



Montgomery County Department of Transportation

**White Oak Science Gateway
LATR / LATIP
Cost Estimating Analysis
White Paper**

**December 2016
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INTRODUCTION

Following approval of the White Oak Science Gateway (WOSG) Master Plan, the County Council directed that the Montgomery County Department of Transportation (MCDOT) estimate costs for intersection-scale treatments¹ across the entire White Oak Policy Area. The Council's direction was intended to replace the typical intersection evaluation process with a single pro-rata fee that would pay for these costs, referred to as the Local Area Transportation Improvement Program (LATIP).

The LATIP fee would be applied for every new vehicle-trip² a development generates. The applicant would pay the associated fee, satisfying the LATIP requirements. Other payments (such as Impact Taxes) would remain applicable in accordance with the Subdivision Staging Policy (SSP).

This document describes the analysis used to identify transportation needs and estimate associated costs, provides the determined fee approved by Council, and then provides information on how LATIP is to be implemented as a program.

¹ Intersections were typically evaluated via the Local Area Transportation Review process (LATR) – a component of the Subdivision Staging Policy (SSP) – which requires each new development to analyze and address traffic impacts to nearby intersections. Each development completes a traffic analysis that identifies existing traffic patterns, new trips generated by approved but unbuilt development, new trips generated by the applicant's development, and then assigns these trips onto the network to identify impacts. At locations deemed to have failing levels of service, the applicant is responsible for identifying – in coordination with public agencies – treatments to either increase capacity or reduce demand.

² A "trip" is defined as a "PM peak hour vehicle-trip" based on Local Area Model (LAM) trip generation rates. These trips do not account for trips removed by demolishing a previous land use. They do include trips reduced by internal capture (trips generated within an often mixed use development) as well as pass-by trips (existing trips utilizing the development, common to land uses such as fast-food and gas stations). Developments going through the development approval process are expected to use the modified-LAM for trip generation purposes as further detailed on page 14.

During development of this analysis other definitions of a Trip were considered using variants of the following metrics:

- Using a time scale of Peak Period Trip or a Daily Trip.
- Defining a trip as a vehicle-trip (trip only by automobile) or a person-trip (a mode-neutral trip that includes automobiles as well as other modes such as walking, bicycling, transit, and carpooling).
- Changing the directionality to specify a trip in the peak flow direction. This metric had been advocated by Viva White Oak on the basis that this development would attract trips in the reverse flow along US 29, utilizing underused capacity.
- Whether the trips used in the denominator should consist only of mitigated trips. Mitigated Trips being only those trips which cause a Level of Service (LOS) F and must be mitigated to achieve LOS E. At intersections failing under existing conditions, any additional trips must be mitigated at 1.5x the amount of trips.

PURPOSE

Coordination

The scattered nature of development in an area can result in a number of uncoordinated transportation projects being pursued by various developers. In some cases an agreement can be struck between developers to provide shared and coordinated treatments, though these agreements can be difficult to implement as intended.⁴ The LATIP fee is intended to reduce these issues, allowing for a unified analysis that can identify all treatments required across the policy area. Implementation is at the behest of public agencies, coordinated by Council-appropriated funds and each project managed by either County or State transportation agencies.

Equity

Intersections generally tend to have some degree of excess capacity before they are considered to be failing and in need of treatment. The first developers to proceed with project approvals will tend to have first claim over this capacity, and later developers tend to be the projects left to mitigate impacts. This is further complicated in that as new master plans potentially free up new capacity by relaxing congestion thresholds, it is the larger and more organized developments which will tend to be more able to proceed quickly. With little transportation capacity remaining, the smaller developments may be left with disproportionate mitigation needs (building a new lane can serve several hundred new vehicles, but the constructing developer may only need to mitigate a dozen vehicles). The LATIP is designed so that each developer pays for its share of the cost of the improvements.”

Transparency

A comprehensive analysis offers the potential for greater public awareness of what mitigating treatments are proposed for an area. While each new development goes through a public process before the Planning Board, public awareness may tend to be focused only on a few select developments of interest, and interested parties may not be cognizant of transportation treatments proposed elsewhere in an area. The analysis associated with the LATIP can potentially provide a more transparent and visible source of information for the public to weigh in, with potential projects being identified comprehensively before the County Council rather than piecemeal before the Planning Board.

Time and Fiscal Savings

The LATIP fee can reduce the number of traffic analyses which must be performed. As most of these analyses do not necessitate any treatments, this saves resources both for the private and public sectors. This relieves developers of the need to perform intensive studies and public officials of the resources spent reviewing them, which can often involve many months of back-and-forth comments & revisions. The centralized analysis is itself a significant undertaking, but the consolidated analysis can provide a fiscal and time savings to all parties. The “pay and go” approach significantly reduces risk to new development by providing a clear one-time payment for an applicant, serving to streamline the development review process.

⁴ However, even as a part of LATIP: private developers may still voluntarily enter into agreements to construct LATIP treatments and may subsequently receive credit toward the LATIP fee, as noted on pages 15-18.

SCOPING

The scoping process occurred over approximately 6 months in 2014 and was formed based on the input of multiple sources, including MCDOT⁵, MCDGS⁶, M-NCPPC⁷, SHA⁸, the County Council⁹, and members of the public.

In total, 61 intersections were included in the analysis, as shown in Exhibit 1 on the next page. These intersections generally represent major intersections, often accompanied by traffic signals. They include intersections within the White Oak Policy Area as well as approximately two intersections beyond the edge of the policy area. Some additional intersections were included beyond the policy area, including several locations located in Prince George's County. All intersections were publicly vetted, with several intersections being added at the public's request.

The analysis is intended to focus on intersection treatments within the White Oak Policy Area. The purpose of evaluating intersections outside the policy area was to ensure that such information was available were it later determined to be of interest.

The analysis included the proposed BRT lines within the policy area, the reconstruction of the Old Columbia Pike Bridge, and new roadways proposed by the WOSG Master Plan. Of note, however, is that the analysis did *not* include the three master planned interchanges at Stewart Ave, Tech Rd / Industrial Pkwy, and Fairland Rd / Musgrove Rd.

The exclusion of these interchanges was to ensure that a worst-case basis – in terms of highway capacity – was evaluated. Noting that none of these interchanges are funded for construction (and would therefore not typically be included in a developer's traffic impact analysis), the analysis was scoped to identify surface-level treatments that might be necessary were an interchange not built.¹⁰

⁵ MCDOT = Montgomery County Department of Transportation, a department under jurisdiction of the County Executive with authority over most non-numbered roadways throughout the County.

⁶ MCDGS = Montgomery County Department of General Services, a department under jurisdiction of the County Executive with authority over County-owned facilities, materials, and right-of-way. At the time the scope was being developed, MCDGS was a partner in the development of the Viva White Oak development located along FDA Boulevard and Cherry Hill Road. While MCDGS has been kept apprised of the project's scope and progress, this analysis has been careful to ensure that Viva White Oak did not have any effect on the analysis different from how any other trip-generating project would be handled.

⁷ M-NCPPC = Maryland-National Capital Park and Planning Commission, a State-created bi-county agency with authority over parks as well as planning in Montgomery and Prince George's Counties. Each county has a separate office that largely functions independently of the other county, with a Planning Board appointed by the County Council. All references to M-NCPPC apply to the Montgomery County office of M-NCPPC.

⁸ SHA = State Highway Administration, a State agency within the Maryland Department of Transportation with authority over all numbered roadways – generally major arterials – throughout the County and State.

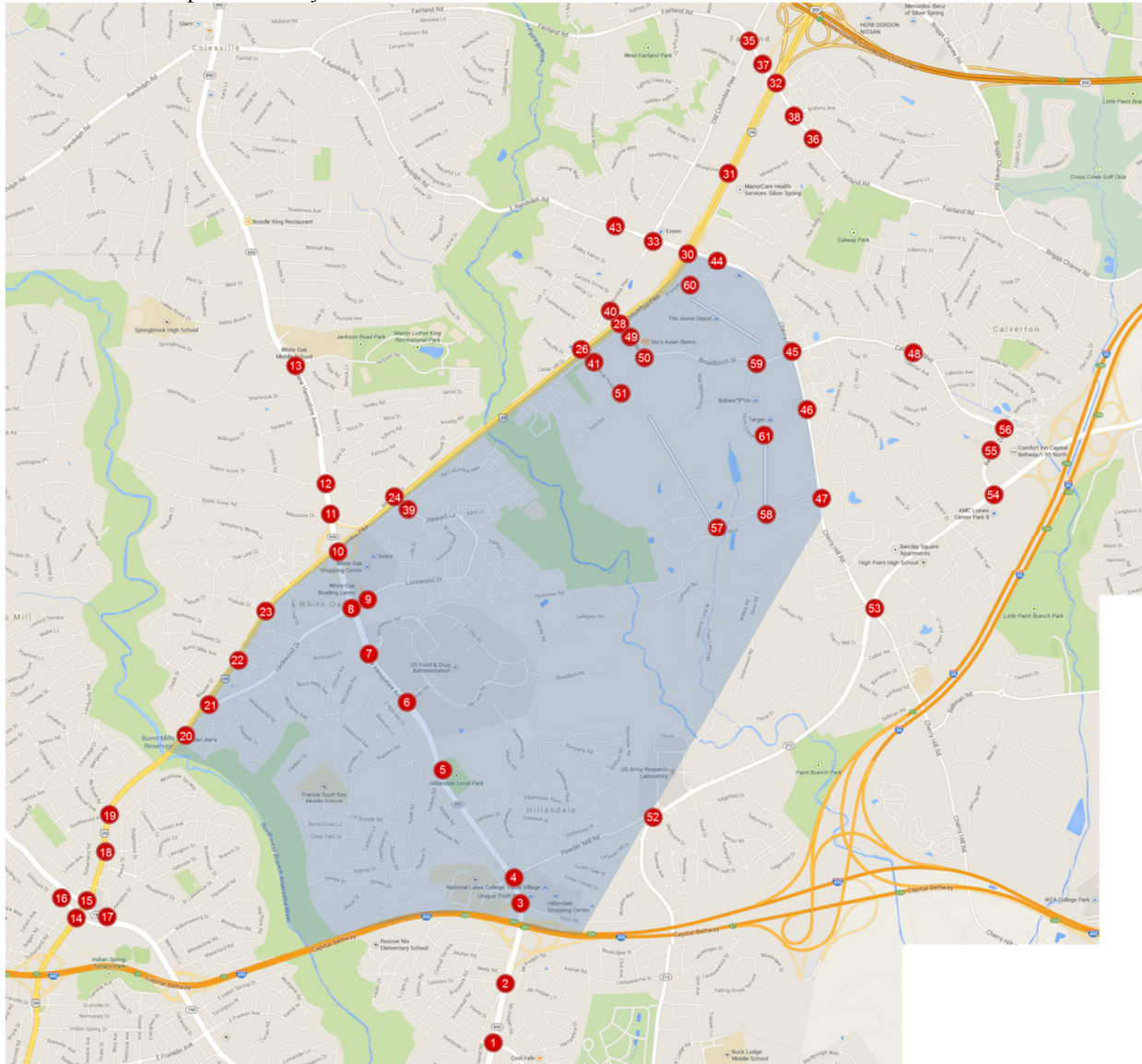
⁹ Per the Full Council Session on April 14, 2015.

¹⁰ This is to ensure that interim surface treatments have been considered, if found to be necessary. This assumption is not intended to imply that the interchanges will not be built. The interchanges at Tech/Industrial and at Fairland/Musgrove were #5 and #9 on the County's 2015 Priorities Letter to the State, though neither is currently funded for planning, design, or construction.

Master plans typically assume that 75% of the development potential would be built-out over the lifetime of the plan.¹¹ Based on public testimony suggesting that the LATIP fee would make it easier to develop, the County Council directed that this analysis be scoped to assume 100% build-out by its horizon year of 2040. While it is unlikely that development would achieve 100% of potential density for the entirety of the policy area, it was agreed that it is likely that development will exceed the typical 75% build-out.

Additional detail on the methodology behind the analysis can be found in the enclosed technical memorandum prepared by our consultant, Sabra, Wang, & Associates (SWA).

Exhibit 1 – Map of the analysis area



North is toward the top of the exhibit. I-495 (Capital Beltway) runs east-west along the bottom, with I-95 running north-south along the right side and MD 200 (Intercounty Connector) at the top-right. US 29 runs diagonal from bottom-left to top-right, and MD 650 runs north-south along just left of the center. The blue-shaded area shows the White Oak Policy Area. Intersections included in the scope are marked in red.

¹¹ 75% build-out is a standard value used by M-NCPPC and is based on their experience with previous master plans.

FINDINGS

The analysis was scoped to generally adhere to the practices as defined and required by the Local Area Transportation Review (LATR) process prior to the 2016 rewrite of the Subdivision Staging Policy (approved by Council on November 15, 2016). The findings presented in the enclosed SWA technical memorandum reflect the results of the analysis.

Based on the LATR methodology, treatments were identified at a total of 16 intersections:

- These results do not include work to be performed by Washington Adventist Hospital along Plum Orchard Dr at both Cherry Hill Rd as well as at B-5, nor do they include work to be completed by Viva White Oak at FDA Blvd and B-5.
- Three intersections are located outside of the White Oak Policy Area, along Old Columbia Pike at Tech Rd, Randolph Rd, and Fairland Rd. For this reason these three intersections are not included in the LATIP.
- Four of these intersections would be addressed by an interchange at US 29 and Tech Rd / Industrial Pkwy.
- One of these intersections would be addressed by an interchange at US 29 and Stewart Lane.

Along US 29 there are 9 intersections identified south of the MD 650 interchange which, in most cases, require an additional through lane in each direction to satisfy the LATR methodology. The issues faced along US 29 are, to a degree, a representation of the WOSG Master Plan having been approved with the recognition that the plan fails both the Roadway and Transit transportation goals.¹²

It is critical to highlight that MCDOT has no expectation that US 29 will be widened to accommodate an additional continuous thru lane in each direction, which could have significant impacts to residents and businesses. It is our position to reduce vehicle-trip generation through improvements to transit, bicycle, and pedestrian accessibility, as well as through Traffic Mitigation Agreements (TMAs) with new development.

The master plan sets the Non-Auto Driver Mode Share (NADMS)¹³ at 30% for all new development, residential and commercial, in the Life Sciences/FDA Village Center and 25% for other new development in the White Oak Center and Hillandale Center. Our analysis did not explicitly factor in this NADMS value as an input, though the analysis does generate an NADMS as an output. The model estimated that based on the inputted infrastructure and development, an NADMS of 32.7% would be achieved. Additional efforts to increase NADMS not already included in the model could contribute to exceeding the master plan's NADMS goals and reducing vehicular demand.

¹² Based on the Transportation Policy Area Review (TPAR) tests that were part of the SSP prior to its being eliminated on January 1, 2017. While LATR looks at nearby intersections, TPAR looks at roadway segments and is focused on arterial roadways. Using planning models to gauge travel speeds, it is measured as a ratio between the modeled travel speed versus the free-flowing travel speed. If a vehicle can travel at 40 MPH along a roadway with a design speed of 45 MPH: its ratio would be 40 divided by 45, or 88%.

¹³ NADMS is the percentage of trips being made by non-auto modes such as by walking, bicycling, transit, carpooling, and telecommuting. The inverse of this is how many trips are performed in single occupant vehicle.

COST ESTIMATES

The enclosed SWA technical memorandum provides cost estimates for each identified intersection project. These estimates utilize SHA's Major Quantities Estimates methodology, which do not include utilities, stormwater management, structures, or detailed information on environmental impacts. Accordingly, contingency factors were applied to compensate for a number of these items, with all contingencies applied before adding in estimated right-of-way costs:

- 10% Environmental contingency for general impacts to environmental elements and as a measure of stormwater management needs.
- 5% Utilities contingency to compensate for related impacts.
- 50% General contingency as a matter of general practice for a planning-level cost estimate.¹⁴

It is expected that all values – particularly items covered by contingencies – would change significantly should a project enter into detailed design. Future monitoring and reassessments of project costs are expected to consider the most accurate and precise information available, refining these costs over time and adjusting the associated LATIP fee accordingly.

¹⁴ These contingencies were overridden at several locations. For the work at the intersections of US 29, Old Columbia Pike / Prosperity Dr, Industrial Pkwy, and Tech Rd: the General contingency was replaced with a 100% contingency to account for the additional complexity and maintenance of traffic needs associated with the proposed work.

FEE CALCULATION

The table included on the following page is split into several groupings of rows and columns. The rows are color-coded and grouped as follows: interchanges (**red**), transit (**blue**), intersections (**purple**), new roads (**brown**), road widening (**orange**), and bikeways (**green**).¹⁵

The focus of the analysis tasked by Council – and the subject of this analysis – was to identify the Intersections (**purple**) costs.¹⁶ However, a nexus was recognized by the Executive Office, Council, and M-NCPPC that as local connectivity and the NADMS goal are critical toward achieving transportation adequacy: a nexus exists toward incorporating additional projects into the cost assessed as the LATIP fee (that is: including projects from the non-**purple** sections).

Exhibit 2 details the projects approved by Council for inclusion in the LATIP fee, totaling \$101,800,000. This is the numerator in the \$/trip LATIP fee.

The denominator (trips) was established by Council to be 20,324 trips.

Cost	\$101,800,000
÷ Trips	20,324
\$/Trip	\$5008.86

Rounding up: the LATIP fee has been established by Council to be **\$5010** per PM peak hour vehicle-trip (using Local Area Model trip generation rates), which does not include trips removed by demolishing the preceding land use, but does account for internal capture and pass-by trips.²

¹⁵ Summation in the table may not be exact due to rounding upward to the nearest \$100,000 value. All costs are over the 2040 lifetime of the plan. This is particularly applicable with transit projects, which include bus and bike replacements over time (operating costs are not included).

¹⁶ The other color-coded sections are sourced from existing project cost estimates, or from other planning level cost estimates performed separately from this analysis as a part of the development of the WOSG Master Plan.

**Cost Estimates for the
White Oak Science Gateway Master Plan**

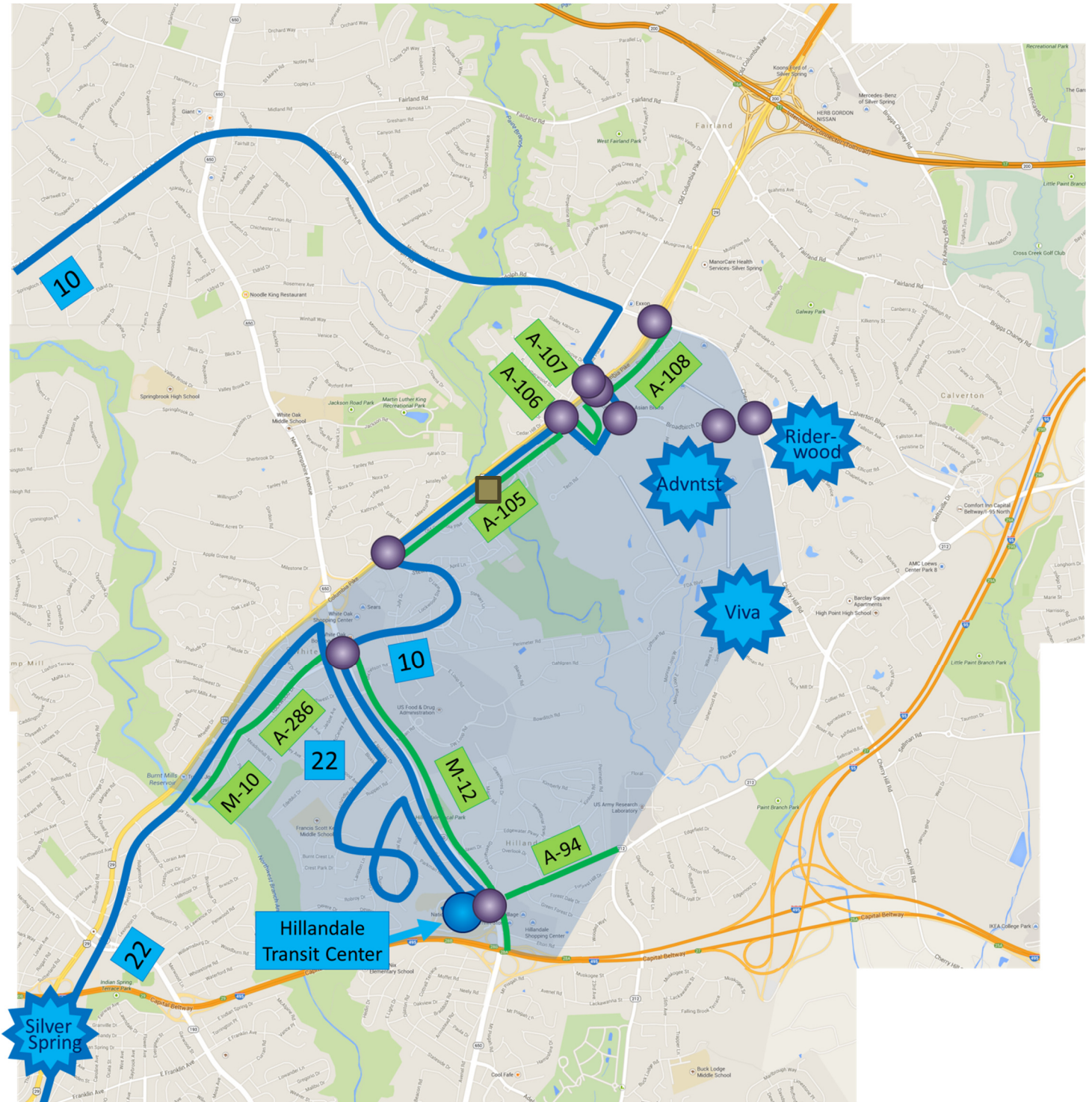
Project		Approx Total Cost	Pub	Pvt	County / State	Developers	UMP	Notes
Interchanges	Stewart La	\$ 130,000,000	100%		\$ 130,000,000	\$ -	\$ -	Fairland/Musgrove based on SHA estimates as of July 2016. Stewart La and Tech/Industrial based on SHA estimates as of September 2013. Greentaste and Blackburn interchanges are excluded on account of being a significant distance outside of the plan area. Fairland/Montrose is included on account of being within 2 intersections distant of the plan area.
	Tech Rd / Industrial Pkwy	\$ 96,000,000	100%		\$ 96,000,000	\$ -	\$ -	
	Fairland Rd / Musgrove Rd	\$ 139,000,000	100%		\$ 139,000,000	\$ -	\$ -	
	SUBTOTAL	\$ 365,000,000			\$ 365,000,000	\$ -	\$ -	
Transit (Capital)	US 29	\$ 65,800,000	100%		\$ 65,800,000	\$ -	\$ -	BRT accounts for the span within the master plan area only; full build-out of the system would be necessary for adequate functionality. Costs are based on a per-mile estimate prepared for each line by VHB. Circulator assumes 2 buses with approximately 2 replacements at 12 year increments. Operating costs not included. These items are not explicitly in the Master Plan, but are outstanding needs identified for the area which could contribute toward a ped, bike, and transit usage (and subsequently contribute toward achieving the NADMS goals for the policy area). Washington Adventist Hospital Transit Center assumed to be built by the Hospital. Bikeshare costs are for capital costs only over the lifetime of the plan and do not include operating costs. The TMD accounts for the total estimated costs to the County over the lifetime of the plan, considering linear commercial development growth and adjusting for incoming revenue.
	MD 650	\$ 64,100,000	100%		\$ 64,100,000	\$ -	\$ -	
	Randolph Rd	\$ 13,900,000	100%		\$ 13,900,000	\$ -	\$ -	
	Circulator	\$ 3,700,000	35%		\$ 1,300,000	\$ -	\$ 2,400,000	
	New Ride-On Service	\$ 12,700,000	34%		\$ 4,300,000	\$ -	\$ 8,400,000	
	Increased Ride-On 10 Service	\$ 9,100,000	78%		\$ 7,100,000	\$ -	\$ 2,000,000	
	Increased Ride-On 21 Service	\$ 3,600,000	100%		\$ 3,600,000	\$ -	\$ -	
	Increased Ride-On 22 Service	\$ 5,500,000	68%		\$ 3,700,000	\$ -	\$ 1,800,000	
	Washington Adventist Hospital Transit Center	\$ 200,000	100%		\$ -	\$ 200,000	\$ -	
	Hillandale Transit Center	\$ 500,000			\$ -	\$ -	\$ 500,000	
	Bus Stop Improvements	\$ 100,000			\$ -	\$ -	\$ 100,000	
	Bikeshare	\$ 4,600,000			\$ -	\$ -	\$ 4,600,000	
	Transportation Management District (TMD)	\$ 13,900,000	100%		\$ 13,900,000	\$ -	\$ -	
	SUBTOTAL	\$ 197,700,000			\$ 177,700,000	\$ 200,000	\$ 19,800,000	
Intersections	LATR Analysis (per each analysis)	\$ 400,000			\$ -	\$ -	\$ 400,000	* = Assumed to be constructed as part of the Viva White Oak development access ** = Assumed to be constructed by Washington Adventist Hospital Δ = Would be negated by an interchange at US 29 and Stewart Lane † = Would be negated by an interchange at US 29 and Tech Rd / Industrial Pkwy ‡ = Would be negated by an interchange at US 29 and Fairland Rd / Musgrove Rd ◻ = Located outside of the WOSG Policy Area
	US 29 at Randolph Rd / Cherry Hill Rd	\$ 2,000,000			\$ -	\$ -	\$ 2,000,000	
	* FDA Blvd at B-5	\$ 1,000,000	100%		\$ -	\$ 1,000,000	\$ -	
	** Cherry Hill Rd at Plum Orchard Dr	\$ 2,800,000	100%		\$ -	\$ 2,800,000	\$ -	
	Broadbirch Dr at Cherry Hill Rd & Plum Orchard Dr	\$ 3,600,000			\$ -	\$ -	\$ 3,600,000	
	Broadbirch Dr at Tech Rd	\$ 1,700,000			\$ -	\$ -	\$ 1,700,000	
	* Tech Rd at Industrial Pkwy	\$ 2,800,000			\$ -	\$ -	\$ 2,800,000	
	Δ US 29 at Stewart Lane	\$ 3,300,000			\$ -	\$ -	\$ 3,300,000	
	† US 29 at Industrial Pkwy	\$ 4,400,000			\$ -	\$ -	\$ 4,400,000	
	† US 29 at Tech Rd	\$ 3,300,000			\$ -	\$ -	\$ 3,300,000	
	† Tech Rd at Prosperity Dr / Old Columbia Pike	\$ 2,300,000			\$ -	\$ -	\$ 2,300,000	
	‡ Old Columbia Pike at Tech Rd	\$ 500,000	100%		\$ 500,000	\$ -	\$ -	
	◻ Old Columbia Pike at Randolph Rd	\$ 1,100,000	100%		\$ 1,100,000	\$ -	\$ -	
	◻ Old Columbia Pike at Fairland Rd	\$ 2,300,000	100%		\$ 2,300,000	\$ -	\$ -	
	MD 650 at Lockwood Dr	\$ 1,400,000			\$ -	\$ -	\$ 1,400,000	
	MD 650 at Powder Mill Rd	\$ 5,000,000			\$ -	\$ -	\$ 5,000,000	
SUBTOTAL	\$ 37,900,000			\$ 3,900,000	\$ 3,800,000	\$ 30,200,000		
New Roads	A-105 (White Oak Shopping Center)	\$ 23,400,000	100%		\$ -	\$ 23,400,000	\$ -	Assumed built by White Oak Shopping Center
	A-106 (Industrial Pkwy Extended)	\$ 49,500,000	100%		\$ -	\$ 49,500,000	\$ -	Assumed built by Viva White Oak
	B-5 (Plum Orchard / FDA Blvd Connector)	\$ 18,300,000	100%		\$ -	\$ 18,300,000	\$ -	Assumed built by Adventist Hospital & Viva White Oak
	B-6 (Plum Orchard Extended)	\$ 26,400,000	100%		\$ -	\$ 26,400,000	\$ -	Assumed built by adjacent development.
	B-7 (Cherry Hill / Plum Orchard Connector)	\$ 8,600,000	100%		\$ -	\$ 8,600,000	\$ -	Assumed built by adjacent development.
	SUBTOTAL	\$ 126,200,000			\$ -	\$ 126,200,000	\$ -	
Roadway Widening	CM-10 US 29 (Columbia Pike) over MD 650	\$ 43,500,000	100%		\$ 43,500,000	\$ -	\$ -	All projects are for road widening for either additional capacity or parking, and includes any master planned bicycle infrastructure. CM-10 (US 29) and M-12 (MD 650) widening are for additional thru lanes along in each southbound directions at US 29 and MD 650. M-12 assumes no bridge reconstruct; lanes narrowed; bikeway behind piers w/ reconstructed wall. CM-10 assumes a bridge reconstruct.
	A-105 Old Columbia Pike Bridge	\$ 12,000,000			\$ -	\$ -	\$ 12,000,000	
	A-105 Old Columbia Pike	\$ 58,100,000	95%		\$ 53,100,000	\$ -	\$ 5,000,000	
	M-12 MD 650 (New Hampshire Ave)	\$ 5,900,000	100%		\$ 5,900,000	\$ -	\$ -	
	P-16 Elton Rd	\$ 100,000	100%		\$ 100,000	\$ -	\$ -	
	B-9 Broadbirch Dr	\$ 33,700,000	100%		\$ 33,700,000	\$ -	\$ -	
	B-10 FDA Blvd	\$ 25,100,000	100%		\$ -	\$ 25,100,000	\$ -	
	B-11 Tech Rd (south of Industrial Pkwy)	\$ 10,400,000	100%		\$ -	\$ 10,400,000	\$ -	
SUBTOTAL	\$ 188,800,000			\$ 136,300,000	\$ 35,500,000	\$ 17,000,000		
New Bikeways	M-10 US 29 (Columbia Pike)	\$ 2,800,000			\$ -	\$ -	\$ 2,800,000	Cost estimates based on DO+DTE evaluation on 2/10/2017.
	M-12 MD 650 (New Hampshire Ave)	\$ 6,600,000			\$ -	\$ -	\$ 6,600,000	
	A-94 Powder Mill Rd	\$ 3,400,000			\$ -	\$ -	\$ 3,400,000	
	A-106 Industrial Pkwy	\$ 8,400,000			\$ -	\$ -	\$ 8,400,000	
	A-107 Tech Rd (north of Industrial Pkwy)	\$ 2,700,000			\$ -	\$ -	\$ 2,700,000	
	A-108 Prosperity Dr	\$ 3,600,000			\$ -	\$ -	\$ 3,600,000	
	A-286 Lockwood Dr (west of New Hampshire Ave)	\$ 5,700,000			\$ -	\$ -	\$ 5,700,000	
B-3 Elton Rd	\$ 500,000	100%		\$ 500,000	\$ -	\$ -		
SUBTOTAL	\$ 33,700,000			\$ 500,000	\$ -	\$ 33,200,000		
TOTAL ESTIMATED COST		\$ 949,300,000			\$ 683,400,000	\$ 165,700,000	\$ 100,200,000	Roadway & Transit TPAR are both inadequate.

Exhibit 2 – LATIP Fee Projects

<u>INTERSECTIONS (purple)</u>		
• US 29 at Stewart Lane ¹⁷		\$3,300,000
• US 29 at Industrial Pkwy ¹⁷		\$4,400,000
• US 29 at Tech Road ¹⁷		\$3,300,000
• US 29 at Randolph Rd / Cherry Hill Rd		\$2,000,000
• Tech Rd at Prosperity Dr / Old Columbia Pike ¹⁷		\$2,300,000
• Tech Rd at Industrial Pkwy		\$4,400,000
• Broadbirch Dr at Tech Rd		\$1,700,000
• Broadbirch Dr at Cherry Hill Rd & Plum Orchard Dr		\$3,600,000
• MD 650 at Powder Mill Rd		\$5,000,000
• MD 650 at Lockwood Dr		<u>\$1,400,000</u>
	Subtotal	\$31,400,000
<u>TRANSIT (blue)¹⁸</u>		
• White Oak Circulator		\$2,400,000
• New Ride-On Service		\$8,400,000
• Increased Ride-On Service		\$3,800,000
• Hillendale Transit Center		\$500,000
• Bus Stop Improvements		\$100,000
• Bikeshare		<u>\$4,600,000</u>
	Subtotal	\$19,800,000
<u>BIKEWAYS (green)¹⁸</u>		
• M-10 US 29 (Columbia Pike)		\$2,800,000
• M-12 MD 650 (New Hampshire Ave)		\$6,600,000
• A-94 Powder Mill Rd		\$3,400,000
• A-105 Old Columbia Pike		\$5,000,000
• A-106 Industrial Pkwy		\$8,400,000
• A-107 Tech Rd		\$2,700,000
• A-108 Prosperity Dr		\$3,600,000
• A-286 Lockwood Dr		<u>\$5,700,000</u>
	Subtotal	\$38,200,000
Old Columbia Pike Bridge Reconstruction		\$12,000,000
LATIP Analyses every 6 yrs, from 2017 to 2040		\$400,000
	Total Amount	\$101,800,000

¹⁷ These could be removed if respective interchanges along US 29 are funded for construction.

¹⁸ On the basis that these will contribute toward NADMS, reducing issues encountered along US 29 and elsewhere. All costs are over the 2040 lifetime of the plan. Operating costs are not included.



Projects proposed for inclusion into the cost estimate. Purple circles represent Intersections projects. Green lines labeled with A-## and M-## indicate bikeways. Blue indicates bus facilities, with existing bus routes (the 10 and 22 lines) as well as service areas (in the 12-pointed stars) to be addressed by the Circulator & future Ride-On lines along routes not yet determined.

SHA FEEDBACK

Coordination with the State Highway Administration (SHA) occurred from the earliest stages, with SHA staff being involved in defining the analyses' scope. Findings were presented to SHA in August 30, 2016, with SHA represented by the Assistant District Engineer for Traffic¹⁹ and Regional Planner²⁰ for Montgomery County. An email response on behalf of SHA was received from the Regional Planner on September 26, 2016 indicating the following information:

Technical Concurrence

SHA concurs with the scope, methodology, and cost estimates.

Required Analyses for SHA Permitting

SHA's response on their buy-in to the LATIP structure is copied verbatim:

While the State defers to local APFOs, where established, for required improvements, MDOT is concerned as to how pending changes in countywide LATR requirements may affect this specific application. The State expects to retain the right, as established in COMAR, to request an applicant perform a [Traffic Impact Study] to determine roadway improvements needed to mitigate additional traffic generated by a proposed development. All proposed roadway improvements will be constructed under an SHA-issued access permit. In addition, partial funding of requested improvements may not be an adequate basis for approval of an access permit.

Funding Allocation

SHA buy-in into the LATIP structure – particularly in reducing the need for additional Traffic Impact Studies – will be contingent on how the LATIP fee structure can fund necessary State projects in a timely manner.

As the County will collect the LATIP fees, considerations must be made as to how funding will provide for State needs. As noted in the preceding section on Council Considerations, a CIP mechanism will be necessary to allocate revenue from the LATIP fee toward SHA projects.

The LATIP fee is not expected to address transportation projects pursued by SHA that are not identified in our analysis, though such treatments may be incorporated during subsequent monitoring reassessments.

SHA noted a desire that LATIP revenue be used solely for projects in the White Oak Policy Area. SHA has also expressed an interest in participating in project selection and how such funds are applied to planned projects along State roadways.

¹⁹ Representing SHA's District 3 Office in Greenbelt and acting on behalf of the Assistant District Engineer for Project Development as well as District 3's Access Management and Engineering System Teams.

²⁰ Located in the Regional and Intermodal Planning Division of SHA's headquarters in Baltimore.

IMPLEMENTATION (DEVELOPERS)

Trip Generation

On September 28, 2017, the Planning Board approved designation of the fee as being tied directly to the Local Area Model (LAM) trip generation rates utilized in the analysis. These rates are shown to the right in the upper table.

Under direction from the Council and Executive, the following refinements to the LAM rates were made:

- BioScience and Hospital land uses were split out from the Other category
- Single Family Residential was split into Detached and Attached
- Multifamily Residential was split into Low and High density.

The new rates were identified by applying the ratio between the corresponding ITE rates for each break-out category to the LAM rate, and setting the total generated trips to remain unchanged.

Fee Estimation

The rates above allow for a direct conversion of the fee (\$ per trip) and land uses (trips per unit²¹) into an easy-to-reference value in \$ per unit:

USE	UNIT	LATIP (\$/unit)	USE	UNIT	LATIP (\$/unit)
Single Family Detached	DU	\$6420	Office	GSF	\$6.01
Single Family Attached	DU	\$3273	Industrial	GSF	\$5.01
Multi-Family High-Rise	DU	\$1688	Bioscience Facility	GSF	\$4.94
Multi-Family Low-Rise	DU	\$2616	Retail	GSF	\$15.03
Multi-Family Senior	DU	\$6420	Place of Worship	GSF	\$4.62
Student-Built Houses	DU	\$6420	Prvt Elem / Scndry School	GSF	\$4.62
Clergy House	DU	\$6420	Hospital	GSF	\$5.36
			Charitable / Philanthropic	GSF	\$6.01
			Other Non-Residential	GSF	\$4.62

An applicant can use this table to estimate the trips being generated by the existing land use as well as the proposed land use. Subtracting the Existing from the Proposed yields the total fee due.²²

Reductions for internal capture and pass-by trips are already accounted for by the Local Area Model trip generation rates.² Note that Moderately Priced Dwelling Units (MPDUs) are subject to the LATIP fee.

Local Area Model Trip Gen		
Land Use	(n) in T =nx	x Units
Office	1.20	1000 SF
Retail	3.00	1000 SF
Industrial	1.00	1000 SF
BioScience	0.99	1000 SF
Hospital	1.07	1000 SF
Other	0.92	1000 SF
SF Det	1.28	DU
SF Att	0.65	DU
MF Low	0.52	DU
MF High	0.34	DU

Above: LAM rates for use in LATIP

Below: Process for modifying LAM rates

Land Use	LAM	ITE	Ratio	Adjusted
SF Det	0.83	1.02	1.96	1.28
SF Att	0.83	0.52		0.65
MF Low	0.48	0.62	1.55	0.52
MF High	0.48	0.40		0.34
BioScience	1.00	1.07	1.07	0.99
Hospital	1.00	1.16	1.16	1.07
Other	1.00	1.00	reference	0.92

²¹ Units being measured in Gross Square Feet (GSF) or Dwelling Units (DU)

²² If there is a net reduction in trips from Existing conditions (that is: Existing trip generation is greater than the Proposed trip generation), then the LATIP fee due is zero.

Payment Process

LATIP fees are collected in a manner and schedule substantially similar to the Transportation Impact Tax. They are collected by the Department of Permitting Services (DPS), and directed to an account specific to the LATIP.

Local Access Analyses

LATR (which the LATIP replaces) evaluates intersections located away from the development site, but not the intersections immediately at the development site. Furthermore, this analysis uses macroscopic models that do not necessarily focus on the intricacies of an individual development, which may have a varying number of access points spread out across one or multiple roadways. New developments are therefore still required to evaluate site frontage and access points for any necessary treatments and mitigate as necessary.

Developments Outside White Oak

Developments located outside the White Oak Policy Area but generating trips to, from, or through the White Oak Policy Area operate entirely under the Subdivision Staging Policy or applicable future regulations. They are not a part of the White Oak LATIP fee. Normal traffic impact analyses are expected, with mitigation required even within the White Oak policy area as per the Subdivision Staging Policy.

Credits to LATIP Fee and Impact Tax

If a developer constructs a project included in the LATIP, the developer is to be credited up to the amount expended toward their LATIP obligation²³. The LATIP credit for any individual project may not exceed the corresponding cost approved by Council to determine the LATIP fee.

If a developer has enough LATIP credits as to reduce their LATIP fee to zero, remaining LATIP credits may potentially be applied as Transportation Impact Tax credits. Implementation costs in excess of the LATIP estimate may potentially be credited toward the Transportation Impact Tax. Work on LATIP projects along both State and County roads and intersections is eligible for Transportation Impact Tax credits under these scenarios. Any credits to the Impact Tax must comply with Impact Tax crediting policies and regulations.

If a developer constructs a project not included in the LATIP, it falls under regular Impact Tax regulations and Impact Tax credit eligibility. The LATIP fee is not itself creditable toward Impact Taxes.

²³ Project costs are subject to approval

LATIP Credits (Intersections)

Intersection treatments must be constructed in full to be eligible for credits. MCDOT is willing to listen to case-by-case proposals to partially implement intersection treatments. If an exception to partially implement an intersection project is approved, MCDOT will assign a partial crediting cap for that location.

EXAMPLE: A full intersection project costs \$1,000,000, but a partial treatment is approved and MCDOT estimates this work amounts to 25% of the estimated costs. The development could then credit toward LATIP of up to \$250,000.

A developer (or group of developers) may submit for MCDOT approval (and possibly also SHA, as applicable) a traffic analysis for an LATIP intersection to identify what specific modifications are necessary to achieve adequacy for their development.

LATIP Credits (Intersections // Changes to the Program)

A developer (or group of developers) may propose an alternative to the LATIP's proposed infrastructure. MCDOT (and SHA, as applicable) will review the proposed alternative on its technical merits.

Upon receiving technical concurrence, MCDOT will hold one public open house and one public hearing for the proposed alternative. The County will not provide resources directly in support of these proposals apart from hosting these two events, and the burden will be on the applicant to defend the alternative in the public setting. It is suggested that the applicant utilize the Regional Services Center to proactively seek public input at the start and throughout the process.

If approved after the public hearing, a workplan must be agreed upon whereby private development will build out the necessary modifications, whether all at once or incrementally based on phases of development. Depending on the proposal it may be prudent for the applicant to begin developing a workplan prior to the public meetings.

The primary goal of implementation is to ensure that proposed modifications adequately meet the transportation needs, are implemented at a schedule reflective of anticipated need, and that necessary work is not left to future development phases that may or may not proceed in a timely manner.

Accepted alternatives remain eligible for LATIP credit. Applicants may consider alternatives away from the immediate intersection if it can be shown to improve conditions without unacceptable adverse impacts elsewhere. On a case-by-case basis, consideration will be given toward LATIP credits for ancillary needs deemed necessary for implementation of the project.

LATIP Credits (Transit)

It is expected that the Hillandale Transit Center would be constructed in full to be eligible for LATIP and potentially Transportation Impact Tax credits, but is not eligible until DOT affirms a final design that can adequately serve future needs.

The White Oak Circulator and new/increased Ride-On service are only eligible for credit with the concurrence and approval of MCDOT. Applicants are encouraged to inquire with MCDOT if they feel these services may be necessary for their project, but these will be considered for implementation only when it is deemed reasonable by MCDOT to do so. If approved, contributions toward capital costs associated with new bus purchases would be eligible for credit. Operating costs would not be eligible. Advance funding future bus replacements would not be eligible unless buses are in need of immediate replacement, as identified by MCDOT.

Bus Stop Improvements are only eligible for credit with the approval of Montgomery County Transit Services and will be considered on a case-by-case basis. The \$100,000 assigned to this item is intended for small-scale needs throughout the policy area. Applicants are encouraged to work with MCDOT to identify whether their proposed treatments may be eligible for credit. Bus Stop Improvements are generally not eligible for Impact Tax credits.

The costs of Bikeshare stations, their installation, and their bikes are all eligible for credit. Operational and maintenance costs are not eligible for credit. MCDOT will estimate the number of Bikeshare stations needed for a development. The development may credit up to this number of stations, based on MCDOT cost estimates for the station, bikes, and installation. Advance funding future bike replacements is not eligible unless bikes are in need of immediate replacement, as identified by MCDOT.

EXAMPLE: MCDOT finds that a development must provide 3 Bikeshare stations. The development may receive credit for the costs associated with the station, bikes, and installation of up to 3 stations.

While operating costs associated with these transit facilities are not eligible for any credits, they may still be conditioned upon a developer (such as part of a Traffic Mitigation Agreement).

LATIP Credits (Bikeways)

Upon the first development proposing to construct a portion of a bikeway, MCDOT will conduct a closer analysis of the bikeway to determine how the estimated costs are best allocated along its length. This is to consider that some portions of a bikeway may be considerably more difficult to construct than others (such as constructing across a stream valley versus flat & open terrain). MCDOT will provide more refined costs for each segment of the bikeway. At that point: developers can be credited on a unit-length basis.

EXAMPLE: If a project constructs 50% of the length of a \$2,000,000 segment, they may be eligible for \$1,000,000 in LATIP credits.

With the approval of the Bicycle Master Plan occurring after the approval of LATIP, any differences between types of bikeways should assume that the Bicycle Master Plan applies. Cost estimates and eligible credit amounts will be updated as part of the next LATIP update, and until such time the current Council-approved costs apply for crediting purposes.

LATIP Credits (Miscellaneous)

The Old Columbia Pike Bridge Reconstruction must be constructed in full to be eligible for credits.

Credits will not be granted for developments proposing to fund the recurring (6-year interval) reanalyses.

IMPLEMENTATION (PUBLIC AGENCIES)

Forward Funding

Revenues from the LATIP fee will not be generated quickly or early enough to allow for design and implementation of associated needs. Without forward funding, new developments may be built and become occupied before design has even begun on a project, no less a project's timeline for design, public coordination, and construction.

Forward funding either individual projects or an area-wide White Oak CIP will be critical to ensuring that necessary infrastructure and services are in place to serve the growing needs of the White Oak Policy Area.

It is anticipated that funding will initially focus on detailed planning and design for some, most, or all of the projects included in the fee, such that they are effectively "shovel ready" for construction funding when need becomes imperative.

Public Involvement

Each LATIP project is expected to proceed through a typical design and construction process, including public involvement. An exception is where developers opt to construct LATIP treatments in addition to or in lieu of fee payment, and where the applicants opt to include plans for such treatments in a development application that is submitted for Montgomery County Planning Board approval. In such cases, public input would occur much like the typical process outside of LATIP, with public testimony being received before the Planning Board as part of the development review process.

Monitoring / Reassessment

The cost estimates in the LATIP fee will be reassessed every 2 years (odd numbered years) and updated accordingly to reflect changes in the planning-level unit prices, detailed design estimates, or to reflect constructed infrastructure. A full reanalysis will be performed at 6 year intervals (the next analysis to be completed in 2023). A cost update or reanalysis may be performed prior to this time if a special situation warrants.

LATIP projects that have been constructed shall remain in the fee listing as to ensure that the cost of these projects continues to be recovered. The costs included in the fee shall be updated with actual construction costs.

Collection & Application

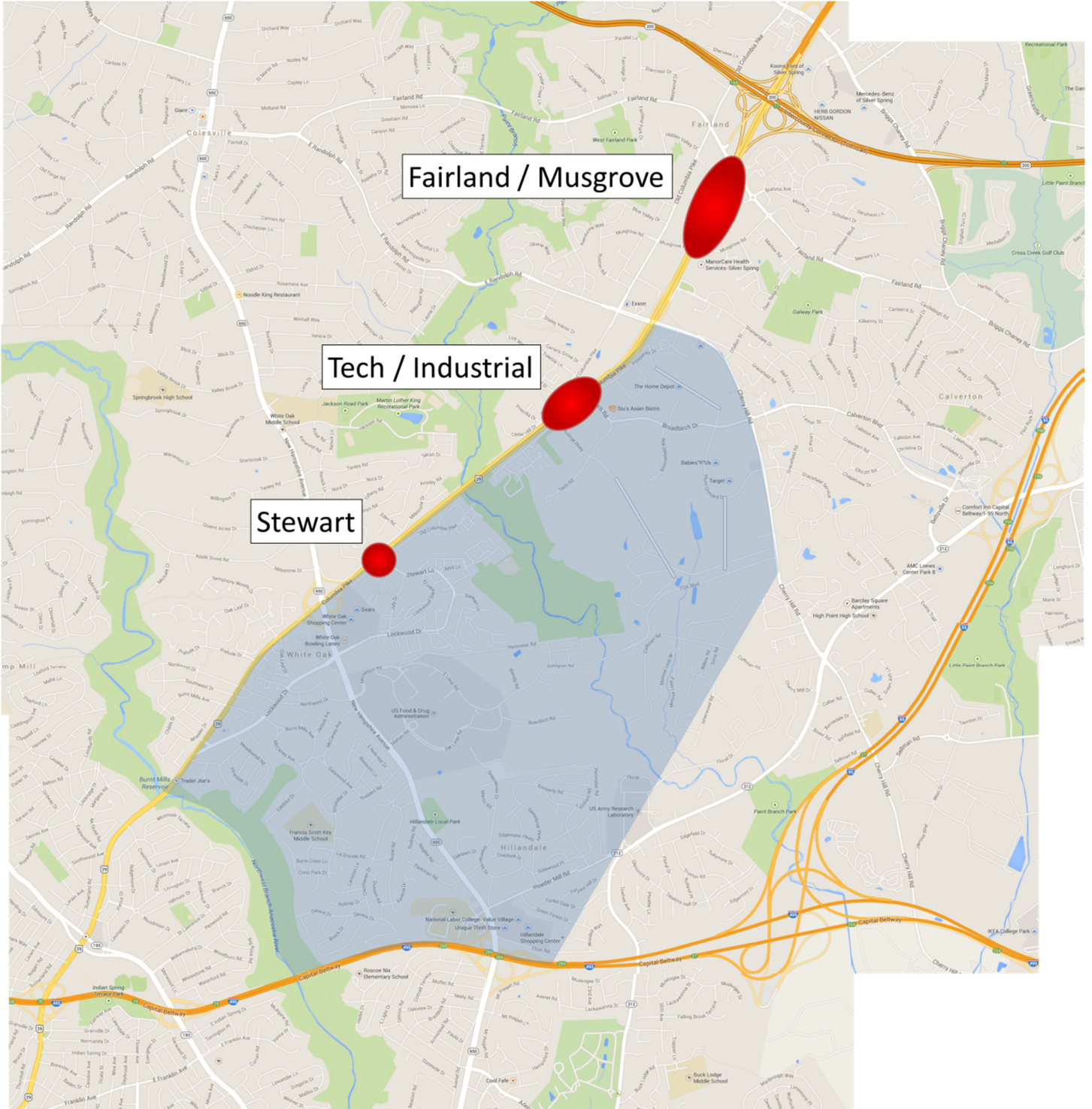
The LATIP fee will be collected following the same schedule as Impact Taxes. The fee will be collected by DPS and deposited into an account explicitly designated for use with projects included in the LATIP fee. It is anticipated that this account would fund a CIP designated for exclusive use with the WOSG LATIP projects, though actual implementation mechanisms may change.

As some projects will impact State roads, consideration must be given toward a mechanism for how to apply LATIP revenue to State projects. A potential mechanism for this is to utilize the State Transportation Participation CIP (P500722), which has already laid a framework for cost participation with SHA under SHA-managed projects. Another option that has been considered by SHA is for the projects to be County-managed under an SHA permit.

PROJECT DESCRIPTIONS

Interchanges (red)

- **US 29 / Stewart Lane** **\$130,000,000**
An SHA-run project. Only conceptual designs & estimates are available. There is no funding scheduled for detailed design. Cost estimate provided by SHA in September 2013. No further information on the design is available.
- **US 29 / Tech Rd / Industrial Pkwy** **\$96,000,000**
An SHA-led project. Only conceptual designs & estimates are available. There is no funding scheduled for detailed design, though the interchange is #5 on the County's Priorities Letter for the Construction Program. Cost estimate provided by SHA in September 2013. Two intersections identified by this LATR Analysis would be impacted by this interchange. The conceptual design shows movements to/from northbound US 29 accessed via Industrial Pkwy (which would not extend across US 29). Tech Rd would bridge over US 29 and serve movements to/from southbound US 29. This interchange is expected to serve a large proportion of traffic to the large Viva White Oak development.
- **US 29 / Fairland Rd / Musgrove Rd** **\$139,000,000**
An SHA-led project. The project is presently on hold at 60% Design, having been put on hold in September 2016 due to State budget cuts deferring design funding indefinitely. The interchange is #9 on the County's Priorities Letter for the Construction Program. Cost estimate provided by SHA in June 2016. This interchange is not located in the White Oak Policy Area. One intersection identified by this LATR Analysis would be impacted by this interchange. The current design shows movements to/from northbound US 29 accessed via Montrose Rd (which would not extend across US 29). Fairland Rd would bridge over US 29 and serve movements to/from southbound US 29.

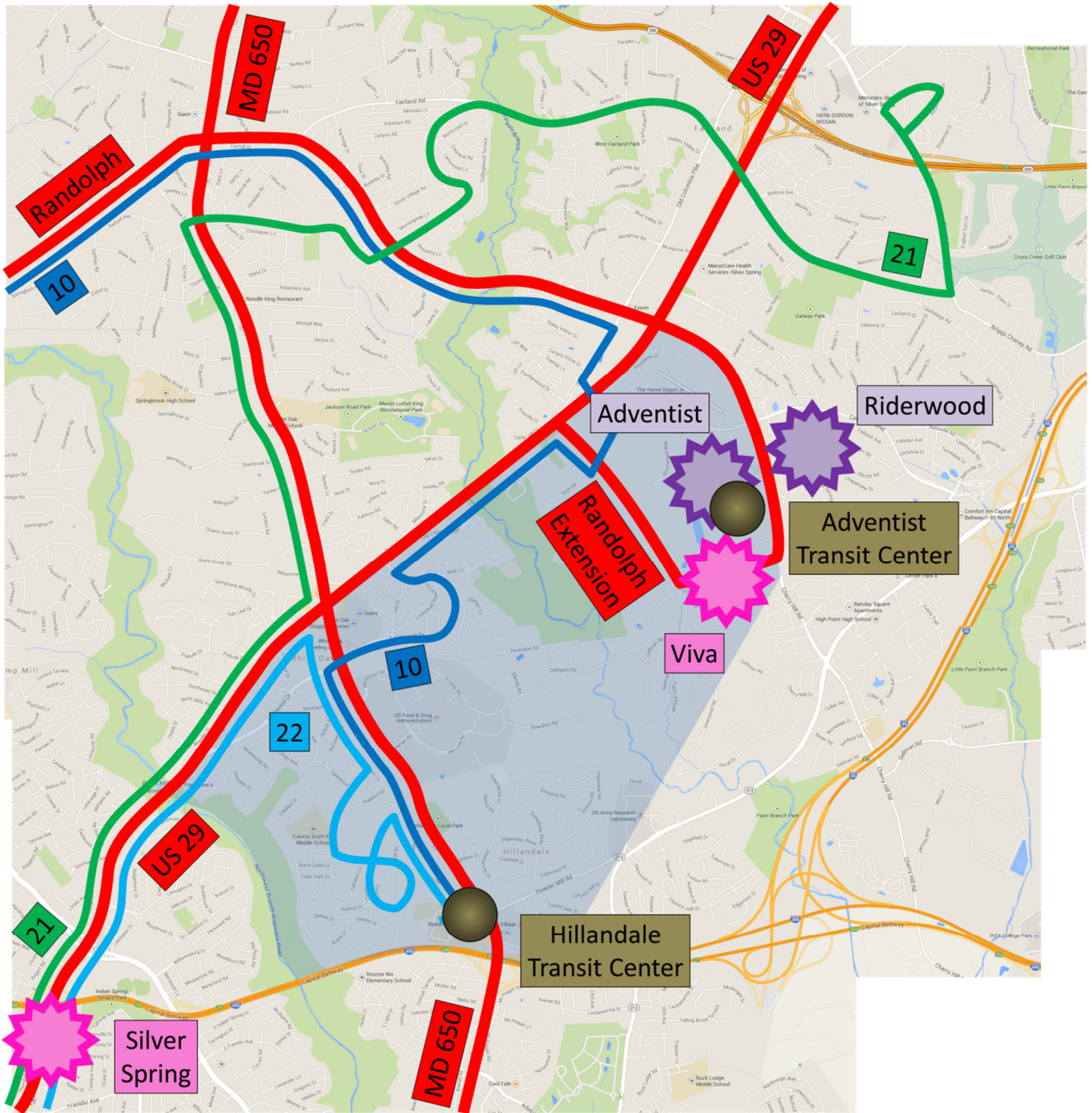


Interchanges

Transit (blue)

- **US 29 BRT** **\$65,800,000**
 This cost estimate utilizes a per-mile estimate (\$31,900,000/mi) from 2014 for dedicated bus lanes and applies it to the 2.06 miles within the WOSG Master Plan. Operating costs are not included.
- **MD 650 BRT** **\$64,100,000**
 This cost estimate utilizes a per-mile estimate (\$33,900,000/mi) from 2014 for dedicated bus lanes and applies it to the 1.89 miles within the WOSG Master Plan. Operating costs are not included.
- **Randolph Rd BRT** **\$13,900,000**
 This cost estimate utilizes a per-mile estimate (\$10,200,000/mi) from 2014 for shared traffic express buses and applies it to the 1.36 miles within the WOSG Master Plan. Operating costs are not included.
- **Circulator** **\$2,400,000**
 A new route serving between Viva White Oak and the Silver Spring Transit Center initially, converting to a Circulator around the White Oak Science Gateway area after construction of the US 29 BRT. Under both cases it is expected to operate at 15 minute headways, requiring 2 buses with 3 replacements at 12 year intervals. Operating costs are not included.
- **New Ride-On Route** **\$8,400,000**
 A new route serving Washington Adventist Hospital, Cherry Hill Rd, Viva White Oak, Riderwood, and the Silver Spring Transit Center. Assumed to begin in 2020, operating at 15 minute headways, requiring 7 buses with 1 set of replacements at a 12 year interval. Operating costs are not included. There is a potential that after the US 29 BRT is constructed, this route may be converted into a Circulator for the master plan area. This service would largely extend and augment the Circulator service noted above.
- **Increased Ride-On Route 10 Service** **\$6,000,000**
 Increasing frequency to 10 minute headways and improving service from the PM peak to midnight. Assumed to occur in 2020 and require 5 additional buses with 1 set of replacements at a 12 year interval. For the LATIP fee the total cost is apportioned by the percentage of the route serving the WOSG plan area (approx. 30%). Operating costs are not included.

- **Increased Ride-On Route 21 Service** **\$2,400,000**
 Increasing frequency to 15 minute headways and adding midday, late-evening, and weekend services. Assumed to occur in 2020 and require 2 additional buses with 1 set of replacements at a 12 year interval. However, as this line does not explicitly serve WOSG activity centers: this cost is excluded from the LATIP fee. Operating costs are not included.
- **Increased Ride-On Route 22 Service** **\$3,600,000**
 Increasing frequency to 10 minute headways and adding midday and late-evening services. Assumed to occur in 2020 and requires 3 additional buses with 1 set of replacements at a 12 year interval. For the LATIP fee the total cost is apportioned by the percentage of the route serving the WOSG plan area (approx. 50%). Operating costs are not included.
- **Washington Adventist Hospital Transit Center** **\$200,000**
 The Transit Center is located at the intersection of Plum Orchard Dr and B-5 (the connector to Viva White Oak). This work is being performed entirely by the Washington Adventist Hospital as a condition upon the development.
- **Hillandale Transit Center** **\$500,000**
 The Transit Center includes layover areas and a restroom for bus operators, located along the Powder Mill Rd cul-de-sac west of MD 650.
- **Bus Stop Improvements** **\$100,000**
 Miscellaneous bus stop improvements through the White Oak Policy Area, including upgraded landing areas, ADA treatments, and improved amenities.
- **Bikeshare** **\$4,600,000**
 Conservative estimates of 67 total Bikeshare stations across the entire White Oak Policy Area under a 100% build-out scenario (spanning the full lifetime of the plan). Assuming linear development rates, approximately 2 stations are added per year beginning in 2020. Bikes are assumed to be replaced every 12 years, therefore 1 set of replacements per station is included in the cost estimate. Operating costs are not included.
- **White Oak TMD** **\$13,900,000**
 The White Oak Transportation Management District (TMD) is currently unfunded and has no developed commercial square footage contributing revenue. This value represents what would have been the public cost for operating the TMD (the TMD Fee would represent a separate Dollar value). This item was excluded from the LATIP fee on the basis that the TMD fee is being addressed through an alternative bill seeking to strengthen and improve funding for TMDs.



Transit, color-coded as follows: **BRT**, **Ride-On 10**, **Ride-On 21**, **Ride-On 22**, **Transit Centers**, **Service areas for Circulator and New Ride-On Service**, or only the latter

Intersections (purple)

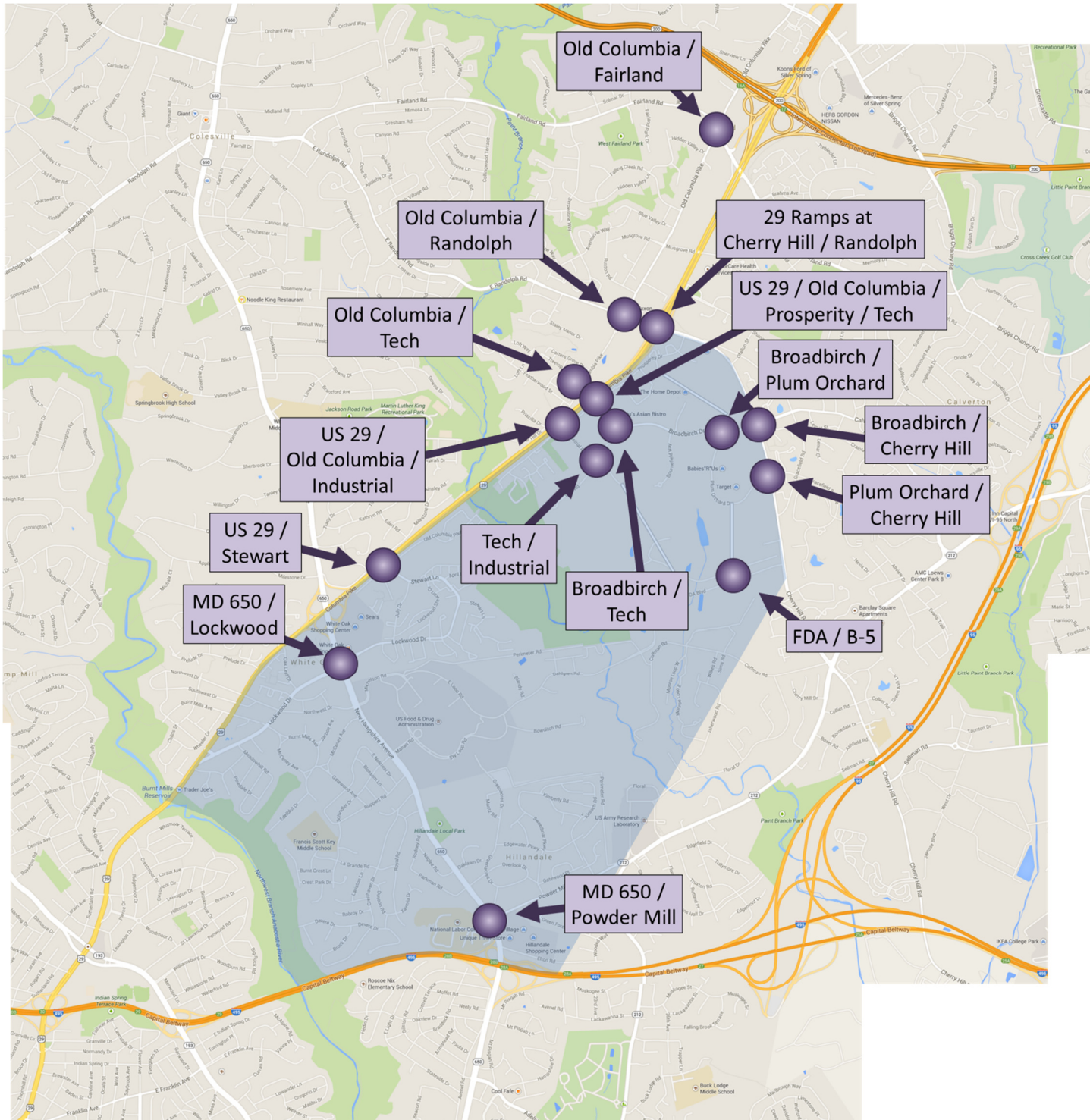
- **LATR Analyses** **\$400,000**
 Estimated at \$100,000 each, with reassessments / monitoring occurring at 6 year intervals between 2017 and 2040. This includes the first analysis completed in 2017 and the final analysis in 2035; a total of 4 analyses.
- **US 29 at Randolph Rd / Cherry Hill Rd** **\$2,000,000**
 Add an eastbound thru lane. Reconfigure the southbound right-turn lane to a shared right/left lane. This includes 65% in contingencies and an estimated \$459,000 in commercial property impacts (no impacts to buildings or total takes are expected).
- **FDA Blvd at B-5** **\$1,000,000**
 Add 1 westbound left-turn lane and southbound lanes accompanied by construction of B-5. Construct a new traffic signal (if warranted + justified). This includes 65% in contingencies and no property impacts. It is assumed this intersection work will be completed by the Viva White Oak development.
- **Cherry Hill Rd at Plum Orchard Dr** **\$2,800,000**
 Add a southbound right-turn lane and a channelized southbound acceleration lane (serving eastbound right-turns). This includes 65% in contingencies and no property impacts. It is assumed this intersection work will be constructed by the Washington Adventist Hospital as a condition of development.
- **Broadburch Dr at Cherry Hill Rd & Plum Orchard Dr** **\$3,600,000**
 At Plum Orchard: restripe the north- and southbound approaches to a four-lane cross-section. Construct a new traffic signal (if warranted + justified). Note that these treatments may not be applicable until such time as B-6 (Plum Orchard Dr) is extended to connect with Prosperity Terrace by the Darcars properties.

At Cherry Hill Rd: add a southbound thru, southbound right, westbound right, eastbound thru, and eastbound right-turn lanes.

Combined, these intersections include 65% in contingencies and an estimated \$20,000 in residential property impacts and \$155,400 in commercial property impacts (no impacts to buildings or total takes are expected).
- **Broadburch Dr at Tech Rd** **\$1,700,000**
 Add a westbound right-turn lane and a northbound right-turn lane. Construct a new traffic signal (if warranted + justified). This includes 65% in contingencies and an estimated \$11,550 in commercial property impacts (no impacts to buildings or total takes are expected).

- **Tech Rd at Industrial Pkwy** **\$2,800,000**
 Add two eastbound left-turn lanes and a westbound right-turn lane along Industrial Pkwy, and 1 southbound left-turn lane. Construct a new traffic signal (if warranted + justified). This includes 65% in contingencies and an estimated \$245,130 in commercial property impacts (no impacts to buildings or total takes are expected).
- **US 29 at Stewart Lane** **\$3,300,000**
 Addition of a northbound thru lane, conversion of the southbound right-turn lane to a shared thru/right lane, addition of an additional southbound left-turn lane, and divert eastbound+westbound thrus+lefts to an adjacent spur intersection. This includes 115% in contingencies – owing to the higher complexity of the proposed treatments. This project would be obsoleted if the interchange at US 29 and Stewart Lane proceeds.
- **US 29 at Industrial Pkwy / Old Columbia Pike** **\$4,400,000**
 Relocation of two northbound right-turns from the primary intersection to a secondary intersection and the addition of a second southbound left-turn lane. A new westbound right-turn lane from Industrial Pkwy onto Prosperity Dr, and signalization at this intersection (if warranted + justified). Old Columbia Pike / Prosperity Dr would be converted to right-only upon approach to Industrial Pkwy. This includes 115% in contingencies – owing to the higher complexity of the proposed treatments – and an estimated \$4,800 in commercial property impacts (no impacts to buildings or total takes are expected). This project would be obsoleted if the interchange at US 29 and Tech Rd / Industrial Pkwy proceeds.
- **US 29 at Tech Road** **\$3,300,000**
 Addition of a northbound right-turn lane, convert the southbound right-turn lane to a shared thru/right lane, add a second southbound left-turn lane, add a second westbound right-turn lane, redirect westbound lefts to Cedar Hill Dr, redirect eastbound lefts to Industrial Dr, and remove split phasing from the signal. This includes 115% in contingencies – owing to the higher complexity of the proposed treatments – and an estimated \$4,800 in commercial property impacts (no impacts to buildings or total takes are expected). This project would be obsoleted if the interchange at US 29 and Tech Rd / Industrial Pkwy proceeds.
- **Tech Rd at Prosperity Dr / Old Columbia Pike** **\$2,300,000**
 Restrict each approach along Old Columbia Pike / Prosperity Dr to right-only. Construct a traffic signal (if warranted + justified). This includes 115% in contingencies – owing to the higher complexity of the proposed treatments – and does not anticipate any property impacts. This project would be obsoleted if the interchange at US 29 and Tech Rd / Industrial Pkwy proceeds.

- **Old Columbia Pike at Tech Rd** **\$500,000**
 Add a westbound right-turn lane and construct a new traffic signal (if warranted + justified). This project is not located in the White Oak Policy Area. This includes 65% in contingencies and does not anticipate any property impacts. This project would be obsoleted if the interchange at US 29 and Tech Rd / Industrial Pkwy proceeds.
- **Old Columbia Pike at Randolph Rd** **\$1,100,000**
 Reconfigure the eastbound lane configuration to a double-left and a shared thru-right. This includes 65% in contingencies and an estimated \$13,500 in commercial property impacts (no impacts to buildings or total takes are expected). This project is not located in the White Oak Policy Area.
- **Old Columbia Pike at Fairland Rd** **\$2,300,000**
 Add a southbound thru lane and an accompanying receiving lane on the south leg. Reconfigure the westbound right to a shared thru-right and add an additional receiving lane on the west leg. Add an eastbound left-turn lane. This includes 65% in contingencies and an estimated \$52,050 in commercial property impacts (no impacts to buildings or total takes are expected). This project would be obsoleted if the interchange at US 29 and Fairland Rd / Musgrove Rd proceeds. This project is not located in the White Oak Policy Area.
- **MD 650 at Lockwood Dr** **\$1,400,000**
 Add a northbound left-turn lane and extend the receiving lane along the west leg. This includes 65% in contingencies and does not anticipate any property impacts.
- **MD 650 at Powder Mill Rd** **\$5,000,000**
 Differing findings between this LATR analysis, the master plan analysis, and treatments being pursued by SHA are such that this cost estimate is considered a placeholder value dependent on further intersection-specific analysis. It is recognized that treatments for MD 650 / Powder Mill Rd may also necessitate treatments at MD 650 / Elton Rd.



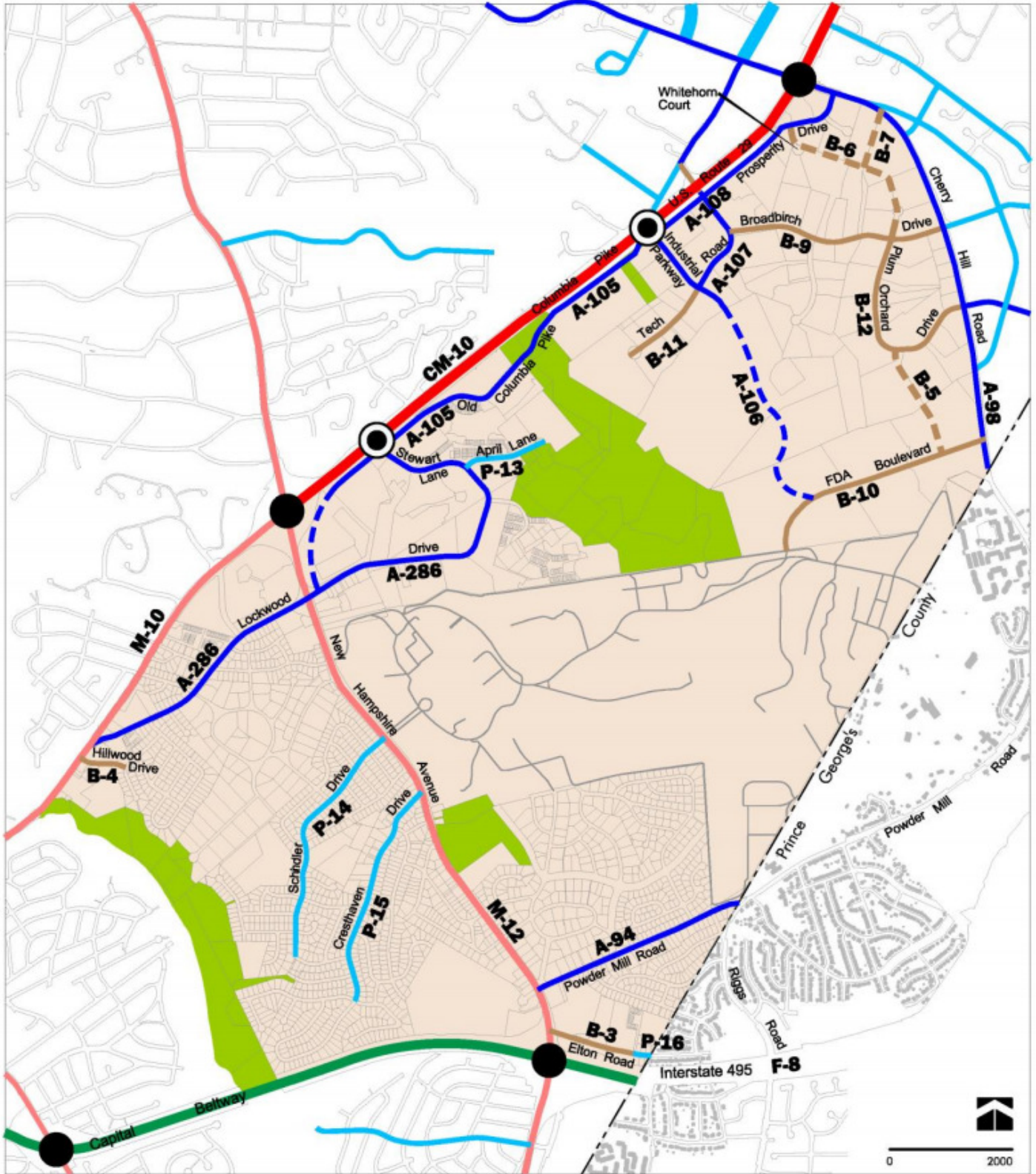
Intersections

New Roads (brown)

- **A-105 White Oak Shopping Center** **\$23,400,000**
 Extension of Old Columbia Pike through the White Oak Shopping Center, intersecting with Lockwood Drive immediately east of MD 650 (0.31 miles). Assumed to be constructed as a part of a future redevelopment of the shopping center. The cost estimate is based on a preliminary conceptual design with 35% in contingencies.
- **A-106 Industrial Pkwy Extended** **\$49,500,000**
 Extension of Industrial Pkwy into the Viva White Oak development, intersecting with FDA Blvd (0.88 miles). Assumed to be constructed as a part of the Viva White Oak development. The cost estimate is based on a preliminary conceptual design with 35% in contingencies.
- **B-5 Plum Orchard / FDA Blvd Connector** **\$18,300,000**
 A new connector street between Plum Orchard Dr and FDA Blvd (0.35 miles). Assumed to be constructed partly by the Washington Adventist Hospital (the northern portion) and Viva White Oak (the southern portion). The cost estimate is based on a preliminary conceptual design with 35% in contingencies.
- **B-6 Plum Orchard Dr Extended** **\$26,400,000**
 Extension of Plum Orchard Dr to Prosperity Terrace (0.46 miles). Assumed to be constructed by future developments in the area. The cost estimate is based on a preliminary conceptual design with 35% in contingencies.
- **B-7 Cherry Hill / Plum Orchard Connector** **\$8,600,000**
 A new connector street between B-6 (Plum Orchard Extended) and Cherry Hill Rd (0.17 miles). Assumed to be constructed by future developments in the area. The cost estimate is based on a preliminary conceptual design with 35% in contingencies.

Road Widening (orange)

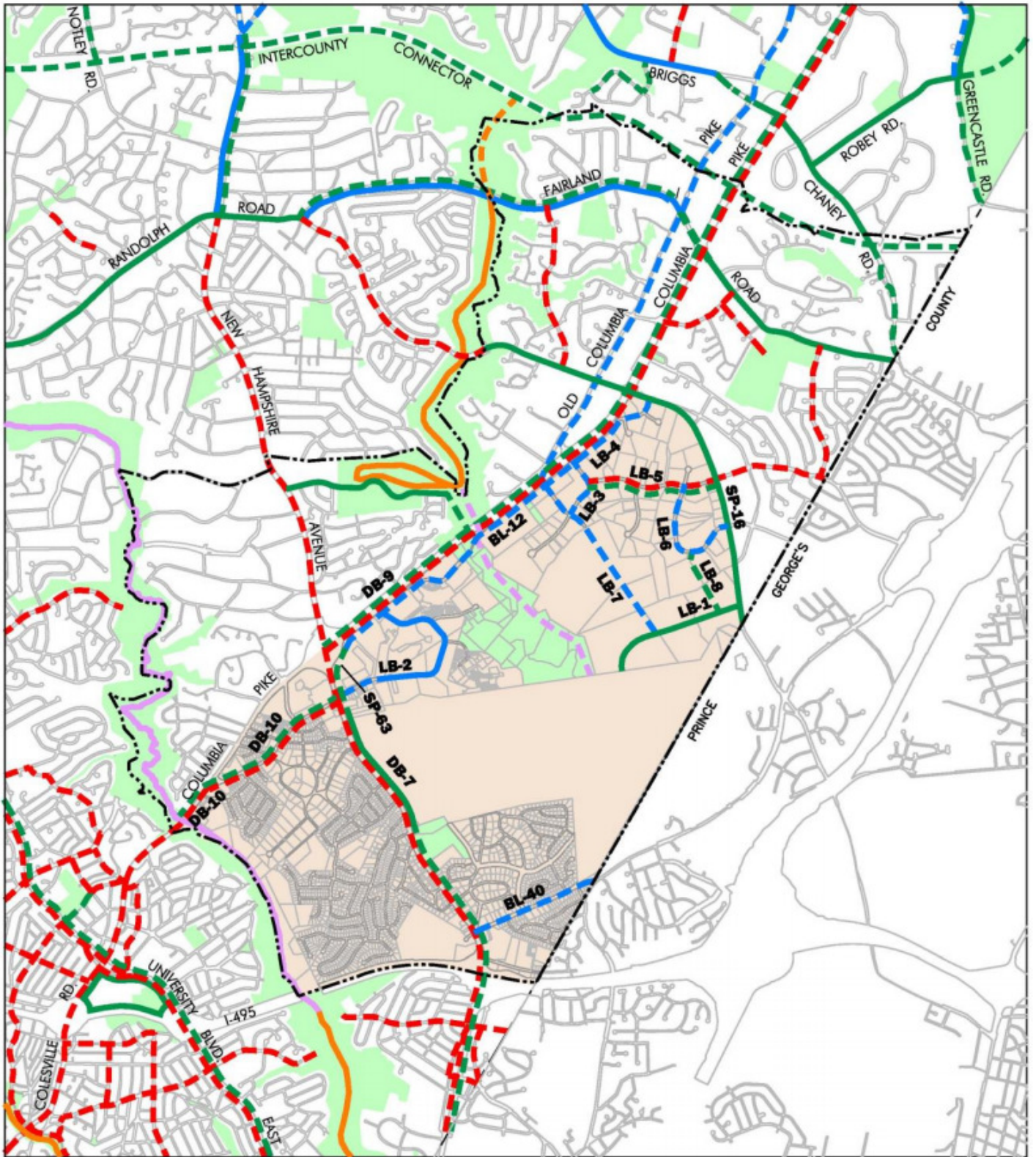
- **CM-10 US 29 over MD 650** **\$43,500,000**
 Reconstruction of the US 29 bridge over MD 650 (\$29.8m) as well as widening in the vicinity of the ramps (\$13.7m) to provide for a third continuous southbound thru lane. The cost estimate assumes 90% in contingencies for the widening (a standard amount for a planning-level estimate), and 110% in contingencies for the bridge reconstruction (accounting for additional complexities with regard to the maintenance of traffic).
- **A-105 Old Columbia Pike Bridge** **\$12,000,000**
 Reconstruction of the Old Columbia Pike bridge over Paint Branch to a four-lane arterial. Cost estimate is based on a preliminary conceptual design with 35% in contingencies.
- **A-105 Old Columbia Pike** **\$58,100,000**
 Widening of Old Columbia Pike (along the east side of US 29) to a four-lane arterial and construction of a shared use path (1.3 miles) [the shared use path is \$5,000,000 of the total cost]. Cost estimate is based on a preliminary conceptual design with 35% in contingencies.
- **M-12 MD 650** **\$5,900,000**
 Widening of MD 650 to provide a third continuous southbound thru lane as it travels beneath US 29. Not intended to necessitate reconstruction of the US 29 bridge, though the estimate for CM-10 does include such work. Cost estimate is based on a preliminary conceptual design with 35% in contingencies.
- **P-16 Elton Rd** **\$100,000**
 Widening of a short segment (300 ft) of the residential portion of Elton Rd (P-6) to provide for 1 travel lane and 1 parking lane in each direction. Cost estimate is based on a preliminary conceptual design with 35% in contingencies. It is unlikely this project would proceed unless there were strong community demand.
- **B-9 Broadbirch Dr** **\$33,700,000**
 Widening to provide for parking lanes along each direction of Broadbirch Dr as well as provide a shared use path (0.7 miles). Cost estimate is based on a preliminary conceptual design with 35% in contingencies.
- **B-10 FDA Blvd** **\$25,100,000**
 Widening to provide for parking lanes along each direction of FDA Blvd (0.5 miles). Cost estimate is based on a preliminary conceptual design with 35% in contingencies. It is anticipated that this work will be addressed as part of the Viva White Oak development.
- **B-11 Tech Rd** **\$10,400,000**
 Widening of Tech Rd south of Industrial Pkwy to provide for an additional travel lane in each direction (0.4 miles). Cost estimate is based on a preliminary conceptual design with 35% in contingencies. It is likely that this work would be completed as a condition upon adjacent developments.



Roadways, image from the White Oak Science Gateway Master Plan

Bikeways (green)

- **M-10 US 29 DB-9 \$2,800,000**
 New shared use path between Lockwood Dr and the Northwest Branch (0.3 miles). Cost estimate is based on a preliminary conceptual design with 35% in contingencies.
- **M-12 MD 650 DB-7 \$6,600,000**
 New shared use path between Lockwood Dr and I-495 (1.0 miles). Cost estimate is based on a preliminary conceptual design with 35% in contingencies.
- **A-94 Powder Mill Rd BL-40 \$3,400,000**
 New bike lanes along each direction of Powder Mill Rd, necessitating 12 ft of additional pavement (0.7 miles) and impacting curblines, utilities, and drainage systems along both sides of the roadway. Cost estimate is based on a preliminary conceptual design with 35% in contingencies.
- **A-106 Industrial Pkwy LB-7 \$8,400,000**
 Conversion of existing parking lanes to travel lanes, and the addition of new bike lanes along each direction of Industrial Pkwy, necessitating 7 ft of additional pavement and reconstruction of curb lines and drainage systems (0.4 miles). Cost estimate is based on a preliminary conceptual design with 35% in contingencies.
- **A-107 Tech Rd LB-3 \$2,700,000**
 New bike lanes along each direction of Tech Rd, necessitating 7 ft of additional pavement and reconstruction of curb lines and drainage systems (0.4 miles). Cost estimate is based on a preliminary conceptual design with 35% in contingencies.
- **A-108 Prosperity Dr LB-4 \$3,600,000**
 Conversion of existing parking lanes to travel lanes, and the addition of new bike lanes along each direction of Prosperity Dr, necessitating 7 ft of additional pavement and reconstruction of curb lines and drainage systems (0.7 miles). Cost estimate is based on a preliminary conceptual design with 35% in contingencies.
- **A-286 Lockwood Dr DB-10 \$5,700,000**
 New shared use path between US 29 and approximately 400 ft west of MD 650 (0.7 miles). Significant grading impacts and potential utility impacts. Cost estimate is based on a preliminary conceptual design with 35% in contingencies.
- **B-3 Elton Rd \$500,000**
 Assumes minor pedestrian treatments along the business street portion (B-3) (0.2 miles). Cost estimate is based on a preliminary conceptual design. It is unlikely this project would proceed unless there were strong community demand with 35% in contingencies, and accordingly: it has been excluded from inclusion in the LATIP.



Bikeways, image from the White Oak Science Gateway Master Plan

ADDITIONAL INFORMATION

ANALYSIS SCHEDULE

09/2014 – 02/2015	Fee Conception
02/2015 – 07/2015	Scoping
08/2015 – 10/2015	Obtaining Base Model
10/2015 – 03/2016	Performing Analysis
04/2016 – 06/2016	Cost Estimating
06/2016 – 09/2016	Presentation of Findings w/ Public Agencies
09/2016 – 12/2016	Finalizing
01/2017 – 02/2017	Council Action
02/2017 – 04/2017	Implementation Policies

PUBLIC PRESENTATIONS

04/14/2015	Update to Council on Scoping
05/14/2015	Meeting with Harriet Quinn (resident) on Scoping
05/26/2015	Meeting with Eileen Finnegan (resident) on Scoping
09/02/2015	Update to the East County Citizens Advisory Board
04/06/2016	Update to the East County Citizens Advisory Board
08/02/2016	Update to Viva White Oak
08/30/2016	Presentation of findings to SHA
09/14/2016	Presentation of findings to M-NCPPC
09/16/2016	Presentation of findings to Glenn Orlin (Council Staff)
11/17/2016	Update to the Greater Silver Spring Chamber of Commerce
12/08/2016	Transmitted to County Council
01/04/2017	Presentation of findings to East County Citizens Advisory Board
01/12/2017	Meeting with Harriet Quinn (resident) on Findings
01/17/2017	Council Public Hearing
02/06/2017	Council Committee Worksession (GO/PHED)
02/14/2017	Council Approval

REVISION HISTORY

12/12/2016	First Draft
04/11/2017	Council Approval Draft
12/22/2017	Planning Board Action Update
05/02/2019	Implementation Info Update [current draft]

ANALYSIS COST

<u>Invoice Period</u>	<u>Invoice Amount</u>
08/2015	\$11,334.50
09/2015	\$7,555.00
10/2015	\$28,148.50
11/2015	\$5,888.00
12/2015	\$19,172.00
01/2016	\$10,219.00
<u>02/2016</u>	<u>\$6,357.50</u>
Total	\$88,674.50

This analysis cost does not account for time spent on County staff estimating the costs of non-LATR/intersection projects, or in preparing the WOSG analysis and accompanying documentation.

UPDATE INFORMATION

This update focused on expanding the “Implementation (Developers)” section to improve clarity and understanding of the process. This included a new section on *Trip Generation* to reflect the designation of the Local Area Model as the source of trip generation rates, and an explanation on how additional land uses’ trip generation rates were derived. A new section on *Payment Process* was added, as were expansions to the section on *Credits to LATIP Fee and Impact Tax* to establish a clearer process for how crediting would be applied to each type of project included in the program.

The table from the “Cost Estimates” section was removed as it was already covered elsewhere, and a second paragraph was added under the *Monitoring and Assessment* part of the “Implementation (Public Agencies)” section to make it clear to future handlers of the LATIP that completed projects do *not* get deleted out of the program’s fee estimate.

The update was posted on 3/20/2019 on the MCDOT White Oak webpage for public review with comments due by 4/8/2019, and this information was promulgated to the public via the Master Plan Coordinator and the East County Regional Services Center.

CONTACT INFORMATION

This analysis was led by Andrew Bossi, Senior Engineer in the Director’s Office of the Montgomery County Department of Transportation. Any questions, comments, or concerns are welcomed at:

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AB

Attachments: Sabra, Wang, & Associates Technical Memorandum