts
General Office - Suburbs	710	304		
Corporate HQ - Suburbs	714	260		
Single Tenant Office	715	295		
Medical-Dental Building	720	207		
Research & Development Center	760	405		
Business Park	770	332		249
Specialty Retail Store	814	549		
Discount Store	815	654		
Hardware Store	816	1,042		
Nursery-Garden Center	817	529		
Quality Restaurant (Sit Down)	831	134		
High Turnover (Sit Down)	832	100		
Fast Food w/o drive-thru	833	70		
Fast Food w/ drive-thru	834	92		
Grocery			938	
Lodging			1,124	917
Bank				317
Office under 100,000 sq.ft.				228
Office over 100,000 sq.ft.				221
Neighborhood Retail				588
Community Retail				383

Source: U.S. Green Building Council (13May08)

As shown in Table 3, estimates of employment by square feet of building space vary widely. However, it is unlikely that all of the new space created will contain fast food restaurants (estimated at between 70 and 92 square feet per worker) or hardware stores (estimated at 1,042 square feet per worker).

Recent research from the University of San Diego shows that current office space leases may be using more space than historic averages may suggest.[1] This research shows that many companies in certain markets have significant amounts of "shadow space," or space that is leased but not occupied. Shadow space is most likely to be found in older buildings and in less vibrant office markets with weak demand. This runs counter to other trends that have seen a reduction in recent office space utilization rates per person.

[1] Norm Miller, P. (2012). *Estimating Office Space per Worker*. University of San Deigo. San Diego: Burnham-Moores Center for Real Estate.

Because the analysis of the study area assumes new space, with new leases, in the vibrant Washington Metro market, it is reasonable to assume that any office leases will be on the low side of recent trends, ranging from 200 to 250 square feet per person depending on the activities taking place within the office space. As space forecasts per person for retail are higher, retail stores would represent the upper range of space used by employee. Because of these trends, this analysis will use a low range of 200 square feet per employee for office space, and a high of 654 square feet per employee for retail (specifically discount stores).

Estimated Development Potential (Range)

The MDP estimated the number of square feet of new development that could potentially be created if the study area is redeveloped as envisioned. Because it is impossible to predict how many square feet would be used for different uses on these redeveloped parcels without a market analysis and economic development strategy, MDP divided these estimated square feet into a range between four percent and fifty percent of the forecasted space being used for commercial or retail purposes.

As summarized in Table 4, using the range of 200 to 654 square feet per employee discussed above, potential employment in the region could range from between 7,182 and 23,490 workers, if 50 percent of the space is used for commercial purposes, and between 629 and 2,054 workers, if four percent of the space is used for commercial purposes.

Table 4: Employment Potential from Redevelopment

Potential Square Feet		Employment Potential Square Feet/Person	
Total	**Commercial**	**200**	**654**
Potential future - 50 percent residential and 50 percent commercial land uses			
9,390,411	4,697,947	23,490	7,182
Potential future - 96 percent residential and 4 percent commercial land uses			
9,390,411	410,849	2,054	629

Source: Maryland Department of Planning, U.S. Green Building Council, Maryland Department of Commerce

Estimated Worker Payroll (Range)

Estimating the potential payroll for a range of potential employment estimates requires additional range assumptions. Without a more extensive market analysis and economic development study for the region, it is not known what commercial activity might be spurred by redevelopment within the study area. Commerce analyzed regional averages for 2015 annual wages in different industry sectors to identify three average annual wages with which to estimate a worker payroll range that might be generated by the fully-maximized purposed commercial splits of 50 percent and 4 percent of the total 9.39 million potential square feet. The 2015 average annual wages for select industry sectors and for Montgomery County, Prince George's County, and the combined area are summarized in Table 5.

Table 5: Average Annual Wages (2015) by Region and Industry Sector

Industry Sector	Average Annual Wage		
	Montgomery County	Prince George's County	Study Area
Average, All Employment	$70,148	$54,652	$62,400
Average, Government Sector	$84,812	$70,512	$77,662
Federal Government	$105,560	$99,060	$102,310
State Government	$46,436	$55,276	$50,856
Local Government	$61,880	$60,008	$60,944
Average, Private Sector	$66,560	$48,204	$57,382
Average, All Service Sectors	$64,792	$45,448	$55,120
Information	$98,540	$77,844	$88,192
Financial Activities	$110,292	$54,444	$82,368
Professional and Business Services	$87,568	$67,548	$77,558
Education and Health Services	$52,780	$50,232	$51,506
Leisure and Hospitality	$23,296	$20,592	$21,944
Other Services	$46,228	$38,532	$42,380

Source: Maryland Department of Labor, Licensing and Regulation, QCEW Data Program, 2015 Annual Average

As Table 6 shows, average annual wages for employees in industry sectors that are likely to located within the study area (based on existing industry activity and regional trends) range from a low of $20,592 (Leisure and Hospitality, Prince George's County) to a high of $110,292 (Financial Activities, Montgomery County). For the purposes of this estimate, the average of both jurisdictions' private sector wages ($57,382 per year) was used to estimate the total payroll that could be generated by the estimated commercial development. This average represents an 86 percent increase over the existing average payroll ($30,919) for the study area (see Table 2). The range of potential total payroll is summarized in Table 6. On average, the total payroll earned by workers in the study area could range from as low as $36 million to as high as $1.3 billion, depending on the intensity of commercial development.

Table 6: Employment Payroll Potential from Redevelopment (Range)

	Estimated Employment	Potential Payroll based on 2015 Average Annual Wages (in $ millions)		
		$57,382	$20,592	$110,292
Potential future - 50 percent residential and 50 percent commercial land uses				
200 SF/Person	23,490	$1,347.90	$483.71	$259.76
654 SF/Person	7,182	$412.12	$147.89	$792.12
Potential future - 96 percent residential and 4 percent commercial land uses				
200 SF/Person	2,054	$117.86	$42.30	$226.54
654 SF/Person	629	$36.09	$12.95	$69.37

Source: Maryland Department of Commerce

Review of Possible Infrastructure Improvements

A review of the cost of road, stormwater, and utility infrastructure needs within the MD 650 right-of-way to facilitate the redevelopment envisioned by the plans, including construction of the multi-way boulevard.

MDOT's State Highway Administration (SHA)

SHA established a methodology to estimate the cost of road, stormwater, utility infrastructure, and right-of-way (ROW) to facilitate the redevelopment envisioned by Concept and Sector Plans for the MD 650 (New Hampshire Avenue) Corridor. The SHA analysis included using each Plan's proposed typical section and ROW estimate from the centerline to estimate planning and construction costs, including ROW impacts. The data used and analysis conducted is described below.

Construction Estimates

The SHA prepared a construction cost estimate for the corridor using a cost-per-mile (CPM) estimate methodology. A CPM methodology is typically prepared when little to no engineering, nor specific project details, are available. A more comprehensive project planning process would be necessary to develop a more detailed cost estimate. The methodology considers the typical section width, roadway functional classification, number of lanes to be added, and the length of the improvement. Average per-mile costs, as documented in the 2015 SHA Highway Cost Estimating Manual, were applied based on this information. The per-mile cost, referenced in the "Roadway" category of the estimate, includes the cost for new pavement, excavation, and shoulder/roadside items (curb, gutter, sidewalk, barriers, etc.). The SHA also determined what existing structures would need to be widened based on the proposed improvements, and estimated the pavement markings, traffic signals, and lighting costs. In addition, an assumption was made on potential landscaping treatments that could be included as part of the corridor improvements. Components of the estimate were calculated as a percentage of the roadway category. A 40 percent contingency was applied due to the level of unknowns at this time. A more detailed analysis could reduce the contingency, if additional design information were known, including design exceptions. The Environmental section (including wetland and stream mitigation items) were applied post-contingency as these activities are typically performed post-construction and under separate contracts. The Preliminary Engineering cost was calculated as 15 percent of the construction total.

Right-of-Way Estimates

The SHA used ArcGIS to overlay ROW estimates from the local comprehensive and corridor plans for the MD 650 (New Hampshire Avenue) from MD 320 (Piney Branch Road) to Washington, D.C. (Eastern Avenue NE) onto the existing centerline of MD 650 to identify potentially impacted existing buildings. The analysis incorporated an ArcGIS shapefile of existing Buildings (18Sept15), maintained by Montgomery County Planning Department, which includes all buildings in Montgomery County and adjacent portions of neighboring jurisdictions. The provided data for buildings inside Montgomery County includes existing land use, square footage, and a unique tax account identifier. Buildings adjacent to MD 650 (New Hampshire Avenue) in Prince George's County were identified using Google Maps and County tax records to locate building addresses.

The first level of ROW impacts analysis identified buildings intersected by each proposed typical section. The second level identified buildings whose parcel is impacted to a degree that would most likely result in a "loss of utility" finding, based on considerations such as the building's proximity to the expanded curb line. The SHA researched potentially impacted buildings through the Montgomery County Department of Finance's Real Property Tax Account system and the Prince George's Property Tax Inquiry system to confirm land use categories, business categories, and assessed values. The resulting ROW Cost Estimate (ROWCE) is an initial assessment based on available property information, area averages, and professional experience that would require additional refinement, traditionally conducted during a formal project planning process that identifies all impacts and potential strategies to reduce impacts.

Based on the available property information, the ROWCE assumed all properties located within 15 feet or less of the proposed rights of way would necessitate a total take of the property and relocation benefits for all affected parties. The SHA Office of Real Estate assumes relocation benefits of $100,000 per affected business and $120,000 per affected resident household. Additional impacted buildings located between 15 and 25 feet of the proposed rights of way were considered as total takes based on the loss of existing parking. These affected business and residents would receive relocation benefits accordingly. Additional assumptions impacting the ROWCE include $30,000 in damages to any property where the proposed ROW is to be relocated to within 25 feet of the frontage of any parcel improvement and commercial parking impacts valued at $10,000 per space lost. Lastly, the ROWCE does not include the cost of demolition, or stormwater and wetlands mitigation impacts. It is not a complete CTP estimate; additional refined analysis would be required as part of a comprehensive project planning process to determine a more complete ROW impact estimate.

Table 7: Construction Cost Estimate

	MD 650 (New Hampshire Avenue) Study Area			
Project Phase	**DC Line (Eastern Avenue NE) to Erskine Street**	**Erskine Street to MD 193 (University Blvd E)**	**MD 193 (University Blvd E) to Lebanon St[1]**	**Lebanon St to MD 320 (Piney Branch Rd)[1]**
Improvement Type	**Widening and Reconstruction**		**Safety and Resurfacing**	
Total Construction	$63,895,964	$28,490,695	$2,838,534	$5,993,022
Planning[2]	$2,000,000	$2,000,000		
Preliminary Engineering	$9,584,395	$4,273,604	$425,780	$898,953
Right-of-Way[3]	$111,205,019	$44,731,554		
Total	**$186,685,378**	**$79,495,854**	**$3,264,314**	**$6,891,975**
			Total Construction Cost Estimate for Study Area	**$276,337,520**

[1] System preservation improvements within existing curb line to improve operations and safety of the roadway.

[2] Planning costs are derived assuming that the study would be conducted as an Environmental Assessment (a planning cost calculator was used to obtain the cost based on this assumption).

[3] ROW costs are not assumed north of MD 193 (University Blvd E) as the improvements would not result in any permanent impacts

Conclusions

The SHA, MDOT Office of Planning and Capital Programming, Planning, and Commerce jointly prepared this report in response to the request from the Chairmen of the Senate Budget and Taxation Committee and House Appropriations Committee to examine potential economic benefits from redeveloping the MD 650 (New Hampshire Avenue) corridor from Washington, D.C. to MD 320 (Piney Branch Road), including sections in Prince George's County and the City of Takoma Park, Montgomery County. The Budget language specifically directed state agencies to base the analysis on potential development and road improvements envisioned in locally-adopted plans for each jurisdiction within the study area. The findings discussed herein are based on analysis of pertinent plans and discussions with local governments. All findings are reported in current (2016) dollars and are not adjusted for inflation. Where potential future conditions are unknown, finding are reported based on the low and high points of a range to represent the potential from redevelopment without making assumptions regarding absorption rates for new development, changes in market conditions during absorption periods, and that ultimate redevelopment potential and future land use is dependent upon individual property owners and whether they choose to change current land uses. Additional coordination would be needed between state agencies, the jurisdictions, and with the District, to develop a consistent vision for the potential redevelopment of MD 650 (New Hampshire Avenue) within the study area.

Potential Redevelopment Findings

The MDP analyzed 15 sites, identified by the local jurisdictions as having high redevelopment potential. They evaluated the existing land uses and assessed values and then used regional prototype developments to estimate the potential property tax revenues generated by a fully-maximized redeveloped corridor. To adjust for the uncertainty of projections, MDP assumed two different future land use scenarios (summarized in Table 8). Scenario one assumes redevelopment within the study area would be evenly distributed between new commercial and residential square footage. Scenario two assumes a distribution of 96 percent residential square footage and four percent commercial. The results for the fully-maximized corridor assume existing taxing rates and authorities and demonstrate a potential to increase property tax revenues by as much as 771 percent.

It is important to note that the Prince George's County Planning Department is comprehensively rewriting the county's Zoning Ordinance and Subdivision Regulations. The County's goals for the update are to streamline the development process, modernize and consolidate zones, incentivize revitalization, and protect stable areas. The rewrite process began in 2013 and adoption of the update is expected in early 2017. The analysis herein assumes existing zoning for all jurisdictions. Any policy development to reflect the future land use vision in Prince George's County, Montgomery County, or the City of Takoma Park would be applied to affected parcels only when an individual property owner chooses to make changes to current land uses.

Table 8: Redevelopment Potential Findings Summary

	Potential Redevelopment Results	
Factors	**Scenario One**	**Scenario Two**
Land Use Mix		
Residential	50%	96%
Commercial	50%	4%
Property Value ($ millions)		
Total	$2,388.86	$2,061.26
per Acre	$18.57	$16.03
Property Tax ($ millions)		
Total	$29.80	$25.72
State	$2.67	$2.31
County	$20.98	$18.10
Municipal	$6.14	$5.32
Total Tax Revenue Percent Increase from Current		
	771%	652%
Study Area New Square Feet Potential (Total = 9,390,411)		
Residential	4,692,464	8,979,562
Commercial	4,697,947	410,849
Study Area New Jobs Potential		
200 Sq.Ft. per Person Employment Factor	23,490	2,054
654 Sq.Ft. per Person Employment Factor	7,182	629
Study Area New Wages Potential ($ millions)		
200 Sq.Ft. per Person Employment Factor	$1,347.90	$412.12
654 Sq.Ft. per Person Employment Factor	$117.86	$36.09

Source: Maryland Department of Planning, Maryland Department of Commerce

Commerce used MDP's findings to estimate the potential number of commercial square feet that could be developed in the study area and corresponding new jobs generated by new commercial land uses. Based on the assumptions discussed herein, a fully-maximized redeveloped study area could support as much as 4.7 million square feet of new commercial space for Scenario One and 0.4 million square feet for Scenario Two. Corresponding potential for new workers and annual wages is summarized in Table 8. A more comprehensive market analysis and economic development plan would be needed to more accurately identify target industries, absorption rates, and business recruitment and retention strategies for the study area and corresponding employment projections.

Potential Infrastructure Improvements Findings

The SHA prepared a construction cost estimate (See Table 9) for four segments of MD 650 (New Hampshire Avenue) within the study area based on the proposed typical sections and necessary rights-of-way from locally-adopted plans and existing conditions of the roadway for each segment. To conform with existing plans, MD 650 (New Hampshire Avenue) would have to be widened and reconstructed from the District line to MD 193 (University Blvd E). North of MD 193 (University Blvd E), based on existing conditions and existing plans, construction along the corridor would include possible geometric improvements to address safety and operational concerns and necessary resurfacing.

Table 9: Construction Cost Estimate Findings Summary

	MD 650 (New Hampshire Avenue) Study Area			
Project Phase	**DC Line (Eastern Avenue NE) to Erskine Street**	**Erskine Street to MD 193 (University Blvd E)**	**MD 193 (University Blvd E) to Lebanon St[1]**	**Lebanon St to MD 320 (Piney Branch Rd)[1]**
Improvement Type	**Widening and Reconstruction**		**Safety and Resurfacing**	
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[1] System preservation improvements within existing curb line to improve operations and safety of the roadway.

[2] Planning costs are derived assuming that the study would be conducted as an Environmental Assessment (a planning cost calculator was used to obtain the cost based on this assumption).

[3] ROW costs are not assumed north of MD 193 (University Blvd E) as the improvements would not result in any permanent impacts

The SHA prepared a construction cost estimate per segment using a cost-per-mile (CPM) estimate methodology for road construction, stormwater, and utility infrastructure components. A CPM methodology is typically prepared when little to no engineering or specific project details are available. To estimate potential ROW costs, SHA applied the ROW from the adopted plans (see Figure 1) to the existing centerline for MD 650 (New Hampshire Avenue) through the study area to identify potentially impacted existing buildings and parking. The resulting ROWCE, discussed in detail above, is an initial assessment based on available property information, area averages, and professional experience that would require additional refinement, traditionally conducted during a formal project planning process, to identify all impacts and potential strategies to reduce impacts. As shown below, the reconstruction of MD 650 (New Hampshire Avenue) consistent with adopted plans would cost approximately $276 million, including $120.4 million for planning, engineering, and construction, and $155.9 million in ROW impacts. A more comprehensive project planning process, including traffic analysis, would be necessary to develop a more detailed cost estimate including possible reductions in ROW impacts.

To initiate a more comprehensive project planning process by SHA the local jurisdictions are encouraged to ensure consistency across locally-adopted plans regarding typical sections and ROW for MD 650 (New Hampshire Avenue) through the study area. Additionally, annual county transportation priority letters to MDOT should reflect prioritization of improvements to the corridor. If prioritized by the local jurisdictions, future projects would compete for funding within the counties and state.

Appendix

The scope of the New Hampshire Corridor Economic Development Potential study area encompass portions of Montgomery County, Prince George's County, and the City of Takoma Park. The land use of the areas in question is governed by Montgomery County's General Plan (1993) and Plan Prince George's 2035 (2014), and more specifically by the Montgomery County Takoma/Langley Crossroads Sector Plan (2012) and the Prince George's County Takoma/Langley Crossroads Sector Plan (2009), all of which have been approved by the respective County Council and adopted by the Maryland-National Capital Park and Planning Commission (M-NCPPC). The New Hampshire Avenue Corridor Concept Plan (2008), though not adopted by M-NCPPC, provides additional guidance regarding future development in the project area.

The corridor today is characterized by a series of disconnected, relatively low density commercial and residential land uses, large surface parking lots, and a state road with high traffic volumes. All of the plans further describe the corridor as lacking cohesion, a sense of place, connectivity, and a pedestrian-friendly environment. The following is a summary of the New Hampshire Avenue corridor's future, as envisioned in each of the plans:

The New Hampshire Avenue Corridor Concept Plan, which includes the segment of MD 650 (New Hampshire Avenue) between Washington, D.C. and Erskine Street, does not articulate a single vision statement, but a list of the plan's following key recommendations are a reasonable substitute:

- Transform New Hampshire Avenue into a pedestrian friendly "multi-way" boulevard.
- Introduce new streets in conjunction with redevelopment.
- Implement enhanced transit service in the corridor in conjunction with redevelopment.
- Develop new pedestrian-oriented buildings along the corridor.
- Develop new housing as an integral component of new development along the corridor.
- Ensure that new development within the character is inspired by the eclectic mix of art-deco, modern, and traditional styles of nearby urban neighborhoods.
- Build green.
- "Greening" of the corridor and enhancing parks and natural areas.
- Integrate local public art to build identity in the corridor.
- Develop parking that is appropriate for mixed-use, pedestrian oriented places.
- Adopt corridor-wide environmental initiatives.

The Takoma/Langley Crossroads Sector Plan for Montgomery County, which includes the MD 650 (New Hampshire Avenue) segment from Long Branch Creek to MD 193 (University Blvd E), articulates the following vision:

> *"Takoma/Langley Crossroads will be a transit-oriented, pedestrian-friendly community that celebrates and builds on the cultural diversity of the Crossroads community. Smart growth and transit-oriented development support the integration of mixed land uses into communities as a critical component of achieving a better place to live. This Plan reduces automobile dependency by locating a mix of uses convenient to homes and adjacent to transit, and by providing alternatives for walking, cycling, and transit within a physical environment that meets the community's needs."*

The Takoma/Langley Crossroads Sector Plan for Prince George's County, which includes the MD 650 (New Hampshire Avenue) segment from MD 193 (University Blvd E) to Quebec Street, articulates the following vision:

> *"The vision for the TLC sector plan area is to achieve a transit-oriented and pedestrian-friendly community that celebrates and builds upon the cultural diversity of the existing and future residents of the TLC with a mix of old and new businesses, providing quality retail goods and services to serve the surrounding residents as well as other shoppers. A newly updated mixed-use center provides numerous opportunities for new and long-time residents to gather and socialize in restaurants, cultural and recreational facilities, plazas, and other community facilities."*