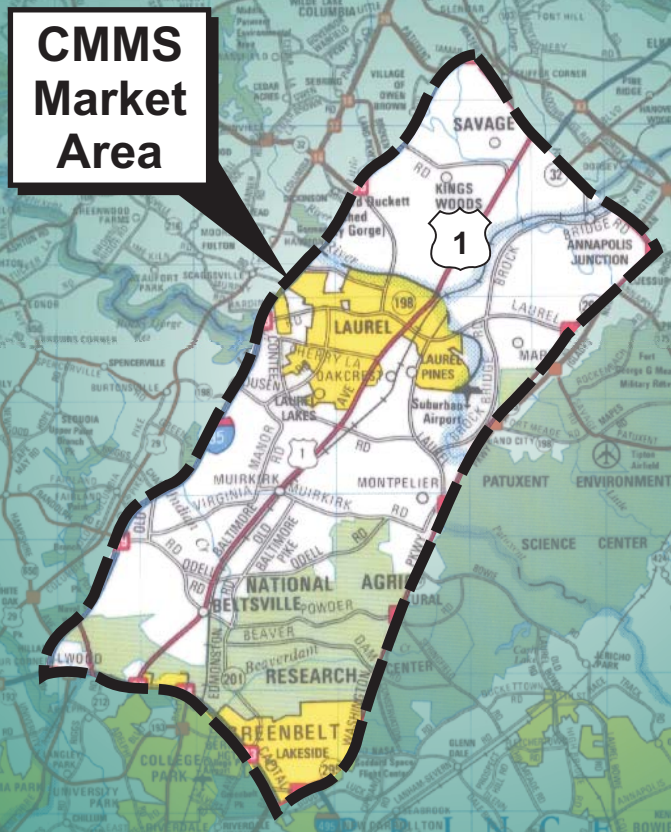
Central Maryland Mobility Study



Draft Report

November 2005

Contents

1 Introduction

Central Maryland, roughly bounded by and including Washington, DC, Baltimore, Frederick, and Annapolis, is undergoing rapid change. Central Maryland not only provides housing that supports the job centers of both nearby cities, but also has its own clusters of employment. Recent residential and employment growth, combined with its important inter-regional transportation infrastructure, makes Central Maryland one of the most heavily traveled corridors in the State. The area will continue its high growth, raising concerns about how it can both accommodate that growth and continue to provide travel mobility.

The Central Maryland Mobility Study (CMMS) is a project of the Maryland Department of Transportation (MDOT), in partnership with Anne Arundel, Howard, and Prince George's Counties, and the City of Laurel, to explore how the location and design of growth will affect travel conditions, transportation infrastructure needs, resulting infrastructure costs, and ultimately, the quality of life of residents and employees in Central Maryland. The goal of the CMMS is to better understand those effects as an aid to State and local policymaking. The CMMS focuses on the US 1 Corridor between Washington and Baltimore as a means to take a closer look at the relationship between development and transportation in Central Maryland.

1.1 Background: Previous Study and Input Received

This work continues a dialogue among State and regional leaders that began at the I-95 Leadership Summit in 2001, which led to a follow-up effort by MDOT to study growth issues in the area. The first product of this effort was the *Central Maryland Mobility Study: State of the Area Report*, which analyzed the area as a single economic unit with regard to existing development patterns, comprehensive plans, demographics, and transportation infrastructure. The study also recommended opportunities for collaboration to address issues that were identified in the analysis.

The State of the Area Report determined that:

- The area contains a significant percentage of the State's employment.
- The collective policy of the counties to limit residential development and to encourage additional employment is leading to a jobs-housing imbalance.
- Emerging trip patterns created by development policies in and beyond the study area do not match the current transportation system.
- The changing demographics and the State's transportation system performance requirements indicate a need to develop an integrated, multi-modal transportation investment strategy to serve the study area.
- The ability to deliver a significant expansion of the highway system must be considered in the context of constrained financial resources, requirements of the Clean Air Act, and the potential for delays as a result of challenges from various groups.

The State of the Area Report's opportunities for collaboration included recommendations to:

- Establish a formal working group to create a more unified action agenda for the study area.
- Develop an integrated transit strategy for the study area.

- Develop a collective economic development strategy.
- Develop integrated strategies to protect the interstate travel capacity of I-95.
- Understand the jobs-housing issues, identify critical implications for the study area, and develop an action plan to address key weaknesses.
- Work collectively on development/redevelopment strategies for the US 1/CSX and Route 29 corridors to balance jobs-housing, attract employment, and provide trip choice.
- Identify new funding mechanisms to support infrastructure required to accommodate additional growth in the study area.

1.2 Study Purpose

In response to these general findings and recommendations, MDOT was asked to proceed with the CMMS as a more focused study of growth in the area and its regional effects. The purpose of the CMMS was to understand better the implications of different kinds of growth in the area and to help local jurisdictions plan for the coming growth.

In keeping with the recommendations above, this study has three purposes.

First, to explore and build on local visions of future land use and community growth and development in the area.

Second, to explore the implications for the participating jurisdictions and MDOT of different land use and growth scenarios on specific development sites, with regard to the effects on regional travel patterns and resulting transportation infrastructure needs.

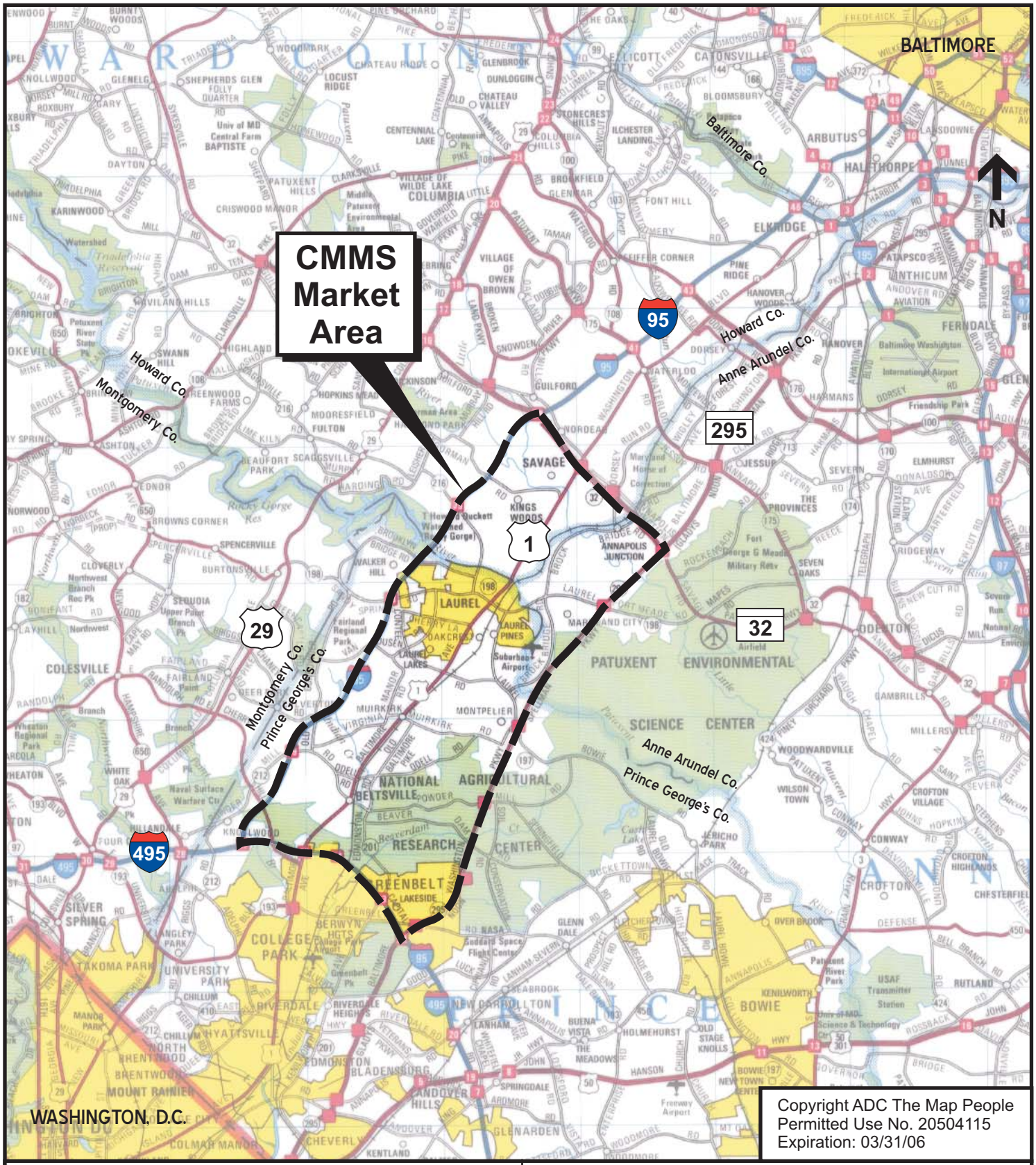
Third, to continue and enhance the strong regional cooperation among State, county, and city officials in facilitating development in the Central Maryland area in a way that can be replicated successfully in this and other areas around the State.

With regard to land use and development, the CMMS is a concept-level study intended to help begin a process to establish local visions for how the area will grow and develop, including identifying critical and cross-jurisdictional issues that will need to be addressed before development plans can move forward. The recommendations of this report do not constitute a specific proposal for development, but rather are meant to provide the first step toward an overall vision for the area and to identify key targets for shaping and implementing that vision.

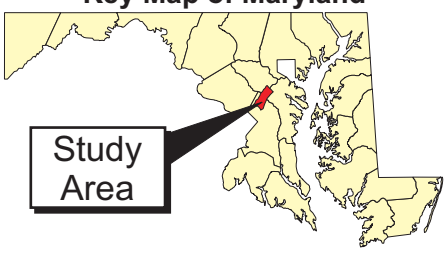
Similarly, with regard to transportation, the CMMS explores the transportation implications of continued development in this area, with a focus on the total effects on the region's transportation performance. While it sheds light on local and regional transportation issues, it was beyond the scope of the CMMS to develop a package of specific recommended capital transportation improvements. Instead, the CMMS investigates how development will affect MDOT's ability to carry out its mission, while leaving the task of addressing specific capital needs to local planning jurisdictions and to MDOT's modal administrations.

1.3 Market Area and Study Framework

The CMMS defines a Market Area for focused study that contains portions of Anne Arundel, Howard, and Prince George's Counties and is roughly bounded by I-495, I-95, MD 32, and. MD 295. Figure 1.1 locates the Market Area in the region.



Key Map of Maryland



Central Maryland Mobility Study

Vicinity Map

Figure 1.1

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To focus the analysis, the CMMS first called upon local jurisdictions to identify places within the Market Area for focused study. These places were intended to:

- Be 'key' properties that jurisdictions believed could capture a significant amount of future growth in the area, and/or could help illustrate the potential effects of growth at sites like them;
- Serve as a signal to the development community and the greater public that the area was beginning to undergo significant redevelopment; and
- Serve as an illustrative example of the vision for new growth in the area.

Development Opportunity Sites (DOSs) were selected by Anne Arundel, Howard, and Prince George's Counties, and the City of Laurel. All are located along the US 1 corridor and are close to the CSX rail line served by MARC commuter rail. The sites were identified by the jurisdictions and MDOT, and finalized following a field tour of the areas, detailed discussions about each DOS with local planning officials, and interviews with key stakeholders. In some cases, slight modifications were made to the site selections based on new study findings or changing conditions.[1]

The selected sites are shown in Figure 1.2, which locates each DOS in the Market Area and in relation to US 1 and the CSX / MARC Camden Line corridor.

[1] The Howard County site boundaries were adjusted based on the field tour. The Prince George's County site was originally at Contee Road at US 1, but was shifted to Muirkirk based on discussions with Prince George's County staff. The Anne Arundel County site was chosen with the expectation of significant redevelopment, but as a result of uncertainty arising from a potential Laurel Race Track slots redevelopment proposal, the County determined that a neutral stance was preferable until the issue was resolved, and directed the study to take a less aggressive approach on that site.

Howard Co.

Savage

Anne Arundel Co.

Laurel Race Track

MARC Camden Line

Muirkirk

Montgomery Co.

Prince George's Co.

Anne Arundel Co.

Prince George's Co.

N

Legend

CMMS Market Area

Development Opportunity Sites

1. Anne Arundel County Site
2. Howard County Site
3. City of Laurel Site
4. Prince George's County Site

Central Maryland Mobility Study

CMMS Market Area and Development Opportunity Sites

Figure 1.2

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Once these DOSs were selected, the CMMS Project Team constructed three Development Scenarios for each site. Care was taken to create meaningfully different scenarios, while retaining characteristics that can reasonably be considered feasible in the market and demographic context of Central Maryland.

These scenarios are as follows:

Aggressive Scenario: This scenario develops the most aggressive development program that the market is projected to be able to support, regardless of the current development limits at the four sites in local plans and policies.

Trend Development Scenario: This scenario reflects development patterns at the four sites consistent with current local plans and policies. Projected growth that would be absorbed in the Market Area in the Aggressive Scenario, but could not be not absorbed in Trend amounts at the DOSs goes elsewhere in the three-county region.

Dispersed Growth Scenario: In this scenario, little or no development occurs at the four DOSs. Instead, the projected growth disperses to the fastest-growing parts of the rest the three-county region.

In sum, the CMMS

- First, defined a market area – the area roughly bounded by I-495, I-95, MD 32, and MD 295.

- Second, from within that Market Area, chose Development Opportunity Sites for which development Concepts were created.

1.4 Report Organization

Chapter 2: Context. The first tasks of the CMMS were to conduct an economic analysis to determine trends and conditions in the Market Area for the residential, office, and retail real estate markets, and to obtain input from local planning officials regarding development issues. These together described the study context.

Chapter 3: Development Approaches and Impacts. Building on the findings from the market analysis, and with input from local planning officials, the CMMS then created concept-level plans for each DOS and each scenario. These plans, presented in detail in Chapter 3, include development programs, land use diagrams, and site designs.

For each of the three scenarios, the CMMS Project Team analyzed project economies, including market support, financial feasibility, and the resulting travel and fiscal impacts. The analysis, also discussed in Chapter 3, includes performance measures to compare and contrast the travel conditions resulting from different development scenarios, as well as cost estimates for the transportation infrastructure investments necessitated by each Scenario.

Finally, the study investigated the development costs of each DOS scenario, and their financial and fiscal implications for state and local governments.

Chapter 4: Next Steps and Recommendations. The study concludes with implementation strategies for facilitating development of the DOSs, and recommendations.

2 Context

This section documents the local context with discussions of demographic, real estate market, and travel trends, as well as summaries of input received from local planning officials regarding development in the area.

2.1 Demographic and Market Trends

From 1990 to 2000, population in the Market Area increased by about 1.8 percent annually. This growth was notably higher than in surrounding areas of Prince George's and Anne Arundel Counties, although not as high as in Howard County. Families still constitute the majority of households, but non-family households have grown in percentage terms, while household size has decreased slightly. This trend is partly explained by an increase in the elderly population and a decrease in the population of young working professionals, residents between the ages of 20 and 34. The Market Area has a median income level lower than surrounding areas. With regard to commute and travel times, half the Market Area's residents commuted more than 30 minutes per day in 2000. This was slightly higher than for Anne Arundel and Howard Counties, but lower than Prince George's County.

In 2000, employment in the Market Area was dominated by management, professional, and sales occupations, with only limited resources devoted to farming, construction or the production of goods. Major industries in the area included education, health, social, professional, scientific, management, and administrative services. In addition, a major source of jobs in the area was focused on the retail sector. Finally, a strong government administration component, stemming from federal agency offices located in the area, was a major employment component.

The residential housing market in the Market Area is comprised of a mix of housing types, including multi-family stock that is mostly for the rental market, and single-family attached and detached stock for purchase. Recently, there has been substantial demand for, and a limited supply of, housing stock, which manifests in low vacancy rates and quick sales.

The commercial real estate market is dominated by free-standing stores, offices, and commercial strip centers. Existing commercial space has been created to suit the needs of modern retailers and service providers.

Retail space in the Market Area is mostly locally oriented. While it is distributed throughout, three distinct nodes of concentrated development are apparent. One node is dominated by the Laurel Mall and Laurel Shopping Center, featuring national chains and medium-sized retail operations. Another node includes Laurel Main Street and the stretch of US 1 from Whiskey Bottom Road to MD 198, featuring smaller sites and mostly local businesses. Finally, a node along MD 198 east of US 1 is characterized by larger retail sites with anchors like The Home Depot and Target.

Most of the existing office real estate in the Market Area is low- to mid-rise Class "B" office buildings located in suburban highway strip developments, and high amounts of flexible office/warehouse space. Much of the demand for office space is generated by government and military operations.

There is a wide range of hotel space in the Market Area, ranging from hotels catering to economy travel, which tend to locate along US 1, to hotels catering to extended-stay business clients, which tend to cluster at major intersections and exits off I-95. The limited-service hotels tend to be

older, while business-class hotels tend to be newer. Average occupancy in 2003 was 63 percent, indicating healthy demand.

2.2 Transportation Trends

2.2.1 Planned Investments and Other Studies

The transportation analysis portion of the CMMS used the MWCOG model. The model included all projects in the *2004 Constrained Long Range Plan, /FY 2005-2010 TIP,* MWCOG TPB. The Inter-County Connector, a new east-west multi-modal highway linking Montgomery and Prince George's Counties between I-270 and I-95/US 1, was coded into the MWCOG model for the CMMS.

In addition, the CMMS project Team reviewed studies relevant to land use and transportation needs in the vicinity of the Market Area for background and context for the study, including:

- US 1, various road and sidewalk improvements, MDOT. This package of infrastructure improvements for US 1 includes brick walkways in the historic areas in and around Laurel, re-habilitating the bridge over the Patuxent River, and re-surfacing and re-striping pavement in multiple locations.

- MD 28/MD 198, State Highway Administration (SHA). Study to consider capacity improvements in the MD 28 and MD 198 Corridor in Montgomery and Prince George's counties. Sidewalks will be included. Wide curb lanes will be incorporated to accommodate bicycles.

- US 1 Revitalization Study Phase 1 and Phase 2, and US 1 Manual, Howard County. Studies and manual to redevelop US 1 with pedestrian-supportive infrastructure improvements, and support new land developments.

- US 1 Study, Howard County and SHA. Prince George's County Line, including potential interchange improvements at MD 175. Joint study of US 1 between Howard County and the State for potential traffic safety, operational and roadway improvements along a nine-mile stretch of US 1 between Elkridge and Laurel.

- Maryland Transit Access 2000. This report prepared by the Maryland Transit Administration and the State Highway Administration identifies bicycle and pedestrian access routes to every transit station in Maryland, and evaluates the quality of the routes.

- Twenty-Year Bicycle and Pedestrian Access Master Plan, MDOT, October 2002. This plan inventories existing conditions for bicycling and walking on key state roadways, formulates a vision and goals for pedestrian and bicycle conditions, and identifies actions, timing, and costs for reaching those goals.

These documents were reviewed to ensure that work and recommendations were not duplicated here. In addition, in Howard County, visioning work and some follow-up implementation has already occurred for the US 1 corridor. Geographically it reached only as far south as the City of Laurel, at the northern end of the CMMS Market Area. The remainder of the Market Area has yet to receive this kind of treatment.

2.2.2 Current Travel Conditions and Trends

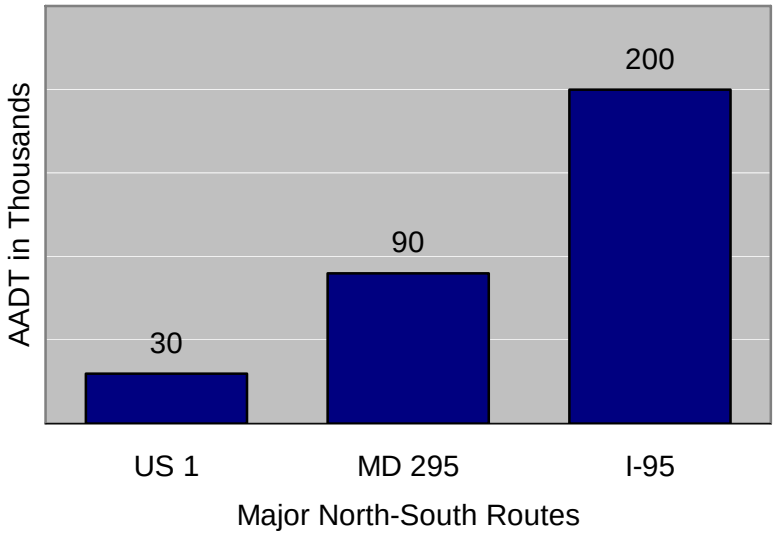
The CMMS is a regional and policy-oriented study, rather than a focused transportation needs study. Hence, this section does not analyze comprehensively the travel and service conditions in the Market Area in detail. Rather, it characterizes general travel conditions and challenges in the area, with illustrative examples from specific locations.

Regional Roadway Conditions

Because of its location along the Northeast Corridor, roadway travel in this area is dominated by inter-regional travel, especially I-95, and to a lesser extent, MD 295. (See Figure 1.2) Each serves major inter-regional travel routes, carrying vehicles whose origins and destinations lie outside the Market Area, and often outside the Washington and Baltimore regions. As a result, north-south traffic on these routes and on US 1, the parallel route that serves local travel in the area, is extremely heavy.

As shown in Figure 2.1, daily traffic throughput on US 1 in the Market Area is in the 30,000 range. Volumes here are comparable to those in other arterial routes in the three-county area and in nearby metropolitan areas. Furthermore, the amount of daily traffic on US 1 is less than half that carried by MD 295, a parallel, limited-access highway, and less than a quarter of the traffic carried by I-95, the major inter-regional travel corridor in the area.

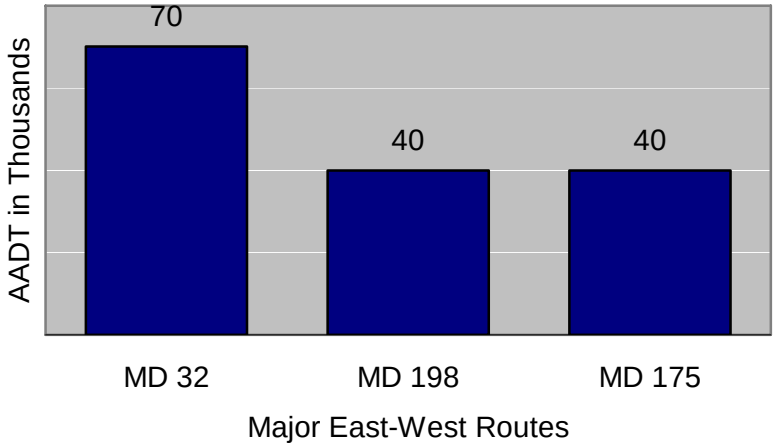
Figure 2.1. Daily Traffic Throughput on Selected N-S Routes, 2004



Source: Maryland Department of Transportation, SHA, 2004.

With major metropolitan areas lying both to the north and south of the Market Area, inter-state and inter-regional traffic is much less prevalent on the major east-west corridors. The primary routes servicing the Market Area are MD 32, MD 198, and MD 175, while their daily traffic throughput is illustrated in Figure 2.2 below.

Figure 2.2. Daily Traffic Throughput on Selected E-W Routes, 2004



Source: Maryland Department of Transportation, SHA, 2004.

Transit Conditions

The Market Area has moderate levels of bus service, including service provided by:

- Washington Metropolitan Area Transit Authority
- Maryland Transit Administration
- Connect-A-Ride
- Howard Area Transit Service

With some peak-period frequencies approaching 30 minutes, together these services constitute a moderate level of local and feeder bus service. Regional or commute bus service is less prevalent than local service. The area's location at the edge of two major metropolitan areas and the intersection of four counties allows riders access to multiple transit services, but this also presents a challenge for service coordination and smooth transfers. Regional commuter bus service connecting this area to other areas within the Baltimore and Washington regions has not been a major focus. Finally, there are gaps in non-peak daytime service.

Train service in the area serves the commuter market, and is limited to the peak period. It has a strong focus on bringing commuters into the Washington, DC, metro area, and, to a lesser extent, the Baltimore metro area. Service is provided by MARC on its Camden Line, with six southbound trains toward Washington, DC, and two northbound trains toward Baltimore in the morning peak period. Ridership on MARC trains is approximately 4,300 boardings per day (Source: Maryland Transit Administration).

MARC stations in the area include Laurel, Laurel Racetrack, and Muirkirk, all of which include Park & Ride lots. The Laurel station lot regularly experiences over-capacity usage rates, while the lots at the Laurel Racetrack and Muirkirk stations do not.

Access to these transit services is mixed. Most bus stops currently lack amenities for transit customers. Sidewalks are narrow and lacking at some locations, and there are few of the elements necessary for comfortable pedestrian and transit waiting environments.

Rail stations along the CSX line in the Market Area also currently lack pedestrian access to and from the surrounding communities. Large parking lots surround each station. These parking lots are critical to MARC's mission in their current outer suburban setting. Nonetheless, they isolate the stations from the rest of the neighborhoods that they serve. As land uses in the area change, facilitating additional types of access may become appropriate.

Figure 2.3. Example of Existing Transit Accessibility and Bicycling Conditions along US 1

Pedestrian and Bicycle Conditions

Conditions in many locations along US 1 are unsupportive of pedestrian and bicycle travel.

Pedestrian. Multiple stretches, and many station areas and bus stops, lack both safety and amenity-oriented pedestrian elements, including sidewalks and crossings.

Bicycle. In a recent bicycle conditions inventory, MDOT measured bicycling conditions on major State routes using the Bicycle Level of Comfort (BLOC) measurement system on a scale of A (best) to F (worst). Because US 1 lacks bike lanes and shoulders and experiences fast vehicular traffic in multiple stretches, it rates an E or F BLOC in many locations. Additionally, few alternate bicycling routes exist, either on nearby streets or on off-street trails.

Figure 2.4. Example of Existing Pedestrian Conditions along US 1: City of Laurel

MDOT's *Bicycle and Pedestrian Access Master Plan* identifies US 1 as a Tier 1 location for pedestrian and bicycle improvements. Tier 1 routes meet three criteria:

1. The road segment is recommended for improvement in a local/regional bicycle or pedestrian plan

2. The road segment is within a Priority Funding Area

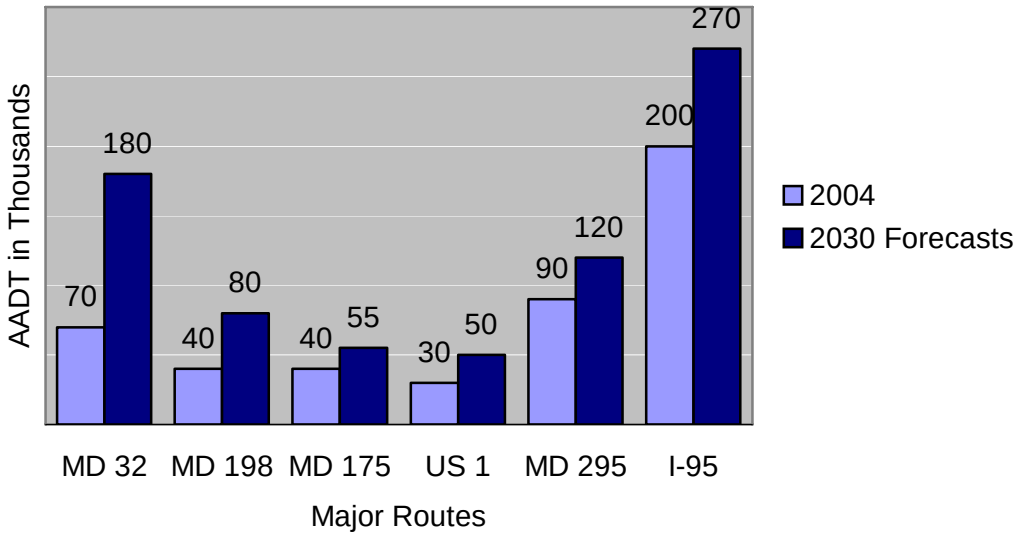
3. The road segment has a Bicycle Level of Comfort of "E" or "F".

2.2.3 Projections

Traffic is projected to increase dramatically in the CMMS study period, with daily vehicle throughput for the year 2030 significantly above today's levels. As shown in Figure 2.5 below, traffic along the major north-south routes in the CMMS area is expected to grow by a combined 30 percent. I-95 and MD 295 are expected to see the bulk of the increases.

Traffic growth is also forecast for the US 1 corridor, but the increases are less dramatic here than along the larger routes, in both absolute and percentage terms.

Figure 2.5. Projected Throughput



Source: Maryland Department of Transportation, SHA, 2004.

The dramatic increases in throughput on I-95 and MD 295 stem from the tremendous growth in through-travel in the north-south corridors that does not originate or end in the CMMS Market Area. These figures suggest that less growth in the CMMS Market Area will not translate directly to substantially less traffic growth in the Market Area. These implications are tested with the travel model in Section 3 of this report.

2.2.4 Current transportation context: Summary

Transportation conditions in the CMMS Market Area are characterized by high and growing traffic, and gaps in the overall system that prevent it from providing the desired levels of

flexibility, safety, capacity, and quality of life. The Market Area is perfectly positioned to develop into a series of places linked to each other and to the Baltimore and Washington markets by MARC commuter rail, high-quality bus service, and linked internally by high-quality pedestrian and bicycle options. Few places enjoy the combination of transportation opportunities represented by the MARC line, the direct highway links, and the concentration of activities. However, until these transportation elements are better linked and integrated, as called for by the planning documents reviewed by the CMMS Project Team, travelers will in too many cases have little choice but to drive, and traffic in the Market Area will increase faster than it would otherwise.

As the participating jurisdictions recognize, land use patterns will also have to change in order for the transportation system to operate better. While the Market Area contains a rich mix of uses, many in close proximity, most of the Market Area is not characterized by a land use pattern conducive to non-auto travel. The CMMS focus on developing land use scenarios is in part an effort to advance the land use side of transportation-land use visioning and planning in the US 1 corridor.

2.3 Local CMMS Participation and Input

One core purpose of the CMMS was to bring together area stakeholders and local government officials into a constructive, broad-perspective dialogue about regional growth issues, in order to spur ideas for actions that governments can take to promote economic vitality and high quality of life in the area. This participation was accomplished through on-going formal and informal coordination, a tour of the Market Area, stakeholder interviews, and a project workshop. The next sections describe key CMMS participation elements.

2.3.1 Leadership Working Group and Ongoing Consultation

One finding of MDOT's *Central Maryland Mobility Study: State of the Area Report* was the need for "collaborative action," including the creation of a permanent interagency working group to address challenges in the Central Maryland area. In response, representatives of MDOT, City of Laurel, and Prince George's, Montgomery, Howard and Anne Arundel Counties formed the Central Maryland Mobility Study Leadership Working Group (LWG). The LWG is composed of local government elected officials—such as mayors and council members—and high-level state and local planning and transportation leaders.

The LWG provided guidance to the CMMS to help shape key aspects of the study, including its goals, issues, and work plan, stakeholder and public participation, the selection of the DOSs, and ways in which the area jurisdictions can best collaborate on common interest.

The CMMS project team and MDOT staff facilitated collaboration among the LWG and local staff members throughout the study. Local plans, reports, data, and demographic projections were made available to the CMMS team, and draft analyses, market trends and projections, transportation studies, and other products were shared with local government participants for their review and input. The CMMS team also solicited ongoing dialogue and input from local stakeholders in order to ensure that CMMS products reflected local input and desires.

2.3.2 Project Kick-Off Tour

In June 2004, staff from the CMMS Project Team, MDOT, the City of Laurel, and Anne Arundel, Howard and Prince George's Counties toured the four DOSs. The tour was conducted to accomplish several purposes. Beyond serving as the official kick-off of this study phase, the tour

introduced the CMMS team and City and County representatives and enabled attendees to become familiar with DOS background and critical issues:

- Current uses, zoning, transportation initiatives and issues,
- Local and State plans, policies, and projects,
- Development/redevelopment activities and planning efforts currently underway, and
- Reasons why each site was suggested for study.

Information was presented regarding past, current, and prospective development and transportation issues and plans in the US 1 corridor and relevant to each DOS. This material served as the point of departure for the CMMS as work proceeded to prepare the design principles and concepts, development scenarios, and implementation strategies. The tour was also an opportunity for participants to express their perspectives on what they wanted to see as products from the CMMS that would help them in their work.

2.3.3 Interviews and Workshop

A series of stakeholder interviews were held during the early stages of the study. Interviews were held with over 25 local and State elected officials, government staff, and representatives of the business, community, transportation, and development communities. The purpose of the interviews was to inform stakeholders about the CMMS and to obtain their views regarding current and future transportation, land use and market issues, both generally for the area and specifically for each of the four DOSs. Information obtained in the interviews was used in the development of the DOS concept plans.

In February 2005, a workshop was held to present and discuss progress on the CMMS. This workshop was attended by State and local government planning and transportation officials. Topics discussed at the workshop included: results of the stakeholder interviews; market analysis and projections; transportation concepts; site analysis and design principles; and concepts for the DOSs. To facilitate in-depth review and discussion, the DOS design principles and concepts were reviewed in break-out group sessions.

The input received in these sessions is summarized in Appendix 2.

3 Development Approaches, Results, and Discussion

3.1 Development Opportunity Site Concepts

The CMMS Project Team developed two concept plans for each Development Opportunity Site, one each for the Trend and Aggressive Scenarios. (In the Dispersed Growth Scenario, the DOSs would see no growth, so that Scenario required no DOS-specific planning.) These Scenarios respond to site opportunities, the goals of each Scenario, and the input from the CMMS stakeholders. This section, for each DOS site:

- Describes current conditions and then the concept plans developed, and
- Illustrates each concept plan.

Detailed building programs for each DOS, for each Scenario, are given in Appendix 3.

Anne Arundel County Site

Current

The study area for Anne Arundel County is the Laurel Park racetrack and associated land. The site is located to the east to the CSX-MARC line and occupies approximately 40 acres over the entire Laurel Park site. The racetrack area is comprised of a large grandstand, the track itself and the paddock area where horses are lodged and service activities are conducted.

The racetrack is considering improvements to the facilities. These improvements include relocating the paddock area to the north and east across Brock Bridge Road, thereby opening up larger areas adjacent to the track itself, for redevelopment. The bulk of the rest of the site would be retained for parking and other track-related needs, with new development, such as high density residential and entertainment venues concentrated to the east and northern sides of the track. In addition to the racetrack, floodplain issues limited developable space.

The site is located adjacent to the Laurel Race Track MARC station. Such excellent proximity could be a focal point for the development of a unique residential community, centered on views of the track, but yet well within convenient access to a regional rail transit location.

Trend

The Trend scenario does not foresee the relocation of the paddock to the other side of Brock Bridge Road, and thus does not change any of the existing uses. (See Figure 3.1)

Aggressive

This plan develops a new community focused on the track and part of a new community that enjoys views of the track and associated features. Residential condominiums of two to four stories fill out new blocks, with surface parking located in the center of the blocks. A new town green centers the plan and provides access to a relocated train station for the MARC line. The plan also includes a new resort hotel to the west, of approximately 200 rooms.

Program (See Figure 3.2)

Parking: all surface parking

Parking ratio: 2.0 cars per townhouse; 1.5 cars per condo units

Uses: High-end Condos, Hotel, New Grandstand Building for Racetrack

Residential Density: 535 Units / 36.92 Acres = 14.5 Units per Acre

Retail: None

Total Residential Units: High End Condos: 484; Townhouses: 51

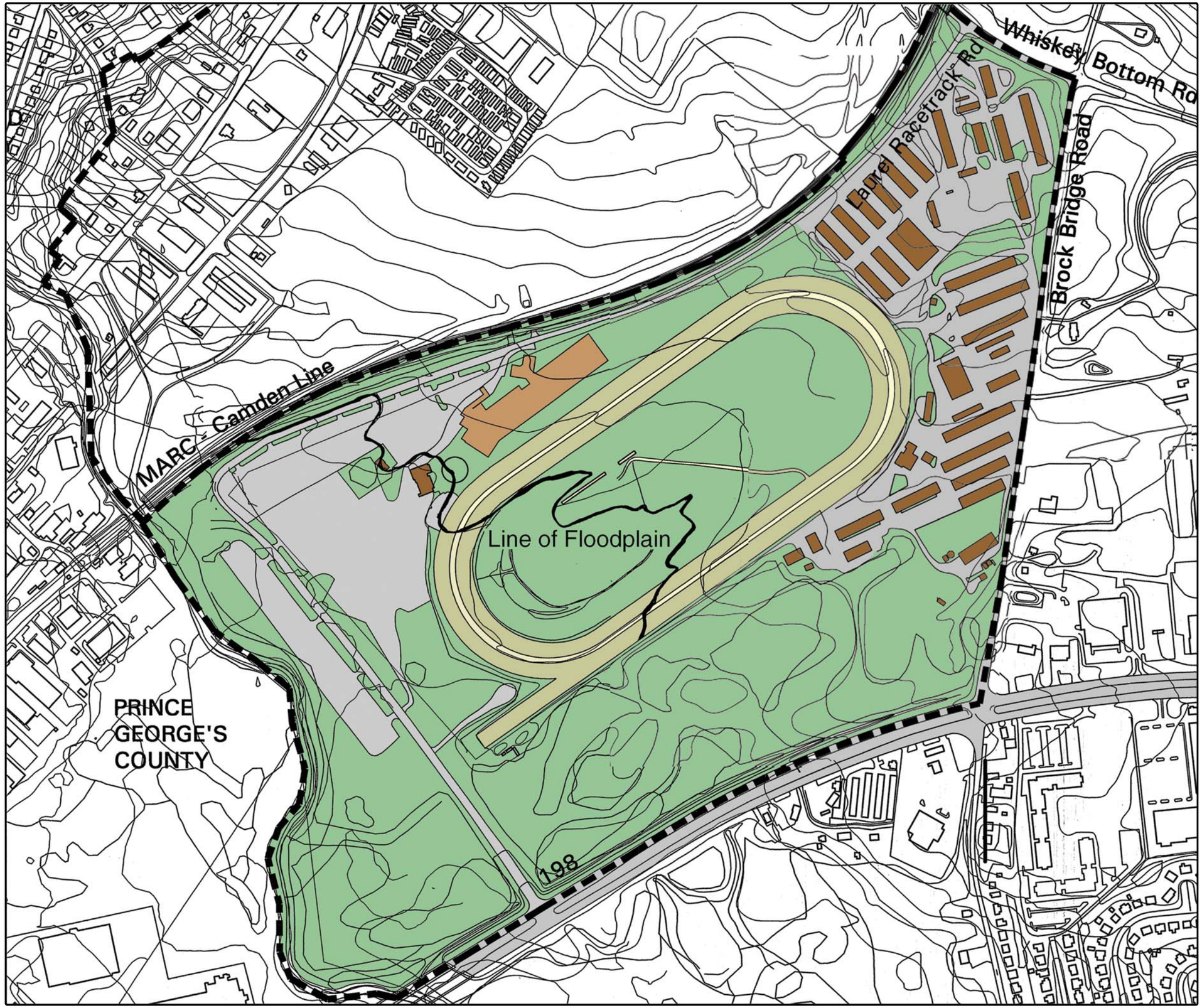
Hotel: 200 Rooms; 2 Meeting Rooms and Restaurant. 110,000 gross square feet (GSF)

Central Maryland Mobility Study

Maryland Departments of Transportation

"Concept" Study

FIGURE 3.1 Anne Arundel County
Scenario 2 - Current Market

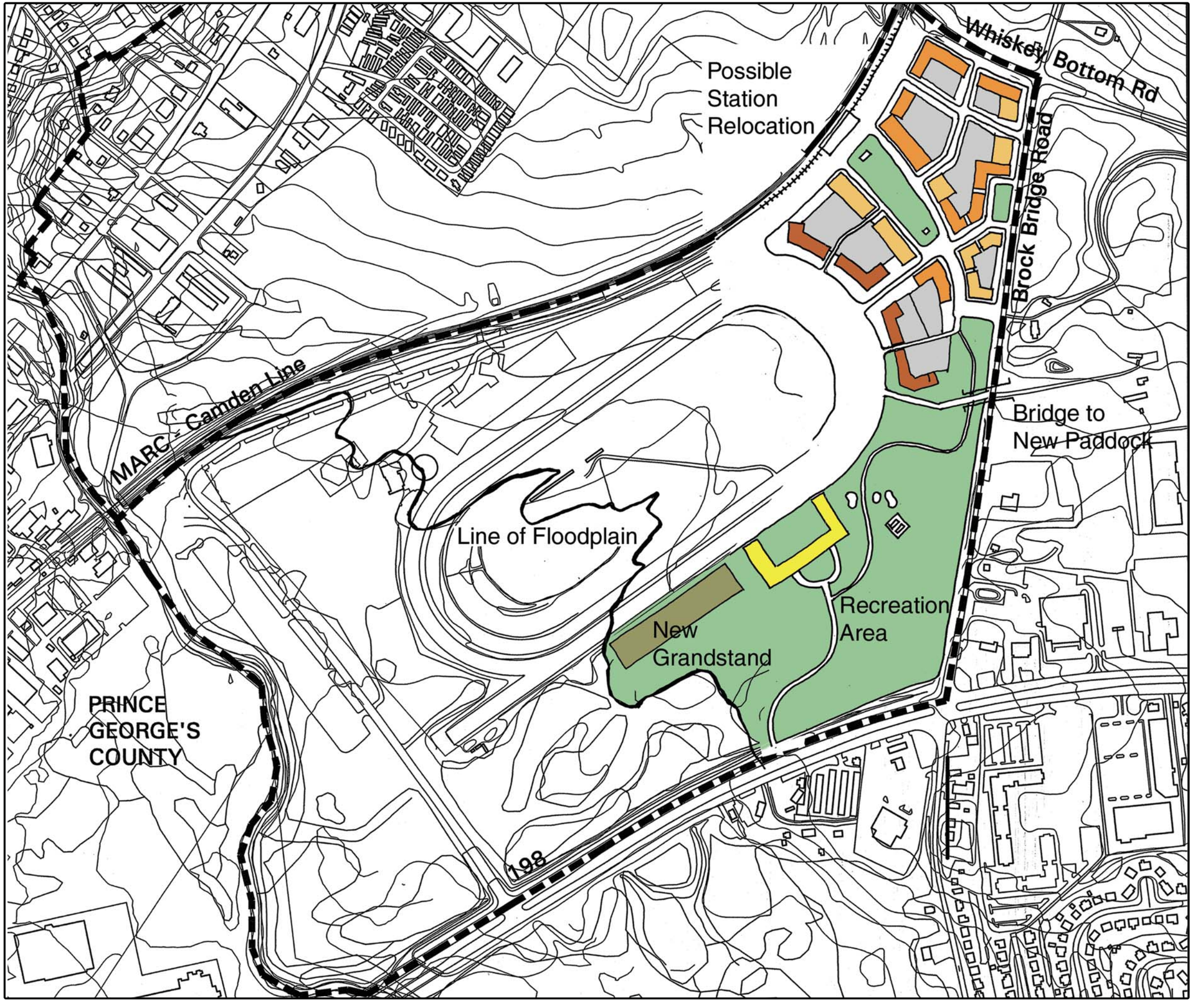


Ehrenkrantz Eckstut & Kuhn Architects

Central Maryland Mobility Study

Maryland Departments of Transportation

FIGURE 3.2 "Concept" Study
Anne Arundel County
Scenario 1 - Aggressive



- Residential - Single Family Home
- Townhomes
- Residential - 2-3 Stories
- Residential - 4 Stories
- Retail
- Office
- Parking (Surface)
- Plaza - Park Area
- Hotel
- New Racetrack Facilities

Ehrenkrantz Eckstut & Kuhn Architects

N

0 300' 600' 900'

Howard County Site

Current

The 155 acre site area is located adjacent to the MARC Camden Line, the Laurel Park racetrack and US 1. To the south is the Patuxent River, part of the Chesapeake Bay watershed. The site is also located mid-way between I-95 and the Baltimore-Washington Parkway. It enjoys excellent access to the regional street and highway network. The Laurel Race Track stop on the MARC Camden Line is located to the eastern edge of the site, and the bulk of the area in that part of the site is used for commuter parking or overflow parking for the racetrack.

The site borders the northern edge of the city of Laurel, itself located in Prince George's County, although the study area is in Howard County. The eastern side of the site is limited by the right-of-way for the CSX/MARC line and the western border extends to the edge of a subdivision that is entered from US 1.

US 1 divides south of the city of Laurel proper and this split continues into the project area. The east side is north bound and is bordered by many drive-in businesses. The west side is bordered by a residential sub-division and other auto-oriented establishments. The US 1 split leaves an underdeveloped strip of land between the north- and south-bound lanes. The split also encourages higher speed traffic as it approaches downtown Laurel and moves through the project area.

The floodplain at the south end of the site limits developable space somewhat.

Trend

This scenario assumes that current strip-style development continues along US 1 and that a lower density residential neighborhood is developed in the area between the highway and the train tracks. All parking is in surface lots.

Program (See Figure 3.3)

Parking: Surface Only

Parking ratio: 4.0 cars per 1,000 GSF of office, 2.0 cars per townhouse; 2.0 cars per condo units; 5.0 cars per 1,000 GSF of retail

Uses: Flex Space, Light Industrial, Residential, some Retail

Residential Density: (according to current zoning) TOD: 15 to 20 units per acre with a requirement that at least 5% be reserved for moderate income residents

Retail: increase existing by 10% on west side of US 1

Aggressive

The aggressive scenario for the site develops a gridded street system with a mixed-use neighborhood between the right-of-way of US 1 and the existing CSX tracks. The plan assumes an adjustment in the alignment of US 1 with the split moved to the south to make larger development parcels possible in the project area, and to support better conditions for pedestrians.

Office development of approximately 250,000 sf is centered along the US 1 corridor, with a retail main street of about 100,000 gsf developed on streets leading to the train station location. The plan envisions townhouse and condominium development throughout with some accommodation of structured parking in the office district. The mix of uses is designed to support retail variety and a new town center for the North Laurel neighborhoods.

Program (See Figure 3.4)

Parking: combination of surface and structured parking

Parking ratio: 2.5 cars per 1,000 GSF of office, 2.0 cars per townhouse; 1.5 cars per condo units; 4.0 cars per 1,000 GSF of retail

Uses: Office, Flex Space, Retail, Condos, Elementary School (or other public use)

Residential Density: 3,129 Residential Units / 154.45 Acres = 20.25 Units per acre

Retail: 103,375 GSF

Office: 250,000 GSF (Last Phase Office 75,000 GSF)

Flex Space / Warehouse: 100,000 GSF

Total Residential Units: 2,702 Condos (1,000 GSF each); 427 Townhouses

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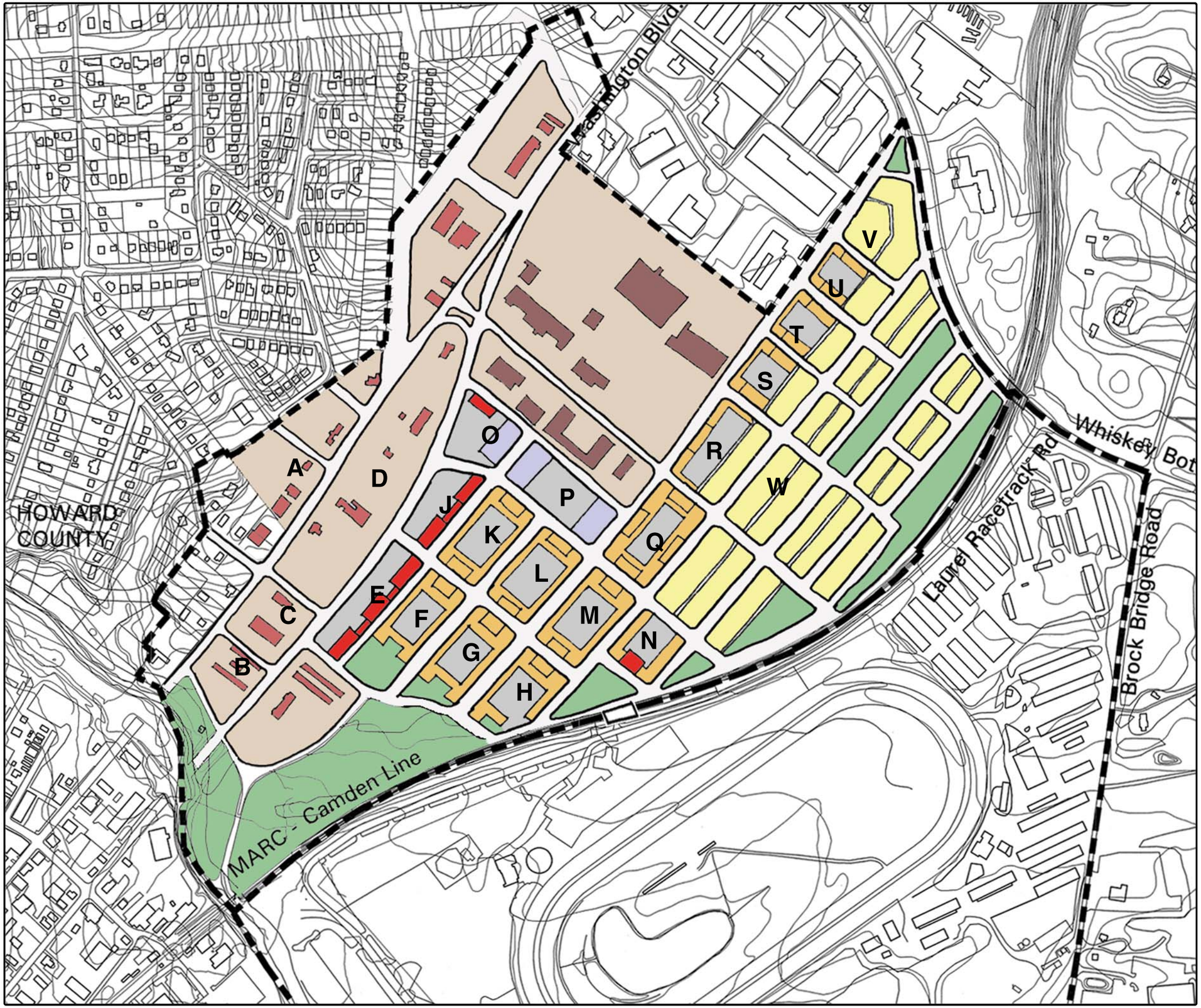
FIGURE 3.3 Howard County
Scenario 2 - Current Market



- Townhomes
- Residential - 2 Stories
- Residential - 3 Stories
- Residential - 4 Stories
- Retail
- Existing Retail
- Office
- Flex Space
- Parking (Surface)
- Parking (Garage)
- Plaza - Park Area
- Light Industrial
- Existing Industrial

Ehrenkrantz Eckstut & Kuhn Architects

N

0 300' 600' 900'

Central Maryland Mobility Study

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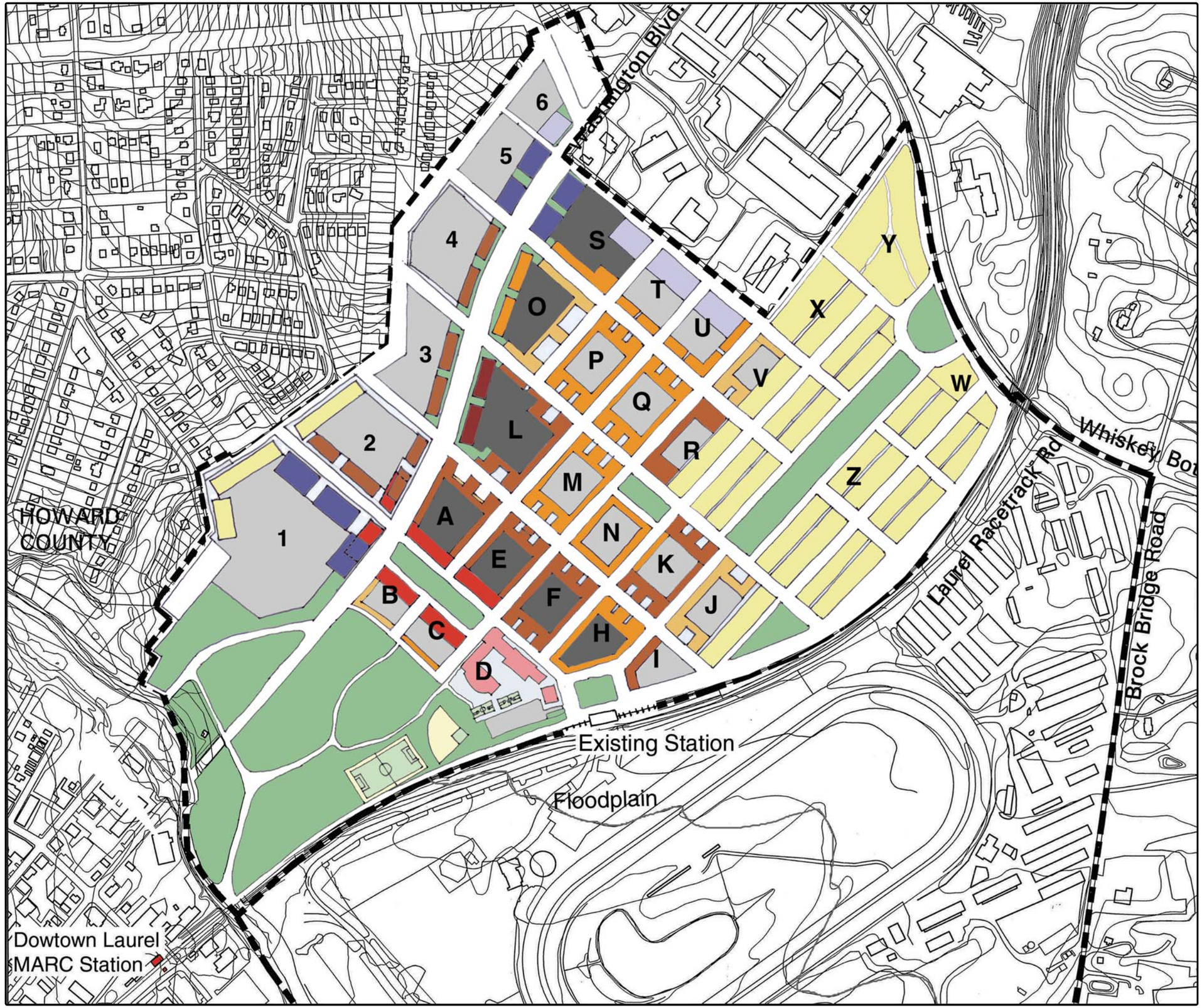
"Concept" Study

Howard County

FIGURE 3.4

Scenario 1 - Aggressive



- Townhomes
- Residential - 2 Stories
- Residential - 3 Stories
- Residential - 4 Stories
- Retail
- Office
- Flex Space
- Parking (Surface)
- Parking (Garage)
- Plaza - Park Area
- Light Industrial
- School

Ehrenkrantz Eckstut & Kuhn Architects

N

0 300' 600' 900'

City of Laurel Site

Current

The DOS is the southern gateway to the City of Laurel proper at the intersection of Cherry Hill Road and US 1/Baltimore Blvd. The eastern side of the DOS is inhabited by light industrial uses from trucking companies to wholesale supply companies, occupying large buildings and land areas. Approaching the site from the south, one passes through conventional strip development.

Laurel Mall is located west of US 1, and is bordered by US 1, Cherry Hill Road, Fourth Street, and the older Laurel Lakes shopping center to the north. Both shopping centers sit adjacent to residential neighborhoods to the west. The Laurel Mall site is a particular opportunity for redevelopment as is continues to be in financial distress.

A new residential community of apartments and townhouses is located to the south of Cherry Hill Road and is noteworthy for its large lake and high-quality landscaped environment. Redevelopment is proposed for the block just to the west of Laurel Mall and is currently proposed to be high-density apartments surrounding a parking garage.

Traffic at the US 1/Cherry Hill Road intersection is heavy and US 1 is particularly difficult for a pedestrian to cross in this area. Few pedestrian routes into the city exist. Although the downtown Laurel MARC station is under a ten-minute walk away, there are no direct routes and the environment for pedestrians is difficult. There is also a small concrete drainage ditch traversing the residential areas to the west of the site, passing between the two shopping complexes and connecting to the regional watershed further west beyond the project area.

To the east of US 1, the floodplain and by the large number of existing light industrial companies concentrated in that area both pose challenges to redevelopment.

The Laurel Mall site offers substantial potential benefits to the CMMS Market Area. Redevelopment could connect the residential areas to the west via a street grid to new projects along US 1. The mall site offers excellent visibility along US 1, and has the potential to transform the southern gateway to the city from a sea of parking to a vibrant, mixed-use community.

Trend

This scenario would develop residential and retail development on the west side of US 1, replacing the failed Laurel Mall, and strip-style businesses on the east side. Further to the east, existing light industrial uses are retained with all surface parking.

Program (See Figure 3.5)

Parking: Surface only

Parking ratio: 4.0 cars per 1,000 GSF of office, 2.0 cars per townhouse; 2.0 cars per condo units; 5.0 cars per 1,000 GSF of retail

Uses: Retail, Residential and Light Industrial

Residential Density: (according to current zoning regulations) Transit-oriented Development, 15 to 20 Units per acre, with a requirement that at least 5 percent be reserved for moderate-income residents

Retail: strip retail along US 1 with parking in front

Aggressive

In this Scenario the existing Laurel Mall is demolished and replaced by an intensely developed area of residential and retail businesses. This plan would include parking structures to accommodate new retail and residential buildings on the west side of the highway. To the east, new residential development of three and four story buildings would occupy parcels now currently used for light industrial uses. Parking would be accommodated by surface lots on the interiors of the blocks. The plan also includes the possibility of developing a new MARC station that would serve residents south of the existing station. The plan re-establishes the former city grid in the area. The plan also suggests the possibility of stream restoration of a nearby tributary of the Patuxent River.

Program (See Figure 3.6)

Parking: Combination of surface and structured parking

Parking ratio: 2.3 cars per 1,000 GSF of office, 2.0 cars per townhouse; 1.5 cars per condo units; 3.5 cars per 1,000 GSF of retail

Uses: Retail, Office, Condos, new Intermodal transit station

Residential Density: 2,151 Units / 107 Acres = 20 Units per Acre

Retail: 142,500 GSF

Office: 550,000 GSF

Total Residential Units: 2,027 Condos; 124 Townhouses

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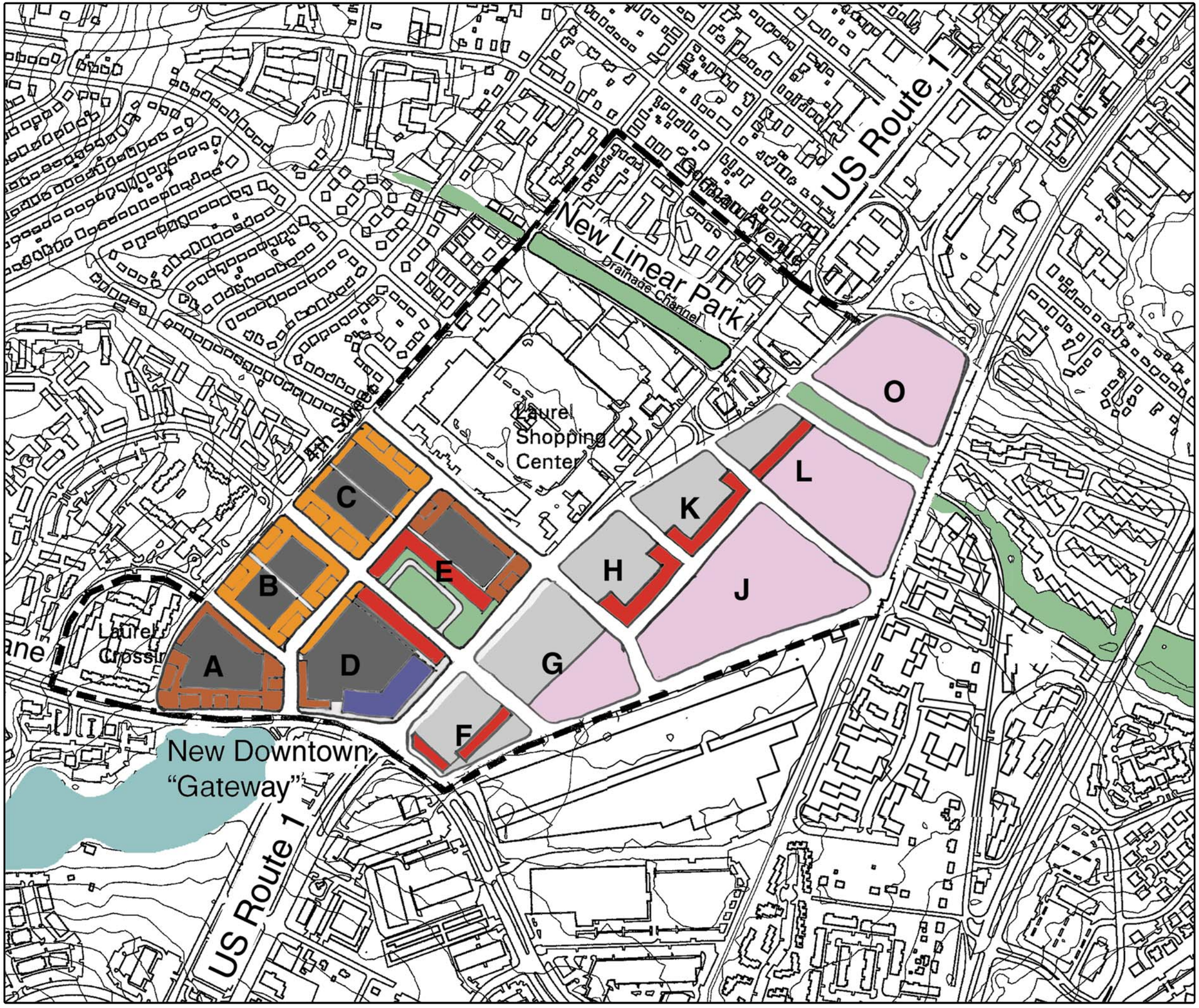
FIGURE 3.5

City of Laurel

Scenario 2 - Current Market



- Residential - 2 Stories
- Residential - 3 Stories
- Residential - 4 Stories
- Retail
- Office
- Flex Space
- Parking (Surface)
- Parking (Garage)
- Plaza - Park Area
- Light Industrial

Ehrenkrantz Eckstut & Kuhn Architects

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0 400' 800' 1600'

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FIGURE 3.6

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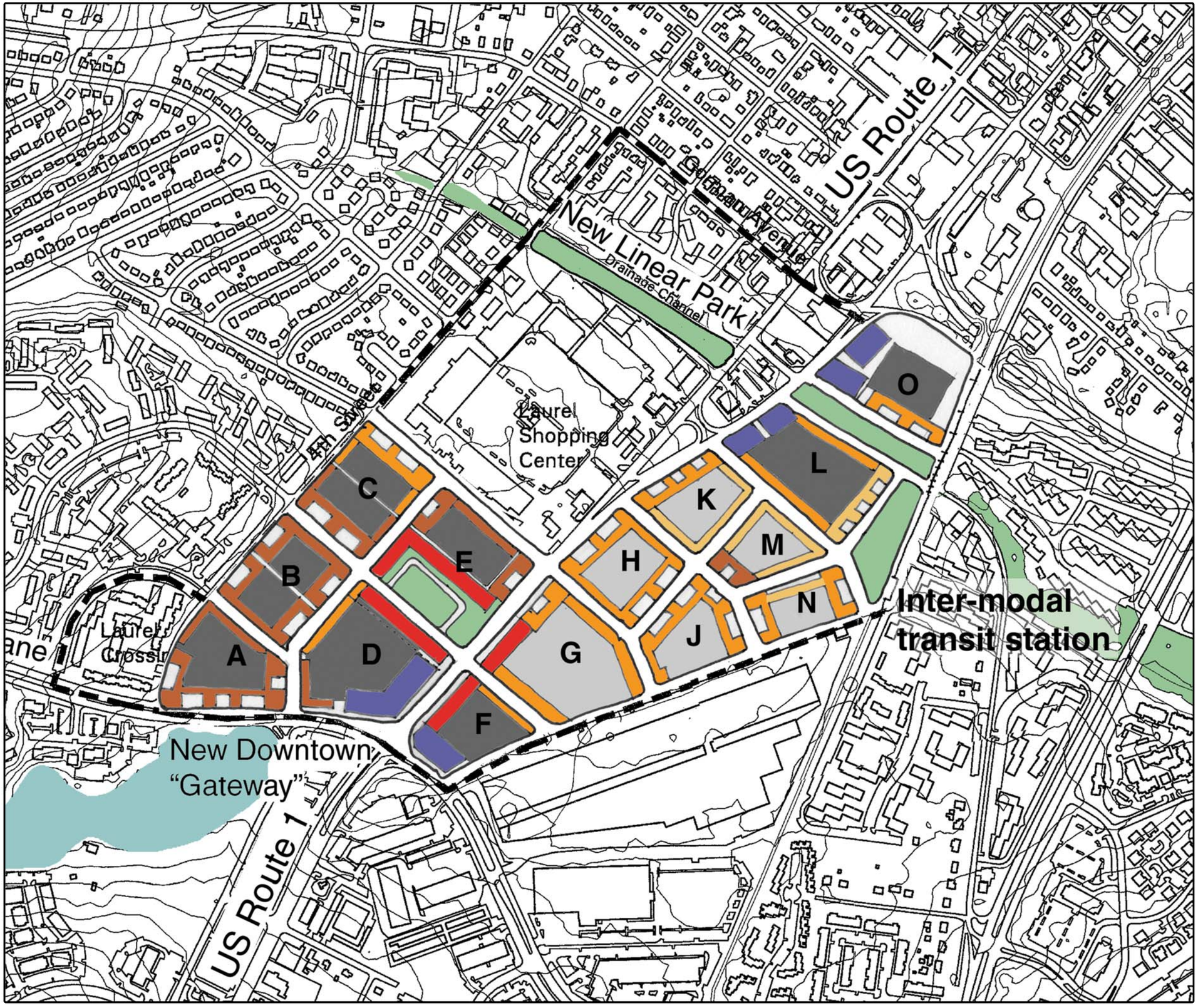
City of Laurel

Scenario 1 - Aggressive



- Residential - 2 Stories
- Residential - 3 Stories
- Residential - 4 Stories
- Retail
- Office
- Parking (Surface)
- Parking (Garage)
- Plaza - Park Area

Ehrenkrantz Eckstut & Kuhn Architects

N

0 400' 800' 1600'

Prince George's County Site

Current

The DOS for the Prince George's County site focuses on the Muirkirk MARC Station and surrounding land. Muirkirk Road passes over US 1 and provides access to the existing MARC station, although this access is indirect and not easily identifiable.

Currently the station and the surrounding area is part of a growing suburban area that is changing from light industrial uses to office development and service facilities, such as FedEx and others. It is also the location of the eastern edge of the larger planned Konterra development, which will include mixed uses. The section of Konterra within the study area is slated for further office development. Smaller, single-family detached districts occupy sites to the east of the study area.

The portion of the DOS along US 1 is auto-oriented in nature, and US 1 by design encourages high speed traffic. The Intercounty Connector is planned to connect through Konterra to US 1 and access I-95 directly from the project area.

Trend

This plan sees the continued development of suburban office buildings with about 20,000 to 25,000 gsf floor plates and surface parking and the future occupants of the site. A modest amount of retail is included as well as future locations to continue the development of light industrial uses, as seen today.

Program (See Figure 3.7)

Parking: surface only

Parking ratio: 4.0 cars per 1,000 GSF of office, 2.0 cars per townhouse; 2.0 cars per condo units; 5.0 cars per 1,000 GSF of retail

Uses: Office, Flex Space, Light and Heavy Industrial

Residential: infill residential townhouses near existing train station

Aggressive

The Scenario develops the site as a mixed-use transit village with high-density office development fronting onto US 1, supported by structured parking. Residential development of two- to four-level condominiums extends further to the west with the last few blocks also containing structured parking.

To the east, the site is centered on the transit station with two to three level apartment buildings and surface parking lots, and lower density townhouse units at the edges. Light industrial is included across Muirkirk Road.

Program (See Figure 3.8)

Parking: Combination of surface and structured parking

Parking ratio: 2.5 cars per 1,000 GSF of office, 2.0 cars per townhouse; 1.5 cars per condo units; 2.5 cars per 1,000 GSF of retail

Uses: Office, Condos, Single Family Homes, Flex Space, Light Industrial, small Service Retail.

Residential Density: 1,427 Units / 142 Acres = 10.05 Units per acre

Retail: Ground level retail on office buildings (20,000 GSF)

Office: 784,000 GSF

Total Residential Units: 2,066 Condos; 361 Townhouses

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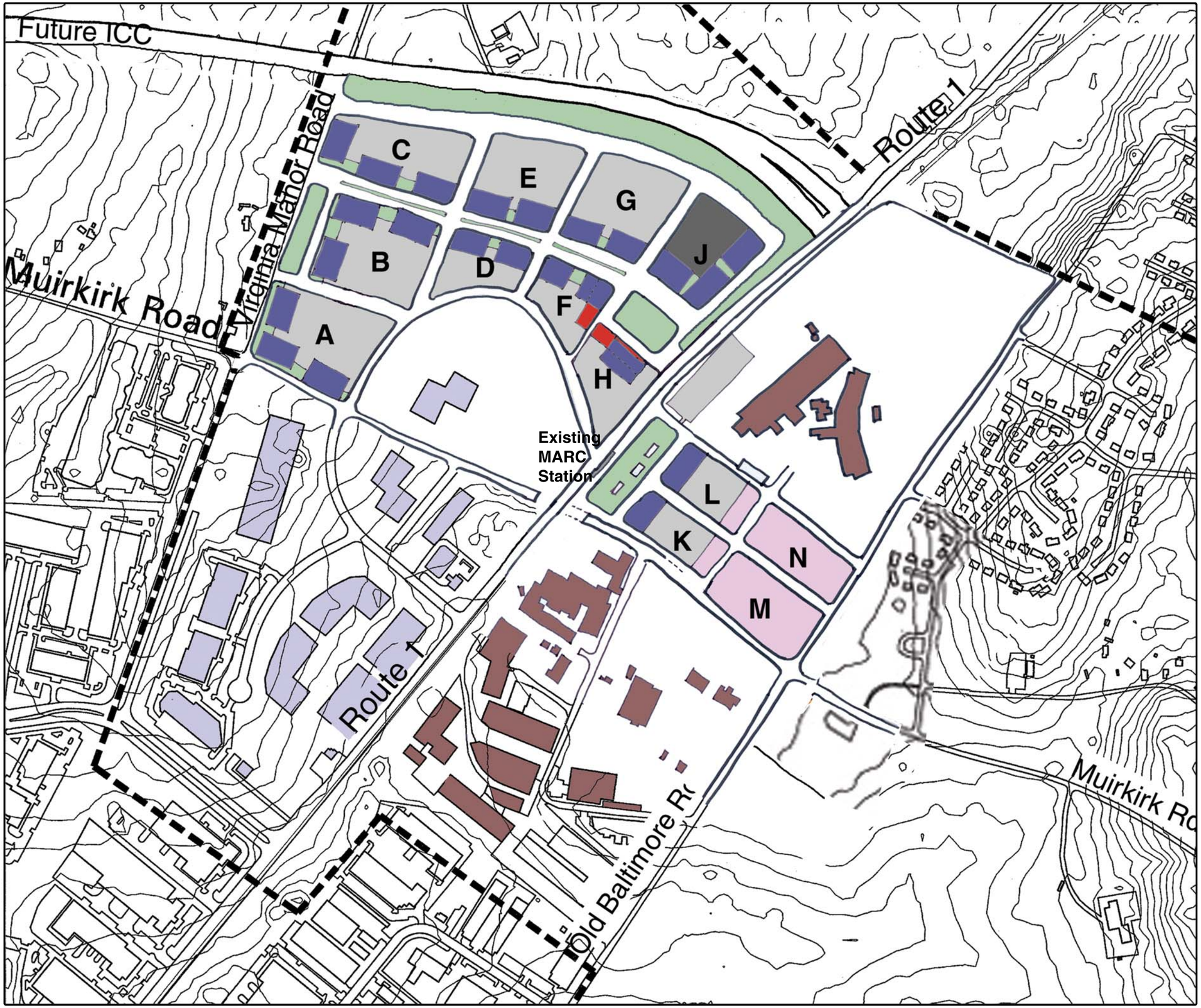
FIGURE 3.7 Muirkirk

Scenario 2 - -Current Market



- Retail
- Office
- Existing Office
- Parking (Surface)
- Parking (Garage)
- Plaza - Park Area
- Light Industrial
- Existing Industrial

Ehrenkrantz Eckstut & Kuhn Architects

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0 300' 600' 900'

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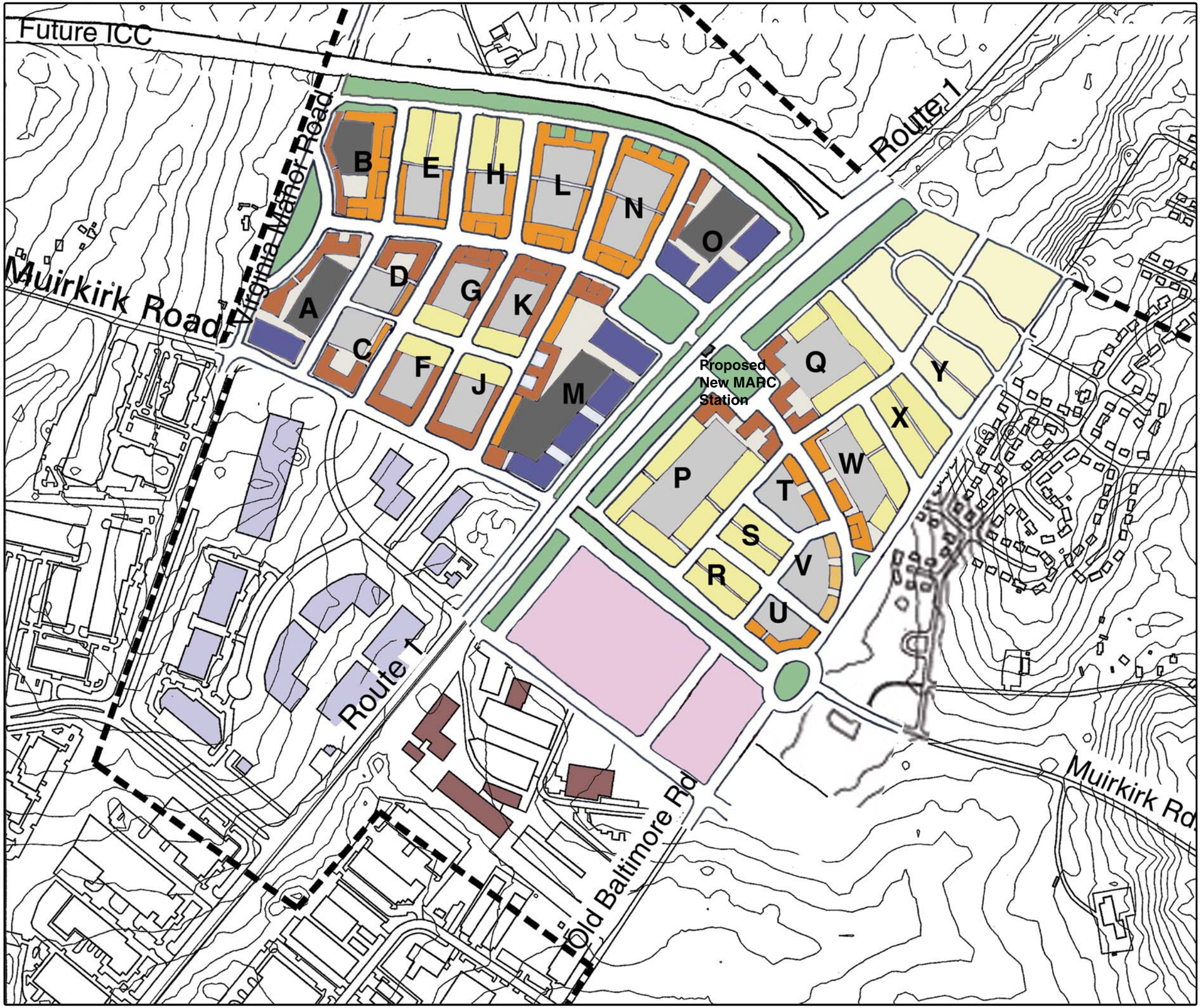
FIGURE 3.8

Muirkirk

Scenario 1 - Aggressive



- Residential - Single Family Home
- Townhomes
- Residential - 2 Stories
- Residential - 3 Stories
- Residential - 4 Stories
- Retail
- Office
- Existing Office
- Parking (Surface)
- Parking (Garage)
- Plaza - Park Area
- Light Industrial
- Existing Industrial

Ehrenkrantz Eckstut & Kuhn Architects

N

0 300' 600' 900'

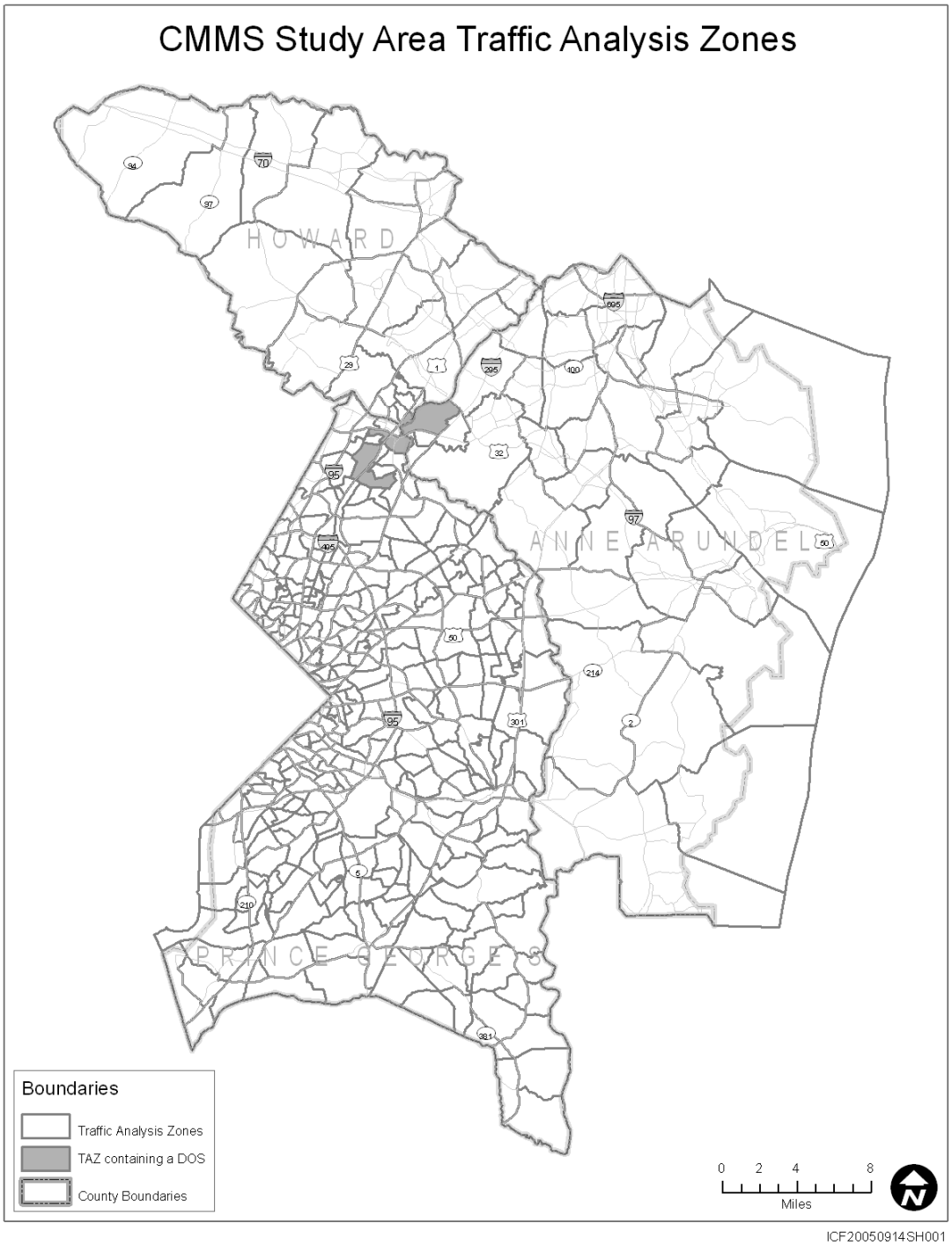
3.2 Transportation Impact Analysis

The transportation analysis explored the performance of each Scenario using several transportation performance indicators. The analysis used the four-step travel model maintained by the Metropolitan Washington Council of Governments (MWCOG). The model forecasts travel behavior and conditions in the metropolitan Washington area using a network of transportation links and information about regional land uses. The land use input for the model is a set of Transportation Analysis Zones (TAZs) that describe the demographics of small divisions of land throughout the region. CMMS used a forecast year of 2030[2].

TAZ boundaries are shown in Figure 3.9.

[2] Specifically, Round 6.4A of the MWCOG Cooperative Forecasts was used.

Figure 3.9. TAZ Boundaries in the Three-County Area



MWCOG builds regional projections of future land use patterns (housing and employment) through a cooperative forecasting process. The CMMS modified the MWCOG projections for selected TAZs to create land use projections corresponding to each of the three development Scenarios. These land use projections were the basis of three model runs, producing forecasts of travel behavior and conditions under each Scenario.

3.2.1 Scenario Development and Description

The three development Scenarios were developed such that the total amount of growth—both households and employment—would remain constant across all three Scenarios. Each Scenario simply distributed the growth in a different way. County-level totals also remained constant. Growth was only shifted within each county.

Growth was assigned to three groups of TAZs:

- TAZs (numbering six) that contain the four DOSs,
- TAZs that constitute a Market Area around the DOSs (including the DOS TAZs), and
- For each of the three counties of Prince George's, Howard, and Anne Arundel, the ten TAZs forecast to experience the highest growth in housing and each type of employment from 2000 to 2030, excluding TAZs in the Market Area.

To create the three Scenarios, growth was shifted between the DOS TAZs and the other two groups of TAZs. For example, for the Aggressive Scenario, most growth was assigned to the DOS TAZs. In the Trend and Dispersed Scenarios, a percentage of growth was instead diverted to the Market Area immediately surrounding the DOSs, and a percentage to the surrounding county. These percentages were developed for each DOS using professional judgment about the ability of each DOS to attract commercial and residential tenants and owners from other parts of the region. The percentages are shown below in Figure 3.10.

Figure 3.10. Household and Job Distribution Percentages for the DOSs

	Percentage of Growth Distributed to/from the Market Area		Percentage of Growth Distributed to/from the Outlying County	
	Households	Jobs	Households	Jobs
Anne Arundel DOS	20%	90%	80%	10%
Howard DOS	40	35	60	65
Laurel DOS	40	50	60	50
Prince George's DOS	55	50	45	50

The study assumed that when employment and household growth occurred away from the Market Area, that growth would follow current development momentum and go to the fastest-growing TAZs in each county. Approximately 120 TAZs out of the 454 TAZs in the three-county area were affected in some manner by these shifts.

Further descriptions of the growth Scenarios for the transportation analysis follow.

Aggressive Development Scenario

In this scenario, aggressive development in the DOS TAZs absorbs some growth in these TAZs that would otherwise have been predicted to occur in other TAZs in the Market Area and in the fastest-growing TAZs in the three counties.

Trend Development Scenario

This scenario represents trend development, and mostly resembles the MWCOG 2030 land use forecast, except that more jobs are expected in the DOSs by CMMS than by MWCOG. To reflect this difference, the CMMS shifted employment from the rest of the Market Area and outlying TAZs to each DOS TAZ.

Dispersed Development Scenario

In this scenario, the DOS TAZs see little or no growth beyond what existed in the year 2000. Growth that has been predicted in these TAZs has instead been moved to the other TAZs in the Market Area and the fastest-growing TAZs in the three counties.

In the DOS TAZs, the Aggressive Scenario contains approximately 11,000 more households and 19,000 more jobs than does the Dispersed Growth Scenario. For control totals to remain constant across each Scenario, the Aggressive Scenario has this amount fewer jobs and households outside the DOS TAZs than does the Dispersed Scenario. Figure 3.11 shows the total jobs and households in the DOS TAZs under each development scenario.

Figure 3.11. Employment and Housing in the DOS TAZs

	Aggressive	Trend	Dispersed
Households	20,775	12,865	9,440
Change from Trend	+7,910		-3,425
Total Employment	31,074	29,378	11,376
Change from Trend	+1,696		-18,002

These totals compare with approximately 720,000 households and 1,160,000 jobs in the total three-county area. The amount of growth captured in the Aggressive Scenario is approximately 7 percent and 9 percent, respectively, of the housing and employment forecast by MWCOG in the three-county area.

TAZs affected by the changes are shown in Figures 3.12a-Households and 3.12b-Employment.

Figure 3.12a. TAZs Affected by Housing Redistribution

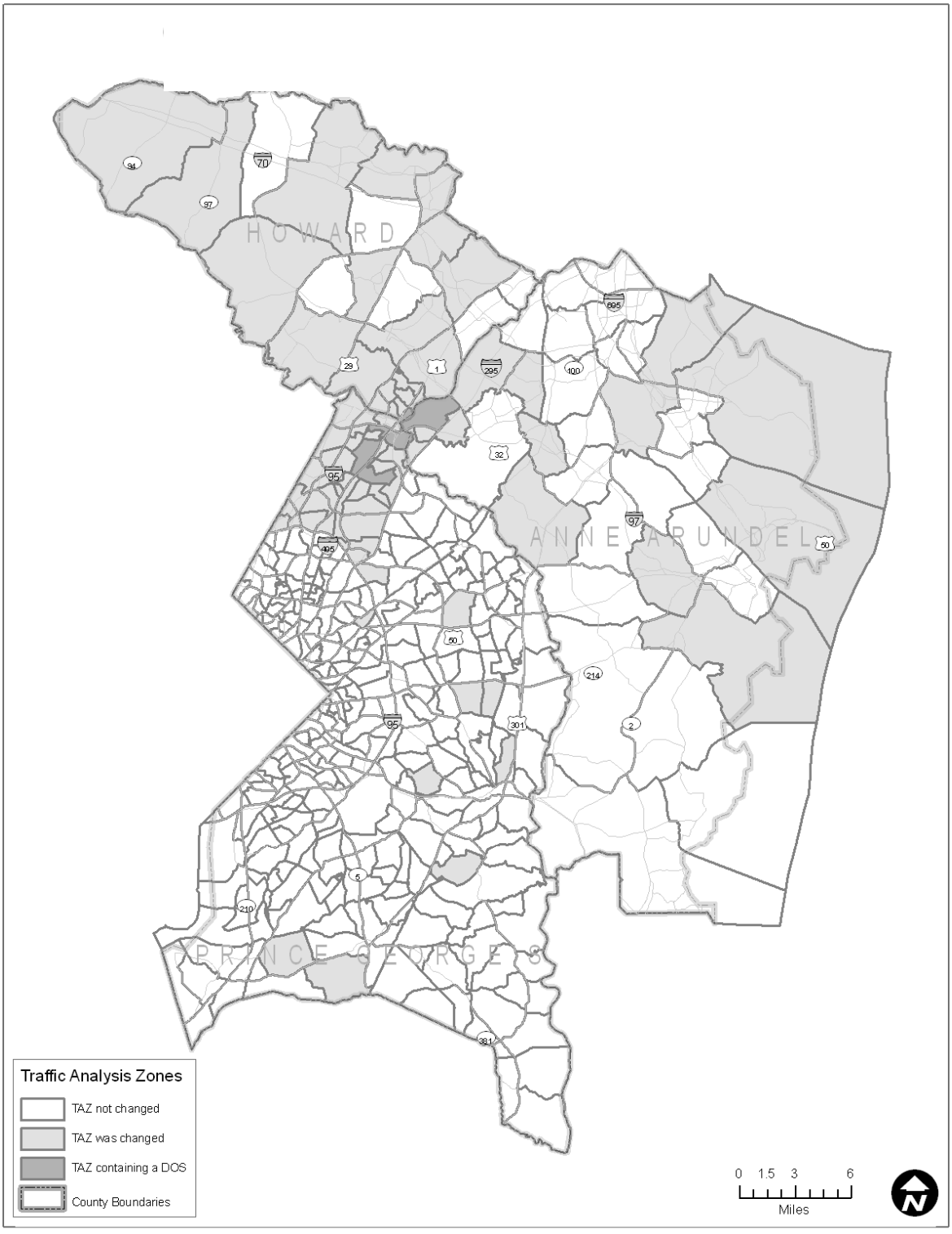
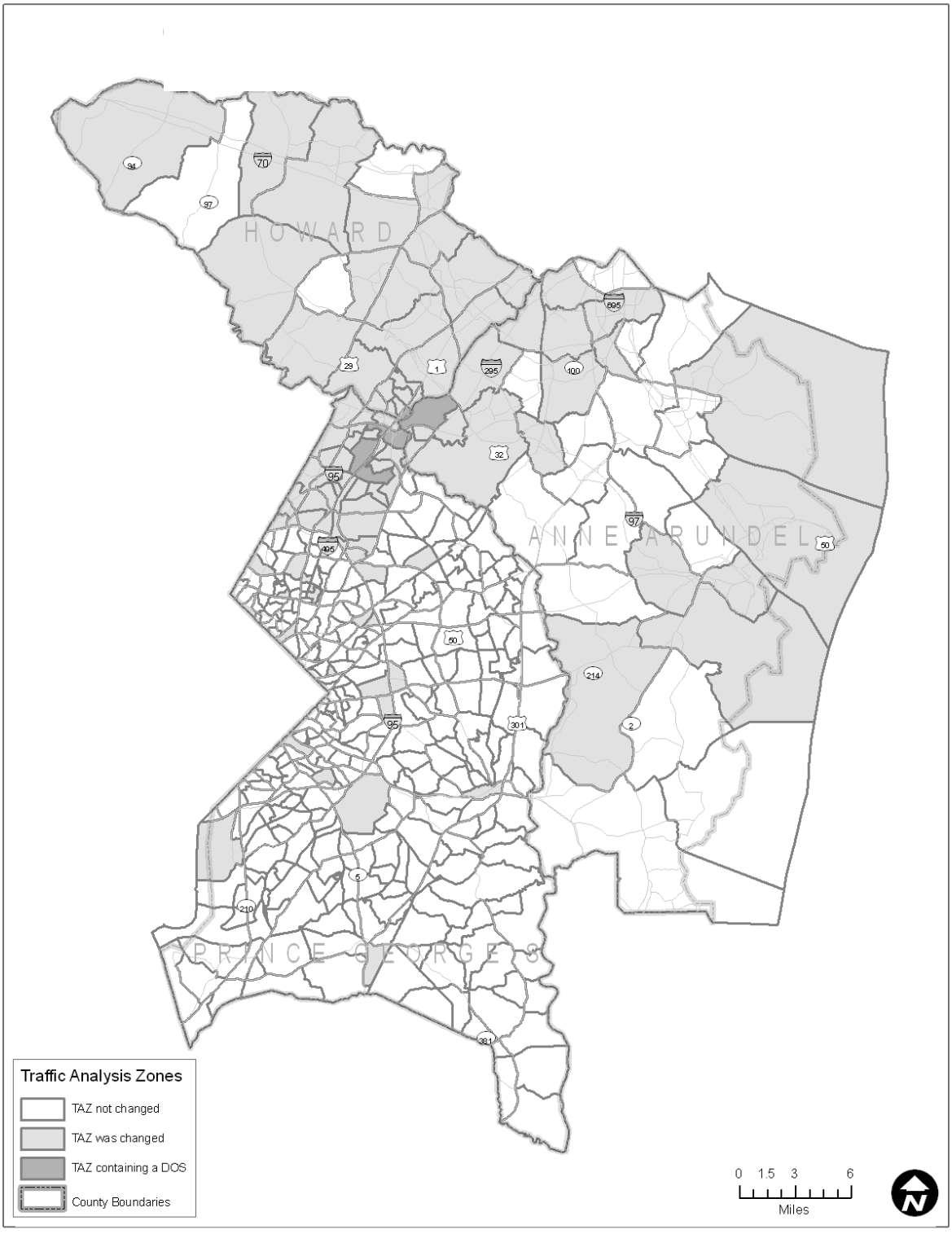


Figure 3.12b. TAZs Affected by Employment Redistribution



3.2.2 Results and Discussion

For the three-county area, summary transportation performance measures are shown in Figure 3.13.

Figure 3.13. Total Number of Daily Trips and Travel Time

	Three-county Area	
Scenario	Daily Total Trips	Daily Total Travel Time (min)
Aggressive	9,025,378	223,874,613
Trend	9,037,473	224,192,314
Dispersed Growth	9,035,709	224,354,756

The Aggressive Scenario produces fewer auto trips and less travel time overall, compared to both the Trend and Dispersed Growth Scenarios. Although the direction of the findings is intuitive, the differences in these results are not as large as in results from studies in similar situations.

There are at least two possible explanations for why the results do not show a larger response.

1. *These results do not include interzonal travel.* Studies such as this one typically do not examine interzonal travel because it is difficult to model well, and generally modeling shows clear differences between Scenarios without calculating intrazonal travel. However, a substantial portion of the benefit of compact growth comes from shorter trips, and the current approach certainly misses some of those benefits. Studies that have adjusted to capture intrazonal trips have shown substantial changes in forecasts before and after intrazonal capture.

2. *The Aggressive Scenario draws some growth from closer to Washington.* Because the Aggressive Scenario redistributes growth to the "fastest-growing" parts of the three counties, the DOSs are further from DC than are some of the TAZs from which they draw growth. So, not all of the growth accommodated in an Aggressive Scenario moves closer to the jobs and housing center(s) of the region.

The forecast performance of the transportation system varies in small but notable ways among the Scenarios. Figure 3.14 below compares the number of lane-miles of the three-county roadway network that experience volumes above their capacity in the AM peak travel period.

Figure 3.14. Miles of Over-Capacity Roadways by Scenario, AM peak period

	Lane-Miles of Roadway with v/c > 1.0
Aggressive	1,415
Trend	1,435
Dispersed	1,446

The Aggressive Scenario generates fewer auto trips than Trend, and Trend, fewer than Dispersed. As a result, the Aggressive Scenario overloads fewer links in the transportation network, allowing more travelers to travel in uncongested conditions than in Trend or Dispersed. Aggressive is forecast to produce roughly 30 fewer lane-miles of roadway categorized as over capacity or about 2.2 percent less than Dispersed. This result is consistent with the forecast of development, putting fewer trips on the regional network as that development is focused in the DOSs.

3.2.3 Transportation System Cost Implications

These forecasts of total congested peak-period lane-miles can be used to suggest how the need for additional road capacity would vary under each Scenario. Roadway expansion needs are of course evaluated on a case-by-case basis, using a variety of dedicated tools. However, as a tool for understanding the overall implications for MDOT of different growth patterns, these results can be instructive. General costs associated with investments to address travel growth stemming from development in each Scenario can be calculated as follows, using standard SHA cost estimating procedures for projects at the planning stage. [3]

These calculations assume that in all locations where existing lanes are overcrowded, the recommendation would be to build 2 new lanes regardless of whether the existing roadway is two, four, or six lanes. In Central Maryland, which covers all counties in the CMMS area, the SHA planning-level estimate for a new two-lane, undivided roadway is $2,550,000/mile. For planning-level cost estimates add to this unit cost a 40% contingency + 15% for engineering + 15% for construction.

Planning level cost estimate:

$2,550,000/mile + 40% + 15% + 15% = $4,721,325 cost per mile estimate

This cost estimate does not include right-of-way, structures, or interchanges. Structures for two lanes typically cost in the range of $650,000 to $1.3 million per structure. For interchanges, we can estimate that each new interchange would be in the range of $10 to 25 million + 15% for engineering +15% for construction, or a total of between $18.5 million to $46 million per interchange, an average of $32.3 million per interchange.

These costs generate the following implications:

The Trend Scenario generates 20 more over-capacity lane-miles than does Aggressive Scenario. At the above costs, and assuming one new interchange associated with those 20 miles, total costs would be:

20 miles	@ $4,700,000 / mile =	$ 94,000,000
1 interchange	@	32,300,000
		$126,300,000

Similar cost estimates could easily be generated for other Scenario to Scenario comparisons, using assumptions about costs, structures, and associated interchanges one thought reasonable.

[3] Cost Estimating For Project Planning Guidance Documentation, Maryland State Highway Administration, November 2004.

Again, these potential cost numbers are not meant to suggest actual roadway needs and costs for MDOT; rather, they are meant to convey at a conceptual level the potential policy and cost implications of various development patterns. Clearly even the small amount of forecast growth that is shifted in the three Scenarios will meaningfully affect the number of regional over-capacity roadways. Increasing the number of over-capacity roadways could create the demand for costly new roadway capacity.

These calculations include only potential direct costs to MDOT. They do not include travel time costs or savings, emissions changes, or other travel impacts measures relevant to MDOT.

3.4 Development Costs and Economics

3.4.1 Site infrastructure development costs

Developing at the DOSs also has costs. The CMMS Project Team estimated the following costs associated with developing the Scenario 1 and 2 concept plans shown in Section 3.1. The cost categories are demolition, earthwork, site utilities, storm drainage, and roadways.

Figure 3.15. Conceptual Infrastructure Cost Estimates for Trend and Aggressive Development Scenarios

Category	City of Laurel (105 Ac.)		Howard County (226 Ac.)		Muirkirk (158 Ac.)		Anne Arundel County (69.3 Ac.)	
	Trend	Aggress-ive	Trend	Aggress-ive	Trend	Aggress-ive	Trend	Aggress-ive
1 Demolition	$18.2	$22.5	$1.9	$4.8	$4.4	4.8	N/A	$2.3
2 Earthwork	4.2	5.6	12.5	12.5	5.9	9.0	N/A	1.9
3 Site Utilities	6.1	9.4	9.9	13.5	6.4	14.8	N/A	5.2
4 Storm Drainage	8.4	10.8	10.8	12.3	5.7	11.5	N/A	3.1
5 Roadways	5.1	5.8	18.7	18.4	1.0	17.5	N/A	3.2
Subtotal	*42.0*	*54.1*	*53.3*	*61.5*	*33.4*	*57.6*	N/A	*15.7*
Contingency 40%	16.8	21.6	21.3	24.6	13.4	23.0	N/A	6.3
TOTAL	**$58.8**	**$75.7**	**$74.6**	**$86.1**	**$46.8**	**$80.6**	**N/A**	**$22.0**
Additional value		**$16.9**		**$11.5**		**$33.8**		**$22.0**

Notes and Assumptions:

1. These costs are presented as initial ballpark order of magnitude comparisons between Scenarios, and are not comprehensive site costs.

2. Unit costs were derived from Maryland SHA bid tabs, CTP estimate guidelines, and from cost estimates prepared for projects with similar items.

3. These costs are infrastructure costs only, and exclude buildings, structures, parking lots, transit stations, HAZMAT, storm water management, erosion and sediment control, landscaping, streetscaping, and traffic signals.

4. It is assumed that all required utilities are new. Abandonment, relocation, or modification of new utilities is not included in these costs.

5. Costs for electricity, gas, telecommunications, cable TV, and water meters are assumed to be developer costs or utility company costs, and therefore are not included in this estimate.

6. Costs for design, permits, environmental mitigation, municipal/state administration, and preliminary construction startup activities are not included in this estimate.

7. For unit price and quantity derivations, refer to attached backup data.

8. For the Howard County Aggressive Scenario, full reconstruction ("un-dualization") of US 1 is included in this estimate.

Discussion

These costs would be needed to enable each of the DOS concepts. The cost estimates are presented without any implication about which parties, whether public or private, might pay them.

All of the *types* of costs estimated for DOS development would also be incurred for developments outside the DOSs in the Dispersed Growth Scenario. Without specific non-DOS sites to analyze, there is no way to accurately estimate those costs. Typically, it would cost a developer less to develop a greenfield site than the currently developed DOS sites. From a total social cost perspective, those developer savings are not free; they generate, at a minimum, new highway costs as discussed above.

These cost calculations raise the following questions:

1. Will the market pay the kinds of costs estimated here in order to even reach Trend Scenario levels of development?

2. If not, what kinds of public / private partnerships, tax-increment financing, cost-sharing, or other kinds of arrangements might be necessary and/or practical to make developments of the kind outlined in Scenarios 1 and 2 possible?

These questions are taken up next.

3.4.2 Development financial analysis

Project and Scenario Economics

For each use within the development concept programs, the CMMS Project Team prepared a *pro forma* financial analysis to determine financial feasibility. The *pro forma* analysis compares the potential income generated once the project is fully leased (i.e., in the stabilized year) to the associated operating expenses. Revenues not required for operating expenses are then available to provide a return on the developer's investment in construction and other development costs. The return is calculated as annual net operating income divided by the developer's investment in "hard" construction costs and compared to typical developer requirements for return on investment. As developers and investors decide where to invest their money and time, they compare the potential returns to the associated risks and to achievable returns from other investments. For projects with a higher risk of failure and losses, investors require higher returns

to compensate them for those risks (in the same way an individual investor decides whether the potential returns from owning stock are satisfactorily higher than the "safe" return available from investing in Treasury bonds or a savings account to justify the risk of a future loss in stock value).

Often termed a "hurdle rate", the minimum acceptable level of return on investment is set in the marketplace by the interplay of 1) potential returns from alternative investments (e.g., stocks and bonds) and 2) the investor's judgment of the risks that the project will not achieve the anticipated returns. Development is associated with many risks such as unexpected site problems, higher than anticipated costs, delays in the development approval process, slower sales or lease-up and/or lower than anticipated sales prices/rents. Currently, area developers report that those required rates of return (calculated as annual net operating income divided by "hard" construction costs) are:

- 10 percent for rental apartments,
- 10 percent for commercial office,
- 10 percent for retail, and
- 15 percent for hotels.

Required returns from for-sale developments are roughly 12 percent of gross sales revenues for condominiums and townhouses. It should be noted that developers and investors have several different measures for potential return. One common approach is to compare the net cash flow after paying debt service to the equity investment (development costs not covered by borrowing). Another approach uses a detailed multi-year cash flow analysis to consider the impact of development and cost phasing as well as the sales or leasing pace of absorption. The hurdle rates vary based on the measure of return used.

A project that cannot demonstrate that it will yield at least the hurdle rate of return will not be funded for development at that time. Private investors (e.g., insurance companies) will not invest if the risks and returns are not commensurate. They may instead postpone their investment until market conditions improve or may invest in other real estate developments with better returns or in other types of investment all together. *Pro formas* are used to compare the costs of development to the level of private investment justified by the potential returns from future sales and/or rents.

Once the feasibility of individual land uses has been established, the financial analysis then compares the income from sale of individual sites to the cost of assembling and improving the land to accommodate new development. This approach assumes that the land developer is buying the land from its current owner and then selling sites to commercial developers and homebuilders for office buildings, retail shops, and/or residential construction. The costs of improving the sites for development include "hard" costs of infrastructure improvements (e.g., roads, sewer, water, drainage, etc.), "soft" costs associated with securing development approvals (e.g., fees for architectural, engineering, legal and accounting services, building permits, etc.), and marketing the property, including the cost of real estate taxes, insurance and maintenance of the property before it can be sold to the final building developers.

Methodology

As shown in Section 3.1, for each development Scenario and DOS, the CMMS Project Team prepared a conceptual design that sited individual land uses, roads, open spaces and parking, and allocated land based on the market analysis prepared by the Team. This site planning analysis determined the amount of each use that could be accommodated given parking requirements.

The potential revenues from leasing/selling individual buildings were estimated based on the preceding market analysis, adjusting the experience of other developments being sold or leased recently to account for the DOSs' relative locational advantages and disadvantages. Operating expenses reflect the experience of other comparable products and typical lease arrangements (e.g., whether the landlord or tenant pays certain expenses). Development costs were estimated based on inputs from area developers coupled with information from local developers and H.S. Means Square Foot Costs. Land sales prices were estimated based on recent sales in the corridor and confirmed by the feasibility analysis of each individual land use.

For each land use, the value of the finished product was estimated by capitalizing the annual net operating income using market-based capitalization rates that reflect the price investors are willing to pay to acquire a real estate asset that generates that annual income. These capitalization rates are 8.0 percent for rental residential, office, retail and flex development and 10.0 percent for hotel development (higher because hotels have been shown to carry higher operational risks and more income volatility than office buildings subject to five- and ten-year leases). The value is calculated by dividing the annual net operating income by the capitalization rate. Total development costs are deducted from the capitalized value of the property to determine the potential return to the developer. The difference between that return and the return required to meet the hurdle rate is identified as "value surplus or deficit".

For the overall DOS feasibility analysis, the Project Team compared the costs of preparing the site for development to land sales payments to the land developer. These costs were estimated by the Project Team based on the preliminary site development concepts. Because they are based on conceptual drawings rather than detailed engineering designs, these infrastructure cost estimates are "order-of-magnitude" estimates.

The resulting value summary for the DOS under each scenario quantifies the potential land sales revenue and the value surplus/deficit from the individual land use components of the development program. Some pieces of the development may have a value deficit, indicating that they are not currently feasible given today's market conditions and costs. In some cases, a developer may choose to cross-subsidize one use with the returns from another use because the lower value use is an important element that provides an amenity and creates value elsewhere in the development. For example, retail on the Prince George's County DOS might not provide an adequate return, but the availability of on-site retail services would help make the office space more marketable and help the office developer achieve higher rents and returns.

Financial Analysis Results

The financial analysis is prepared in two segments:

1. Analysis of individual land uses and the potential returns to building developers; and then

2. Analysis of the overall land development process and potential returns to the land developer for each DOS.

Individual Land Uses and Building Developer Returns

Under the Trend Scenario financial analysis many of the DOSs' planned developments failed to meet current hurdle rates. Scenario 1 includes the most aggressive development program that the projected market could support, regardless of the current development limits established in local plans and policies. In some cases the cost of new construction coupled with current market constraints on achievable sales and rental prices limits the development opportunity, indicating

that the private market can not overcome the challenges to provide medium- to high-density transit-oriented development at these locations given current market conditions.

For each development opportunity site, the level of development activity increases from the Trend to the Aggressive Scenario with higher densities and more urban developments. Structured parking (Aggressive) allows at least a doubling of the amount of development on each of the DOSs. Typical of mixed-use development, the Aggressive Scenario creates a place with both daytime and evening activities and supports higher rents and prices for associated buildings. Figure 3.16 summarizes the total project value for each of the proposed development opportunity sites, by Scenario.

Figure 3.16. Total Project Value for Development Opportunity Sites

	Total Project Value	
Development Opportunity Site	**Trend**	**Aggressive**
Anne Arundel	N/A	$499,579,000
Howard County	$498,000,000	$1,263,000,000
City of Laurel	$429,000,000	$877,000,000
Prince George's County	$184,000,000	$954,000,000

While this table indicates the value associated with each Scenario, the feasibility of these developments depends on their ability to meet private developer's anticipated levels of return.

The following analyses focus on the individual building developers who would buy sites from the land developer in order to construct condominiums, an office building, or a retail center.

None of the conventional office developments are financially feasible at present. The overhang of vacant office space throughout the region has depressed office rents to the point where a developer cannot earn a high enough return to attract private financing. Except for a few distinct areas with local space shortages (e.g., the Fort Meade area, north of the CMMS Market Area), office construction in suburban Maryland is limited primarily to owner-occupied buildings. An upturn in the weak office market resulting in rent increases to $27 per square foot or more would be needed to support the development of new office space in the area. This suggests that the office portion of each development may need to wait until a later phase.

Figure 3.17 shows the project return above or below the required developer return (i.e., hurdle rate) for each land use by DOS and Scenario. A value deficit, shown as a negative number in the following financial gap analysis table, indicates the estimated gap financing not available from the private market without public assistance, but necessary for a DOS Scenario.

In the case of new low-rise condominium development, the value deficit is relatively small. The US 1 market is on the verge of being able to support development of new condominiums. A price increase of one to two percent would be sufficient to support development of new condominiums. With an upgrading of the US 1 environment, condominium development should become feasible in the near future. Because a project's ability to meet the developer's hurdle rate depends in part on its development costs, certain developers with access to lower-cost financing could make their required returns now under current market conditions.

The returns in the following table relate only to the profitability of the building development and do not address the costs required to assemble and improve the land to make it suitable for development. The analysis of the land development feasibility follows in the next section.

Figure 3.17. Financial Gap Analysis for Individual Land Use by DOS

Development Opportunity Site/Land Use	Value Surplus/Deficit Trend	Value Surplus/Deficit Aggressive
Anne Arundel County		
Hotel		$247,000
Condominiums		$20,981,840
Townhouses		$2,991,600
Total		*$24,220,440*
Howard County		
Office	n/a	-$34,631,000
Flex	$224,062	$511,000
Retail	$752,000	$358,000
Condominiums (Low-Rise)	$1,292,000	-$1,123,000
Condominiums (High-Rise)	n/a	-$5,615,000
Townhouses	$870,000	$8,943,000
Total	*$3,138,062*	*-$31,557,000*
City of Laurel		
Office	-$18,681,000	-$21,872,000
Flex	$890,000	n/a
Lifestyle Retail	-$3,156,000	$1,163,000
Other Retail	$565,000	n/a
Condominiums (West of US 1)	-$14,369,000	-$1,744,000
Condominiums (East of US 1)	n/a	-$4,331,000
Total	*-$34,751,000*	*-$26,784,000*
Prince George's County		
Office	-$34,442,000	-$23,021,000
Flex	$263,000	n/a
Retail	$1,643,000	$1,300,000
Condominiums	n/a	-$7,868,000
Townhouses	n/a	$2,621,000
Total	*-$32,536,000*	*-$26,968,000*

Anne Arundel County Development Opportunity Site

The Anne Arundel County DOS consists of the Laurel Park racetrack owned and operated by Magna Entertainment Corporation. As the future of the race track operations is uncertain, the Aggressive Scenario evaluated only the undeveloped portion of the race track. (Under the Trend Scenario, the entire site is assumed to continue in use for racetrack and related activities.) This

alternative development created a hotel and luxury condominiums marketed to the niche race enthusiast audience. The hotel's success was linked to its ability to build on the entertainment venue and provide a unique small conference and meeting venue. Finally, a small neighborhood of approximately 58 townhouses fronting on Brook Bridge Road provides ample return to interest residential developers to justify investment. Due to the higher sales prices and room rates projected to be generated in this niche development, none of these individual uses would require public financial assistance.

Howard County Development Opportunity Site

The Howard County DOS supported low-density commercial development consisting of retail and flexible office/warehouse space under the Trend scenario. The planned townhouses and condominiums (with surface parking) provided sufficient return to entice development.

The Aggressive Scenario for the Howard County DOS resulted in significant value gaps for office and high-rise condominium uses. Under this Scenario the proposed retail and flex space offer sufficient return to interest a developer. Currently, the financial feasibility of the more than 620,000 square feet of office space in this scenario is constrained by the current level of office rents, which do not support the cost of constructing new office space. The weak office market results in the need for more than $30 million in additional funds to allow the proposed development to proceed in the near future. Additionally, the potential cost for providing structured parking for the condominium projects, estimated at $74 million for almost 4,600 parking spaces, limits their feasibility.

These results suggest that the density level and mix of uses under the Aggressive Scenario would need to be phased with the office portion delayed until market demand improves and rents increase. The low-rise condominiums (three to four stories) are almost feasible in today's market. Higher-density condominiums in buildings of five or more stories incur extra construction costs that are not now justified by prices significantly higher than those for low-rise condominiums.

City of Laurel Development Opportunity Site

The City of Laurel DOS creates a vibrant lifestyle center under both Scenarios. Under the Trend Scenario, returns for the typical strip shopping center retail and flex space exceed developer hurdle rates. However, there is not enough cross-subsidy available to compensate a private developer for the high cost to build and provide structured parking for the "lifestyle" retail and residential component.

As with the Howard County DOS, the developer of the Laurel site would need to delay the office component until the regional and local markets improve. Development of the lifestyle retail and nearby condominiums will start to enhance the local market. With higher densities, higher-quality development, and higher prices achievable within the mixed-use development, the returns under the Aggressive Scenario exceeded those achievable under the Trend Scenario.

The potential spin-off from a new town center-style development replacing the Laurel Mall could be substantial, eliminating an eyesore and creating an appealing, attractive gathering place. That new pedestrian environment could then support significant new construction of quality condominiums with a density and design more appropriate to the city's economic center.

Prince George's County Development Opportunity Site

The Prince George's County DOS surrounding the Muirkirk MARC station incorporates many elements of a mixed-use development, but focuses on long-term potentials for office and flex space. This location already serves as a hub of flexible warehouse and back office space for Class B office users.

The location of the proposed ICC to the north of the site will present a clear opportunity for this type of commercial activity. Under the Trend Scenario, office rents reach a low $22 per square foot for one- and two-story office buildings. However, with the terminus of the ICC located at the site, a signature office building visible from the roadway may attract more office users resulting in rents equivalent to $25 to $30 per square foot in current dollars.

Overall Site Development and Land Developer Returns

Providing development sites for each of the individual land uses is typically the responsibility of a land developer (who may or may not be the same as the current landowner, office developer or homebuilder). Testing the financial feasibility of land development at each DOS requires estimating the cost of assembling and clearing the land and installing the basic infrastructure (e.g., roads and sewer, water, storm drainage, gas, electric lines) and then comparing those costs to the potential revenues achieved from selling sites to individual builders and developers.

The site infrastructure development costs cover typical site improvement costs. In Maryland, these on-site costs and related off-site costs necessitated by the new development are funded by the private developer. This analysis used improvement costs plus 20 percent for related soft costs (e.g., engineering fees, permits and contingencies). It should be noted that the current level of site design does not allow for detailed cost estimates, so there is still a 40 percent contingency associated with these estimates.

The cost of acquiring sites for redevelopment depends on the existing structures. Acquisition costs are estimated at $17 million for the Anne Arundel County DOS, $37 million for the Howard County DOS, $136 million for the Laurel DOS and $11.5 million for the Prince George's County DOS, based on current assessed values. (See Figure 3.18)

The revenues to be achieved from land sales include both the prices assumed for each individual land use as well as any surplus value created by returns in excess of the developer hurdle rates of return.

Figure 3.18. Comparison of Land and Development Values to Land Development Costs

	Trend		Aggressive	
	With Office	**Without Office**	**With Office**	**Without Office**
ANNE ARUNDEL COUNTY				
Value Created				
Land Value				$41,672,000
Value Surplus				$27,146,680
Total Value Created				**$68,818,680**
Development Costs				
Land				$17,380,000
Clearance				$2,300,000
Infrastructure				$13,400,000
Soft Costs (20%)				$3,140,000
Developer Return (15%)				$4,962,000
Total Costs				**$41,182,000**
Incremental Value				**$27,636,680**
	Trend		**Aggressive**	
	With Office	**Without Office**	**With Office**	**Without Office**
HOWARD COUNTY				
Value Created				
Land Value		$66,246,938	$140,035,000	$140,035,000
Value Surplus		$3,138,062	-$31,557,000	$3,074,000
Total Value Created		**$69,385,000**	**$108,478,000**	**$143,109,000**
Development Costs				
Land		$25,116,000	$36,707,000	$36,707,000
Clearance		$1,900,000	$4,800,000	$4,800,000
Infrastructure		$51,400,000	$56,700,000	$56,700,000
Soft Costs (20%)		$10,660,000	$12,300,000	$12,300,000
Developer Return (15%)		$11,762,000	$14,731,000	$14,731,000
Total Costs		**$100,838,000**	**$125,238,000**	**$125,238,000**
Incremental Value		**-$31,453,000**	**-$16,760,000**	**$17,871,000**

Figure 3.18, continued

	Trend		Aggressive	
	With Office	**Without Office**	**With Office**	**Without Office**
CITY OF LAUREL				
Value Created				
Land Value	$56,414,000	$56,414,000	$99,686,000	$99,063,000
Value Surplus	-$32,442,000	-$13,761,000	-$26,784,000	-$4,912,000
Total Value Created	**$23,972,000**	**$42,653,000**	**$72,902,000**	**$94,151,000**
Development Costs				
Land	$136,223,000	$136,223,000	$141,227,000	$141,227,000
Clearance	$18,200,000	$18,200,000	$22,500,000	$22,500,000
Infrastructure	$23,800,000	$23,800,000	$31,600,000	$31,600,000
Soft Costs (20%)	$8,400,000	$8,400,000	$10,820,000	$10,820,000
Developer Return (15%)	$26,733,000	$26,733,000	$29,299,000	$29,299,000
Total Costs	**$213,356,000**	**$213,356,000**	**$235,446,000**	**$235,446,000**
Incremental Value	**-$189,384,000**	**-$170,703,000**	**-$162,544,000**	**-$141,295,000**
MUIRKIRK				
Value Created				
Land Value	$1,921,000	$1,921,000	$100,527,000	$100,527,000
Value Surplus	-$32,536,000	$1,906,000	-$26,968,000	-$3,947,000
Total Value Created	**-$30,615,000**	**$3,827,000**	**$73,559,000**	**$96,580,000**
Development Costs				
Land	$11,282,000	$11,282,000	$11,501,000	$11,501,000
Clearance	$4,400,000	$4,400,000	$4,800,000	$4,800,000
Infrastructure	$29,000,000	$29,000,000	$52,800,000	$52,800,000
Soft Costs (20%)	$6,680,000	$6,680,000	$11,520,000	$11,520,000
Developer Return (15%)	$6,702,000	$6,702,000	$10,365,000	$10,365,000
Total Costs	**$58,064,000**	**$58,064,000**	**$90,986,000**	**$90,986,000**
Incremental Value	**-$88,679,000**	**-$54,237,000**	**-$17,427,000**	**$5,594,000**

Anne Arundel County Development Opportunity Site

Under the Aggressive Scenario, the land developer could receive up to $69 million from the sale of parcels while allowing individual building developers to achieve their required rates of return. To prepare the site with the required roads and infrastructure for development, the land developer would need to invest $18.8 million. After the $17.3 million initial purchase price of the land and the land developer's required 15-percent return, the project would have an incremental value of $27.6 million. The positive value indicates that the project is developable privately with no public assistance.

Howard County Development Opportunity Site

Trend Scenario development of the Howard County DOS would create $69 million in value; however, land assembly and improvement would entail costs of $101 million. This financial gap of $31.5 million would need to be closed through delays in development of certain uses until rents and prices increase, changes in the development program, and/or public assistance.

That gap is closed considerably under the Aggressive Scenario where the land value increases to $108 million. With land development costs of $125 million, the project has a financial gap of $16.8 million. Much of the gap is a function of the cost of realigning US 1 and the cost of developing office with current rents. Without the office use, but still including the US 1 realignment, the project becomes feasible, resulting in an incremental value of $17.9 million.

City of Laurel Development Opportunity Site

Redevelopment of the Laurel Mall site and properties east of US 1 would entail significant land assembly and improvement costs, estimated at $213 million under the Trend Scenario. The created land value would offset $43 million of those costs, leaving a financial gap of $171 million.

The Aggressive Scenario allows greater density and higher values for new development, generating land values totaling $94 million with the exclusion of new office space. The associated costs of $235 million would leave a financial gap of $141 million.

Financial assistance would be needed to fully redevelop the entire DOS under either Scenario. The high costs of site assemblage and demolition exceed the investment that the private market alone could justify. This is a common problem when redevelopment necessitates acquiring existing buildings that are leased and still have useful life. Though redevelopment could deliver higher value uses, it cannot always generate enough new income to compensate for acquiring and demolishing viable uses.

Unlike the other sites within the CMMS study area, the Laurel Mall site cannot wait for market rents and prices to rise. This critical redevelopment effort is likely to proceed within the next two years. Failure to achieve a high-quality redevelopment with a design that creates a walkable environment would waste this great opportunity and doom US 1 in the heart of Laurel to another two decades of mediocre, auto-oriented development.

It is not the purpose of this study to recommend investments in specific projects. Nonetheless, the CMMS Project Team's review of the current market direction strongly suggests that the Laurel DOS represents a unique opportunity, and one that will likely not continue to be available. Despite the sizable financial gap this site deserves attention as a candidate for public financing to bridge the financial gap for at least the immediate Laurel Mall portion of the DOS, financing that would help facilitate the creation of this centerpiece for Laurel revitalization. Potential financing mechanisms, including TIF, are discussed further in the Section 4 Recommendations.

Prince George's County Development Opportunity Site

The Muirkirk DOS has the potential to generate $3.8 million in land value, which would be more than offset by the $58 million in land assembly and improvement costs. The Trend Scenario would have a financial gap of $54 million if developed today. Under the Aggressive Scenario with office uses, that gap would be reduced to $17 million. Under the Aggressive Scenario without office development the project's incremental value is estimated at $5.6 million. Given the timing of the Inter-County Connector construction and the associated rent and land value

increases, delay in the development program would be appropriate, particularly in the timing of development west of US 1.

Discussion of DOS financial analyses

This analysis measures financial feasibility as though every use would be built at once. Real estate markets are cyclical. At this stage in the office market, supply has outstripped demand and depressed rents to the point where they do not support new development. That does not suggest that no new office space will ever be built in the corridor, nor that development planning should not create sites for future office space.

One challenge in the analysis is that the area is on the cusp of becoming more urban and better able to support higher-density and higher-quality development. Condominiums are not a major factor in the area's current housing market, but as prices of other housing types rise, and as population growth continues, condos will become more of a staple and consumers will become more willing to pay the higher prices required to build quality condominiums.

Another issue is the high cost of assembling for redevelopment land with active businesses. Few developments can afford to pay to tear out existing buildings and businesses to support new development. This cost burden affects the Laurel site in particular.

There may also be opportunities for different types of investors and developers to cut some of the costs. Building developers that are also the land developer have some economies of scale. Also, building developers that are also contractors can deliver buildings at lower costs. One weakness of generic *pro formas* is that they cannot take into account the specific opportunities associated with individual developers (e.g., Real Estate Investment Trusts with access to low-cost financing as opposed to conventional developers). Other developers may take a longer view and may be willing to invest based on their expectations of higher prices in the future. Finally, existing land owners who do not need to acquire land at today's land prices would face better economics than the outside developers assumed for the *pro forma* analysis.

3.4.3 Development fiscal impacts

The fiscal impacts on the individual jurisdictions are mitigated in large part by the expectation that development not accommodated in each DOS would occur elsewhere in the same county. That means that income taxes and other household-based taxes are unlikely to change significantly with the geographical redistribution of development.

However, properties in close proximity to commuter rail stations and other transit stations have been shown to achieve a value premium over similar properties not in proximity to transit. Few studies have been conducted on the value impacts of commuter rail. A 2002 analysis by Cervero and Duncan indicated that land values of office properties within one-quarter mile of commuter rail stations in Santa Clara, California were 103 percent higher than comparable properties. In San Diego, they found an impact ranging from -4.2 to 38.5 percent increase in land value associated with a location within one-half mile of a commuter rail station. Office rents near Bay Area commuter rail stations were 100 percent higher. For multi-family housing, the Santa Clara case study revealed a 17-percent premium. A recent analysis of Chicago single-family homes within one-mile of commuter rail and heavy-rail stations found a value premium of 24 percent.

To be conservative, this analysis assumes a 10-percent value premium for locations near MARC stations for the Anne Arundel, Howard, and Prince George's County DOSs (See Figure 3.19). Comparing the premiums generated from development under the Trend Scenario to those

generated in the Aggressive Scenario suggests that Anne Arundel County could achieve $436,000 in additional annual property tax revenues from focusing development near a MARC station. Howard County property taxes would be $818,000 higher annually. Prince George's County taxes would see an incremental increase of $1,154,000 per year from enhanced development at the Muirkirk station.

Figure 3.19. Estimated Annual Fiscal Benefit by Development Scenario

	Howard County	Anne Arundel County	Prince George's County
Trend Scenario			
Property Tax			
Residential Development	$ 469,895,000		
Residential Tax Rate	1.380%	0.931%	1.451%
Residential Property Taxes	$ 6,484,551	$ -	$ -
Commercial Development	$ 27,961,000		$ 24,063,000
Commercial Tax Rate	2.940%	2.327%	1.451%
Commercial Property Taxes	$ 822,053	$ -	$ 349,154
Annual property tax	**$ 7,306,604**	**$ -**	**$ 349,154**
Attributable to TOD (a)	**$ 730,660**	**$ -**	**$ 34,915**
Total Annual Fiscal Benefit	**$ 730,660**	**$ -**	**$ 34,915**
Aggressive Scenario			
Property Tax			
Residential Development	$ 1,122,541,000	$ 468,168,000	$ 819,126,000
Residential Tax Rate	1.380%	0.931%	1.451%
Residential Property Taxes	$ 15,491,066	$ 4,358,644	$ 11,885,518
Commercial Development	$ 34,033,000	$ 33,263,000	$ 5,413,000
Commercial Tax Rate	2.940%	2.327%	1.451%
Commercial Property Taxes	$ 1,000,570	$ 774,030	$ 78,543
Annual property tax	**$ 1,000,570**	**$ 774,030**	**$ 78,543**
Attributable to TOD (a)	**$ 1,549,107**	**$ 435,864**	**$ 1,188,552**
Total Annual Fiscal Benefit	**$ 1,549,107**	**$ 435,864**	**$ 1,188,552**
Incremental Property Taxes Generated by Aggressive Scenario in Excess of Revenues from Trend Scenario	**$ 818,446**	**$ 435,864**	**$ 1,153,636**

Note: Excludes office development values.

(a) BAE estimate of 10 percent

3.5 Analysis Conclusions

The goals of the CMMS given in Section 1.1 were:

First, to explore the implications for MDOT of different land use and growth scenarios on specific development sites, with regard to the effects on regional travel patterns and resulting transportation infrastructure needs.

Second, to explore and build on local visions of future land use and community growth and development in the area.

Third, to spur stronger regional cooperation among State, county, and city officials in facilitating development in the Central Maryland area in a way that can be replicated successfully in this and other areas around the State.

The transportation analysis fulfilled the *first goal*. The transportation results suggest that MDOT's interests in providing mobility are consistent with and served by the local jurisdictions' goals to focus growth in the DOS corridor. Whether they are consistent with MDOT interests to the extent that MDOT would be interested in financially participating in any public efforts to address the financial challenges identified, is beyond the scope of the CMMS to address.

Although the results of the analysis are not strictly definitive, they do present some important policy implications for MDOT.

- The four-step travel demand model used in the analysis proved limited in its ability to capture comprehensively the travel behavior effects of subtle changes in land use patterns. Nonetheless, the analysis suggests that there are mobility benefits to concentrated development in already-urbanized areas over dispersed development on the urban fringes, and that these mobility benefits translate into lower needs for transportation investment.

  At the very least, the results are definitive in again demonstrating the link between denser development in the urban core and lower rates of trip generation and suggesting that these lower trip rates lead to mobility improvements.

- In the focused growth Scenarios, MDOT has more options for managing congestion and mobility. The single-occupant vehicle mode dominates on the urban fringes, where the only viable strategies for improving mobility are ones related to vehicle travel. By contrast, compact, urban corridors that are served by multiple modes create more options for managing congestion, including improvements in transit and non-motorized modes.

- Finally, the results of the CMMS demonstrate a need for further research. Given the finding that the region's existing travel model is limited in its ability to support policy research at the level of detail required by this study, MDOT may wish to develop additional tools to support policymaking.

The process that led to the DOS concept plans, and associated potential infrastructure costs, fulfilled the *second and third goals*.

- The CMMS DOS concepts indicate that land use and transportation designs that support transportation choices are feasible and would improve the livability of the existing area.

- The CMMS found that existing conditions in the Market Area conducive to infill and redevelopment, but also finds that given the costs, as represented by the estimates for the DOS sites, the desired development may need to be phased over several years to coincide with improved market conditions and/or public-sector initiatives may be needed to produce the kind of development patterns desired by the participating jurisdictions. In particular, the Laurel Mall site will need public subsidy to move forward in a timely manner.

- The prevailing real estate market prices here have been lower than in other areas within the region, but are on the rise, and the demographic patterns suggest that denser and higher grades of housing and commercial stock are desired and feasible than exist currently in the area.

- At the same time, some constraints to development exist on the DOSs themselves, concerning such issues as flood protection, parcel ownership, and parking policy. These constraints may require focused attention and possibly assistance from the local jurisdictions before any development plans can proceed.

4 Implementation Strategy Recommendations

Long-term implementation of a strategy to enhance development in the ways desired by the Central Maryland jurisdictions, and developed in the DOS Scenarios in this study, will require a multi-layered strategy of cooperative county, city and State actions. To encourage this type of development pattern, a number of strategies are potentially available.

Stakeholders in the area should continue to work together to facilitate compact, mixed-use development through plans, policies, zoning provisions, and incentives for supportive densities, designs and mixes of land uses. Joint strategies should be coordinated and timed to complement the phasing of overall redevelopment. Specific changes to local county and city regulations and policies may be considered. Changes take time and should be dealt with in the initial implementation phase so as to be in place when needed to influence private developer decisions.

4.1 Land Use Regulation

Land use regulation is a function of local governments, so much of the implementation responsibility falls on each individual county and city government. It is unlikely that any of the proposed Aggressive Scenario developments could be built today under existing zoning ordinances.

The parking requirements embedded in each jurisdiction's zoning ordinance impose high costs on developers, particularly in a design that requires structured parking. At a per-space cost in excess of $18,000, structured parking is a major cost factor, one that undermines the financial feasibility of some of the DOS concepts. Zoning ordinances in each jurisdiction require more parking than recent Institute of Transportation Engineers research suggests is necessary. Those requirements should be revisited to reduce this barrier to higher-density development. Transit-oriented development can benefit from zoning that establishes a maximum number of spaces that can be built, although in a suburban location this needs to be examined case-by-case. Ordinances should encourage and accommodate shared parking among different land uses that require parking at different times of the day and week. Shared parking reduces the amount of land devoted to parking as well as the cost of development. For example, restaurant parking needs that peak in the evening can be accommodated by office parking spaces that would ordinarily stand empty during the evening and on weekends.

4.2 Development Approval Process

Development depends greatly upon developers' and investors' judgments as to whether the potential returns from development offset the potential risks. One of the greatest real estate risks is delay, particularly in the development approvals process. Not only do developers have large amounts of money invested in land and pre-development services that are not earning a return during the approval process, they also run great risks of missing the market. Given the cyclical nature of real estate development, an extended development approval process can postpone a project until a time when the market is no longer viable due to new competition or changes in the economic climate (e.g., higher interest rates). Reducing uncertainties as to the likelihood of approval and the time required for development approvals can greatly improve a project's ability to attract developer and investor interest.

Form-based codes are increasingly popular (recently adopted, for example, for Arlington County's Columbia Pike) as a means of providing more clarity and certainty for prospective developers while ensuring that the ultimate development is consistent with community desires.

Form-based codes specify the height and mass of allowable development as well as key design guidelines regarding how the buildings meet the street and placement of parking and driveways. In exchange for agreeing to comply with these codes, developers are guaranteed accelerated development approval and allowed to bypass the more lengthy and unpredictable process of Planned Unit Development (PUD) approvals.

Public planning efforts that achieve community consensus in favor of higher-density, mixed-use development in advance of a specific proposal can help to reduce the time required and the uncertainty inherent in the traditional development approval process. Form-based codes are typically developed with such citizen input.

4.3 Public Infrastructure

Maryland land use practices typically require developers to fund infrastructure improvements necessitated by the new development, e.g., intersection improvements, sewer and water extensions. A coordinated approach toward the provision of infrastructure in the area should be examined. Such an approach would coordinate State and local government as well as private sector actions. In cases where inadequate public infrastructure is constraining preferred development patterns, programs and funding (e.g. school construction, water/sewer, library, police, etc.) could target areas served by transit.

A major public infrastructure issue in the area is flooding, particularly in the City of Laurel. Flooding problems and solutions are rarely confined to a single property. Solutions will require a broader effort to resolve this issue initiated by the local and State government(s).

4.4 Public-Private Partnerships

The financial analyses in Section 3.4 have demonstrated the constraints on private developers' ability to fund new development of the desired land use mix and density. In pursuing new land use patterns that make better use of the land, encourage transit usage and discourage unnecessary vehicle trips, the counties and city should consider entering into public-private partnerships with developers.

Tax-increment financing (TIF) can be a very effective tool to generate financial support for investments that advance public goals, e.g., public amenities, structured parking. In such cases, the real property taxes levied on the increased assessed valuation above the existing assessed value are pledged for 20 to 30 years to finance public improvements. That relieves the developer of a financial burden, making the project financially feasible. Properly structured and negotiated, such public-private partnerships can fill the gap between the overall costs of development and the private investment justified and supported by project revenues.

Other financial contributions can help to close that gap, including State or local government funding of land, demolition, environmental cleanup, public parking, or other major costs. In cases where the public sector owns land at the development site, contribution of that land to the development can be repaid over time from a share of the project's cash flow. This could be important in cases where MDOT owns land at MARC stations that could be redeveloped for transit-oriented development. In the situation of building on existing commuter parking lots, it is important that the land contribution may not be predicated upon the developer replacing existing spaces with structured parking on a one-for-one replacement basis. Typically, in such suburban locations the land is not valuable enough to justify the high cost of building structured parking in order to make land available for development.

4.5 Land Assembly

One of the key impediments to redevelopment at a higher density is the difficulty in assembling land for redevelopment. Multiple ownership patterns can create a significant obstacle to redevelopment at higher densities for transit-oriented development. Public acquisition of land through negotiated purchase and/or eminent domain can be a critical factor in achieving the desired redevelopment and land use patterns. However, eminent domain is unlikely to be used except in cases where it is required for new public facilities, e.g., realigning US 1.

Appendix 1: Transportation elements that would support the land use scenarios

The concept plans developed for each development Scenario would work best when supported with appropriate transportation elements. Developing and recommending specific transportation designs and investments was beyond the scope of this study (with some exceptions, such as de-dualizing US 1 through the Howard DOS). As part of developing the Concept land use plans, the study developed basic principles for the types of transportation infrastructure that would work best with the Concept plans, and support broad transportation goals of:

- Increased system capacity
- Increased safety
- Decreased trip lengths
- Improved quality of life

The transportation principles presented here are the result of the same process that developed the Concept plans, although not taken to the same level of detail. In addition to responding to transportation needs of the Concept plans, these transportation principles respond to the participating jurisdictions' desire for greater transportation choices and transportation that supports community livability. Because these principles did not directly affect either the development of the land use Scenarios or the transportation impacts analyses, the principles are presented in this Appendix.

Transportation principles

The transportation principles developed by the CMMS Project Team can serve as foundations on which detailed future plans and programs can be built.

Roadway improvements

Numerous physical elements of streets and streetscapes in the DOSs and along US 1 could be improved to better support all travel modes and improve community livability. Suggested changes are predominantly aimed at increasing pedestrian comfort, and are located either in the roadway itself or adjacent to the roadway. The travel way includes all road space between the two curb faces of a street. Travel way elements might include:

- landscaped medians;
- narrow travel lanes;
- on-street parking at strategic locations; and
- traffic calming elements at strategic locations.

The pedestrian way includes all space from a street's curb face to building fronts. Pedestrian way elements might include:

- wide sidewalks;
- street trees;

- pedestrian-scale lighting;
- pedestrian amenities such as benches; and
- increased and enhanced pedestrian crossings.

Appropriate land use and building design is also important for supporting travel mode choice. The elements of supportive land use design include elements such as:

- buildings that frame the street at the appropriate scale;
- parking located in lots behind buildings or in structures;
- windows and entrances that face the street; and
- architectural details of visual interest.

Finally, with some additional design specifications, streets and streetscapes can also function as local, on-site urban and storm runoff treatment facilities that contribute to improved water quality. Sometimes called Green Streets design, this set of specifications calls for street trees and planted areas that can serve both as water treatment facilities and pedestrian amenities.

Street Network Improvements

Dense networks of narrow streets that offer multiple alternative travel routes have been shown to outperform sparse networks, which force large amounts of traffic onto relatively few routes. In denser networks, the traffic burden is spread among multiple streets, reducing the amount of traffic on any one street. Vehicles benefit from increased choices of travel routes and the dispersion of heavy traffic, which can reduce delays. Pedestrians and bicyclists also benefit from multiple travel routes and the more pleasant experience of less traffic on any one street.

Some of the DOSs currently include traditional street networks but have had some connections removed, such as the City of Laurel DOS. Others are either largely undeveloped or feature sparse local street networks interrupted by large parking lots. As noted in some of the design concepts in Section 3.1, new developments in these areas are opportunities to restore connections and increase local network connectivity.

Transit Improvements

Stakeholder input and review of current planning documents both highlighted the need to create a coordinated vision for the future role of transit in the area. Transit currently serves local travel and a minor amount of regional commuter travel. With major investments, transit could become a vital part of the area's infrastructure, helping both to move people and to create focal points for community, as buildings and public spaces focused toward transit stations and stops. Because so many aspects of land use design depend on what kind of transit service will exist, a vision for transit is needed to provide an overall theme around which land uses can be designed.

Transportation Demand Management Elements

Transportation Demand Management (TDM) measures could be applied more broadly and systematically to reduce demands on the transportation system while enhancing mobility and choice. TDM programs can be implemented at both employment and residential locations. Residential programs look slightly different, but the main goal remains supporting travel choices other than driving alone.

TDM elements can include:

- charging for parking;
- unbundling of parking and leasing;
- parking cash-out;
- preferential or subsidized carpool parking; and
- subsidized vanpools.

Supporting elements can include:

- marketing;
- regional guaranteed-ride-home;
- car-sharing;
- secure bicycle parking;
- clothes lockers and showers; and
- carpool and vanpool matching services.

These transportation principles have been applied to high-throughput arterials like US 1 throughout the country, especially in places where those arterials serve compact, mixed-use places. The following examples are given as illustrations of what is possible.

Case studies of high-volume arterials

These case studies represent a range of efforts to facilitate and serve compact, mixed-use growth, improve walkability and community character, and efficiently manage transportation investments along high-volume highways. The case studies illustrate the ways in which other agencies across the country have dealt with or are dealing with issues relating to improving the quality of life along high-volume corridors.

These cases were selected to feature a diverse set of considerations that can inform thinking about US 1 through Central Maryland. In some cases, the focus is on the planning process that galvanized local communities to support necessary land use and transportation compromises. In other cases, the focus is on successful implementation of street improvements and associated land use changes.

Consistent themes include:

- Multi-disciplinary studies that analyzed several aspects of urban development, including transportation, urban design, and real estate development, to create a comprehensive overall vision for the corridor

- Analysis of pedestrian, bicycle, and transit modes as well as vehicle modes, with attention to balancing the needs of different users of the street

- Treatment of different sections of the corridor with actions and policies that are most appropriate to the sections' individual characteristics, including the creation of clustered activity centers

- Transportation investments and land use policy changes used to spur positive change from the private sector

- Inclusive stakeholder processes that help all parties broaden their thinking about the interrelated issues influencing the current and future traffic and livability conditions, as well as build consensus to leverage access to public funding

The examples below represent the most appropriate successes that were identified. Each example has some elements that are very similar to conditions in Central Maryland's US 1 corridor as well as some elements that differ significantly. But as a set, they showcase how agencies around the country are attempting to address some of the specific concerns and conditions important for Maryland's US 1 planning effort.

El Camino Real

Location: Palo Alto, California

State Highway: State Route 82

El Camino Real Vital Statistics

ADT: 45-55,000
Through Lanes: 6
Typical ROW: 120 feet

Adjoining Land Uses: commercial; residential

Context

El Camino Real is a State Route that in the past connected San Francisco and San Jose through the countryside, first for access to the historic missions, and then the urban centers that grew around them. Over time, that countryside developed entirely, creating one large metropolitan area. Because of the accessibility it provided, El Camino attracted large amounts of commercial, industrial, and residential development to land adjoining the highway, changing the function of the road from being purely a vehicular travel route to also serving as a desired destination for pedestrians, bicyclists, and transit riders. But the character of the roadway, governed partly by California Department of Transportation (Caltrans) design standards, has remained weighted toward its travel function.

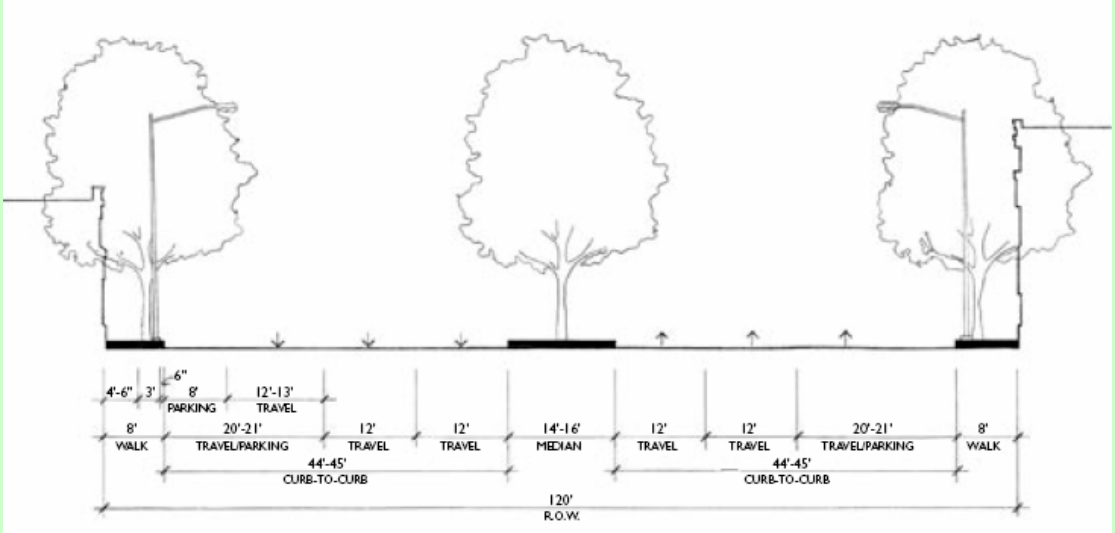
In the city of Palo Alto, approximately halfway between San Jose and San Francisco, El Camino Real is a dominant local feature. It currently serves large amounts of local and regional vehicular traffic as a major arterial in the region's roadway network that feeds the regional freeways. It also carries the most bus service of the local transit authority's service area, and is in close proximity to a major commuter rail line, with major rail stations within walking distance. In some locations, major pedestrian activity occurs, including high street crossing volumes. Finally, El Camino Real serves local bicycle trips, providing bicycle access to destinations along its street frontage.

Adjoining land uses along El Camino Real in Palo Alto include major commercial development, some of which is auto-oriented, such as car dealerships and repair shops, and some of which is pedestrian-focused, such as retail shops and restaurants. Single- and multi-family residential development also appears along the street in numerous locations. Design of these land uses varies, with older development featuring front-facing parking lots, large setbacks, and little architectural detail, and newer development featuring side- or rear-located parking, smaller setbacks, and greater architectural detail. Nearby land uses include major activity centers such as business parks, mixed-use downtown areas, and regional shopping malls. Although very little vacant land exists along El Camino Real, growth is projected for the city and the region, and it is expected that a significant portion of the city's growth will occur along this street.

Current Design Features and Travel Characteristics

There is variation even within segments of El Camino Real in Palo Alto, but the street generally features the following design elements. It has signalized intersections and between 4 and 6 travel lanes. It features street parking in a wide curb lane that accommodates both parking and through travel. It features sidewalks on both sides, generally at 8 feet. In some sections, there is a center median planted with trees.

El Camino Real, Typical Existing Section



Vehicle Traffic Characteristics. Vehicular traffic volume is 45-55,000 vehicles per day. With the effects of congestion and traffic signal delay, peak-period travel speed is approximately 17 mph, although in between signals, speeds reach 40 mph.

Transit Characteristics. Major bus lines run along this section of El Camino Real, at frequencies of 10 minutes during peak periods and 20-60 minutes during off-peak periods. There are also major commuter rail stations within walking distance of the street.

Current/Recent Studies

In partnership with Caltrans, the City of Palo Alto has undertaken a design study of El Camino Real. The goals of the study are:

> [T]o change the character of El Camino Real from a highway designed primarily for motor vehicle mobility to:
>
> 1. A fully multi-modal urban thoroughfare that maintains mobility and improves safety for transit, trucks, and autos, while improving safety and convenience for pedestrians and bicyclists;
>
> 2. A center of community activity rather than a barrier between activities on either side of the street; and
>
> 3. An aesthetically attractive corridor that projects a positive image of Palo Alto.

The study investigated the potential for wider sidewalks, enhanced pedestrian crossings, narrower travel lanes, street trees, pedestrian and transit amenities, and better accommodation of bicycling. It featured analysis of:

- Land use context
- Street furnishings
- Buried utility lines
- Street trees
- Crash history
- Vehicle travel times
- Pedestrian conditions
- Bicycle conditions

The design study convened an Advisory Group of interested stakeholders and a Technical Advisory Committee of technical specialists. The process included public meetings, public workshops, and meetings with Caltrans to discuss design implications, since some proposals differed from Caltrans design standards. The study produced a number of recommended improvements to achieve the stated goals.

Lessons for Central Maryland

In order to develop recommendations that effectively improve multimodal travel, a corridor study needs to analyze all modes in a rigorous fashion, and standard vehicular measures such as LOS may not prove sufficient to capture travel conditions. But meaningful measures can be chosen and implemented if informed by the fundamental principles governing travel conditions for the various modes. In the case of El Camino Real, some examples of measures used are: travel times; crossing distances; transit frequencies; and bikeway conditions.

Resources for Additional Information

http://www.cityofpaloalto.org/elcaminoreal/

Route 31 Flemington

Route 31 Flemington Vital Statistics

ADT: 25,000
Through Lanes: 2 to 4
Adjoining Land Uses: suburban industrial, suburban centers, town centers, suburban residential

Location: Raritan Township/Flemington Borough, New Jersey

State Highway: State Route 31

Context

Growing congestion has been an issue on Route 31 in the Raritan Township/Flemington Borough. There have been a number of attempts to mitigate congestion including the addition of turn lanes and grade separation of a key intersection. Development of a 4-lane limited access bypass highway is currently on-hold, pending a "smart growth alternative" strategy. A statewide smart growth initiative, coupled with the high cost of the Flemington Bypass led the NJDOT to initiate this process. New Jersey, with assistance from several consultants and participation from all local jurisdictions, led the development of the Route 31 Transportation and Land Use Plan.

The majority of the area around Route 31 and Route 202 is classified as “fringe planning area.” Fringe planning areas, in New Jersey’s 2004 State Plan, prioritize objectives such as protecting the environment as a resource and as a buffer to urbanized areas, accommodating new growth in existing or proposed centers, protecting the area’s character, and encouraging private sector provision of infrastructure.

Development on Route 31 includes a mix of aging homes, older strip commercial development, recent commercial and office development, and several regional destinations (e.g., Hunterdon Regional Medical Center). Flemington Borough itself is an historic town with 60 percent of its buildings listed on the National Register for Historic Places. The town has a traditional grid pattern and a compact, mixed-use character. The study area’s other major corridor, Route 202, travels through both low-density rural and rapidly developing commercial areas.

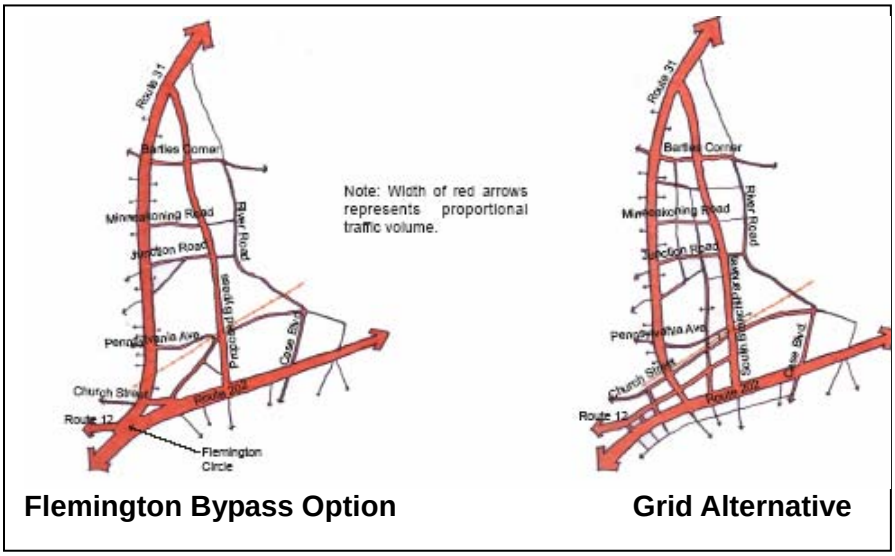
Current Design Features and Travel Characteristics

Geometric Characteristics. Route 31 is mostly four lanes with several 2-lane restrictions. The two lane restrictions will potentially be removed as part of the set of improvements currently under consideration.

Vehicle Traffic Characteristics. Significant traffic congestion occurs during peak travel periods, with a mix of local traffic and regional through traffic. Average daily volumes are approximately 25,000.

Transit Characteristics. Transit is not a significant factor in the corridor.

Current/Recent Studies



The Draft Route 31 Land Use and Transportation Plan Concept Development Workbook was released in July 2004. Seeking to build consensus among the various stakeholders, the plan documents the initial development of a "Smart Growth" alternative to the Flemington Bypass. The concepts enumerated in this workbook will be the starting point for a broader community process that will result in a formal land use and transportation plan for Route 31.

The workbook highlights the following issues:

- regional and local context that are driving traffic trends
- current conditions including zoning, development pressures, transportation needs, and resource constraints
- future land development and opportunities for land use/transportation coordination
- a rough comparison of the proposed grade-separated Flemington Bypass with an at grade, narrower alternative complimented by a more interconnected grid of local streets

The project is listed in the STIP as follows:

> This project will provide congestion mitigation in the Flemington area, from Route 202 east of Voorhees Corner Road to Route 31 north of Bartles Corner Road. Alternatives to be evaluated range from a 4-lane bypass with grade-separated interchanges to a 2-lane boulevard with at-grade intersections and a grid of streets providing connectivity.

The State DOT has recently modeled these alternatives and is proceeding with efforts to develop detailed plans for further stakeholder input.

Lessons for Central Maryland

- An effective visual presentation is a worthwhile investment to help stakeholders appreciate the broad set of issues and contexts that form a foundation for decisions. The Draft Route 31 workbook presents simple, but effective presentation graphics that captures the range of environments and contexts throughout the corridor, while also presenting an image of opportunities.

- Development of a more complete local grid system, supplied through a combination of local, private, and state funds, can cost less than highway improvements that provide a commensurate degree of congestion relief. However, the grid options provide additional benefits for local circulation.

- Fitting corridor considerations into a broader framework for statewide smart growth policies and plans provide helpful reference points for major decisions and a helpful framework to inform stakeholders of the larger goals driving the corridor changes.

- A firm stand by the State DOT with regard to future available funds can encourage coordination and cooperation from jurisdictions. The NJDOT made it clear that funds were not available for the bypass alternative, and additional widening of route 31. This forced the affected communities to grapple with other options.

Resources for Additional Information

The Draft Route 31 Land Use and Transportation Plan Concept Development Workbook can be acquired from Mr. John Mole at New Jersey DOT, 609-530-2720.

State Road 7/US 441

Location: Broward County, Florida

State Highway: State Road 7 (also US 441)

State Road 7/US 441
Vital Statistics

ADT: 40-60,000
Through Lanes: 4-5
Typical ROW: 90-120 feet
Adjoining Land Uses: industrial, commercial retail, auto-oriented commercial, multi-family residential

Context

Approximately 15 miles north of Miami, Florida, the 25-mile State Road 7/US 441 corridor extends from Miami-Dade County in the south to Palm Beach County in the north. The corridor serves as a major regional connector for air, rail, roadway, and port traffic. SR 7/US 441 connects with I-595, and other parallel routes are nearby that feature limited access travel, including SR 91 and I-95. Partially as a result of this regional transportation role, and later, because of the emergence of limited-access parallel routes such as SR 91 and I-95, the role of SR 7/US 441 shifted to more one of local access to regional destinations, providing access to the dramatic commercial shopping and entertainment development that occurred along the road from the 1950s through the 1970s. But by the 1980s, growth had moved westward, leaving the corridor with deteriorating infrastructure, higher vacancies, and declining property values.

Current Design Features and Travel Characteristics

Geometric Characteristics. State Road 7/US 441's geometrics vary widely. Typical sections feature two or three travel lanes in each direction, in addition to turn lanes at several locations. Total right-of-way currently ranges between 90 and 120 feet. No median currently exists between the directions of travel, and no parking lanes exist. Sidewalks are generally present.

Vehicle Traffic Characteristics. Average daily traffic along the corridor is approximately 40-60,000. Average intersection spacing is approximately 2 per mile.

Transit Characteristics. A major bus route operates on SR 7/US 441, serving approximately 10,000 boardings per day at a frequency of 15 minutes. No other transit modes are present.

Current/Recent Studies

As a response to the decline of the SR 7/US 441 corridor, a Collaborative has been formed that consists of 14 local land use jurisdictions, the Seminole Nation of Florida, as well as ex-officio membership from the Broward County MPO, the Florida Department of Community Affairs, Florida DOT, South Florida Water Management District, and the South Florida Regional Planning Council. The Collaborative is striving to re-vitalize the corridor by achieving the following goals:

- Promote economic development and business expansion
- Coordinate aesthetic improvements for signage and landscaping
- Adopt land use policies that support mobility
- Create design standards for transit facilities
- Enhance pedestrian safety
- Seek the involvement of stakeholders in planning and implementing projects

A number of activities have been undertaken to improve the corridor. Plans for unified landscaping and local land use changes are underway, and Bus Rapid Transit service for the corridor is also in planning stages. In addition, plans for roadway re-design and expansion to six lanes are being discussed, including wider sidewalks, bike lanes, and a planted median. Florida DOT (FDOT) is proceeding with purchasing right-of-way to accommodate the additional lanes. The Collaborative's design considerations for eventual dedicated bus lanes along the street are being discussed; these considerations involve designs different from FDOT's recommended dimensions, necessitating close coordination among agencies. Finally, a Strategic Master Plan is currently under development that aims to coordinate future changes to support a common vision for the corridor.

Lessons for Central Maryland

- Multi-agency partnerships can be powerful mechanisms for building community consensus and leveraging local resources and political power to obtain needed public investments. For instance, the Collaborative was able to secure $500,000 in Transportation Enhancements for landscaping improvements through the efforts of its transportation partners.

- Stretches of major thoroughfares can vary tremendously in character, and warrant different treatments and visions for future improvements.

- Design exceptions from state DOTs may be needed in order to create more pedestrian-friendly street environment on State Routes; early participation by roadway design officials is necessary to facilitate such discussions. For instance, local officials desire a narrower total right-of-way than FDOT has recommended; the negotiations required to come to agreement on street design may delay implementation unless initiated early.

- The business climate and the nature of the real estate market will have a large influence on what kind of development and redevelopment is feasible, pointing to the importance of market analysis. An Urban Land Institute analysis found that although the area experienced low demand for land development in the recent past, demographic trends are signaling a shift toward higher population and job growth in the future, representing an excellent opportunity for community revitalization.

Resources for Additional Information

http://www.sfrpc.com/sr7.htm

Connecticut Avenue

Location: Washington, District of Columbia

Connecticut Avenue Vital Statistics

ADT: 40,000
Through Lanes: 6
Adjoining Land Uses: commercial retail; residential

Context

Connecticut Avenue is a major thoroughfare in the northwest portion of Washington, D.C., serving as a feeder for regional freeways and as a commute route for the surrounding suburbs of Maryland.

Within Washington, D.C., city limits, the road also serves as a major destination, featuring a number of moderate- to high-density neighborhoods and mixed-use commercial and residential areas with high pedestrian volumes along its length. Most buildings face the street with minimal setbacks. Few parking lots are visible; most parking is configured in structures or on the street.

Current Design Features and Travel Characteristics

Geometrics. Connecticut Avenue has six travel lanes, with reversible flow on the center lanes. There is no median.

Vehicle Traffic Characteristics. Average volumes on Connecticut Avenue are in the 40,000 vehicles-per-day range. Off-peak average speed is between 30 and 40 mph, while average peak-period speed is 30 mph.

Transit Characteristics. Several major bus lines run along Connecticut Avenue, with peak-period headways of about 6-12 minutes. In addition, the busiest Metro line is located underneath Connecticut Avenue, with several station entrances on both sides of the street at several locations.

Current/Recent Studies

The portion of Connecticut Avenue within DC jurisdiction from Tilden Street to Albemarle Street was studied by the District Department of Transportation (DDOT) for potential improvements. The main goals were:

> [T]o examine existing and future transportation conditions and determine short-term and long-term improvements to reduce traffic congestion, especially during peak morning and evening travel hours; improve traffic and pedestrian safety; protect surrounding residential streets from traffic impacts; enhance transit service; and improve pedestrian transportation facilities in the study area.

The study analyzed:

- Vehicle traffic volumes and intersection level of service
- Vehicle travel times
- Vehicle origin-destination patterns
- Crash history
- Parking conditions
- Pedestrian conditions

The study produced a list of recommended improvements to address traffic congestion, safety, pedestrian conditions, and transit conditions.

Lessons for Central Maryland

- Vehicle commute routes with high volumes can still serve high-quality, pedestrian-friendly communities. Despite the high traffic volumes along Connecticut Avenue, neighborhoods along the corridor are regarded as high-quality communities.

- Creating a multimodal calls for balancing the needs of various users of the street. Along Connecticut Avenue, some improvement projects will facilitate faster auto travel, while others will address pedestrian safety issues.

Resources for Additional Information

http://www.ddot.dc.gov/ddot/cwp/view,a,1249,q,561431.asp

Santa Monica Boulevard

Location: West Hollywood, California

State Highway: Formerly State Route 2

Santa Monica Boulevard Vital Statistics

ADT: 40,000
Through Lanes: 4
Typical ROW: 80-130 feet

Adjoining Land Uses:
commercial; office; residential

Context

Santa Monica Boulevard through the City of West Hollywood has served as the City's main commercial street, and is part of the historic Route 66. For a number of years, the City of West Hollywood sought to improve the Santa Monica Boulevard in order to provide pedestrian amenities, improve business conditions, and create a stronger sense of community along the route. A number of the design features proposed by the City were not approved by the State DOT. Through an agreement between the two agencies the West Hollywood took control of the state highway within the City's boundaries and began implementing pedestrian oriented improvements.

Current Design Features and Travel Characteristics

Geometric Characteristics. This segment of Santa Monica Boulevard is between 80 and 130 feet wide, including two travel lanes in each direction. Much of this segment also includes a central landscaped median or left-turn lanes.

Vehicle Traffic Characteristics. Average daily volumes are in the 40,000 range. The street exhibits peak period traffic in both directions, with stable flow throughout the day. Speed limits along this stretch range from 25 to 35 mph.

Transit Characteristics. Santa Monica Boulevard is a major bus corridor through West Hollywood. Bus ridership is roughly equal to the volume of vehicles.

Current/Recent Plans

The West Hollywood City Planning Department developed a vision for the main street segment of Santa Monica Boulevard, based on a six month public involvement process. This visioning process led to West Hollywood City Council adoption of the Santa Monica Boulevard Master Plan. Among other goals, the plan sought to:

- Increase pedestrian safety (through sidewalk widening, bulb-outs, and signal improvements);
- Redesign the boulevard to better accommodate cultural, recreational, and other community activities;
- Improve the appearance of the street through landscaping, street furniture, and other design features;
- Improved transit facilities (including a bus queue-jump traffic signal)
- Improved bicycle facilities; and
- Maintenance of existing number of lanes and parking spaces.

1998, the City took control of the highway from the State DOT, in order to be able to move forward with the proposed Boulevard Master Plan. A detailed reconstruction plan for the boulevard was completed in 1999. Reconstruction was completed and the Boulevard was reopened in August, 2001.

There are future plans for installation of additional street furniture and transit shelters over the next several years.

Lessons for Central Maryland

- Some design goals may justify local jurisdictions taking jurisdictional control of a highway route. In the case of Santa Monica Boulevard, this allowed the community to better achieve its objectives for the corridor and expedited the design process.

- Defining major intersections with coherent urban design can create a sense of identity and support development of pedestrian-oriented businesses and housing.

Resources for Additional Information

Contact Sharon Perlstein, Traffic Engineer, City of West Hollywood, 323-848-6875, or

Lisa Padilla, Principal, Zimmer Gunsul Frasca Partnership, 213-617-1901.

Ponce de Leon Avenue

Ponce de Leon Avenue Vital Statistics

ADT: 25-30,000
Through Lanes: 4
Typical ROW: 80-105 feet
Adjoining Land Uses: multi-and single-family residential; commercial

Location: Atlanta, Georgia

Context

Located on the east side of Atlanta, this two-mile stretch of Ponce de Leon Avenue contains a variety of adjoining land uses. Some are historic neighborhoods with street-oriented buildings, but some are single-use developments that are oriented for auto use or do not front onto the street. The Avenue has become the subject of an effort to increase the "livability" of this area.

Current Design Features and Travel Characteristics

Geometric Characteristics. The right-of-way for Ponce de Leon Avenue currently includes two travel lanes in each direction, a two-way left-turn lane, and occasional right turn lanes. Lanes are generally 9.5' to 10', substandard by GDOT's guidelines. Along most of each side of the Avenue, there is a 7-foot furnishings/planting zone and a 7.5-foot sidewalk zone.

Vehicle Traffic Characteristics. Ponce de Leon Avenue experiences between 25 and 30,000 vehicles per day. Spacing of signalized intersections along the Avenue is approximately 3 per mile. Using a link-related Level of Service methodology developed by Florida DOT, the Avenue consistently measures between LOS A and LOS C, with a short segment measuring below LOS D.

Transit Characteristics. Buses currently serve the corridor; no other modes of transit exist, with the exception of a rapid rail transit station near one end of the corridor. Bus frequencies are 20 minutes during peak periods and 40 minutes during off-peak periods.

Improvement Study

Funded by the Atlanta Regional Commission (ARC) through its Livable Centers Initiative (LCI), the Ponce de Leon Avenue study is striving toward the following goals relating to transportation:

- Enhance the pedestrian environment by making walking comfortable, safe, and convenient
- Improve vehicular safety along major arterials, while respecting its urban context and impact on other modes of travel
- Make bicycling pleasant and safe
- Make transit a more viable means of travel

The study specifically analyzes street connectivity, pedestrian conditions, and bicycle conditions. It also includes a substantial land use component that analyzes real estate market conditions, and multiple points of public participation. It is intended to result in recommendations for streetscape improvements, transit investments, and land use policy changes that encourage infill development and improve the overall livability of the area.

Lessons for Central Maryland

- Transportation investments can be used as a catalyst to spur additional development or redevelopment efforts. In the case of Ponce de Leon, the main impetus for comprehensive study of the area was the goal of improving quality of life through new public and private investments, rather than traffic congestion concerns.

Resources for Additional Information

http://www.tunspan.com/poncemoreland/index.html

Route 9 Monmouth County

Location: Western Monmouth County, New Jersey

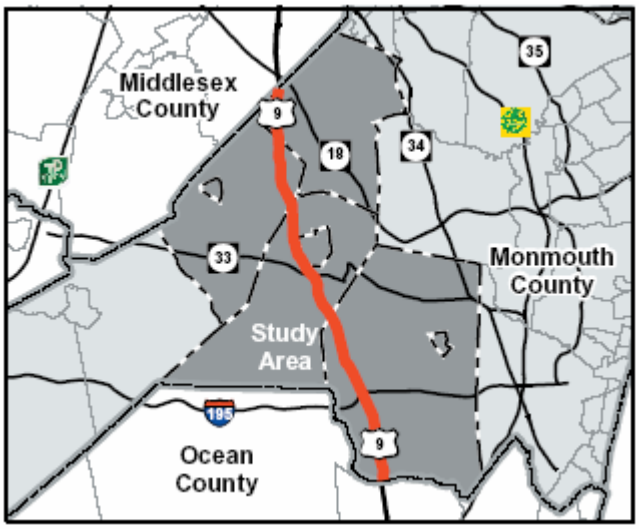
State Highway: State Route 9

Route 9 Monmouth County Vital Statistics

ADT: 40,000 to 65,000
Through Lanes: 4
Typical ROW: 80 to 110
Adjoining Land Uses: Strip malls, regional malls, and office.

Context

The Route 9 corridor is situated between I-195 to the south and Route 18 to the north, and between the New Jersey Turnpike to the west and the Garden State Parkway to the east. The surrounding area, including seven municipalities, has grown in population as development headed south from Middlesex County. Route 9 accommodates commuters to many parts of the state, as well as to New York City. Current and forecasted congestion levels, plans for possible widening of the route, and lack of acceptable pedestrian conditions are some factors that precipitated broader thinking about the corridor's transportation and land use development.



Surroundings

The towns along the corridor are largely bedroom communities. In most of the 7 municipalities along the route, more than half of the workers commute out of the county. Northern New Jersey is the most common destination.

Relevant Uses

Population growth in the corridor occurred before the establishment of major businesses, creating a typical suburban character in much of the surrounding area. Office and retail uses are now common directly along Route 9, along with a number of large automobile dealers, and office buildings. There are also several larger malls, and a recent profusion of strip mall development in some segments.

Current Design Features and Travel Characteristics

Geometric Characteristics. Route 9 is a divided 4-lane highway through most of the study area, with some occasional turn-lanes at major intersections. The median is ranges from 10 feet to 36 feet in much of the corridor, and though the southern portion is simply a concrete barrier flanked by 3-foot shoulders. Most intersections are at-grade/signal controlled, however, there are also several grade separated intersections at major crossings.

Vehicle Traffic Characteristics. The study area experiences a lot of through traffic as well as a large number of area residents commuting to and from jobs outside the study area. Most travel is by single-occupant vehicle, with about 10 percent of trips by HOV. Bike/pedestrian trips range from 1 to 6 percent, depending on the municipality.

There is significant peak hour congestion, with six of the corridors intersections operating at LOS E or F. Given current infrastructure, the majority of the intersections are forecast to operate at LOS F in 2020.

Transit Characteristics. NJ Transit Route 139 carries the most riders along the corridor, serving approximately 2,300 morning trips per day. It primarily serves Manhattan-bound workers. Ridership is heavy on the Academy Bus Line route to Wall Street.

Current/Recent Plans

The Western Monmouth Development Plan[1] seeks achieve the following goals:

- Establish a cooperative planning effort to review land use, transportation, redevelopment and public facilities and services in a regional context,
- Develop strategies, policies and design guidelines that address local concerns,
- Support the long-term goals and objectives of the Route 9 municipalities,
- Create a land use and design vision for the Route 9 municipalities and the region,
- Achieve endorsement by the New Jersey State Planning Commission as a Regional Strategic Plan.

The plan reviews existing conditions in the corridor and establishes build-out conditions under current trends and under the desired vision of development. In order to support the desired vision, the plan establishes detailed design guidelines for characteristic places along the corridor (e.g. commercial places, residential places, rural places, mixed use places, and gateways) as well as the Route 9 corridor itself.

In addition to the Western Monmouth Development Plan, New Jersey Transit is conducting an environmental impact study to examine the feasibility of using the Monmouth-Ocean-Middlesex (MOM) rail line more thoroughly.

Lessons for Central Maryland

- A competitive smart growth planning grant program can encourage communities to collaborate to take on more complex problems with more thorough analysis than would otherwise be possible. The detailed corridor recommendations contained in the Monmouth plan have created a positive outlook and a sense of cooperation along the corridor that did not exist previously.

- A corridor plan that provides sufficient detail can inform and inspire efforts by individual municipalities toward integrated aesthetic, mobility, and safety improvements.

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[1] The study was led by Monmouth County Planning Board led the effort, assisted by the planning consultants Orth-Rodgers & Associates, Inc. It was funded through a "Smart Growth Planning Grant," from the New Jersey Office of Smart Growth (NJOSG). The final report and supporting documents are available at http://www.shore.co.monmouth.nj.us/03230planboard/WMDP/Overview.htm.

Resources for Additional Information

www.shore.co.monmouth.nj.us/03230planboard/WMDP/Overview.htm

US 1 Treasure Coast

Location: St. Lucie and Martin Counties, Florida

State Highway: US 1

US1 Treasure Coast Vital Statistics

ADT: 60,000
Through Lanes: 4 to 6
Adjoining Land Uses: Suburban residential, commercial, industrial, conservation.

Context

US 1 is a high-volume corridor connecting a chain of seven communities through St. Lucie and Martin Counties South Florida's Atlantic Coast, including Port St. Lucie, St. Lucie Village, Stuart, Jupiter Island, Sewall's Point, and Ocean Breeze Park. The area is expanding rapidly, with the population expected to nearly double between 2002 and 2025. I-95 is the main freeway artery through the study area, with Route 91 serving as another major artery.

Surroundings

The area has a predominantly suburban orientation, with few well-defined centers. There is a significant amount of residential development, with a relatively small number of jobs. In the Port St. Lucie area, there are large areas of subdivided, yet undeveloped residential lots in individual ownership.

Relevant Uses

Land is predominantly residential with significant amounts of commercial, industrial, conservation, and recreation lands. There are underutilized and vacant parcels in the older, established commercial core areas.

Current Design Features and Travel Characteristics

Geometric Characteristics. The corridor is mostly four lanes, with turn lanes at major intersections. The route includes sidewalks throughout, and portions include bike lanes.

Vehicle Traffic Characteristics. There is a significant amount of regional through traffic associated with employment centers along the broader US1 corridor. Use of non-automobile and HOV modes is limited. Physical and environmental features that limit roadway connectivity allow only a few continuous routes though the area.

Transit Characteristics. In 2002, a number of fixed-route transit services were added along US 1 and to nearby activity centers. Transit does not represent a significant mode in the corridor.

Current/Recent Plans

FDOT's 1998 US 1 *Corridor Alternatives Study*, recommended major capacity expansions at several points along US 1 through the study area.

In January 2002, the Treasure Coast Regional Planning Commission (TCRPC) published the Martin and St. Lucie Counties Regional Land Use Study Final Report[2]. The study was inspired by the community's reaction to expansion plans, and sought to evaluate the degree to which changes in the area's land development patterns may influence future transportation needs. To this end, the report focused on four products:

- An inventory and analysis of vacant land and potential redevelopment areas in the urban service area to accommodate the area's projected population in 2025;
- An Analysis of market demand, alternative regional development patterns and land use scenarios to identify an effective way to manage that growth;
- Identification of transportation projects and their costs to support future land use recommendations, and
- A framework for moving forward with the recommended plan.

The study focused on three key questions:

- Can developable land within the existing urban service area boundaries of both counties fully accommodate projected population and employment growth through 2025?
- Can an alternative land use and transportation development scenario eliminate or at least delay the need to construct major roadway capacity expansions along US 1?
- How can US 1 evolve into a true multi-modal corridor that supports expanded travel choices?

Comparing several land use scenarios, the study recommend, concentration of future residential and commercial development in a series of compact, mixed-use centers spread throughout the study area. This strategy would most effectively sustain the local economy, expand travel choices and avoid the need to build interchanges on US 1.

The study recommends construction of a select few new roads and expanded public transportation services to better connect future community centers and reduce traffic congestion.

The study found that transportation projects needed to support the Community Centers vision with an adequate level of mobility would cost approximately $615 million (including several roadway construction projects, fixed route bus service investments, and a busway within the US 1 corridor, and passenger rail service linking the study area with Palm Beach County. This represents about 41 percent of the projected combined cost of the adopted 2025 Long Range Transportation Plans (LRTPs) for St. Lucie and Martin County MPOs and leads to reduced projected congestion in 2025 (relative to the LRTPs).

A second stage of the study, is focused on strategies needed to implement the recommended vision.[3] Based on the study's findings, several of the communities along US 1 have proceeded

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[2] The study was prepared by prepared by Renaissance Planning Group. Treasure Coast Regional Planning Council coordinated the study, with agency funding and participation from Martin County, St. Lucie County, the City of Stuart, the Florida Department of Transportation and the Florida Department of Community Affairs. The final report and supporting documents are available at http://www.tcrpc.org/regional_lu_study.htm.

[3] The second portion of the study was funded through the Federal TCSP funds.

with local land use plans and code adjustments that are consistent with the study's recommendations. Other communities have either not taken initiative for further action, or have been unable to reach consensus on how to proceed.

TCRPC has coordinated additional studies of specific, large redevelopment opportunity sites along the US1 corridor. These analyses applied FDOT's multimodal level of service, including assessments of street connectivity for various modes, and rankings of urban design factors.

Lessons for Central Maryland

- Conceptual Land Use and Transportation plans for multiple jurisdiction corridors are most effective if there is a follow-up strategy to implement land use and code adjustments within local communities that support the plans objectives.

- Consultants that conducted the area-wide and community center analyses for the Treasure Coast US1 corridor found that the traffic volumes and speeds on the route made it difficult to claim the highway corridor as a significant part of the community/pedestrian realm. Rather, they chose to promote pedestrian-oriented community spaces on either side of the route, with a strong visual link to US1 itself.

- TCRPC staff ascribed the success of this high volume highway corridor planning effort to the charrettes that took place early in the planning effort. The charrette process helped bring together stakeholders and develop a common understanding of the study area, the current and anticipated problems, and the range of opportunities.

Resources for Additional Information

www.tcrpc.org/regional_lu_study.htm

Appendix 2: Stakeholder Input on CMMS and Development Opportunity Sites

Stakeholders in the CMMS gave input at the CMMS Workshop on a range of subjects, ranging from how the CMMS could be of value to them to specific issues they wished to be addressed in the Development Opportunity Sites (DOS) concepts. The comments, information, questions, suggestions and constructive criticism were extremely valuable as the study progressed, particularly in the development and evaluation of the scenarios for the DOSs and preparation of the implementation strategies.

Given the number and variety of study stakeholders, a variety of views was represented, sometimes consistent and sometimes contradictory. The summary that follows reflects that range.

Input on the CMMS

There was consensus among the local government stakeholders that general concept plans for the DOSs would be beneficial. Although "big-picture" concepts were preferred over detailed site design plans, stakeholders indicated interest in seeing streetscapes that would be part of private development. To ensure marketability, they indicated that any building footprints used in the concept plans should be market-tested.

Participants were also interested in the implementation of the concept plans, asking for a phased, strategic development framework that could be supported by the market, and identification of potential lead "jump-start" project opportunities. Given the issues and prospective solutions, local stakeholders agreed on the need for intergovernmental coordination among municipal, county and state agencies to support implementation of these concepts.

Input on the Central Maryland Area

Local stakeholders expressed interest in ways to improve the relationship between potential development and the capacity and design of US 1. Likewise, increasing transit oriented development was a theme related to all of the sites and jurisdictions.

- Both the private and public sectors believe that this area possesses high potential because of its location, including commute-distance of two major metropolitan areas, proximity to major travel routes, and the presence of federal government entities such as the National Security Agency, Fort Meade, and Department of Homeland Security.

- The private sector is skeptical that there will be governmental support, pointing to previous studies that have not resulted in development, as well as what the private sector sees as public sector impediments to development.

- Large projects such as the Konterra development and the Intercounty Connector will catalyze and shape future development.

- There seems to be no consistent vision for transit.

- There seems to be no consistent vision for US 1.

- There is concern about traffic capacity issues at the intersection of US 1 and MD 198.

Input on the Anne Arundel County Site

- There are environmental and infrastructure issues, including floodplain issues and sewer capacity issues.
- Laurel Park Racetrack decisions, particularly whether or not slot machines will be part of redevelopment, may drive the overall direction of the site's redevelopment.
- Consider moving the MARC station.
- Industrial development is preferred.
- Flexible development plan and phasing strategy are strongly desired.

Input on the Howard County Site

- Laurel Park Racetrack decisions, particularly whether or not slot machines will be part of redevelopment, may drive the overall direction of the site's redevelopment.
- There is private-sector interest in redeveloping several parts of the site, but there also has been a lack of public-private cooperation.
- Regarding desired development types, the County does not want low-density residential development. The County prefers office development, and although the office market may not be viable in the short term, the County is willing to wait. The County also desires commercial and industrial "flex" space.
- A phasing strategy is needed here for better jobs-housing balance.
- The business owners on land between the current US 1 couplet may resist being re-located.
- Increasing the number of intersections and curb cuts on US 1 raises concerns about traffic flow along US 1.
- Retail access should be from local streets rather than from US 1.
- There is not agreement on whether or not on-street parking is desirable on US 1.
- There is potential interest in relocating the MARC station.
- Community needs may differ from County and State objectives.

Input on the City of Laurel Site

- Private and public sectors are both interested in growth and redevelopment at this site.
- Laurel Mall and its potential redevelopment will be a driving force for the overall direction of this site's redevelopment.
- There may be floodplain issues on part of the site east of US 1, near the MARC station.

- Regarding desired development types, high densities are desired for the Town Center area, while at the same time, more green space is also desired. Entertainment uses are desired, and office development would be welcomed but might be optimistic. Archstone Smith's Laurel Crossing apartment development is a model for what kind of growth is desirable. Residential uses should be placed on the upper floors of other uses, such as retail or structured parking.

- US 1's non-pedestrian-friendly design creates a barrier that divides the site.

- 4th Street should be pedestrian-oriented, and be multi-family, not townhomes.

- Structured parking is preferred over lots.

- The street interface of buildings along US 1 should be pedestrian-friendly.

- Local traffic and circulation could be issues here, especially at Cherry Lane and US 1, and along US 1 pertaining to access to land uses fronting onto US 1.

- There's a need for pedestrian linkages across US 1.

- There's a need to coordinate connections among local bus systems.

- Consider potential relocations of the bus transfer center, and a new MARC station for inter-modal transfers; more coordinated MARC/bus connections would be desirable.

Input on the Prince George's County Site

- There has already been development activity at this site, but it still needs overall coordination, direction, and planning.

- The current property owners on the site, Howard University, University of the District of Columbia, and federal agencies, will be interested in and drive the overall direction of development here, as well as the Konterra development.

- From the transportation side, the Intercounty Connector may positively impact the office development potential of the site; the potential Contee Road interchange with I-95 will also impact the area. For the portion southeast of US 1, the lack of transportation access and lack of highway capacity limit development opportunities.

- Regarding desired development types, TOD and mixed-use development that creates "a place" is desired, with residential, convenience retail (especially near the MARC station) and office uses in a pedestrian-friendly setting. Archstone Smith's Laurel Crossing offers a desired model for apartment development.

- Industrial zoning is desired to remain, and higher-quality office space is desirable. Light industrial or commercial uses are preferred over warehouse or distribution uses.

- Office uses are preferred to the west of US 1, while residential uses are preferred to the east. Alternatively, development might be clustered to the west side of US 1, leaving the east side of US 1 as green space, for improved safety and security.

- Owner-occupied housing is desired.

- Better integration of parking areas with residential buildings is desired, as a safety consideration with connecting parking surfaces. Also, lower parking rates are desired.

- Small scale blocks are desired, and all development should front major streets, with buildings closer to the street.

- Improved pedestrian safety and connectivity across US 1 and CSX tracks are desired.

- There is concern about curb cuts and cross streets along US 1 in terms of their impact on through travel.

- Truck traffic along US 1 is a concern.

Appendix 3: Concept plan details

Anne Arundel County

Trend

Due to the unknown influence of potential slots development, no changes to the existing land uses at this site were developed under the Trend Scenario.

Aggressive

Block	Building	Use	Block SqFt	Building Footprint	Lot Footprint	# of Towers /Buildings	Height In feet	# of Floors	GSF	Units	Parking Cars	Parking SqFt	Parking Surface	Parking Levels
A			260,680											
	A1	High End Condos		20,000		2	40	4	160,000	133	200	60,000	90,620	0.7
	A2	Townhouses		42,720	1,600	23								
B			188,640											
	B1	High End Condos		10,900		3	60	6	196,200	164	245	73,575	71,830	1.0
	B2	Townhouses		17,510	1,600	12								
C			154,640											
	C1	High End Condos		32,760		4	30	3	393,120	328	491	147,420	59,680	2.5
	C2	Townhouses		27,130	1,600	11								
D			104,920											
	D1	High End Condos		14,630		1	60	6	87,780	73	110	32,918	45,210	0.7
	D2	Townhouses		20,040	1,600	12								
E			101,880											
	E1	High End Condos		41,549		1	30	3	124,647	104	156	46,743	42,140	1.1
F			70,830											
	F1	High End Condos		27,110		1	30	3	81,330	68	102	30,499	31,690	1.0
G			75100											
	G1	High End Condos		16,990		1	40	4	67,960	57	85	25,485	27,520	0.9
	G2	Townhomes		13,710		1								

TOTALS				Units			GSF	Units	Cars	Parking GSF
Total High End Condos							1,111,037	926	1,389	416,639
Total Townhouses				58						

Howard County

Trend

Block	Building	Use	Block SqFt	Building Footprint	Lot Footprint	# of Towers /Buildings	Height In feet	# of Floors	GSF	Units	Parking Required Cars	SqFt	Parking Surface	Parking Levels
A														
		Existing Retail and light industrial												
		Minimum renovations and additions												
B														
		Existing Retail and light industrial												
		Minimum renovations and additions												
C														
		Existing Retail and light industrial												
		Minimum renovations and additions												
D														
		Existing Retail and light industrial												
		Minimum renovations and additions												
E			119,070									50,400	59,650	0.8
	E1	Retail		11,200		3	20	1	33,600		168	50,400		
F			146,150											
	F1	Condos		38,300		1	20	2	76,600	77	153	45,960	43,070	1.1
G			150,940											
	G1	Condos		45,680		1	20	2	91,360	91	183	54,816	48,690	1.1
H			122,420											
	H1	Condos		38,440		1	20	2	76,880	77	154	46,128	50,530	0.9
J			81,320											
	J1	Retail		11,130		2	20	1	22,260		111	33,390	39,170	0.9
K			134,570											
	K1	Condos		53,200		1	20	2	106,400	106	213	63,840	47,560	1.3
L			131,310											
	L1	Condos		50,890		1	20	2	101,780	102	204	61,068	47,560	1.3
M			142,100											
	M1	Condos		54,240		1	20	2	108,480	108	217	65,088	51,550	1.3
N			91,390									69,201	29,970	2.3
	N1	Condos		46,230		1	20	2	92,460	92	185	55,476		
	N2	Retail		9,150		1	20	1	9,150		46	13,725		
O			92,850									97,699	45,620	2.1
	O1	Retail		11,130		1	20	1	11,130		56	16,695		
	O2	Flex Space		67,503		1	20	1	67,503		270	81,004		
P			136,340											
	P1	Flex Space		23,410		2	20	1	46,820		187	56,184	61,550	0.9
Q			146,520											
	Q1	Condos		53,100		1	20	2	106,200	106	212	63,720	57,530	1.1
R			140,870											
	R1	Condos		31,760		1	20	2	63,520	64	127	38,112	35,680	1.1
	R2	Townhouses		39,970						22				
S			98,390											
	S1	Condos		29,310		1	20	2	58,620	59	117	35,172	22,860	1.5
	S2	Townhouses		24,320						14				
T			92,440											
	T1	Condos		29,300		1	20	2	58,600	59	117	35,160	21,530	1.6
	T2	Townhouses		21,390						12				
U			89,020											
	U1	Condos		25,030		1	20	2	50,060	50	100	30,036	25,280	1.2
	U2	Townhouses		18,000						10				
V			152,490											
	V1	Townhouses	70,490			1				39			27,270	
W		Multiple Blocks												
	W1	Townhouses	970,506							337				

TOTALS	GSF	Units
Total Condos	990,960	991
Total Flex Space	114,323	
Total Retail	76,140	
Total Townhouses		434

Howard County, *Aggressive*

Block	Building	Use	Block SqFt	Building Footprint	Lot Footprint	# of Towers /Buildings	Height In feet	# of Floors	GSF	Units	Parking Cars	SqFt	Parking Surface
A			146,570									104,898	52,550
	A1	Retail		18,250		1	20	1	25,000		100	30,000	
	A2	Condos		41,610		1	40	4	166,440	166	250	74,898	
B			64,740									30,246	23,600
	B1	Retail		16,160		1	20	1	16,160		65	19,392	
	B2	Condos		12,060		1	20	2	24,120	24	36	10,854	
C			67,210									31,901	29,930
	C1	Retail		17,460		1	10	1	17,460		70	20,952	
	C2	Condos		8,110		1	30	3	24,330	24	36	10,949	
D													18,780
	D1	Elementary School		79,630		1							
E			123,520									81,264	48,100
	E1	Retail		17,500		1	20	1	17,500		70	21,000	
	E2	Condos		33,480		1	40	4	133,920	134	201	60,264	
F			123,520										
	F1	Condos		50,370		1	40	4	201,480	201	302	90,666	43,010
H			106,380										
	H1	Condos		41,420		1	40	4	165,680	166	249	74,556	40,080
I			54,560										
	I1	Condos		13,770		1	40	4	55,080	55	83	24,786	25,800
J			170,380										
	J1	Condos		39,800		1	30	3	119,400	119	179	53,730	50,440
	J2	Townhouses		37,990						23			
K			131,050									68,108	48,540
	K1	Condos		8,890		1	30	3	26,670	27	40	12,002	
	K2	Condos		41,560		1	30	3	124,680	125	187	56,106	
L			245,070									172,872	89,350
	L1	Condo Towers		13,000		2	80	8	208,000	208	312	93,600	
	L2	Condo (Back)		44,040		1	40	4	176,160	176	264	79,272	
											0		
M			133,120										
	M1	Condos		50,496		1	30	3	151,488	151	227	68,170	49,480
N			96,280										
	N1	Condos		35,470		1	30	3	106,410	106	160	47,885	49,480
O			203,580									122,850	64,760
	O1	Condo Towers		13,000		2	60	6	156,000	156	234	70,200	
	O2	Condo (Back)		39,000		1	30	3	117,000	117	176	52,650	
P			132,960										
	P1	Condos		50,515		1	30	3	151,545	152	227	68,195	49,360
Q			132,900										
	Q1	Condos		50,515		1	30	3	151,545	152	227	68,195	49,360
R			132,840										
	R1	Condos		31,970		1	30	3	95,910	96	144	43,160	31,720
	R2	Townhouses		30,400						22			
S			209,460									126,855	62,630
	S1	Office		19,200		2	30	3	115,200		288	86,400	
	S2	Condos		13,300		1	30	3	39,900	40	60	17,955	
	S3	Flex-Space		15,000		2	20	1	30,000		75	22,500	
T			106,540									41,013	50,100
	T1	Condos		12,360		1	40	4	49,440	49	74	22,248	
	T2	Flex-Space		25,020		1	20	1	25,020		63	18,765	
U			106,540									41,013	50,100

V			106,510										
	V1	Condos		20,480		1	30	3	61,440	61	92	27,648	28,900
	V2	Townhouses		28,800						16			
W			104,010										
	W1	Townhouses		74,844						18			
X			121,590										
	X1	Townhouses		33,100						45			
		Condos		25,360		1	20	2	50,720	51	76	22,824	
Y			198,360										
	Y1	Townhouses		96,490						70			
		Condos		18,000		1	30	3	54,000	54	81	24,300	25,590
Z			660,340										
	Z1	Townhouses (8 blocks)								319			
1			684,560									288,000	290,750
	1.1	Retail		15,000		1	20	1	15,000		60	18,000	
	1.2	Townhouses		48,990						29			
	1.3	Office		24,000		3	50	5	360,000		900	270,000	
2			268,750									127,125	138,090
	2.1	Retail		14,520		1	20	1	14,520		58	17,424	
	2.2	Condos		9,750		3	60	6	175,500	176	263	78,975	
	2.3	Condos		11,380		1	60	6	68,280	68	102	30,726	
	2.4	Townhouses		33,440						18			
3			160,590										
	3.1	Condos		13,050		2	50	5	130,500	131	261	78,300	97,940
4			212,430										
	4.1	Condos		13,050		2	50	5	130,500	131	261	78,300	150,690
5			130,000										
	5.1	Office		18,500		2	40	4	148,000		370	111,000	66,680
6			68,160										
	6.1	Flex-Space		15,390		1	20	2	30,780		77	23,085	33,690

TOTALS							**GSF**	**Units**	**SqFt/Acres**		
Total Blocks SqFt											
Total Condos							3,060,858	3,061			
Total Office							623,200				
Total Flex-Space							110,820				
Total Retail							105,640				
Total Townhouses								560			

City of Laurel

Trend

Block	Building	Use	Block SqFt	Building Footprint	Lot Footprint	# of Towers /Buildings	Height In feet	# of Floors	GSF	Units	Parking Required Cars	SqFt	Parking Surface	Parking Levels
A			211,250											
	A1	Condos		59,136		1	40	4	236,544	237	473	165,581	100,000	2.0
B			253,000											
	B1	Condos		31,525		1	30	3	94,575	95	189	56,745	45,000	1.3
	B2	Condos		31,525		1	30	3	94,575	95	189	56,745	45,000	1.3
C			253,000											
	C1	Condos		31,525		1	30	3	94,575	95	189	56,745	45,000	1.3
	C2	Condos		31,525		1	30	3	94,575	95	189	56,745	45,000	1.3
D			386,250								1,284	385,200	160,000	2.4
	D1	Retail		37,500		1	20	1	37,500		188	56,250		
	D2	Office		60,000		1	40	4	240,000		960	288,000		
	D3	Condos (South)		4,875		1	40	4	19,500	20	39	11,700		
	D4	Condos (New street)		16,250		1	30	3	48,750	49	98	29,250		
D Optional	D5	Condos (above Retail)		27,750		1	30	3	83,250	83	167	49,950		
												435,150	160,000	2.7
E			356,500								590	177,120	64,400	2.8
	E1	Retail		60,000		1	20	1	60,000		300	90,000		
	E2	Condos		36,300		1	40	4	145,200	145	290	87,120		
F			230,000								263	78,750	66,000	1.2
	F1	Retail		30,000		1	20	1	30,000		150	45,000		
	F2	Retail		22,500		1	20	1	22,500		113	33,750		
G			366,250											
	G1	Retail		37,500		1	20	1	37,500		188	56,250	150,000	0.4
	G2	Light Industrial		178,750										
H			225,000											
	H1	Retail		37,500		1	20	1	37,500		188	56,250	80,000	0.7
J			457,700											
	J1	Light Industrial		457,700										
K			178,250											
	K1	Retail		24,212		1	20	1	24,212		121	36,318	100,000	0.4
L			395,000											
	L1	Retail		26,250		1	20	1	26,250		131	39,375	52,500	0.8
	L2	Light Industrial		316,250										
O			330,000											
	O1	Light Industrial		330,000										

TOTALS	GSF	Units
Total Condos	911,544	912
Total Office	270,000	
Total Retail	245,462	
Total Light Industrial	1,282,700	

City of Laurel, *Aggressive*

Block	Building	Use	Block SqFt	Building Footprint	Lot Footprint	# of Towers /Buildings	Height		GSF	Units	Parking Required		Parking Surface	Parking Levels
							In feet	# of Floors			Cars	SqFt		
A			223,830									138,782	67410	2.1
	A1	Condos		46,088		1	40	4	184,352	184	277	96,785		
	A2	Condos		26,665		1	30	3	79,995	80	120	41,997		
B			260,710									126,756	93,320	1.4
	B1	Condos		40,240		1	40	4	160,960	161	241	72,432	46,840	
	B2	Condos		40,240		1	30	3	120,720	121	181	54,324	46,480	
C			269,380									119,448	90,000	1.3
	C1	Condos		37,920		1	40	4	151,680	152	228	68,256		
	C2	Condos		37,920		1	30	3	113,760	114	171	51,192		
D			373,230								857	257,064	133,950	1.9
	D1	Retail		45,860		1	20	1	45,860		161	48,153		
	D2	Office		60,000		1	40	4	240,000		552	165,600		
	D3	Condos (South)		13,050		1	40	4	52,200	52	78	23,490		
	D4	Condos (New street)		14,682		1	30	3	44,046	44	66	19,821		
D Optional	D5	Condos (above Retail)		27,750		1	30	3	83,250	83	125	37,463		
												294,526	160,000	1.8
E			388,860								412	123,482	78,790	1.6
	E1	Retail		55,750		1	20	1	55,750		128	38,468		
	E2	Condos		47,230		1	40	4	188,920	189	283	85,014		
F			183,200								514	154,250	70,810	2.2
	F1	Office		29,030		1	40	4	116,120		406	121,926		
	F2	Retail		25,090		1	20	1	25,090		58	17,312		
	F3	Condos		11,120		1	30	3	33,360	33	50	15,012		
G			376,480								545	163,430	174,780	0.9
	G1	Retail		18,680		1	20	1	18,680		43	12,889		
	G2	Condos		83,634		1	40	4	334,536	335	502	150,541		
H			227,340											
	H1	Condos		72,870		1	30	3	218,610	219	328	98,375	84,720	1.2
J			211,080											
	J1	Condos		46,940		1	30	3	140,820	141	211	63,369	106,220	0.6
K			183,450								254	76,343	66,500	1.1
	K1	Condos (front)		41,510		1	30	3	124,530	125	187	56,039		
	K2	Condos (back)		22,560		1	20	2	45,120	45	68	20,304		
L			299,120									234,063	123,560	1.9
	L1	Office		19,980		2	40	4	159,840		559	167,832		
	L2	Condos (end)		21,190		1	30	3	63,570	64	95	28,607		
	L3	Condos (both sides total)		27,870		1	30	3	83,610	84	125	37,625		
M			179,650									63,783	69,720	0.9
	M1	Condos (wrapping)		43,310		1	20	2	86,620	87	130	38,979		
	M2	Condos (corner)		13,780		1	40	4	55,120	55	83	24,804		
N			144,860								264	79,070	67,780	1.2
	N1	Condos (side-total)		23,610		1	30	3	70,830	71	106	31,874		
	N2	Condos (end)		13,110		2	40	4	104,880	105	157	47,196		
O			366,540								754	226,161	108,570	2.1
	O1	Office (total)		42,360		1	40	4	169,440		593	177,912		
	O2	Condos		35,740		1	30	3	107,220	107	161	48,249		

TOTALS	GSF	Units	Cars	Parking GSF
Total Condos	2,296,544	2,649	5,297	1,589,225
Total Office	685,400		2,399	719,670
Total Retail	145,380		582	174,456
Total Townhouses	0	124		

Prince George's County

Trend

Block	Building	Use	Block SqFt	Building Footprint	Lot Footprint	# of Towers /Buildings	Height In feet	# of Floors	GSF	Units	Parking Cars	SqFt	Parking Surface	Parking Levels
A			272,050											
	A1	Office		24,000		3	20	2	144,000		576	172,800	132,430	1.3
B			257,760											
	B1	Office		24,000		3	20	2	144,000		576	172,800	122,410	1.4
C			254,040											
	C1	Office		24,000		3	20	2	144,000		576	172,800	128,030	1.3
D			104,530											
	D1	Office		21,000		2	20	2	84,000		336	100,800	42,210	2.4
E			209,770											
	E1	Office		21,000		2	20	2	84,000		336	100,800	130,300	0.8
F			135,560									101,190	59,980	1.7
	F1	Office		32,500		1	20	2	65,000		260	78,000		
	F2	Retail		15,460		1	20	1	15,460		77	23,190		
G			234,770											
	G1	Office		21,000		2	20	2	84,000		336	100,800	153,800	0.7
H			133,950									89,132	66,818	1.3
	H1	Office		24,710		1	20	2	49,420		198	59,304		
	H2	Retail		19,885		1	20	1	19,885		99	29,828		
J			216,360									316,800	95,920	3.3
	J1	Office		24,000		2	40	4	192,000		768	230,400		
	J2	Office		24,000		1	30	3	72,000		288	86,400		
K			123,700											
	K1	Office		22,030		1	20	2	44,060		176	52,872	60,000	0.9
	K2	Light Industrial		30,000										
L			90,000											
	L1	Office		24,000		1	20	2	48,000		192	57,600	60,000	1.0
	L2	Light Industrial		30,000										
M			171,890											
	M1	Light Industrial		152,104										
N			128,470											
	M1	Light Industrial		110,220										

TOTALS							GSF				
Total Blocks SQFT	2,332,850										
Total Condos											
Total Office							1,082,480				
Total Retail							35,345				
Total Light Industrial		322,324									

Prince George's County, *Aggressive*

Block	Building	Use	Block SqFt	Building Footprint	Lot Footprint	# of Towers /Buildings	Height In feet	# of Floors	GSF	Units	Parking Cars	SqFt	Parking Surface	Parking Levels
A			216,210									124,056	90,000	1.4
	A1	Office		23,400		1	40	4	93,600		234	70,200		
	A2	Condos		29,920		1	40	4	119,680	120	180	53,856		
B			151,550									76,424	36,790	2.1
	B1	Condos (Va. Manor Rd)		21,240		1	40	4	84,960	85	127	38,232		
	B2	Condos (New Street)		28,290		1	30	3	84,870	85	127	38,192		
C			133,750									64,242	45,000	1.4
	C1	Condos (End Block)		24,770		1	40	4	99,080	99	149	44,586		
	C2	Condos (Side Street)		10,920		1	40	4	43,680	44	66	19,656		
D			110,410									46,530	45,000	1.0
	D1	Condos (End Block)		14,930		1	40	4	59,720	60	90	26,874		
	D2	Condos (Side Street)		10,920		1	40	4	43,680	44	66	19,656		
E			188,300											
	E1	Condos		32,800		1	40	4	131,200	131	197	59,040	43,700	1.4
	E2	Townhouses		43,700						22				
F			131,920											
	F1	Condos		34,140		1	40	4	136,560	137	205	61,452	45,000	1.4
	F2	Townhouses		19,820						12				
G			127,010											
	G1	Condos		29,010		1	40	4	116,040	116	174	52,218	47,250	1.1
	G2	Townhouses		19,820						12				
H			167,300											
	H1	Condos		29,020		1	30	3	87,060	87	131	39,177	50,150	0.8
	H2	Townhouses		25,520		2				22				
J			138,420											
	J1	Condos		38,430		1	40	4	153,720	154	231	69,174	45,000	1.5
	J2	Townhouses		20,100		1				12				
K			137,390											
	K1	Condos		31,840		1	40	4	127,360	127	191	57,312	46,100	1.2
	K2	Townhouses		20,100		1				12				
L			210,640											
	L1 (north)	Condos		31,550		1	30	3	94,650	95	142	42,593	45,490	0.9
	L2 (south)	Condos		29,130		1	30	3	87,390	87	131	39,326	46,050	0.9
M			435,540									326,886	98,360	3.3
	M1	Office		31,280		1	40	4	125,120		313	93,840		
	M2	Office		24,000		2	30	3	144,000		360	108,000		
	M3	Office		24,000		1	30	3	72,000		180	54,000		
	M4	Office		36,000		1	30	3						
	M4	Condos		39,470		1	40	4	157,880	158	237	71,046		
	M5	Condos		4,990		2	30	3	29,940					
N			242,500											
	N1 (north)	Condos		38,170		1	30	3	114,510	115	172	51,530	45,490	1.1
	N2 (south)	Condos		18,670		1	30	3	56,010	56	84	25,205	45,650	0.6
O			234,210									207,531	73,290	2.8
	O1	Office		23,750		2	30	3	142,500		356	106,875		
	O2	Office		24,000		1	40	4	96,000		240	72,000		
	O3	Condos		15,920		1	40	4	63,680	64	96	28,656		
P			342,100									46,782	103,880	0.5
	P1	Condos		10,110		1	40	4	40,440	40	61	18,198		
	P2	Condos		15,880		1	40	4	63,520	64	95	28,584		
	P4	Townhouses		112,760						67				
Q			244,600									56,358	59,110	1.0
	Q1	Condos		11,810		1	40	4	47,240	47	71	21,258		
	Q2	Condos		19,500		1	40	4	78,000	78	117	35,100		
	Q4	Townhouses		75,080						46				

P			342,100									46,782	103,880	0.5
	P1	Condos		10,110		1	40	4	40,440	40	61	18,198		
	P2	Condos		15,880		1	40	4	63,520	64	95	28,584		
	P4	Townhouses		112,760						67				
Q			244,600									56,358	59,110	1.0
	Q1	Condos		11,810		1	40	4	47,240	47	71	21,258		
	Q2	Condos		19,500		1	40	4	78,000	78	117	35,100		
	Q4	Townhouses		75,080						46				
R			89,240											
	R1	Townhouses	66,940							33				
S			61,000											
	S1	Townhouses	41,690							30				
T			98,660											
	T1	Condos		11,860		2	40	4	94,880	95	142	42,696	43,480	1.0
U			81,000										28,810	
	U1	Condos		25,660		1	30	3	76,980	77	115	34,641		
V			82,380									24,512	37,880	0.4
	V1	Condos		10,050		1	30	3	30,150	30	45	13,568		
	V2	Condos		12,160		1	20	2	24,320	24	36	10,944		
W			218,750											
	W1	Condos		36,730		1	40	4	146,920	147	220	66,114	53,140	1.2
	W2	Townhouses		53,210						36				
X			90,100											
	X1	Townhouses	65,230							40				
Y			99,870											
	Y1	Townhouses								17				
Z														

TOTALS								**GSF**	**Units**			
Total Blocks SQFT	4,206,710											
Total Condos								2,464,180	2,464			
Total Office								673,220				
Total Retail								30,000				
Total Townhouses									361			