



## RENAISSANCE PLANNING GROUP

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May 21, 2014

Stephanie Akerley  
M-NCPPC Purchasing Division  
6611 Kenilworth Avenue, Suite 300  
Riverdale, Maryland 20737

**RE: RFP 34-148 – LOCAL AREA TRANSPORTATION REVIEW (LATR)/TRANSPORTATION POLICY AREA REVIEW (TPAR) UPDATE FOR MONTGOMERY COUNTY**

Renaissance Planning Group is pleased to submit this proposal to provide consulting services to the Montgomery County Planning Department to develop changes to the Local Area Transportation Review and Transportation Policy Area Review processes as described in the Request for Proposals. Montgomery County has been at the vanguard of growth management for the past five decades. Continued evolution of these processes in response to changing conditions is a deliberative element of the County's approach and we would be pleased to assist you in this process.

Renaissance is a land use, transportation and urban design integration firm headquartered in Orlando, Florida, with a local office in Arlington, Virginia. Renaissance has extensive experience helping communities plan for, and implement, compact, walkable communities served by multimodal transportation systems. We synthesize communication, analysis, and policy development skills to customize state-of-the-practice approaches to community development challenges.

We have assembled a team that provides complementary local and national experience in developing innovative approaches to integrating multimodal planning and growth management. **Vanesse Hangen Brustlin** will provide expertise in applying the M-NCPPC travel demand model that forms the basis for the Transportation Policy Area Review (TPAR) analysis, as well as insight on the integration of the new Bus Rapid Transit (BRT) system as the County's consultant for BRT systems planning. **Connetics Transportation Group** provides national experience in transit system performance measures ranging from long-range planning to operations for consideration of alternative metrics. **VRPA Technologies** provides expertise on the wide range of reactions to California's landmark SB 743 legislation. Connetics and VRPA are both MFD firms.

**Daniel Hardy, P.E., PTP** will serve as Project Manager and primary point of contact for the team's efforts. Dan is perhaps uniquely qualified for this project, having spent more than five years leading the transportation-related Growth Policy efforts during his tenure with the Planning Department.

We thank you for the opportunity to submit this proposal and sincerely look forward to the opportunity to work with you on this important effort. If you have any questions, feel free to contact me at (703) 776-9922 ext. 500.

Respectfully submitted,

Katharine Ange, AICP  
**Renaissance Planning Group**  
Principal



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# 1. KEY PERSONNEL AND EXPERIENCE



## RENAISSANCE PLANNING GROUP



Renaissance is a planning, design, and policy analysis consulting firm specializing in the integration of transportation, land use, urban design, and technology. We have a staff of 30 people located in offices throughout the Mid-Atlantic and Southeast, **including our local office in Arlington, Virginia.**

We are particularly skilled in working with communities in transition, most notably those seeking to transform existing patterns of development into more livable and sustainable patterns supported by robust multimodal transportation systems. Renaissance believes strongly in the value of collaborative planning that connects technical disciplines with meaningful stakeholder engagement to address challenges facing communities in a comprehensive way.

We are uniquely qualified for this project, bringing together an understanding of the local technical, policy and environmental nuances that affect this project with extensive experience in multimodal planning, accessibility, long range transportation planning, implementation and funding, transit planning and performance measurement. We have assembled a professional team of experts from different disciplines who routinely collaborate to solve complex planning problems. We have brought on three subconsultants to augment our expertise: **VHB, Inc.** provides experience and expertise with BRT system integration and the M-NCPPC travel demand model that forms the basis for the Transportation Policy Area Review (TPAR); **Connetics Transportation Group** provides national experience in transit system performance measures; and **VRPA Technologies** provides expertise California's landmark SB 743 legislation that will form the starting point for options to the LATR technical analysis.

Renaissance is a national planning firm with **deep local knowledge** of Montgomery County and its issues. We have **extensive experience with a wide variety of approval and exaction approaches** that blend science and stakeholder interests in crafting policy – and our project manager, Dan Hardy, a former Transportation Planning Chief at M-NCPPC who **understands the technical and policy nuances affecting this project**, played a key role in developing the scope.



**Vanasse Hangen Brustlin, Inc.**

**Vanasse Hangen Brustlin, Inc. (VHB)**

provides integrated planning, transportation, land development, and environmental services and employs more than 900 professionals and staff throughout 22 offices along the East Coast. VHB's transportation practice focuses on the planning, design, construction, and operation of roads, highways, bridges, tunnels, rail and transit systems, and airports, as well as planning and engineering for property owners and developers. VHB also provides comprehensive land development and urban redevelopment services to public and private clients. A focused approach brings together skills in land planning, survey, environmental sciences, site/civil engineering, pavement management services, and landscape architecture.

- Brings experience and expertise with **BRT integration** and the **M-NCPPC travel demand model that forms the basis of the TPAR analysis**

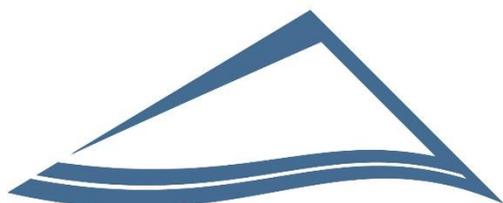


**Connetics Transportation Group**

**Connetics Transportation Group, Inc.**

(CTG) is a consulting firm specializing in public transportation systems and operations planning. We were established as an S Corporation in 2005. Our staff members have provided bus and rail transit planning services to agencies in nearly every major U.S. city for over 20 years. Our expertise includes short-range service planning, long-range systems plans and corridor projects, financial and economic analysis, and ridership forecasting. Our service and operations planning assignments have encompassed bus (local, express, and paratransit), bus rapid transit, light rail transit, streetcar, automated guideway, heavy rail, commuter rail, diesel railcars (DMUs), intercity rail, and typically the interfacing of modes.

- Brings national experience in **transit system performance measures**



**VRPA TECHNOLOGIES, INC.**

**VRPA Technologies, Inc.**

uniquely combines engineering expertise and professionalism with creative thinking and innovative problem solving. The result is an extraordinary transportation engineering and planning firm that possesses the essential expertise as well as the ability to look across disciplinary boundaries for solutions others may overlook. This innovative approach is evident by the expanse of services available to VRPA Technologies diverse clientele, which includes both the public and private sectors consisting of state governments, regional agencies, counties and cities, as well as private planning/engineering firms. Each client receives what VRPA Technologies is known for...on time, on target, on budget professional service.

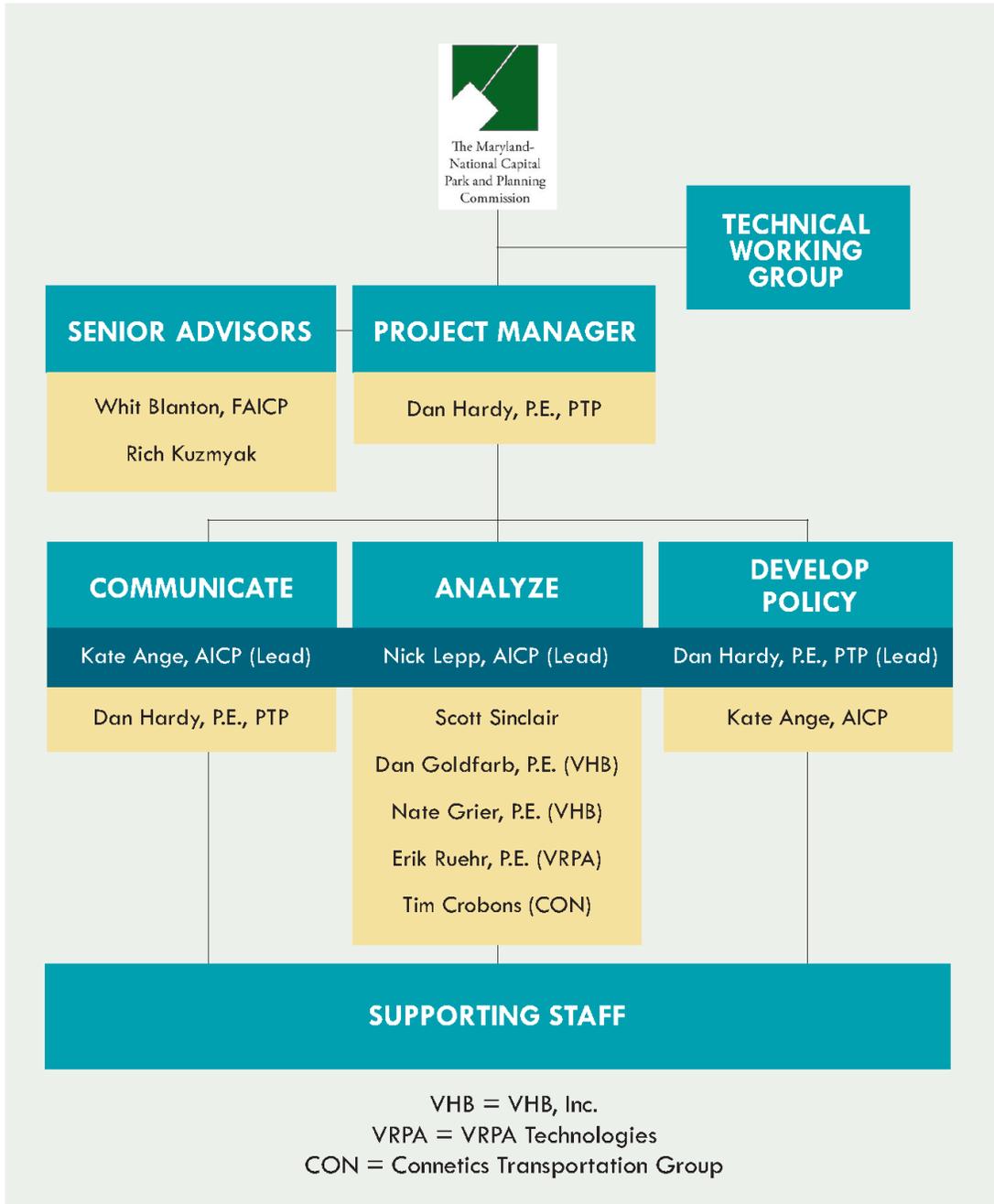
- Brings expertise on the **wide range of reactions to California's landmark SB 743 legislation** that will form the starting point for options to the LATR technical analysis



## KEY PERSONNEL

Renaissance assigns both a principal and a project manager for every contract, with the objective of creating an internal partnership among our key staff members on how to approach the work and carry out the scope of services. **Dan Hardy, P.E., PTP**, who has more than 25 years of transportation planning experience, including 12 years at M-NCPPC, will serve as project manager. **Katharine Ange, AICP**, who has more than 15 years of transportation planning experience, will serve as principal.

### Organizational Chart





## STAFF SKILLS MATRIX

Included below is a matrix that outlines the skills of the Renaissance Team separated by task specialties.

		Innovative Transportation Performance Measures	Accessibility	Innovative Tools and Analysis	Guidelines	Multimodal Planning and Implementation	Traffic Simulation	Multimodal Quality of Service	Bicycle/Pedestrian	Transit	Development Review	Land Use and Transportation Policy Development	MMTD	LAR/TPAR	Long Range Planning	Comprehensive Planning	Impact Fee/Mobility Fees	Stakeholder/Agency Outreach	Interagency Coordination	Social Media	Training
Renaissance Team Staff	Dan Hardy, P.E., PTP, <i>Project Manager</i>		•	•	•		•	•	•	•	•			•		•	•		•		
	Kate Ange, AICP, <i>Principal</i>		•		•										•				•	•	•
	Whit Blanton, FAICP, <i>Senior Advisor</i>		•					•	•	•	•		•		•	•	•		•	•	•
	Rich Kuzmyak, <i>Senior Advisor</i>		•	•					•												
	Nick Lepp, AICP, <i>Analyze Lead</i>		•	•				•		•	•		•		•	•	•		•		
	Scott Sinclair, <i>Analyze Support</i>		•	•				•			•		•		•	•	•				
	Dan Goldfarb, P.E. (VHB), <i>Analyze Support</i>			•			•	•	•	•	•			•	•						
	Nate Grier (VHB), <i>Analyze Support</i>			•			•	•	•	•	•				•						
	Erik Ruehr, P.E. (VRPA), <i>Analyze Support</i>			•			•	•			•				•						
	Tim Crobons (Connetics), <i>Analyze Support</i>				•			•		•					•						



## STAFF QUALIFICATIONS

The following section includes abbreviated resumes for each of our proposed team members. Relevant project examples are included for each team member. Full resumes can be found in the appendix.

### *Dan Hardy, PE, PTP, Renaissance Planning Group*

**Role:** Project Manager, Develop Policy Lead, Communicate Support

**Years of Experience:** 24 years

**Education:** Masters of Science in Civil Engineering, Michigan State University; Bachelor of Science in Civil Engineering, Michigan State University

**Contact:** 703.776.9922 ext. 502; dhardy@ciesthatwork.com



Dan Hardy is a principal with Renaissance Planning Group and has experience in developing transportation solutions that balance transportation and land use options to optimize multimodal travel demand and transportation network services in congested communities. Prior to joining Renaissance, Dan served as the Transportation Planning Chief for the Montgomery County Planning Department. Dan managed a 15-person Transportation Planning Division responsible for transportation elements of Countywide growth policies, master plans, and development review cases in a rapidly growing County of nearly one million residents with high expectations for involvement in decision making. His expertise includes both developing and applying growth management policies and practices.

- **White Flint Metrorail Station Area SectorPlan** – Montgomery County Planning Department
- **Countywide Transit Network Study** – Fairfax County Department of Transportation
- **Growth Policy 2007, 2009, and 2011 (while working for the Montgomery County Planning Department)** – Metropolitan Washington Council of Governments

### *Kate Ange, AICP, Renaissance Planning Group*

**Role:** Principal, Communicate Lead, Develop Policy Support

**Years of Experience:** 15 years

**Education:** Master of Planning in Urban and Environmental Planning, University of Virginia; Bachelor of Arts in Environmental Studies, Rollins College

**Contact:** 703.776.9922 ext. 502; kange@ciesthatwork.com



Kate is a principal with Renaissance Planning Group and serves as practice leader for the firm's Washington, DC area office. Her experience includes visioning and scenario planning, transportation planning, urban design, transit oriented development, corridor studies, park planning, feasibility studies and public involvement. Kate excels in persuasive communications and effectively framing planning issues to help elected officials, stakeholders and the public clearly understand tradeoffs associated with differing policy decisions.

- **Countywide Transit Network Study** – Fairfax County Department of Transportation
- **Vine Steet/US 192 Corridor Multimodal Development** – City of Kissimmee (FL)



*Rich Kuzmyak, Renaissance Planning Group*

**Role:** Senior Advisor  
**Years of Experience:** 35 years  
**Education:** Master of Science, Public Management and Public Policy, Carnegie-Mellon University; Bachelor of Science, Civil Engineering, University of Pittsburgh  
**Contact:** 703.776.9922 ext. 501; rkuzmyak@ciesthatwork.com



Rich is a transportation planner and policy analyst with extensive experience in the areas of travel demand analysis, the integration of transportation and land use, smart growth, performance based planning, travel demand management and air quality. He has done leading research on many of these issues, created special tools to bring the findings into planning practice, and worked with federal, state and local governments and public/private organizations in their application.

- **On-Call Support Services** – Maryland Department of Transportation
- **NCHRP 08-78: Estimating Walking and Bicycling Demand for Planning and Project Development** – Transportation Research Board
- **Smart Location Database** – US Environmental Protection Agency

*Whit Blanton, FAICP, Renaissance Planning Group*

**Role:** Senior Advisor  
**Years of Experience:** 26 years  
**Education:** Bachelors Degree in Journalism, University of Florida; Masters Program in urban and Regional Planning, Florida State University  
**Contact:** 407.487.0061 ext. 113; wblanton@ciesthatwork.com



Whit specializes in multimodal transportation planning, land use-transportation integration and strategic communications, leading many of the firm’s major planning projects. His experience entails working with a diverse array of regional planning organizations, federal and state agencies, transit providers and local governments. He is a nationally recognized expert in transportation planning for compact, mixed-use development, performance measurement in transportation planning and funding/governance. Tapping into his journalism background, he brings the unique skill of storytelling to projects, with a focus on translating complex technical issues into understandable policy considerations for elected officials, agency staff, the media and the public. Whit is active in the leadership of the American Planning Association and is a member of the AICP College of Fellows.

- **Master Plan for the Neck Area of Charleston & North Charleston (SC)** – Berkeley-Charleston-Dorchester (SC) Council of Governments
- **Multimodal Traffic Impact Analysis Revisions** – Charlotte (NC) Department of Transportation
- **Regional Land Use Performance Measures** – MetroPlan Orlando



*Nick Lepp, AICP, Renaissance Planning Group*

**Role:** Analyze Lead

**Years of Experience:** 12 years

**Education:** Bachelor of Science in Urban and Environmental Planning, State College

**Contact:** 407.487.0061 ext. 129; nlepp@ciesthatwork.com



Nick Lepp has over ten years of experience in travel demand modeling, and integrated land use and transportation planning. He excels at technical analysis and has a keen focus on practical, results-oriented approaches to development review, transportation analysis and long range planning. He is a responsive and service-oriented project manager who has demonstrated the ability to thoroughly understand local community issues, context and perspectives as a framework for development of transportation. He uses his knowledge of Geographic Information Systems (GIS) to work with Renaissance’s own community-based land-use planning model CorPlan, and multimodal sketch planning Tool CorMap with the Florida Standard Urban Transportation Model Structure (FSUTMS) to evaluate scenarios based on performance measures developed for the context of the community.

- **Regional Land Use Performance Measures** – MetroPlan Orlando
- **Development Review Services** – Cities of Destin, Kissimmee and Ocoee (FL)
- **US 41 Latent Demand Transit Studies** – Sarasota/Manatee Metropolitan Planning Organization (FL)

*Scott Sinclair, Renaissance Planning Group*

**Role:** Analyze Support

**Years of Experience:** 4 years

**Education:** Bachelor of Science in Geography, Florida State University

**Contact:** 407.487.0061 ext. 131; ssinclair@ciesthatwork.com



Scott has four years of land use and transportation planning experience with both the public and private sector through his work on various projects, including neighborhood redevelopment, comprehensive plans, long-range transportation plans, scenario planning, and corridor studies. He uses his knowledge of Geographic Information Systems (GIS) to work with Renaissance’s own community-based land-use planning model CorPlan, and multimodal sketch planning Tool CorMap with the Florida Standard Urban Transportation Model Structure (FSUTMS).

- **Impact Fee/Mobility Fee Update** – City of Kissimmee (FL)
- **Regional Land Use Performance Measures** – MetroPlan Orlando (FL)
- **Development Review Services** – Cities of Destin, Kissimmee and Ocoee (FL)



*Tim Crobons, Connetics Transportation Group*

**Role:** Analyze Support

**Years of Experience:** 25 years

**Education:** BS, Business Admin Management, University of South Florida; MBA, University of Central Florida

**Contact:** 404.579.1144; tcrobons@ctgconsult.com



Mr. Crobons has over 25 years of transportation planning experience and is based in Orlando. Mr. Crobons has worked on studies and projects in Denver, Dallas/Ft. Worth, Chicago, Minneapolis, Orlando, Tampa, Miami, Columbus, Indianapolis, Peoria, Pittsburgh, Washington D.C., Charlotte, Norfolk, Baton Rouge and Seattle. Mr. Crobons has experience with a wide variety of transit-related projects including Service Plans and O&M Cost Estimates for numerous systems plans and FTA Section 5309 New Starts Corridor level projects (AA, DEIS, FEIS, PE), Short-Range and Long-Range service plans for Comprehensive Operations Analyses (COA), Transit Development Plans and Systems Planning. Mr. Crobons has recently managed Comprehensive Operations Analysis (Short & Long Range Service Planning) projects in Baton Rouge (LA), Orlando (FL), Indianapolis (IN), Grand Rapids (MI) and Peoria (IL).

- **Comprehensive Operations Analysis (COA)** – Capital Area Transit System (CATS)
- **Westshore to Inverness/Crystal River Transit Evaluation Study** – Florida Department of Transportation and Tampa Bay Area Regional Transportation Authority (TBARTA)

*Erik Ruehr, P.E., VRPA Technologies*

**Role:** Analyze Support

**Years of Experience:** 33 years

**Education:** Master of Science in Engineering, University of Michigan; Bachelor of Science in Engineering, University of Michigan

**Contact:** 858.566.1766 ext. 2; eruehr@vrpatechnologies.com



Erik has 33 years of experience in traffic engineering and transportation planning. He is registered as a Professional Engineer in California and several other states and is also a registered Professional Traffic Operations Engineer. Mr. Ruehr has conducted over 300 traffic impact analyses projects throughout the United States and has written traffic impact study guidelines for Monroe County, Florida, and several jurisdictions in California. In early 2014, Mr. Ruehr was appointed by the Western District of the Institute of Transportation Engineers to be the Chair of the California SB 743 Task Force. The role of the task force is to keep ITE members updated on this recent legislation and to work to help draft new guidelines for transportation studies conducted under the California Environmental Quality Act.

- **March JPA Traffic Impact Study Guidelines** – March Joint Powers Authority
- **San Joaquin Growth Response Study, Phase III** – Caltrans District Six
- **California SB 743 Analysis** – Institute of Transportation Engineers



*Dan Goldfarb, P.E., VHB*

**Role:** Analyze Support

**Years of Experience:** 22 years

**Education:** MS, Civil Engineering, Virginia Polytechnic Institute; BS, Civil Engineering, University of Maryland College Park

**Contact:** 703.847.3071 ext. 8158; dgoldfarb@vhb.com



Dan has worked in the transportation field for two decades, both in the United States and abroad. He has experience in multimodal analysis and transportation modeling for planning applications, as well as traffic operational analysis.

- **Montgomery County Bus Rapid Transit System** – Gannett/Fleming/GPI Joint Venture
- **Montgomery County Department of Planning Local Area Model Technical Assistance** – M-NCPPC

*Nate Grier P.E., VHB*

**Role:** Analyze Support

**Years of Experience:** 12 years

**Education:** MS, Transportation, Massachusetts Institute of Technology, BS, Civil Engineering, Massachusetts Institute of Technology

**Contact:** 703.847.3071; ngrier@vhb.com



Nate has extensive experience in a broad set of disciplines within the field of transportation. His primary areas of interest include multimodal transportation planning, demand modeling, and GIS applications. In addition to transit, bike and pedestrian planning, his multimodal work includes TOD, scenario analysis and small area planning. He also plays a key role in the development of travel demand models and forecasting. Mr. Grier has experience with a wide array of transportation planning projects including CTP, LRTP development and traffic forecasting, as well as air quality modeling and emissions estimates.

- **Montgomery County Bus Rapid Transit System** – Gannett/Fleming/GPI Joint Venture
- **Montgomery County Department of Planning Local Area Model Technical Assistance** – M-NCPPC



## CONFLICTS OF INTEREST

Neither Renaissance nor any of its subconsultants have any representations or relationships that might present an actual conflict of interest, or which might create the appearance of a conflict of interest.

## EXAMPLES OF SIMILAR WORK PRODUCTS

The following pages provide samples of work relevant to the RFP that demonstrate the experience of Renaissance Planning Group staff.

### **Kissimmee Multimodal Transportation District (MMTD) Brochure**

Renaissance has provided a variety of services to the City of Kissimmee on a nearly continuous basis over the past decade, including the establishment and monitoring of the Multimodal Transportation District (MMTD). The four-page brochure that follows summarizes the MMTD intent and process in an accessible format suited for a wide range of audiences, demonstrating the synthesis of communication, analysis, and policy development.

### **Charlotte Best Practices White Paper**

Renaissance Planning Group developed a review of best practices for the City of Charlotte, NC as the city staff considered the implementation of a Multimodal Transportation District structure. This twelve-page paper includes notable findings from other jurisdictions, with a focus on North Carolina communities, including a comparative matrix.

### **Montgomery County Growth Policy Information**

While with the Montgomery County Planning Department, Dan Hardy led the development of the transportation elements of the Growth Policy for the 2007, 2009, and 2011 growth policy reports. The final eleven pages in this section of our proposal consist of two representative samples of the work led by Dan in the 2009 Growth Policy analysis:

- A three-page summary of existing and proposed changes to Growth Policy in the form of display boards used at a series of open house public meetings, and
- An eight-page summary of the effects of alternative Growth Policy proposals on two hypothetical case studies; these alternatives were summarized on one of the display boards noted above and refined in response to comments, ultimately being included in Appendix N of the Planning Board's growth policy document.

### **ITE Transportation Impact Analyses for Site Development (TIASD) Recommended Practice**

Dan Hardy served as the volunteer project manager for the 2010 ITE Recommended Practice on conducting transportation impact analyses, which included the review of over 100 jurisdictional TIASD requirements and establishment of recommended practices for all elements of the transportation impact review process. Like the ITE Trip Generation Manual and Trip Generation Handbook, this document is the primary "how-to" reference document for local jurisdictions considering the establishment or refinement of transportation impact analysis requirements. The ~130 page report is available from ITE at <http://ecommerce.ite.org/IMIS/ItemDetail?iProductCode=RP-020D>.

Dan also led a "how-to" webinar co-hosted by the Recommended Practice consultant project manager, Julie Doyle, in 2011. This webinar can be found here: [http://www.ite.org/education/webinars\\_SIA.asp](http://www.ite.org/education/webinars_SIA.asp).

# CITY OF KISSIMMEE

MULTIMODAL TRANSPORTATION DISTRICT



DYNAMIC. DIVERSE. DEVELOPING.



**THIS TOWN WILL SURPRISE YOU.** Kissimmee is rapidly emerging as a dynamic, urban center with a diverse blend of jobs, restaurants, historic homes and outstanding parks. Located on the shores of Lake Tohopekaliga, Kissimmee's historic legacy as a center of Central Florida's agricultural commerce is giving way in the 21<sup>st</sup> Century as metro Orlando's southern focal point, a hub of regional transportation connections, education, the arts, culture and community in Osceola County. Mixed use development projects like City Centre and the new Lakefront Park are just part of the City's transformation that will see a major boost from a new SunRail commuter stop and intermodal center in downtown. With redevelopment plans in place for Vine Street, and a strategic employment hub gaining impetus adjacent to Kissimmee Gateway Airport, the City of Kissimmee is poised for sustained quality growth.

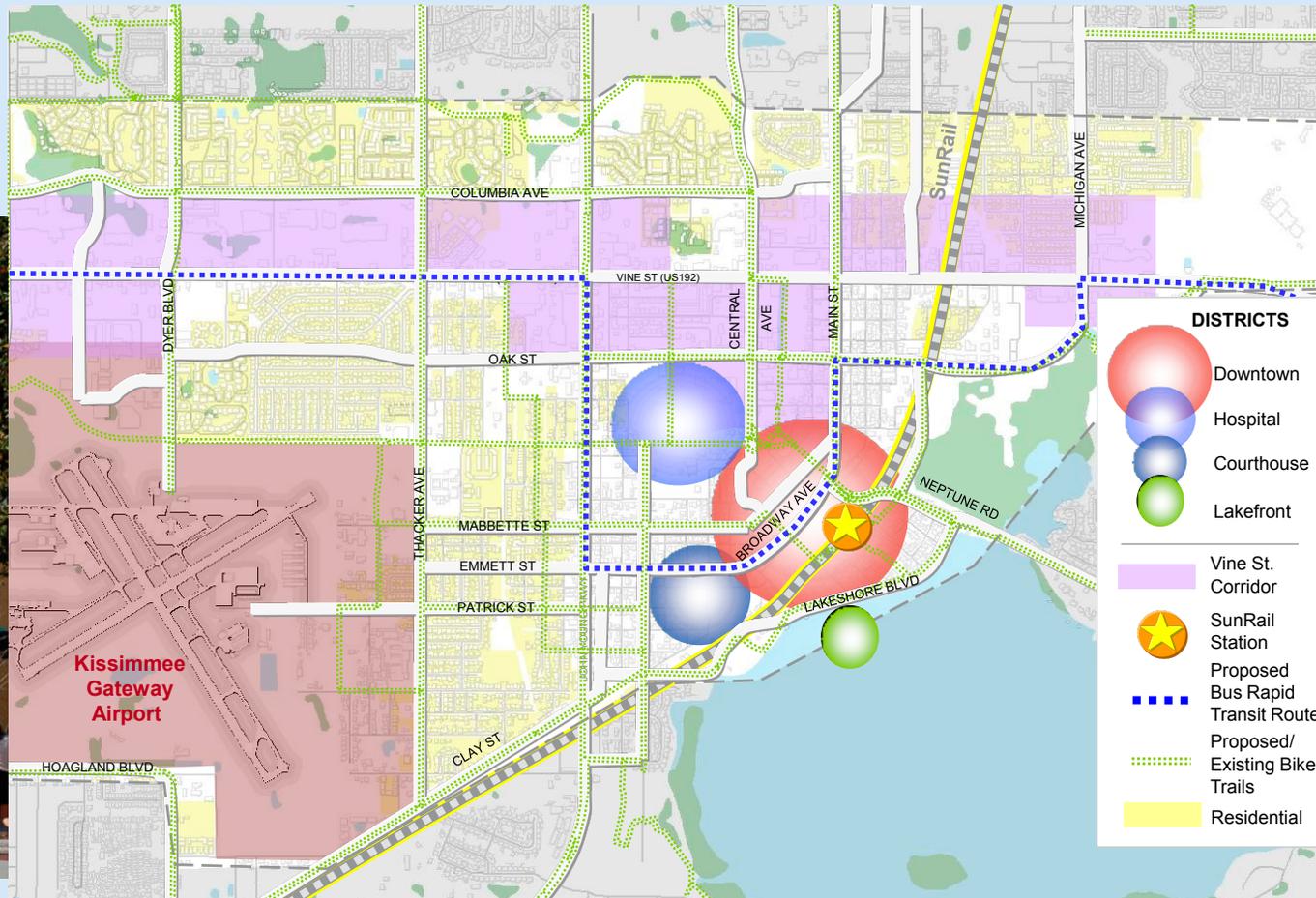
**PURPOSE OF THE MMTD** Kissimmee has adopted a Multimodal Transportation District to promote transportation choices and support quality development. The district helps create places with lasting economic, civic and social value by improving accessibility and safety for people of all ages and abilities. Rather than focus all attention on adding roadway capacity, this approach helps create an environment where walking, bicycling, using transit and driving coexist as convenient, comfortable options for people to reach their destinations. It integrates good redevelopment with better transportation.



**FOCUSED ON CONNECTIVITY AND ACCESSIBILITY.** Developers working within the Multimodal District must do three things: 1) Ensure their site design puts pedestrians first through layout of the buildings, placement of parking, and use of lighting and landscaping; 2) Provide internal connections of streets, sidewalks, marked crosswalks, bicycle parking and other design features that safely link the public right-of-way and parking areas to the building's entrances, and 3) Contribute to off-site multimodal projects that serve the corridor or area where the development occurs.

## KEY FEATURES OF THE DISTRICT

By relaxing conventional roadway concurrency requirements based on a development's trip generation, the City can now enable higher density development without requiring expensive roadway capacity mitigation. The traffic analysis review is also streamlined in the District, saving time and money. Development must consider pedestrians first through layout of the buildings, placement of parking and other site features; provide internal connections of streets and sidewalks, marked crosswalks, bike parking and other design elements to connect the street and parking areas to building entrances, and contribute to off-site multimodal projects that serve the corridor or area.



## PRINCIPLES & POLICIES

To improve connectivity and enhance the pedestrian-orientation of Kissimmee's core urban area, principles of quality design are being adopted into plans for development and redevelopment activities within the MMTD. The policies encourage mixed uses to reduce distances between destinations, require the inclusion of pedestrian facilities and amenities, such as crosswalks and wide, shaded sidewalks – especially near retail and schools – and they allow strategic increases in density and intensity to support a shift toward multimodal transportation, and an overall reduction in automobile trips.

## WHAT DEVELOPMENT MUST DEMONSTRATE

Proposed development and redevelopment projects in the MMTD must provide a site or master plan that displays an understanding of the fundamental principles of pedestrian-oriented design, and demonstrates an accommodation of multiple modes of transportation accessing the site. Buildings must be oriented toward sidewalks and pedestrian spaces, automobile parking should be located behind buildings, and bicycle parking should be installed for all uses in visible locations. With SunRail and a converging of Lynx buses in the District, transit shelters, benches and clearly defined walking areas from the transit stop to the building entrance must be provided.

## BASIC PROCEDURES & KEY TERMS

- Determine whether a property is located in the MMTD, and contact Development Services prior to the design stage.
- Work with city staff to develop a plan that will support the integration of multimodal-supportive land uses and urban design with Kissimmee's overall transportation vision and economic development goals.
- Multimodal – The consideration of all types of transportation options, including walking, bicycling, transit, and automobiles.
- Connectivity – The degree to which the transportation network interacts between all modes, allowing users to smoothly, efficiently, and safely transition from one mode to another.

**THE ADVENT OF SUNRAIL COMMUTER RAIL** is a transformative project that will become the centerpiece of improved regional accessibility in Kissimmee. The downtown Kissimmee Intermodal Transportation Center will be the hub for multimodal access throughout the city. Other key projects include the Shingle Creek Greenway trail network, a multi-use pathway across busy John Young Parkway, MLK, Jr. Boulevard, and the redevelopment of Vine Street supported by a planned Bus Rapid Transit route to Disney.





To learn more about  
Kissimmee's Multimodal  
Transportation District,  
please contact:

City of Kissimmee  
Development Services Department  
101 N. Church Street, First Floor

Or

PH: 407-518-2140



RENAISSANCE PLANNING GROUP

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## BEST PRACTICES RESEARCH FINDINGS

CITY OF CHARLOTTE  
MULTIMODAL TRANSPORTATION IMPACT STUDY  
ASSESSMENT AND RECOMMENDATIONS  
Charlotte, NC

**Prepared for:**

Mr. Daniel Gallagher  
City of Charlotte

**By:**

Jessica Haase, EIT  
Whit Blanton, AICP  
RENAISSANCE PLANNING GROUP  
200 Sixth St. NE  
Charlottesville, Virginia 22902

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December 18, 2008



## PEER REVIEW OF TRAFFIC IMPACT ANALYSIS PROCEDURES

### Overview

After reviewing the City of Charlotte's Traffic Impact Analysis (TIA) process and meeting with the Charlotte Department of Transportation (CDOT) staff involved in the development review process, Renaissance Planning Group conducted a phone survey with several peer cities in North Carolina and a few others cities throughout the nation. City traffic engineers, directors of transportation departments, and town planners were interviewed about several aspects of their city's TIA process and guidelines. This memo provides a summary of the responses as they relate to the City of Charlotte.

### Key Findings

The traffic impact analysis (TIA) guidelines and procedures of 19 peer cities and comparable jurisdictions to the City of Charlotte, NC, were examined in an effort to identify differences and commonalities in development review and traffic impact mitigation requirements throughout the state. The key findings of the analysis are as follows:

- **TIA Trip Threshold** - With the exception of Raleigh, Charlotte's trip generation threshold for requiring the submittal of a TIA in the rezoning process is higher than that of other cities. In the City of Charlotte, a TIA would not be required for development generating 1,500 daily trips (such as a 10,000 sq ft shopping center); however most other comparable cities would require the submittal of a traffic study for the same development.
- **TIA for By-Right Development** - Charlotte does not require a TIA for any by-right development. Most other surveyed cities do not distinguish between by-right and rezoning development in their guidelines for traffic studies.
- **TIA Trip Credit for Existing Zoning** – Of the 19 cities examined, Charlotte is the only city that gives “credit” for trips that could be generated under the existing zoning. Other cities may subtract the number of trips generated by the site's existing land use from the total number of trips generated by the proposed development.
- **Study Area Determination** - Most peer cities, like Charlotte, have a flexible process for negotiating mitigation and determine the study area intersection on a case-by-case basis during the scoping process. Only Greensboro and Winston Salem do not require any mitigation at locations that are not adjacent to the site property.
- **TIA Requirements by Geographical Area** - Although Charlotte is not alone in applying its TIA guidelines universally regardless of where the proposed project is located in the city, some cities adjust mitigation requirements based on location. For example, the Town of Huntersville allows for higher levels of congestion in the downtown area and designated development districts, while requiring more stringent Level of Service (LOS) standards for development in suburban and rural areas.
- **Impact Fees** - While many communities across the nation utilize road impact fees, Charlotte compares with many of the North Carolina peer cities in that it does not assess transportation impact fees. In North Carolina, Raleigh, Durham, Cary and Knightdale do currently assess impact fees.
- **TIA Multimodal Considerations** - All surveyed peer cities do not have explicit written guidelines for multi-modal considerations. Alternative modes are usually addressed on a case-by-case basis and most often accounted for by trip reductions and mitigation negotiations (e.g., redirection of mitigation projects or reduction in impact fees). Several localities in Pinellas County, FL have mitigation options available for improving all transportation modes, which are especially applicable for development projects on



substandard LOS corridors. The City of Charlotte compares with most of its peer cities as it has no definitive multi-modal guidelines. While Charlotte's *Urban Street Design Guidelines* define the specific methodology for pedestrian and bicyclist levels of service; these have not yet been incorporated in the language of the TIA guidelines.

## **Purpose**

The purpose of this study is to become familiar with the key procedures of Charlotte's peer cities, and to understand the reasoning behind the requirements. The study also serves as a way to assess where Charlotte stands in terms of its TIA guidelines and requirements relative to other cities. From the results of the survey process, one can see which cities have more or less stringent guidelines in terms of the required expense and detail of analysis and the amount of mitigation that developers are responsible for providing. One can also see the resulting effects that come with administering those guidelines. This understanding enables us to determine which policies may be best for the City of Charlotte to implement in the revision of its TIA guidelines. The revised guidelines should better reflect the City's values displayed in its Centers, Corridors and Wedges vision. For further clarification and information on the interviewed cities' TIA processes, each Code of Ordinances may be consulted.

## **Process**

The intent of the survey was to interview city staff who were most involved with the local development approval process and most familiar with TIA requirements and special exceptions from about a dozen different North Carolina cities and a handful of comparable cities outside of North Carolina. The following peer cities responded and are included in this summary: Raleigh, Greensboro, Durham, Winston Salem, Fayetteville, Cary, High Point, Wilmington, Asheville, Huntersville and Davidson in North Carolina, as well as Seattle, WA; Nashville, TN; Atlanta, GA; Louisville, KY; and Chattanooga, TN. The City of Sacramento, CA was also included in this review process; Sacramento is also in the midst of revising its TIA guidelines. Information about Sacramento was taken from the *Transportation Impact Procedures Issues and Options* report prepared by Fehr & Peers in 2005. In addition, information from Pinellas County, FL is included. That region's Metropolitan Planning Organization (MPO) has a concurrency management process to ensure a systematic and consistent review of traffic impacts within all 24 municipalities and the county. Information was also taken from the Virginia Department of Transportation's (VDOT) *Traffic Impact Analysis Regulations Administrative Guidelines* to provide further insight from newly-developed guidelines in a neighboring state; for comparison purposes, NCDOT's guidelines are also discussed. Finally, Montgomery County, MD is considered to have one of the most progressive traffic review agencies in the nation, and information about their TIA requirements is included towards the end of this report.

Employees at each city were asked a variety of questions about their local municipality's typical TIA methodology, mitigation negotiation, geographical or zone distinctions, timing of development and infrastructure construction, and coordination between local government and North Carolina Department of Transportation (NCDOT), where applicable. Many local governments have not recently updated their TIA guidelines, and consequently do not broadly address mobility issues related to new development. In cases where the locality did not have any formal guidelines regarding certain aspects of the TIA process, city respondents were prompted to provide their typical procedures and examples of how their municipality deals with those aspects.

## **Results and Findings**

Charlotte's written guidelines for the Traffic Impact Analysis review process have relatively high trip generation thresholds which minimizes the amount of mitigation that developers are required to provide and simplifies the



development review process. However, this simplified process may result in adverse implications, as traffic impacts will intensify, available roadway capacity will decrease, and congestion will increase because of the lack of transportation system improvements. With high thresholds, the city misses an opportunity to improve the multimodal infrastructure needed at the time of new development. Charlotte's current TIA guidelines do not differentiate between center, corridor and wedge areas, thus giving no incentive for developing in areas targeted for higher density. Developers may find that development in low-density areas will require less mitigation, because the available roadway capacity is greater in these areas and development is less likely to trigger a threshold increase in the volume-to-capacity (v/c) ratio. The lack of distinction between the center, corridor, and wedge areas also does not allow for consideration of the varying multimodal conditions within the three different development contexts.

The existing trend of sprawling development is inconsistent with Charlotte's plans and vision for the City, including the Transportation Action Plan, its growth framework for Centers, Corridors and Wedges, and the Urban Street Design Guidelines. The City's goals for development and future vision include enhancing the multimodal capacity and connectivity of streets, "sustaining economic viability and protecting livability by encouraging targeted growth in the 'Centers and Corridors' with existing infrastructure and capacity, leaving lower density development in the large residential 'Wedges' between Corridors." Ideally, TIA guidelines can establish a method and means for local governments to monitor the capacity and congestion of the transportation network, while still encouraging development and growth in appropriate or targeted areas. The TIA guidelines can also encourage multimodal improvements as legitimate transportation system mitigation strategies depending on the type of area or roadway type that is impacted by the development.

Overall, Charlotte's requirements and guidelines for the TIA review process are comparable to, though generally less stringent than many of the other large cities in North Carolina, such as Raleigh, Greensboro, and Winston Salem. **Table 1** on Page 11 summarizes the major similarities and differences of the peer cities' TIA guidelines. A more detailed explanation of each comparison in the table is given below.

### Threshold for Requiring a Traffic Impact Analysis

In order to receive approval for a proposed rezoning development, the City of Charlotte requires developments that will generate 2,500 daily trips or more to perform a TIA. Charlotte is unique in that it only requires TIAs for rezonings. As seen in Table 1, most cities and towns have thresholds that depend on peak hour trips. Greensboro, Durham and Winston Salem require a TIA for developments that generate 150 or more peak hour trips. Other smaller cities have lower thresholds ranging from 50 to 150 peak hour trips. For comparison purposes, 2,500 daily trips are roughly equivalent to 250 peak hour trips, indicating that the threshold in Charlotte is significantly higher than in these peer cities.

The City of Raleigh does not have written public guidelines for performing a TIA, but typically uses NCDOT's threshold of 3,000 or more daily trips to require a TIA for rezoning projects. Raleigh will request a TIA for any development if traffic intensity is projected to increase substantially, but this is dependent upon the city staff's judgment. Because there are no written guidelines, Raleigh has the greatest amount of flexibility in determining when a TIA is appropriate. Developments that would usually require a TIA include those that are 20 acres or larger, have a noted increase in zoning for retail developments, are adjacent to the intersection of two major thoroughfares or congested streets, have an unusual parcel shape that prompts questions about site accessibility, or are institutions in residential areas such as libraries, churches and schools.



Davidson, NC and Seattle, WA base their thresholds on the number of dwelling units and square feet, respectively, instead of peak hour trips. At this time, the Town of Davidson does not have written requirements for commercial-only developments (developments without a residential component). The Town's Planning Ordinance reserves Section 7.6.4.5.D "for traffic impact analysis options for commercial development to be added at a later date." Because of the other requirements in the planning ordinance, very few commercial-only developments are proposed in Davidson. Instead, most commercial developments are integrated into planned mixed-use development. In contrast, the City of Winston Salem does not require a TIA for residential-only development. The City of Seattle exempts any development less than 12,000 square feet from performing a TIA. It is the City's discretion whether a full TIA or only a trip generation summary would be required for a development beyond 12,000 square feet. Greensboro and Fayetteville also have clauses that refer to the use of professional judgment to determine the necessity of performing a TIA.

The cities of Nashville, TN and Sacramento, CA both use a tiered approach to assess what type of traffic study is required. In Nashville, generation of 50 to 99 peak hour trips requires a Traffic Access Study, which evaluates a project's access points to public roadways, private driveways and joint access easements. Generation of 100 to 249 peak hour trips requires a Traffic Impact Statement, and 250 or more peak hour trips requires a Traffic Impact Analysis, which includes more intersections in the study area than a Traffic Impact Statement. In Sacramento, a project generating fewer than 75 peak hour trips in an area with no significant congestion does not have to complete a traffic analysis. For projects generating fewer than 75 peak hour trips in an area with significant congestion and all projects generating 75-150 peak hour trips, a basic capacity analysis is required. If the basic capacity analysis indicates that significant impacts are likely, a full traffic impact study will be required. For all projects generating over 150 peak hour trips, a full traffic impact study is required.

In the Commonwealth of Virginia, the General Assembly passed a law that "instructs VDOT to analyze and provide comment on the impacts of comprehensive plans and land development proposals that will have a significant impact on state controlled highways" for all jurisdictions where VDOT has maintenance responsibility for the local highway system. In these jurisdictions, all residential development that will generate over 100 peak hour trips and all commercial development generating over 250 peak hour trips must complete a traffic impact analysis. In jurisdictions where VDOT does not have maintenance responsibility for the local highway system (the independent cities in Virginia), developments within 3,000 feet of a state road are also subject to the 100 or 250 peak hour trip thresholds. Independent cities may have their own guidelines as well.

In addition to the requirements for a TIA in Virginia, any development expected to generate over 5,000 daily trips is considered to have a "substantial impact" to the existing transportation network. This larger impact must be accounted for in the community's transportation plan, and may ultimately result in an amendment to the comprehensive plan submitted to VDOT for review and comment.

The North Carolina Department of Transportation (NCDOT), like many other state DOTs, does not have a formal role in local jurisdictions' rezoning processes. Instead, NCDOT requires traffic studies as part of their driveway permitting process. As mentioned previously, NCDOT may require a TIA for developments with an estimated trip generation of 3,000 vehicles per day or greater. As most localities in North Carolina have lower thresholds, the local jurisdictions have the most responsibility for requiring traffic analyses, whereas in Virginia it is state law that determines whether a traffic study is required. NCDOT's guidelines also specify that "a TIS may also be required for proposed accesses within 1000 feet of an interchange, in the vicinity of a high accident location, on a major



arterial roadway, involvement with an existing or proposed median crossover, highway improvements that are in the Transportation Improvement Program, involvement with an active roadway construction project, or at the discretion of the District Engineer.”

### By-Right vs. Rezoning vs. Subdivision

Charlotte is different from most cities in that it only requires a TIA to be prepared for rezoning developments and does not require a TIA for other developments that do not require rezonings. In Charlotte, only a small percentage of developments are required to perform a TIA. Historically, Charlotte has issued thousands of development approvals annually, but only 20 to 25 developments are typically required to submit a TIA. Most other cities have TIA requirements for rezoning and by-right developments, which results in more projects that are required to conduct a TIA and to implement transportation mitigation improvements concurrent with new development. Raleigh and Greensboro are the only cities that differentiate between by-right and rezoning development; all others have the same requirements for all developments. The City of Raleigh requests a TIA for rezoning as previously discussed, and requires an analysis for by-right development if traffic intensity is projected to increase substantially, which is dependent on the traffic engineer’s judgment. Because Raleigh does not have public TIA guidelines, the city has a great amount of flexibility in determining whether a TIA will be required. Rezoning applicants in the City of Greensboro must complete a TIA if the development is expected to generate more than 150 peak hour trips or 1,500 daily trips. If the expected trip generation is between 100-150 peak hour trips or 1,000-1,500 daily trips, the City may require a TIA if location, size, congestion or safety concerns arise. Developments that do not require rezoning, in contrast, must submit only a trip generation memo, and the City of Greensboro then determines whether a TIA will be required. Louisville, KY has a similar process for by-right development. As seen in Table 1, the North Carolina cities of Durham, Fayetteville, Cary, High Point, Wilmington, Asheville, Huntersville, and Davidson require TIAs regardless of whether the development is by-right or rezoning, as well as Pinellas County, FL, Seattle, WA, Nashville, TN, Atlanta, GA, Sacramento, CA and Chattanooga, TN.

Limiting the TIA requirements to only rezoning projects means that there is no formal process in place to require developers to provide improvements to alleviate roadway congestion or transportation system impacts that result from large by-right developments or even small by-right developments located in already congested areas of the City. In addition, developers can easily choose to downsize the scale of development in order to avoid providing improvements that might strengthen the multimodal transportation system. Limiting the TIA requirements may be appropriate in certain areas where development, especially infill and redevelopment should be encouraged, such as downtown Fayetteville. However, it is generally helpful for cities to be able to review the potential impacts of any development with a potential transportation impact, regardless of whether the development would require rezoning.

### TIA Trip Credit for Existing Zoning

The City of Charlotte allows trips that are generated by the current use of the property to be subtracted from the number of generated trips from the proposed development. As seen in Table 1, many other peer cities similarly account for the existing development that is currently on the site property. For example, if the site currently consists of an apartment building with 20 dwelling units (which generates 12 PM peak hour trips according to ITE’s Trip Generation Manual), and the proposed development will be an apartment building with 400 dwelling units (which generates 248 trips). Instead of adding 248 trips to the network, only 236 (248 minus 12) net new trips will be analyzed. Several smaller peer cities, such as Fayetteville, High Point, Wilmington and Davidson do not account for the existing site use. Smaller cities may not see much redevelopment, so this issue may not be addressed in their



policy documents. Other cities like Nashville and Chattanooga, TN determine this on a case-by-case basis, relying on engineering judgment. Nashville's response to the scenario described above is that all new trips would be considered new, and the existing 20 units are not considered. However, if the proposed 200 unit apartment building was replacing a currently occupied 190 unit building, Nashville may not require a TIA at all.

The City of Charlotte is unique in that it not only accounts for the generated trips from the current property, but also for the number of trips that *could be generated* if the existing zoning is completely built out. Returning to the example from the previous paragraph, if the site is zoned to allow up to 50 dwelling units (31 trips), the net number of new trips added to the network may be reduced to 217 trips (248 minus 31). None of Charlotte's peer cities considers the theoretical trip generation of the existing zoning. This is a key difference in how Charlotte has historically approached TIAs from other communities.

### Mitigation at Non-Adjacent Locations

According to Charlotte's guidelines, the defined study area will include "the site's proposed access locations, the next signalized intersection in all directions from the site's proposed access, and other signalized intersections where the development is likely to reduce the vehicle level of service at the intersection." The process to determine acceptable mitigation commitments from the developer is flexible for each project. The *Transportation Impact Study (TIS) Process for Developers/Consultants* (April 2008) specifies the acceptable duration of the negotiation process between CDOT and the developer, which depends on the number of affected intersections.

Greensboro and Winston Salem do not require any mitigation at locations that are not adjacent to the site, meaning that transportation improvements are made solely along the frontage of the development property. With the exception of Greensboro and Winston Salem, all other surveyed cities can require off-site improvements. The study area is usually determined during the scoping process, and developers are held responsible for any adverse impact to an intersection or segment of road within that defined study area. Appropriate mitigation measures are negotiated with each city's review body.

### Threshold for Requiring Mitigation

Charlotte is unique in that its specified threshold for requiring mitigation is based entirely on an increase in the v/c ratio. Most cities set their thresholds based on degradations of level of service. In most cases, a city has set a specified LOS standard for its streets in its Comprehensive Plan or similar planning document. The most common standard in peer cities is LOS D, and any degradation beyond this LOS will require mitigation. Raleigh, Greensboro, Durham, Cary, Huntersville and Davidson, as well as Seattle, Nashville and Sacramento use this strategy. Winston Salem, Fayetteville, Wilmington and Asheville use another strategy involving level of service thresholds. In these cities, any degradation beyond the current level of service will require mitigation. Localities in Pinellas County, FL have standards for both average daily LOS and peak hour LOS; some have a volume-to-capacity (v/c) ratio standard as well. Other cities like High Point, Atlanta, Louisville and Chattanooga do not have any specified thresholds for requiring mitigation. These cities rely on the judgment of their traffic engineers and the recommendations in each TIA to determine what mitigation measures are appropriate on a case-by-case basis.

NCDOT's guidelines specify three conditions for which applicants must identify mitigation improvements: (1) the total average delay at an intersection or individual approach increases by 25% or greater, while maintaining the same level of service, (2) the Level of Service degrades by at least one level, or (3) Level of Service is "F." Improvements must also be identified if the analysis indicates that the 95<sup>th</sup> percentile queue exceeds the storage



capacity of an existing turning lane.

Although Virginia has a state law that precisely defines the requirements of TIA submittals, VDOT cannot require mitigation. The responsibility for negotiating mitigation measures to alleviate those impacts is handled by each locality. Most localities will require mitigation if the development will cause a drop in the level of service, but this threshold is subjective and not always specified in written documentation.

### Geographic or Development Zone Distinctions

Several cities have made geographic distinctions in their TIA guidelines, namely Durham, Fayetteville, Cary, Wilmington, Davidson and Nashville. Dividing a city into development zones allows the city to promote different kinds of development in different places and to tailor mitigation requirements to reflect the characteristics of the transportation network in each area. The cities that have implemented this strategy in their TIA guidelines have done so to encourage high density infill or revitalization in urban areas by loosening the requirement of maintaining a high roadway level of service. In the Town of Cary's Base Zone, all roads have an LOS D standard, but the road network in the Central Zone may operate at LOS F, as long as the v/c ratio is under 1.25. The Town of Huntersville similarly relaxes the LOS standard for its Town Center and Transit-Oriented Development Districts to LOS E. Rural and Transitional Residential Districts should maintain LOS C, while all other districts have a LOS D goal. The Town of Davidson follows a similar strategy. The City of Pinellas Park, FL maintains an LOS standard of C or D for roads citywide, but has adopted a lower standard (LOS E or F) for congested/constrained areas of the city that have been targeted for redevelopment. Most localities in Pinellas County have some sort of related impact fee reduction zones. St. Petersburg, Largo, and Safety Harbor call these zones their Concurrency Exception Areas. The application of impact fees in Pinellas County is discussed in the following section. Fayetteville and Nashville do not require a TIA for their downtown areas. Some cities that do not have such zones explicitly stated in their TIA guidelines have often made special exceptions for downtown development, such as Greensboro and Wilmington.

### Impact Fees

While road impact fees are common in most states, Charlotte is similar to most other cities in North Carolina in that it does not assess impact fees. Very few North Carolina cities assess impact fees; Raleigh, Durham, Cary and Knightdale are the exceptions. Models for estimating impact fees are complex and require professional judgment. Each city assesses fees differently. The City of Raleigh uses a multi-page spreadsheet calculation based on the service cost of adding one lane-mile of capacity, which is then compared to each development's ITE trip generation rate. The City of Durham calculates the net difference between expected future deficiencies and the current deficiencies of the roadway network. The Town of Cary uses the same basic principle as Raleigh, and it estimates credits for gas tax, vehicle license fees, property tax, and other fees. Atlanta and Sacramento also assess impact fees. Seattle accepts voluntary impact fees in-lieu-of completing a TIA for two sub-areas of the city, where recently completed master plans identify the needed transportation projects in these areas.

Pinellas County assesses impact fees based on a cost per lane mile for additional road capacity. This is a county-wide impact fee in which all 24 municipalities participate. There are 12 impact fee zones or benefit districts in which revenues generated are returned and shared between the County and municipalities. As previously mentioned, most localities have impact fee reduction zones. About a dozen of these areas have been identified as prime redevelopment areas, as these areas exhibit urban characteristics that usually result in lower trip generation than indicated in ITE's Trip Generation report. Lower impact fees provide an incentive to develop in these areas. The County also offers additional impact fee reductions for certain "livable community" design principles that are incorporated into a site plan, such as reduced parking, buildings oriented toward the street, reduced set-backs,



additional bicycle parking, and similar features.

While most North Carolina cities do not assess impact fees, collecting pro-rata shares is a more common practice. The City of High Point requires developers to provide funds in lieu of improvements, if only partial improvements are necessary and the full improvement shall be constructed by other parties at a later date. The Town of Huntersville utilizes the Intersection Capacity Utilization (ICU) methodology, which assigns an intersection a current capacity (percentage), which may be under or over 100%. If a development will generate enough traffic to take the capacity above 100%, mitigation must bring the capacity back to 100%. However in instances where an intersection is currently failing and mitigation would require complete reconstruction, the Town will grant exceptions to the developers on a case-by-case basis. Greensboro, Durham, Wilmington and Davidson have also accepted pro-rata shares or in-lieu-of payments on a case-by-case basis. As mentioned earlier, each county in Virginia is responsible for negotiating mitigation for traffic impacts from developers. This negotiation usually results in proffers from developers, sometimes in the form of payments in-lieu-of improvements.

### Timing Infrastructure with Development

Charlotte's TIA guidelines ensure that mitigation measures are constructed in a timely manner, as the City will neither issue a Certificate of Occupancy (CO) nor accept streets for maintenance until the applicant constructs the necessary transportation improvement in compliance with the City's design standards. However, because the TIA guidelines are only applicable to rezoning developments, only a small percentage of all developments in Charlotte are actually required to provide mitigation for traffic impacts. In North Carolina, only Cary, Huntersville and Davidson have an Adequate Public Facilities Ordinance (APFO) or similar requirement for transportation. APFOs and transportation concurrency requirements are generally common in high growth states such as Florida, California, New York, Washington, and Maryland.

### Multimodal Considerations

The City of Charlotte addresses multimodal transportation in its rezoning review process. Bicycle accommodations and pedestrian and transit features are critical site plan characteristics for CDOT's support of a rezoning application. The City has devised a methodology for pedestrian and bicycle Level of Service (LOS) at intersections, and provides multimodal LOS standards in its *Urban Street Design Guidelines*; however these multimodal LOS standards are not yet incorporated into the TIA guidelines.

None of Charlotte's peer cities have explicit written guidelines for multi-modal considerations. Most jurisdictions acknowledge the value of pedestrian and bicycle facilities in their City Ordinance, yet none have determined a specific way to integrate these alternative modes into their TIA requirements. Internal capture rates account for trip reduction, and several cities (Durham, Winston Salem, Cary, and High Point) will allow Transit Oriented Developments (TODs) or multi-use developments to use internal capture rates that account for trip reduction, but this is determined on a case-by-case basis and must be backed with substantial documentation (in Durham). Fayetteville asks for pedestrian counts and analysis of feasible pedestrian improvements. Many jurisdictions will negotiate with developers to provide alternative mode improvements such as the physical installation of a bus stop or bike racks, but these improvements may not be considered mitigation measures.

Several localities in Pinellas County provide mitigation options for development projects on substandard LOS corridors. Dunedin, Tarpon Springs, and surrounding unincorporated areas of the county have a menu of options for developers to choose from, which includes pedestrian and transit facility improvements in addition to the more



traditional options of intersection improvements and access management improvements. Other options for development in Safety Harbor include transit usage initiatives including vanpools and ride sharing, and the institution of flex time, transportation management associations and scheduled work shifts during off peak hours. Largo undertakes a “parallel relief collector” project to improve connectivity and route choices to help mitigate identified deficiencies and facilitate improved accessibility to the local road network.

### Montgomery County, Maryland

The Montgomery County Planning Board and the Development Review Team within the County’s Division of Traffic Engineering and Operations are considered one of the most progressive traffic review agencies in the nation. The following information is taken from Montgomery County’s *Local Area Transportation Review and Policy Area Mobility Review Standards*, and is provided for comparison with the other guidelines previously discussed.

Montgomery County assesses development through two separate reviews. In the Local Area Transportation Review (LATR), development cannot proceed if unacceptable weekday peak-hour levels of congestion will result after mitigation. Each policy area within the county has a Congestion Standard defined by a critical lane volume. The Policy Area Mobility Review (PAMR) is an area-wide test of public transportation facilities. This review is comprised of two components: Relative Arterial Mobility, which measures congestion on the arterial roadway network by comparing forecasted congested speeds to free-flow speeds on roadways, and Relative Transit Mobility, which is based on the relative speed by which journey to work trips can be made by transit as opposed to by auto.

The review standards state five different mitigation approaches, each with a specified order of priority:

1. Peak hour vehicle trip reduction (Transportation Demand Management techniques i.e. flex-time/telecommute programs, shuttle services)
2. Public transit capacity (e.g. purchase of Ride-On bus fleet vehicle and guarantee 12 years of operations funding)
3. Non-auto facilities (e.g. offsite sidewalks and bus shelters)
4. Intersection improvements (e.g. turn lanes, change of lane use configurations)
5. Roadway link improvements (e.g. roadway widening)

Montgomery County serves as a prime example of a jurisdiction that has successfully integrated multimodal transportation into its development review process, which also acknowledges and accounts for variations in the application of the standards by location around the county.

### **Conclusion**

Based on the review of Charlotte’s peer cities, the City should consider the following in the revision of its TIA guidelines:

- (1) reducing the trip threshold for requiring a TIA to a level consistent with other communities,
- (2) requiring TIAs for both rezonings and by-right development,
- (3) providing a “trip credit” only for trips being generated by existing development and not for trips that could be generated under the existing zoning,
- (4) differentiating TIA requirements by Centers, Corridors and Wedges to promote appropriate development and mitigation strategies in each of these zones, and designating differing level of service standards for each development zone,
- (5) integrating direct requirements for multimodal impacts and mitigation,



- (6) implementing other peer city mitigation measures and stronger requirements for the timing of transportation improvements, and
- (7) in the future, the City should consider road impact fees and/or an Adequate Public Facilities Ordinance to better time infrastructure with new development.

By implementing these considerations, the City of Charlotte can better influence the type, intensity, and location of development, and effectively achieve its vision for integrated land use and transportation system development in the context of the Centers, Corridors and Wedges growth framework.

### **Next Steps**

The next task in the assessment of recommendations for the City of Charlotte's Multimodal Transportation Impact Study is to draft the revisions to the Land Development Rezoning and Traffic Impact Study Review Process. In addition to the considerations listed in the previous section, the revisions should focus on ensuring that the development review process is consistent with the vision of the Centers, Corridors and Wedges growth framework, the Transportation Action Plan and other adopted planning policy documents such as the Urban Street Design Guidelines and the General Development Policies. The draft revisions of the city's TIA guidelines will be applicable to TIAs associated with rezoning and create new TIA guidelines for by-right development. These revisions will include a tiered set of analysis requirements and mitigation measures based on geographic location, transportation and development context. These revisions will be displayed with the current *Land Development Rezoning and Traffic Impact Study Review Process* document in a side-by-side comparative format in landscape orientation.

The revisions will serve as stand-alone documents, but will also be included in a report that documents the process and products of the entire project. This document will begin with an overview that provides readers with a clear and simple understanding of what a Traffic Impact Analysis is, why revisions to Charlotte's TIA methodology are being considered, and how the revisions will help to implement the Centers, Corridors and Wedges growth strategy. The document will also contain this summary of peer city practices, the revised TIA methodology, and a section for a summary and conclusions.



Table 1. Traffic Impact Analysis Guidelines and Procedures by City

City and Population	Threshold for requiring TIA	Same requirement for by-right, rezoning, and subdivisions? <sup>2</sup>	"Trip Credit" given for trips generated by existing site development?	"Trip Credit" given for trips theoretically generated by existing zoning?	Require Mitigation at non-adjacent Locations?	Assess Transportation Impact Fees?	Requirement for Timing Infrastructure with Development	Geographic or Development Zone Distinctions	Threshold for Requiring Mitigation specified increase in v/c	LOS Standard
Charlotte, NC pop. 671,888	2500 daily trips	No	Yes	Yes	Yes	No	Tied to CO	None	specified increase in v/c	None
Raleigh, NC pop. 375,806	Flexible <sup>1</sup>	No	Yes	No	Yes <sup>3</sup>	Yes	None	None	LOS worse than D	D
Greensboro, NC pop. 247,183	150 peak hour trips or 1500 daily trips	No <sup>16</sup>	Yes	No	No	No	Bonds for Construction	None <sup>8</sup>	LOS worse than D <sup>7</sup>	D
Durham, NC pop. 217,847	150 peak hour trips	Yes	Yes	No	Yes <sup>3</sup>	Yes	Tied to CO	Rural Tier Suburban Tier Urban Tier Compact Neighborhood Tier Downtown Tier	LOS worse than C LOS worse than D LOS worse than E LOS worse than E	C D D E E
Winston Salem, NC pop. 215,348	<sup>8</sup> 150 peak hour trips or any area at LOS E or F	No	<sup>21</sup>	No	No	No	Tied to CO or thru zoning or driveway permit process	None	one LOS letter degrade	None
Fayetteville, NC pop. 122,435	Flexible	Yes	No	No	Yes	No	None	CBD other	no TIA required one LOS letter degrade	None
Cary, NC pop. 121,796	50 peak hour trips	Yes	Yes	No	Yes	Yes	APFO	Central Zone Base Zone	LOS F, v/c > 1.25 LOS D	F D
High Point, NC pop. 100,432	150 peak hour trips	Yes	No	No	Yes	No	None	None	not specified	None
Wilmington, NC pop. 89,799	100 peak hour trips	Yes	No <sup>20</sup>	No	Yes	No	Tied to CO	CBD other	one LOS letter degrade one LOS letter degrade	D D
Asheville, NC pop. 73,875	100 peak hour trips	Yes	Yes	No	Yes	No	Tied to CO	None	one LOS letter degrade	C/D <sup>5</sup>
Huntersville, NC pop. 42,579	50 peak hour trips or 500 daily trips	Yes	Yes	No	Yes	No	APFO	Rural and TR <sup>14</sup> Districts Town Center and TOD All Other Districts	LOS worse than C LOS worse than E LOS worse than D	C E D
Davidson, NC pop. 9,592	20 dwelling units	Yes	No <sup>21</sup>	No	Yes	No	APFO	Tier 1 Tier 2 Tier 3	LOS worse than D LOS worse than C LOS worse than B	D C B
Pinellas County, FL pop. 924,413	varies by locality	Yes	Yes	No	Yes	Yes	Tied to Development Order	Several localities have concurrency management or exception areas	varies by locality	varies; defined in MPO plan
Seattle, WA pop. 594,210	12,000 square feet	Yes	Yes	No	Yes	No <sup>10</sup>	Statewide Transportation Concurrency Ordinance	None	LOS worse than D	D
Nashville, TN pop. 590,807	Residential: 100 dwelling units Non-residential: 50,000 sq. feet Mixed-use: 100 peak hour trips or 1000 daily trips Expansion: 250 new peak hour trips or 35% increase in peak hour trips	Yes	No <sup>21</sup>	No	Yes	No	Commercial; UNO process Residential; platting process By-right; tied to CO	Downtown Loop other	not TIA required LOS worse than D <sup>13</sup>	D <sup>13</sup>
Atlanta, GA pop. 519,145	100 peak hour trips	Yes	No	No	No	Yes	None	None	not specified	D
Sacramento, CA pop. 460,242	(a) 100 peak hour trips or (b) 50 peak hour trips and main access route at LOS D or worse <sup>12</sup>	Yes	Yes	No	Yes	Yes	Capital Improvement Program, impact fees, and California Environmental Protection Act	None	LOS worse than C <sup>11</sup>	C
Louisville, KY pop. 256,231	200 peak hour trips or near heavily congested roadway	No <sup>16</sup>	Yes	No	Yes	No <sup>17</sup>	Tied to CO	None	not specified	None
Chattanooga, TN pop. 169,884	Flexible <sup>6</sup>	Yes	No <sup>21</sup>	No <sup>21</sup>	Yes	No	Specified in order for construction permit	None	not specified	None
North Carolina Dept. of Transportation	3000 daily trips	Yes	<sup>21</sup>	<sup>21</sup>	Yes <sup>19</sup>	No	Tied to CO	None	25% increase in intersection volume, one LOS letter degrade, or LOS at F.	D <sup>3</sup>
Virginia Dept. of Transportation	Residential: 100 peak hour trips Other: 250 peak hour trips	Yes	<sup>21</sup>	No	No <sup>18</sup>	No	Tied to CO	None	not specified	varies by county



<sup>1</sup> use as a rule of thumb NCDOT's requirement of 3000 daily trips

<sup>2</sup> unless stated otherwise, rezoning considers trip threshold for net increase of trips (subtract trips from existing zoning)

<sup>3</sup> While not noted in the policy document, NCDOT often seeks LOS D.

<sup>4</sup> although not technically specified, a good rule of thumb

<sup>5</sup> Nothing is written, but maintaining LOS C or D is considered acceptable

<sup>6</sup> No written distinction, however CBD development is considered a special case

<sup>7</sup> for roads currently operating at LOS E or F, mitigation is negotiated on a case-by-case basis

<sup>8</sup> no requirements for residential-only development

<sup>9</sup> Any intersection where approach traffic is increased by more than 10% is included in study area

<sup>10</sup> In two sub-areas, applicants have the choice of paying an impact fee or submitting a TIA

<sup>11</sup> Unwritten standards: segment at LOS D or worse and v/c increase  $\geq 0.02$

intersection at LOS D or worse and avg. delay increase  $\geq 5$  sec

<sup>12</sup> Usually TIA required for 75 peak hour trips or more

<sup>13</sup> Left turns from major streets at unsignalized intersections and side-street approaches have a policy goal of LOS E

<sup>14</sup> transitional residential

<sup>15</sup> Any change of use or rezoning may require a traffic study

<sup>16</sup> Must submit a trip generation summary for by-right, may necessitate further analysis

<sup>17</sup> unless the project is located on a special corridor, assessed on a case-by-case basis

<sup>18</sup> VDOT cannot require mitigation; the individual counties are responsible for mitigation negotiation

<sup>19</sup> if significant site traffic could be expected to impact the intersection or roadway segment; determined by the District Engineer

<sup>20</sup> unless it is an expansion of existing uses. All redevelopment projects do not have trip credits.

<sup>21</sup> City ordinance/code or policy document does not address existing site uses; determined on a case-by-case basis

## Special Thanks to

Lauren Blackburn, Town Planner, Town of Davidson

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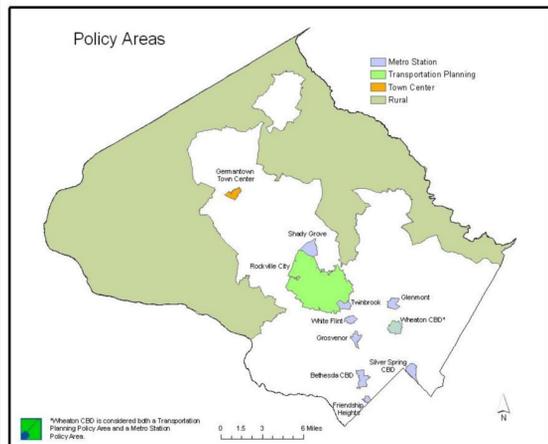
John Shaw, Department of Planning and Development, City of Seattle

Ben Taylor, Traffic Engineer, City of Chattanooga

Rusty Thompson, City Traffic Engineer, City of Fayetteville

# Proposed Changes to Transportation Adequacy Tests

Staff recommends several revisions to the Policy Area Mobility Review (PAMR) and Local Area Transportation Review (LATR) tests to incentivize efficient growth and encourage multi-modal mobility solutions.



## current

“Alternative Review Procedures” allowed in Metro Station Policy Areas

PAMR requirements based on requiring LOS D as minimum for average arterial mobility, regardless of how good transit service is.

PAMR requirements established by future forecasted, not actual speeds

Special vehicle trip generation rates in LATR are only applicable in certain CBDs

Provision of non-auto facilities are limited by type, include some out-of-date options, and are not equitably valued.

## proposed

“Alternative Review Procedures” allowed in all urban areas

PAMR requirements balance arterial mobility with transit mobility throughout LOS spectrum

PAMR requirements could be waived in urban areas if specific adjacent roadways serving the site meet mobility (speed) standards

Adopt rates for transit-oriented development contained in TCRP Report 128

Revise listing of facility types and define \$11,000 per vehicle trip as common variable.

Additional proposals include adopting urban area traffic volume caps or other staging mechanisms in master plans and sector plans such as White Flint and allowing developments to transfer APFO approvals.

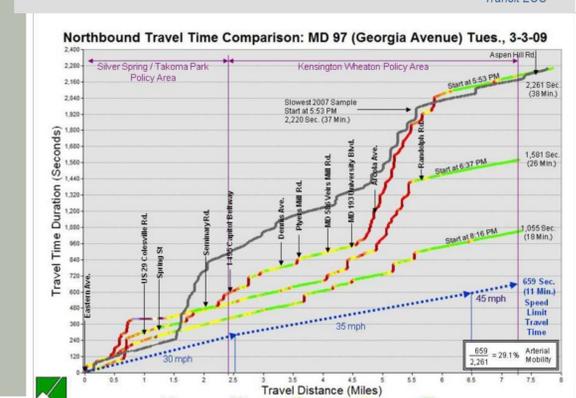
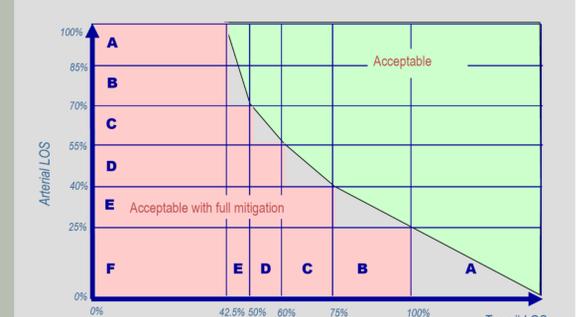
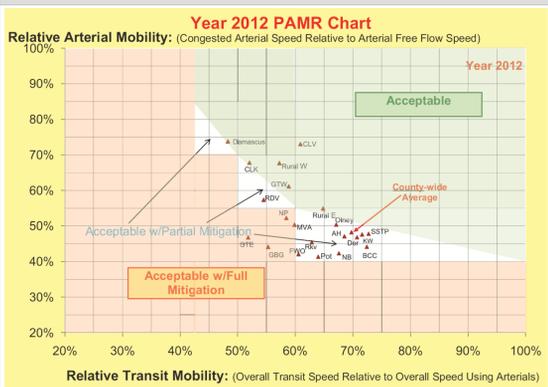
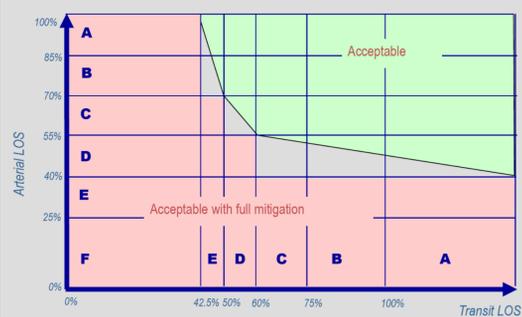
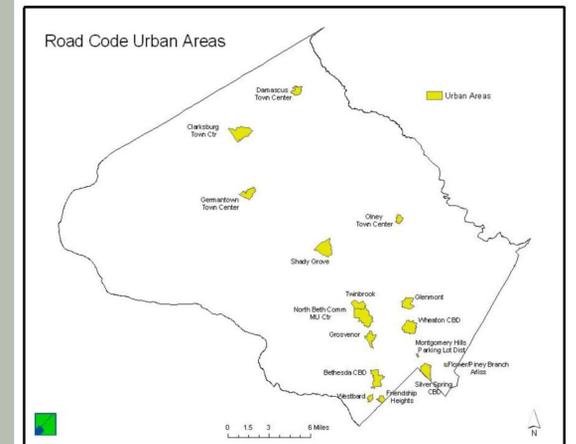
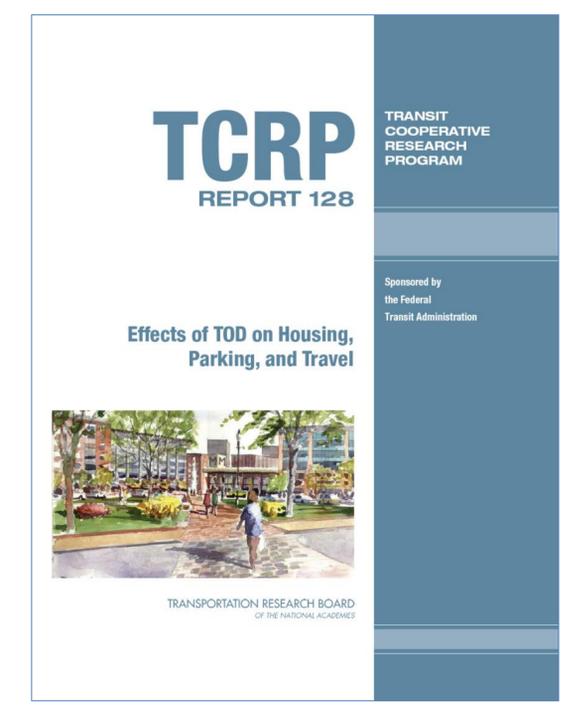


Table C-2  
Weekday Morning and Evening Peak Hour Trip Generation Rates for the Silver Spring CBD

Land Use	Morning			Evening		
	Rate	% In	% Out	Rate	% In	% Out
Office (existing vacant/1,000 sf)	1.80	85	15	1.60	15	85
Office (pending + future/1,000 sf)	1.40	85	15	1.40	15	85
Industrial (1,000 sf)	1.00	85	15	1.00	15	85
Retail (1,000 sf)	0.50	50	50	2.00	50	50
Residential (high rise)	0.30	20	80	0.30	70	30
Residential (townhouse)	0.45	20	80	0.45	67	33
Hotel (room)	0.20	60	40	0.20	55	45

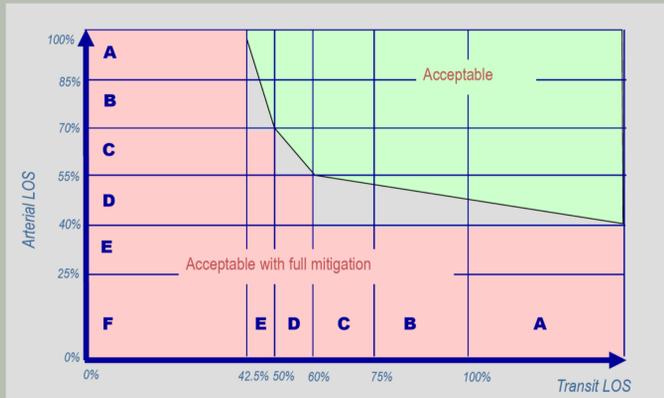
Table 5  
Graduated and Maximum Trip Credits Related to Congestion Standards

Non-Automobile Transportation Facility	Trip Credit vs Congestion Standard		
	1350-1500	1550-1600	1800
100 linear feet of five-foot wide sidewalk	0.5	0.75	1.0
100 linear feet of eight-foot wide bike path	0.5	0.75	1.0
Curb Extension/Pedestrian Refuge Island/Handicap Ramp	2.0	3.0	4.0
Accessible or Countdown Pedestrian Signals/Intersection	1.0	2.0	3.0
Bus Shelter	5.0	7.5	10.0
*Super* Bus Shelter	10.0	15.0	20.0
Bus Bench with Pad	0.5	0.75	1.0
Information Kiosk	1.5	3.0	4.5
Bike Locker (set of eight)	2.0	3.0	4.0
Real-Time Transit Information Sign	10.0	15.0	20.0
Static Transit Information Sign	0.25	0.4	0.5
Maximum Trip Credits	60	90	120



# What is Policy Area Mobility Review (PAMR)?

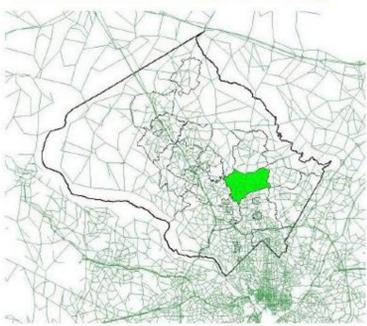
**P**olicy Area Mobility Review is an areawide assessment of mobility adequacy that considers the level of delay associated with rush hour congestion and the degree to which transit service provides a time-competitive alternative to auto travel.



Level of Service (LOS) grades are like those received in grade school: A is best and F is worst. One important difference is that while LOS A provides the best service for each customer, the most efficient use of resources to move people and goods on roadways occurs at LOS E, when roads are well used (but not gridlocked), even though all customers experience some delay.

County requirements for areawide Arterial LOS and Transit LOS reflect County policy that transportation mobility should be multi-modal. Areas with better transit service are not as reliant on auto travel; consequently more congestion can be accepted as transit LOS improves.

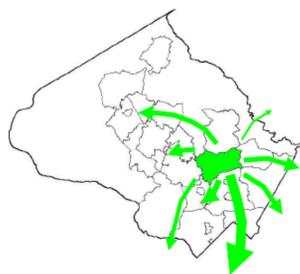
## Relative Arterial Mobility



- Aspen Hill, 2005**
- 86 lane miles
  - 167,000 VMT
  - 5,000 VHT free
  - 11,000 VHT cong.
  - 33 MPH free
  - 15 MPH cong.
  - 45% Relative Arterial Mobility

How much slower is traffic during rush hours?

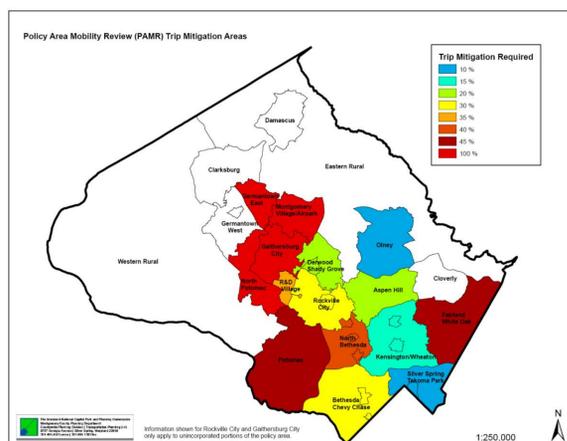
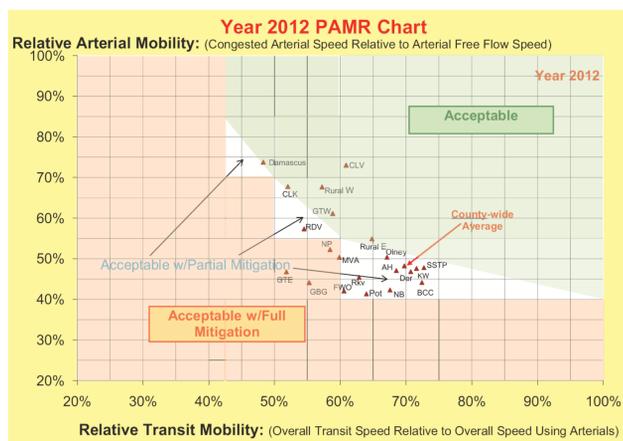
## Relative Transit Mobility



- Aspen Hill, 2005**
- 25,000 households
  - 32,000 trips to work
  - 15% by transit
  - 55 min - transit
  - 31 min - auto
  - Relative Transit Mobility = 69%

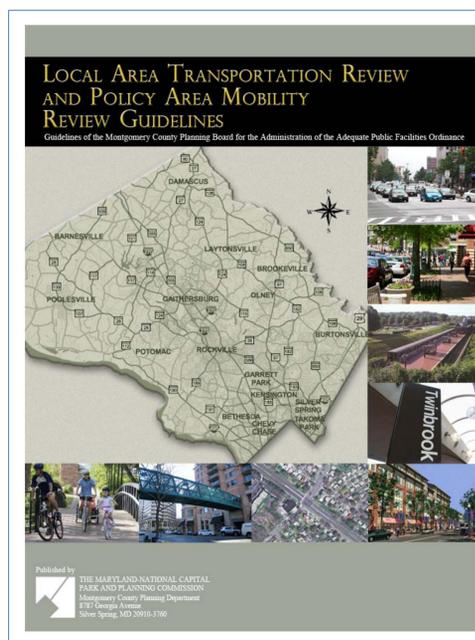
How competitive is transit service?

Relative Arterial Mobility and Relative Transit Mobility are calculated for each of the County's 21 PAMR policy areas for current conditions and forecasted conditions considering approved development and roadway and transit improvements.



PAMR mitigation requirements for all developments in a given policy area are based on the forecasted future year travel conditions for each Policy Area and the LOS standards. PAMR mitigation techniques include trip reduction agreements and construction of off-site improvements like streets, sidewalks, or transit service.

**Policy Area Mobility Review** is applied in conjunction with **Local Area Transportation Review** to assess the transportation adequacy of new development. The Local Area Transportation Review tests examines intersection capacity near each development site. A development may need to take mitigating action under either or both review processes, depending upon its location and size.



Additional information is available in the Planning Board's **Local Area Transportation Review and Policy Area Mobility Review Guidelines**.

[http://www.montgomeryplanning.org/Transportation/latr\\_guidelines/latr\\_guidelines\\_2008.shtm](http://www.montgomeryplanning.org/Transportation/latr_guidelines/latr_guidelines_2008.shtm)

# Smart Growth Criteria Proposal Examples

How would the Smart Growth Criteria apply to actual development cases? The following charts show how two hypothetical developments on a similarly sized piece of land would incent more efficient development.

## Case Study #1. Metro Station Policy Area (Such as Twinbrook) With 40% PAMR Mitigation Requirement

Lot Area (Square Feet)	Floor Area Ratio		Proposed Development					PAMR Trips Mitigated		PAMR Cost	
	Allowed	Proposed	Office	Retail	Residential	Additional MPDU or WFDU	TOTALS	Percent	Total	Per Trip	Total
					Base						
<b>Initial Proposal</b>											
Percent FAR by Use	100000	3.00	1.50	55%	45%	0%	1000	100%			
Average Size of Dwelling Unit (SF)						1000	1000				
Square Footage by Type				82500	67500	0	0	150000			
Number of Dwelling Units						0	0				
Peak Hour Trips Generated (retail at 75% pass-by)				139	209	0	0	348	40%	139	\$ 11,000
Net Trip Generation Rate - Trips per 1000 Square Feet								2.32			
PAMR Exemption									0%		\$ -
Net PAMR Cost											\$ 1,529,000
<b>Housing Mitigation Requirement</b>											
Assumed Value of MPDU / WFDU						\$ 50,000					
Half the Value of PAMR Mitigation						\$ 764,500					
Number of Units Needed						15					
<b>Exemption Proposal #1 - Mixed Use Transit Proximity</b>											
Percent FAR by Use	100000	3.00	3.00	25%	20%	55%	5%	105%			
Average Size of Dwelling Unit (SF)						1000	1000				
Lot and Building											
Square Footage by Type				75000	60000	165000	15000	315000			
Number of Dwelling Units						165	15				
Peak Hour Trips Generated (retail at 75% pass-by)				115	185	79	7	386	40%	154	\$ 11,000
Net Trip Generation Rate - Trips per 1000 Square Feet								1.23			
PAMR Exemption									100%		\$ 1,694,000
Net PAMR Cost											\$ -
<b>Exemption Proposal #2 - Proximity to Basic Services</b>											
Percent FAR by Use	100000	3.00	3.00	25%	20%	55%	5%	105%			
Average Size of Dwelling Unit (SF)						1000	1000				
Lot and Building											
Square Footage by Type				75000	60000	165000	15000	315000			
Number of Dwelling Units						165	15				
Peak Hour Trips Generated (retail at 75% pass-by)				128	185	79	7	399	40%	160	\$ 11,000
Net Trip Generation Rate - Trips per 1000 Square Feet								1.27			
PAMR Exemption									50%		\$ 880,000
Net PAMR Cost											\$ 880,000

An urban commercial site could require \$1.5M in PAMR mitigation. But with 180 residential units (including 15 affordable units) added on a transit-oriented site, the mitigation could be waived.



## Case Study #2. Suburban Area (Such as Germantown East) With 100% PAMR Mitigation Requirement

Lot Area (Square Feet)	Floor Area Ratio		Proposed Development					PAMR Trips Mitigated		PAMR Cost	
	Allowed	Proposed	Office	Retail	Residential	Additional MPDU or WFDU	TOTALS	Percent	Total	Per Trip	Total
					Base						
<b>Initial Proposal</b>											
Percent FAR by Use	100000	1.00	0.50	90%	10%	0%	1200	100%			
Average Size of Dwelling Unit (SF)						1200	1200				
Square Footage by Type				45000	5000	0	0	50000			
Number of Dwelling Units						0	0				
Peak Hour Trips Generated (retail at 50% pass-by)				85	31	0	0	116	100%	116	\$ 11,000
Net Trip Generation Rate - Trips per 1000 Square Feet								2.32			
PAMR Exemption									0%		\$ -
Net PAMR Cost											\$ 1,276,000
<b>Housing Mitigation Requirement</b>											
Assumed Value of MPDU / WFDU						\$ 30,000					
Half the Value of PAMR Mitigation						\$ 638,000					
Number of Units Needed						21					
<b>Exemption Proposal #1 - Mixed Use Transit Proximity</b>											
Percent FAR by Use	100000	1.00	0.85	45%	5%	50%	30%	130%			
Average Size of Dwelling Unit (SF)						1200	1200				
Lot and Building											
Square Footage by Type				38250	4250	42500	25200	110200			
Number of Dwelling Units						35	21				
Peak Hour Trips Generated (retail at 50% pass-by)				75	26	17	10	128	100%	128	\$ 11,000
Net Trip Generation Rate - Trips per 1000 Square Feet								1.16			
PAMR Exemption									100%		\$ 1,408,000
Net PAMR Cost											\$ -
<b>Exemption Proposal #2 - Proximity to Basic Services</b>											
Percent FAR by Use	100000	1.00	0.85	45%	5%	50%	30%	130%			
Average Size of Dwelling Unit (SF)						1200	1200				
Lot and Building											
Square Footage by Type				38250	4250	42500	25200	110200			
Number of Dwelling Units						35	21				
Peak Hour Trips Generated (retail at 50% pass-by)				75	26	17	10	128	100%	128	\$ 11,000
Net Trip Generation Rate - Trips per 1000 Square Feet								1.16			
PAMR Exemption									50%		\$ 704,000
Net PAMR Cost											\$ 704,000

The commercial pad site below could require \$1.4M in PAMR mitigation. But with 56 residential units (including 21 affordable units) added on a transit-oriented site, the mitigation could be waived.



**Case Study #1. Metro Station Policy Area With 35% PAMR Mitigation Requirement**

**PLANNING BOARD RECOMMENDATIONS  
 PAMR MITIGATION**

Lot Area (Square Feet)	Floor Area Ratio		Proposed Development				PAMR Trips Mitigated		PAMR Cost	
	Allowed	Proposed	Office	Retail	Residential	TOTALS	Percent	Total	Per Trip	Total
<b>Sample Proposal Without Smart Growth Criteria</b>										
Percent FAR by Use	100000	3.00	1.50	55%	45%	0%	100%			
Average Size of Dwelling Unit (SF)						1000				
Square Footage by Type				82500	67500	0	150000			
Number of Dwelling Units						0				
Peak Hour Trips Generated (retail at 75% pass-by)				139	209	0	348	35%	122	\$ 11,000
Net Trip Generation Rate - Trips per 1000 Square Feet							2.32			\$ 1,342,000
PAMR Offset								0%		\$ -
Net PAMR Cost										\$ 1,342,000
<b>Alternative Review Proposal #1 - Mixed Use Transit Proximity</b>										
Percent FAR by Use	100000	3.00	3.00	25%	20%	55%	100%			
Average Size of Dwelling Unit (SF)						1000				
Lot and Building										
Square Footage by Type				75000	60000	165000	300000			
Number of Dwelling Units						165				
Number of Dwelling Units Subject to Impact Tax						144				
Peak Hour Trips Generated (retail at 75% pass-by)				115	185	79	379	35%	133	\$ 11,000
Net Trip Generation Rate - Trips per 1000 Square Feet							1.26			\$ 1,463,000
PAMR Offset Waived								25%		\$ 365,750
PAMR Offset Applied Toward Affordable Housing								25%		\$ 365,750
PAMR Resources Applied Toward Transit Services								50%		\$ 731,500
										\$ 1,097,250
<b>Housing Mitigation Requirement</b>										
Assumed Value of MPDU / WFDU						\$ 50,000				
PAMR Offset Applied Toward Affordable Housing						\$ 365,750				
Number of Units Needed						7				
Total Units Subject to Impact Tax						137				
<b>Comparison: Increased FAR Without Residential</b>										
Percent FAR by Use	100000	3.00	3.00	55%	45%	0%	100%			
Average Size of Dwelling Unit (SF)						1000				
Square Footage by Type				165000	135000	0	300000			
Number of Dwelling Units						0				
Peak Hour Trips Generated (retail at 75% pass-by)				273	417	0	690	35%	242	\$ 11,000
Net Trip Generation Rate - Trips per 1000 Square Feet							2.30			\$ 2,662,000
PAMR Offset								0%		\$ -
Net PAMR Cost										\$ 2,662,000

Notes:  
 Site assumed to be 750 feet from Metrorail station for Offset Proposal 1  
 Base case assumed MPDU percentage is 12.5%

**Case Study #1. Metro Station Policy Area With 35% PAMR Mitigation Requirement**

**PLANNING BOARD RECOMMENDATIONS  
COMPARISON OF PAMR AND IMPACT TAX COSTS**

	Sample Proposal Without Smart Growth Criteria	Alternative Review Proposal #1 - Mixed Use Transit Proximity	Comparison: Increased FAR Without Residential
<b>IMPACT TAX COSTS TO APPLICANT</b>			
Transportation Impact Tax Office GSF	82500	75000	165000
Rate	\$ 4.85	\$ 4.85	\$ 4.85
Extension	\$ 400,125	\$ 363,750	\$ 800,250
Transportation Impact Tax Retail GSF	67500	60000	135000
Rate	\$ 4.34	\$ 4.34	\$ 4.34
Extension	\$ 292,950	\$ 260,400	\$ 585,900
Transportation Impact Tax - High Rise Residential DU (subject to impact taxes)	0	137	0
Rate	\$ 2,420.00	\$ 2,420.00	\$ 2,420.00
Extension	\$ -	\$ 331,540	\$ -
School Impact Tax - High Rise Residential DU (subject to impact taxes)	0	137	0
Rate	\$ 4,127.00	\$ 4,127.00	\$ 4,127.00
Extension	\$ -	\$ 565,399	\$ -
<b>TOTAL IMPACT TAX</b>	<b>\$ 693,075</b>	<b>\$ 1,521,089</b>	<b>\$ 1,386,150</b>
<b>PAMR COSTS TO APPLICANT</b>			
Applied toward MPDUs	\$ -	\$ 365,750	\$ -
Applied toward transit services	\$ 1,342,000	\$ 731,500	\$ 2,662,000
<b>TOTAL PAMR COST</b>	<b>\$ 1,342,000</b>	<b>\$ 1,097,250</b>	<b>\$ 2,662,000</b>
<b>TOTAL PAMR COST PLUS IMPACT TAX</b>	<b>\$ 2,035,075</b>	<b>\$ 2,618,339</b>	<b>\$ 4,048,150</b>
Total Development GSF	150000	300000	300000
<b>TOTAL PAMR COST PLUS IMPACT TAX / GSF</b>	<b>\$ 13.57</b>	<b>\$ 8.73</b>	<b>\$ 13.49</b>
Resources Provided for Transportation	\$ 2,035,075	\$ 1,687,190	\$ 4,048,150
Resources Provided for Schools	\$ -	\$ 565,399	\$ -
Resources Provided for Affordable Housing	\$ -	\$ 365,750	\$ -
<b>TOTAL</b>	<b>\$ 2,035,075</b>	<b>\$ 2,618,339</b>	<b>\$ 4,048,150</b>
Transportation Resources Per New Vehicle Trip	\$ 5,848	\$ 4,452	\$ 5,867

Note: All scenarios reflect adoption of \$11,000 value for vehicle trips requiring mitigation  
Under FY 2007-2009 Growth Policy, PAMR costs range estimated to average \$3,000 per vehicle trip.

**Case Study #2. Suburban Area With 100% PAMR Mitigation Requirement**

**PLANNING BOARD RECOMMENDATIONS  
PAMR MITIGATION**

	Lot Area (Square Feet)		Proposed Development				PAMR Trips Mitigated		PAMR Cost	
	Allowed	Proposed	Office	Retail	Residential	TOTALS	Percent	Total	Per Trip	Total
<b>Base</b>										
<b>Sample Proposal Without Smart Growth Criteria</b>										
Percent FAR by Use	100000	1.00	0.50	90%	10%	0%	100%			
Average Size of Dwelling Unit (SF)						1200				
Square Footage by Type				45000	5000	0	<b>50000</b>			
Number of Dwelling Units						0				
Peak Hour Trips Generated (retail at 75% pass-by)				85	15	0	<b>100</b>	100%	100	\$ 11,000
Net Trip Generation Rate - Trips per 1000 Square Feet							<b>2.00</b>			
PAMR Offset							0%			\$ -
Net PAMR Cost										<b>\$ 1,100,000</b>
<b>Alternative Review Proposal #1 - Mixed Use Transit Proximity</b>										
Percent FAR by Use	100000	1.00	0.85	45%	5%	50%	100%			
Average Size of Dwelling Unit (SF)						1200				
Lot and Building										
Square Footage by Type				38250	4250	42500	<b>85000</b>			
Number of Dwelling Units						35				
Number of Dwelling Units Subject to Impact Tax						31				
Peak Hour Trips Generated (retail at 75% pass-by)				75	26	17	<b>118</b>	100%	118	\$ 11,000
Net Trip Generation Rate - Trips per 1000 Square Feet							<b>1.39</b>			
PAMR Offset Waived								25%		\$ 324,500
PAMR Offset Applied Toward Affordable Housing								25%		\$ 324,500
PAMR Resources Applied Toward Transit Services								50%		\$ 649,000
										<b>\$ 973,500</b>
<b>Housing Mitigation Requirement</b>										
Assumed Value of MPDU / WFDU						\$ 30,000				
PAMR Offset Applied Toward Affordable Housing						\$ 324,500				
Number of Units Needed						11				
Total Units Subject to Impact Tax						20				
<b>Comparison: Increased FAR Without Residential</b>										
Percent FAR by Use	100000	1.00	0.85	90%	10%	0%	100%			
Average Size of Dwelling Unit (SF)						1000				
Square Footage by Type				76500	8500	0	<b>85000</b>			
Number of Dwelling Units						0				
Peak Hour Trips Generated (retail at 75% pass-by)				130	26	0	<b>156</b>	100%	156	\$ 11,000
Net Trip Generation Rate - Trips per 1000 Square Feet							<b>1.84</b>			
PAMR Offset							0%			\$ -
Net PAMR Cost										<b>\$ 1,716,000</b>

Notes:

Site assumed to be adjacent to Ride-On Route 55 stop for Offset Proposal #1  
Base case assumed MPDU percentage is 12.5%

**Case Study #2. Suburban Area With 100% PAMR Mitigation Requirement**

**PLANNING BOARD RECOMMENDATIONS  
COMPARISON OF PAMR AND IMPACT TAX COSTS**

	Sample Proposal Without Smart Growth Criteria	Alternative Review Proposal #1 - Mixed Use Transit Proximity	Comparison: Increased FAR Without Residential
<b>IMPACT TAX COSTS TO APPLICANT</b>			
Transportation Impact Tax Office GSF	45000	38250	76500
Rate	\$ 9.69	\$ 9.69	\$ 9.69
Extension	\$ 436,050	\$ 370,643	\$ 741,285
Transportation Impact Tax Retail GSF	5000	4250	8500
Rate	\$ 8.67	\$ 8.67	\$ 8.67
Extension	\$ 43,350	\$ 36,848	\$ 73,695
Transportation Impact Tax - High Rise Residential DU (subject to impact taxes)	0	20	0
Rate	\$ 6,776.00	\$ 6,776.00	\$ 6,776.00
Extension	\$ -	\$ 135,520	\$ -
School Impact Tax - High Rise Residential DU (subject to impact taxes)	0	20	0
Rate	\$ 9,734.00	\$ 9,734.00	\$ 9,734.00
Extension	\$ -	\$ 194,680	\$ -
<b>TOTAL IMPACT TAX</b>	<b>\$ 479,400</b>	<b>\$ 737,690</b>	<b>\$ 814,980</b>
<b>PAMR COSTS TO APPLICANT</b>			
Applied toward MPDUs	\$ -	\$ 324,500	\$ -
Applied toward transportation projects	\$ 1,100,000	\$ 649,000	\$ 1,716,000
<b>TOTAL PAMR COST</b>	<b>\$ 1,100,000</b>	<b>\$ 973,500</b>	<b>\$ 1,716,000</b>
<b>TOTAL PAMR COST PLUS IMPACT TAX</b>	<b>\$ 1,579,400</b>	<b>\$ 1,711,190</b>	<b>\$ 2,530,980</b>
Total Development GSF	50000	85000	85000
<b>TOTAL PAMR COST PLUS IMPACT TAX / GSF</b>	<b>\$ 31.59</b>	<b>\$ 20.13</b>	<b>\$ 29.78</b>
Resources Provided for Transportation	\$ 1,579,400	\$ 1,192,010	\$ 2,530,980
Resources Provided for Schools	\$ -	\$ 194,680	\$ -
Resources Provided for Affordable Housing	\$ -	\$ 324,500	\$ -
<b>TOTAL</b>	<b>\$ 1,579,400</b>	<b>\$ 1,711,190</b>	<b>\$ 2,530,980</b>
Transportation Resources Per New Vehicle Trip	\$ 15,794	\$ 10,102	\$ 16,224

Note: All scenarios reflect adoption of \$11,000 value for vehicle trips requiring mitigation  
Under FY 2007-2009 Growth Policy, PAMR costs range estimated to average \$3,000 per vehicle trip.

**Case Study #1. Metro Station Policy Area With 35% PAMR Mitigation Requirement**

**STAFF DRAFT RECOMMENDATIONS  
 PAMR MITIGATION**

	Lot Area (Square Feet)		Proposed Development				PAMR Trips Mitigated		PAMR Cost	
	Allowed	Proposed	Office	Retail	Residential	TOTALS	Percent	Total	Per Trip	Total
<b>Sample Proposal Without Smart Growth Criteria</b>										
Percent FAR by Use	100000	3.00	1.50	55%	45%	0%	100%			
Average Size of Dwelling Unit (SF)						1000				
Square Footage by Type				82500	67500	0	<b>150000</b>			
Number of Dwelling Units						0				
Peak Hour Trips Generated (retail at 75% pass-by)				139	209	0	<b>348</b>	35%	122	\$ 11,000
Net Trip Generation Rate - Trips per 1000 Square Feet							<b>2.32</b>			
PAMR Offset								0%		\$ -
Net PAMR Cost										<b>\$ 1,342,000</b>
<b>Alternative Review Proposal #1 - Mixed Use Transit Proximity</b>										
Percent FAR by Use	100000	3.00	3.00	25%	20%	55%	100%			
Average Size of Dwelling Unit (SF)						1000				
Lot and Building										
Square Footage by Type				75000	60000	165000	<b>300000</b>			
Number of Dwelling Units						165				
Number of Dwelling Units Subject to Impact Tax						144				
Peak Hour Trips Generated (retail at 75% pass-by)				115	185	79	<b>379</b>	35%	133	\$ 11,000
Net Trip Generation Rate - Trips per 1000 Square Feet							<b>1.26</b>			
PAMR Payment Waived								100%		\$ 1,463,000
Net PAMR Cost to Applicant										<b>\$ -</b>
<b>Housing Mitigation Requirement</b>										
Assumed Value of MPDU / WFDU						\$ 50,000				
PAMR Offset Applied Toward Affordable Housing						\$ 731,500				
Number of Units Needed						15				
Total Units Subject to Impact Tax						129				
<b>Alternative Review Proposal #2 - Proximity to Basic Services</b>										
Percent FAR by Use	100000	3.00	3.00	25%	20%	55%	100%			
Average Size of Dwelling Unit (SF)						1000				
Lot and Building										
Square Footage by Type				75000	60000	165000	<b>300000</b>			
Number of Dwelling Units						165				
Number of Dwelling Units Subject to Impact Tax						144				
Peak Hour Trips Generated (retail at 75% pass-by)				128	185	79	<b>392</b>	35%	137	\$ 11,000
Net Trip Generation Rate - Trips per 1000 Square Feet							<b>1.31</b>			
PAMR Payment Waived								50%		\$ 753,500
Net PAMR Cost to Applicant										<b>\$ 753,500</b>
<b>Housing Mitigation Requirement</b>										
Assumed Value of MPDU / WFDU						\$ 50,000				
PAMR Offset Applied Toward Affordable Housing						\$ 376,750				
Number of Units Needed						8				
Total Units Subject to Impact Tax						136				
<b>Comparison: Increased FAR Without Residential</b>										
Percent FAR by Use	100000	3.00	3.00	55%	45%	0%	100%			
Average Size of Dwelling Unit (SF)						1000				
Square Footage by Type				165000	135000	0	<b>300000</b>			
Number of Dwelling Units						0				
Peak Hour Trips Generated (retail at 75% pass-by)				273	417	0	<b>690</b>	35%	242	\$ 11,000
Net Trip Generation Rate - Trips per 1000 Square Feet							<b>2.30</b>			
PAMR Offset								0%		\$ -
Net PAMR Cost										<b>\$ 2,662,000</b>

Notes:  
 Site assumed to be 750 feet from Metrorail station for Offset Proposal 1  
 Base case assumed MPDU percentage is 12.5%

**Case Study #1. Metro Station Policy Area With 35% PAMR Mitigation Requirement**

**STAFF DRAFT RECOMMENDATIONS**

**COMPARISON OF PAMR AND IMPACT TAX COSTS**

	Sample Proposal Without Smart Growth Criteria	Alternative Review Proposal #1 - Mixed Use Transit Proximity	Alternative Review Proposal #2 - Proximity to Basic Services	Comparison: Increased FAR Without Residential
<b>IMPACT TAX COSTS TO APPLICANT</b>				
Transportation Impact Tax Office				
GSF	82500	75000	75000	165000
Rate	\$ 4.85	\$ 4.85	\$ 4.85	\$ 4.85
Extension	\$ 400,125	\$ 363,750	\$ 363,750	\$ 800,250
Transportation Impact Tax Retail				
GSF	67500	60000	60000	135000
Rate	\$ 4.34	\$ 4.34	\$ 4.34	\$ 4.34
Extension	\$ 292,950	\$ 260,400	\$ 260,400	\$ 585,900
Transportation Impact Tax - High Rise Residential				
DU (subject to impact taxes)	0	129	136	0
Rate	\$ 2,420.00	\$ 2,420.00	\$ 2,420.00	\$ 2,420.00
Extension	\$ -	\$ 312,180	\$ 329,120	\$ -
School Impact Tax - High Rise Residential				
DU (subject to impact taxes)	0	129	136	0
Rate	\$ 4,127.00	\$ 4,127.00	\$ 4,127.00	\$ 4,127.00
Extension	\$ -	\$ 532,383	\$ 561,272	\$ -
<b>TOTAL IMPACT TAX</b>	<b>\$ 693,075</b>	<b>\$ 1,468,713</b>	<b>\$ 1,514,542</b>	<b>\$ 1,386,150</b>
<b>PAMR COSTS TO APPLICANT</b>				
Applied toward MPDUs	\$ -	\$ 731,500	\$ 376,750	\$ -
Applied toward transportation projects	\$ 1,342,000	\$ -	\$ 753,500	\$ 2,662,000
<b>TOTAL PAMR COST</b>	<b>\$ 1,342,000</b>	<b>\$ 731,500</b>	<b>\$ 1,130,250</b>	<b>\$ 2,662,000</b>
<b>TOTAL PAMR COST PLUS IMPACT TAX</b>	<b>\$ 2,035,075</b>	<b>\$ 2,200,213</b>	<b>\$ 2,644,792</b>	<b>\$ 4,048,150</b>
Total Development GSF	150000	300000	300000	300000
<b>TOTAL PAMR COST PLUS IMPACT TAX / GSF</b>	<b>\$ 13.57</b>	<b>\$ 7.33</b>	<b>\$ 8.82</b>	<b>\$ 13.49</b>
Resources Provided for Transportation	\$ 2,035,075	\$ 936,330	\$ 1,706,770	\$ 4,048,150
Resources Provided for Schools	\$ -	\$ 532,383	\$ 561,272	\$ -
Resources Provided for Affordable Housing	\$ -	\$ 731,500	\$ 376,750	\$ -
<b>TOTAL</b>	<b>\$ 2,035,075</b>	<b>\$ 2,200,213</b>	<b>\$ 2,644,792</b>	<b>\$ 4,048,150</b>
Transportation Resources Per New Vehicle Trip	\$ 5,848	\$ 2,471	\$ 4,354	\$ 5,867

Note: All scenarios reflect adoption of \$11,000 value for vehicle trips requiring mitigation  
Under FY 2007-2009 Growth Policy, PAMR costs range estimated to average \$3,000 per vehicle trip.

**Case Study #2. Suburban Area With 100% PAMR Mitigation Requirement**

**STAFF DRAFT RECOMMENDATIONS  
PAMR MITIGATION**

Lot Area (Square Feet)	Floor Area Ratio		Proposed Development				PAMR Trips Mitigated		PAMR Cost	
	Allowed	Proposed	Office	Retail	Residential	TOTALS	Percent	Total	Per Trip	Total
<b>Sample Proposal Without Smart Growth Criteria</b>										
Base										
Percent FAR by Use	100000	1.00	0.50	90%	10%	0%	100%			
Average Size of Dwelling Unit (SF)						1200				
Square Footage by Type				45000	5000	0	<b>50000</b>			
Number of Dwelling Units						0				
Peak Hour Trips Generated (retail at 75% pass-by)				85	15	0	<b>100</b>	100%	100	\$ 11,000
Net Trip Generation Rate - Trips per 1000 Square Feet							<b>2.00</b>			
PAMR Offset								0%		\$ -
Net PAMR Cost										<b>\$ 1,100,000</b>
<b>Alternative Review Proposal #1 - Mixed Use Transit Proximity</b>										
Percent FAR by Use	100000	1.00	0.85	45%	5%	50%	100%			
Average Size of Dwelling Unit (SF)						1200				
Lot and Building										
Square Footage by Type				38250	4250	42500	<b>85000</b>			
Number of Dwelling Units						35				
Number of Dwelling Units Subject to Impact Tax						31				
Peak Hour Trips Generated (retail at 75% pass-by)				75	26	17	<b>118</b>	100%	118	\$ 11,000
Net Trip Generation Rate - Trips per 1000 Square Feet							<b>1.39</b>			
PAMR Payment Waived								100%		\$ 1,298,000
Net PAMR Cost to Applicant										<b>\$ -</b>
<b>Housing Mitigation Requirement</b>										
Assumed Value of MPDU / WFDU						\$ 30,000				
PAMR Offset Applied Toward Affordable Housing						\$ 649,000				
Number of Units Needed						22				
Total Units Subject to Impact Tax						9				
<b>Alternative Review Proposal #2 - Proximity to Basic Services</b>										
Percent FAR by Use	100000	1.00	0.85	45%	5%	50%	100%			
Average Size of Dwelling Unit (SF)						1200				
Lot and Building										
Square Footage by Type				38250	4250	42500	<b>85000</b>			
Number of Dwelling Units						35				
Number of Dwelling Units Subject to Impact Tax						31				
Peak Hour Trips Generated (retail at 75% pass-by)				75	26	17	<b>118</b>	100%	118	\$ 11,000
Net Trip Generation Rate - Trips per 1000 Square Feet							<b>1.39</b>			
PAMR Payment Waived								50%		\$ 649,000
Net PAMR Cost to Applicant										<b>\$ 649,000</b>
<b>Housing Mitigation Requirement</b>										
Assumed Value of MPDU / WFDU						\$ 30,000				
PAMR Offset Applied Toward Affordable Housing						\$ 324,500				
Number of Units Needed						11				
Total Units Subject to Impact Tax						20				
<b>Comparison: Increased FAR Without Residential</b>										
Percent FAR by Use	100000	1.00	0.85	90%	10%	0%	100%			
Average Size of Dwelling Unit (SF)						1000				
Square Footage by Type				76500	8500	0	<b>85000</b>			
Number of Dwelling Units						0				
Peak Hour Trips Generated (retail at 75% pass-by)				130	26	0	<b>156</b>	100%	156	\$ 11,000
Net Trip Generation Rate - Trips per 1000 Square Feet							<b>1.84</b>			
PAMR Offset								0%		\$ -
Net PAMR Cost										<b>\$ 1,716,000</b>

Notes:

Site assumed to be adjacent to Ride-On Route 55 stop for Offset Proposal #1  
Base case assumed MPDU percentage is 12.5%

**Case Study #2. Suburban Area With 100% PAMR Mitigation Requirement**

**STAFF DRAFT RECOMMENDATIONS**

**COMPARISON OF PAMR AND IMPACT TAX COSTS**

	Sample Proposal Without Smart Growth Criteria	Alternative Review Proposal #1 - Mixed Use Transit Proximity	Alternative Review Proposal #2 - Proximity to Basic Services	Comparison: Increased FAR Without Residential
<b>IMPACT TAX COSTS TO APPLICANT</b>				
Transportation Impact Tax Office				
GSF	45000	38250	38250	76500
Rate	\$ 9.69	\$ 9.69	\$ 9.69	\$ 9.69
Extension	\$ 436,050	\$ 370,643	\$ 370,643	\$ 741,285
Transportation Impact Tax Retail				
GSF	5000	4250	4250	8500
Rate	\$ 8.67	\$ 8.67	\$ 8.67	\$ 8.67
Extension	\$ 43,350	\$ 36,848	\$ 36,848	\$ 73,695
Transportation Impact Tax - High Rise Residential				
DU (subject to impact taxes)	0	9	20	0
Rate	\$ 6,776.00	\$ 6,776.00	\$ 6,776.00	\$ 6,776.00
Extension	\$ -	\$ 60,984	\$ 135,520	\$ -
School Impact Tax - High Rise Residential				
DU (subject to impact taxes)	0	9	20	0
Rate	\$ 9,734.00	\$ 9,734.00	\$ 9,734.00	\$ 9,734.00
Extension	\$ -	\$ 87,606	\$ 194,680	\$ -
<b>TOTAL IMPACT TAX</b>	<b>\$ 479,400</b>	<b>\$ 556,080</b>	<b>\$ 737,690</b>	<b>\$ 814,980</b>
<b>PAMR COSTS TO APPLICANT</b>				
Applied toward MPDUs	\$ -	\$ 649,000	\$ 324,500	\$ -
Applied toward transportation projects	\$ 1,100,000	\$ -	\$ 649,000	\$ 1,716,000
<b>TOTAL PAMR COST</b>	<b>\$ 1,100,000</b>	<b>\$ 649,000</b>	<b>\$ 973,500</b>	<b>\$ 1,716,000</b>
<b>TOTAL PAMR COST PLUS IMPACT TAX</b>	<b>\$ 1,579,400</b>	<b>\$ 1,205,080</b>	<b>\$ 1,711,190</b>	<b>\$ 2,530,980</b>
Total Development GSF	50000	85000	85000	85000
<b>TOTAL PAMR COST PLUS IMPACT TAX / GSF</b>	<b>\$ 31.59</b>	<b>\$ 14.18</b>	<b>\$ 20.13</b>	<b>\$ 29.78</b>
Resources Provided for Transportation	\$ 1,579,400	\$ 468,474	\$ 1,192,010	\$ 2,530,980
Resources Provided for Schools	\$ -	\$ 87,606	\$ 194,680	\$ -
Resources Provided for Affordable Housing	\$ -	\$ 649,000	\$ 324,500	\$ -
<b>TOTAL</b>	<b>\$ 1,579,400</b>	<b>\$ 1,205,080</b>	<b>\$ 1,711,190</b>	<b>\$ 2,530,980</b>
Transportation Resources Per New Vehicle Trip	\$ 15,794	\$ 3,970	\$ 10,102	\$ 16,224

Note: All scenarios reflect adoption of \$11,000 value for vehicle trips requiring mitigation  
Under FY 2007-2009 Growth Policy, PAMR costs range estimated to average \$3,000 per vehicle trip.

## 2. UNDERSTANDING & APPROACH



### PROJECT UNDERSTANDING

For four decades, Montgomery County has been at the vanguard of growth management, developing landmark legislation to address contemporary needs and concerns, but with the recognition that the system needs to evolve over time as both the development environment changes and as unforeseen side-effects of prior policies become evident. This foresight included the division of growth policy implementation between the County Council and the Planning Board, wherein:

- The County Council makes high-level policy decisions through resolutions on a quadrennial schedule mandated by law, and
- The Planning Board administers the mechanics of those resolutions through Planning Board Guidelines that can be amended at any time.

This study is expected to result in the staff recommendation of a series of largely mechanical changes that can be incorporated within the Planning Board's *Local Area Transportation Review and Transportation Policy Area Review Guidelines*, last adopted in January 2013 to reflect the 2012-2016 Subdivision Staging Policy adopted in November 2012 by the County Council in Resolution 17-601. Such mechanical changes could be incorporated immediately into a new set of Planning Board Guidelines. It is expected that the study will also recommend policy changes that affect the Council's resolution, which would set the stage for the next quadrennial review of the Subdivision Staging Policy by the Planning Board and County Council that would occur primarily in FY 16, with adoption by the County Council in November 2016.

The changes to Subdivision Staging Policy in Resolution 17-601 were substantial, primarily bifurcating the assessment of auto and transit system performance. The new Transportation Policy Area Review test shifts the transit performance measures from comparing speed of transit travel to better align with the County's objectives for improving bus service headway, span of service, and frequency. The focus on this important realignment precluded the full consideration of two important elements that form the subject of the current study:

**Renaissance brings an integrated approach** to multimodal transportation planning – connecting technical disciplines with meaningful stakeholder engagement to address challenges facing communities in a comprehensive way.

- Improving non-auto mode considerations in the Local Area Transportation Review (LATR) process, an interest of the Planning Board staff since a similar study scope was developed in 2009, but deferred due to budgetary constraints, and
- Refining the Transportation Policy Area Review (TPAR) process so that it applies metrics and processes that will reflect the benefits of the bus rapid transit (BRT) network in the Countywide Transit Corridors Functional Master Plan (CTCFMP) adopted in November 2013 by the County Council.

### *Appreciating Where We've Been*

Montgomery County established its Adequate Public Facilities Ordinance (APFO) in 1973, recognizing the need to manage the implementation of planned public facilities in a manner commensurate with the pace and pattern of land use development. At about the same time, the County established its Agricultural Reserve and Transfer of Development Rights (TDR) programs, concepts at the vanguard of utilizing an urban growth boundary to both concentrate development where infrastructure and services would be most efficiently provided as well as to protect environmental and heritage resources. Currently, about half of the County's acreage is protected from sprawl development through designation as parkland, TDR sending areas, or other low-growth designation.

The APFO process was particularly well suited for the County's greenfields development phase. From 1970 to 2000, the County added 350,000 residents, most of who moved into new subdivisions crafted from farmland. In the last decade, the amount of greenfields space in the County has dropped below 4%, and the focus on accommodating growth is through infill development. The growth will continue to occur; an additional 200,000 residents will call the County home over the next 30 years.

As the growth is increasingly concentrated in Central Business Districts and other County-designated urban areas, the nature of the mobility needs for residents, employees, and visitors is changing. The initial APFO focus on transportation was in ensuring that the network of local arterial roadways was constructed to provide sufficient connectivity and capacity for auto and truck traffic.

While most of the growth is concentrated into urban or urbanizing areas, substantial amounts of infill development will continue to occur in suburban areas of the County, including many that will be served by enhanced transit services such as BRT. The Subdivision Staging Policy needs to be flexible to provide encouragement of smarter growth in both environments.



*Infill and smart growth development is increasing development density and diversity in strategic locations across the County.*



The County's Growth Policy has evolved as the needs have changed over time:

- The assessment of areawide transportation system implementation has shifted from placing a full moratorium on jobs and/or housing in poorly performing policy areas to increasing the cost of development in those areas. The current Subdivision Staging Policy elegantly blends the technical element of assigning planned transportation infrastructure costs to individual policy areas with the policy element of allowing the Council to determine what proportion of those costs are to be borne by the private sector as opposed to the public sector in each area.
- The assessment of areawide review has shifted from dividing the County into 11 policy areas to 32 policy areas as the need for more particular fine-tuning for multimodal policies that reflect proximity to high-quality transit, primarily in Metrorail station areas and along the Corridor Cities Transitway.
- The frequency of substantive changes to policy has evolved from an annual basis to a quadrennial basis to help provide more stability and predictability in the development arena and to recognize that each County Council (with four-year election cycles) needs to have one, but not more, opportunities to affect the pace and pattern of growth.
- The ability to “pay-and-go” has come into and out of vogue, generally used from time-to-time to encourage particularly desired categories of strategic development or as a form of extending de-minimis impact levels. The 2009 White Flint Special Taxing District is the newest and most innovative approach that the County has implemented, replacing the suite of LATR, TPAR, and transportation impact taxes with an ad-valorem tax on commercial development that provides more consistent and predictable effects for both the public and private sectors in an environment where the planned infrastructure is also fairly predictable and a comprehensive public sector implementation plan far more efficient than coordinating overlapping and piecemeal infrastructure construction from multiple applicants all working in a small geographic area.
- The accommodation of non-auto modes of travel has shifted from a review that primarily recognizes auto mode shares as a quantitative element of a Total Transportation Level of Service (TTLOS) to one that prioritizes the implementation of TDM, transit, and bicycle/pedestrian infrastructure and services with the ability to trade auto trip mitigation on a cost-per-trip basis.

### ***Recognizing The Current Challenge***

The status of that last bullet in the description of the growth policy evolution, accommodating and emphasizing non-auto modes of travel, forms the need for the current study. In both the LATR and TPAR elements, many stakeholders are concerned that the consideration of bicyclists, pedestrians, and transit users is

inadequate. The general direction of continued attention to non-motorized travel is clearly desired; the details of that attention are what is subject to discussion.

As the County has urbanized, the County has struggled with means for addressing non-auto modes in the APFO, due in large part to the difficulties associated with forecasting transit and non-motorized travel in a suburban environment as well as the challenges inherent in assessing the Quality of Service that differentiates pure capacity or delay-based outcomes from considerations of convenience, comfort, and perceived safety that are particularly important in the real-world selection of travel mode, but poorly reflected in industry analysis techniques.



*The LATR process needs to be more sensitive to pedestrian, bicyclists, and transit quality of service, particularly in urban areas like the Silver Spring CBD.*

The current concerns regarding LATR (Technical Component A) span a range of perspectives:

- Perhaps most important, nearly all constituents agree that the focus of the Critical Lane Volume (CLV) technique remains primarily one of increasing roadway capacity for auto travel through roadway widening
- The incorporation of Highway Capacity Manual (HCM) techniques (applied using Synchro or CORSIM) for congested locations to address the cascading effect of traffic through a series of intersections is seen as a step in the right direction, but the incorporation of pedestrian, bicyclist, and transit elements of this analysis may remain lacking. Furthermore, the use of many HCM LOS techniques for urban streets is fairly insensitive to design solutions (i.e., the presence, absence, or design of on-road bike facilities tends to result in LOS B most of the time).
- The process for establishing an equivalency for non-auto facilities in the LATR manual has been vastly simplified (removing the loudest complaints from several years ago that “whimsical bus benches don’t



reduce traffic congestion” and reducing the number of applicants seeking handicap ramps as their preferred mitigation approach based on ease of implementability). Yet there is still a concern that using a fiscal equivalency for non-auto facilities is not well connected to the efficacy of those facilities in affecting mode share or improving multimodal access or mobility.

- The “belt and suspenders” system of exactions remains sufficiently complex so as to be understandable only to those deeply involved in its execution. Tools that bring increased complexity to the table, such as the introduction of traffic simulation, may provide more precise results, but they also increase the cost and unpredictability of the development approval process.

The current concerns regarding TPAR (Technical Component B) are primarily related to the challenges of measuring the effects of future BRT:

- The current process of setting standards for bus transit headways, coverage, and span of service by policy area is not sensitive to the increased transit travel speed associated with BRT, nor with the sub-policy-area transit accessibility benefitting specific BRT station locations.
- The development of the Travel/4 model, the first model to incorporate transit assignment, facilitates consideration of corridor-specific transit needs for both near term and master-plan horizons.

### *Incorporating Stakeholder Interests*

The study scope is deeply technical in nature; an appropriate level of stakeholder outreach is channeled through constituency representation on the study’s Transportation Impact Study Technical Working Group (TISTWG). The study team therefore must balance the technocratic approaches with a recognition of the needs and interests of the various stakeholders that should be represented on the TISTWG, including:

- **The County’s growth management policy makers:** the Planning Board and the County Council are ultimately responsible for balancing the interests of all constituents countywide.
- **The transportation implementing agencies:** These agencies at local (MCDOT), state (Maryland SHA and MTA), and regional (WMATA) levels each have long range plans and implementation approaches that have both budgetary and performance measure aspects that should be synchronized with the County’s Subdivision Staging Policy requirements.
- **The development community:** The development review applicants are those who are most immediately and directly affected by Subdivision Staging Policy requirements and are interested in ensuring a fair and equitable business climate both within different areas of the County as

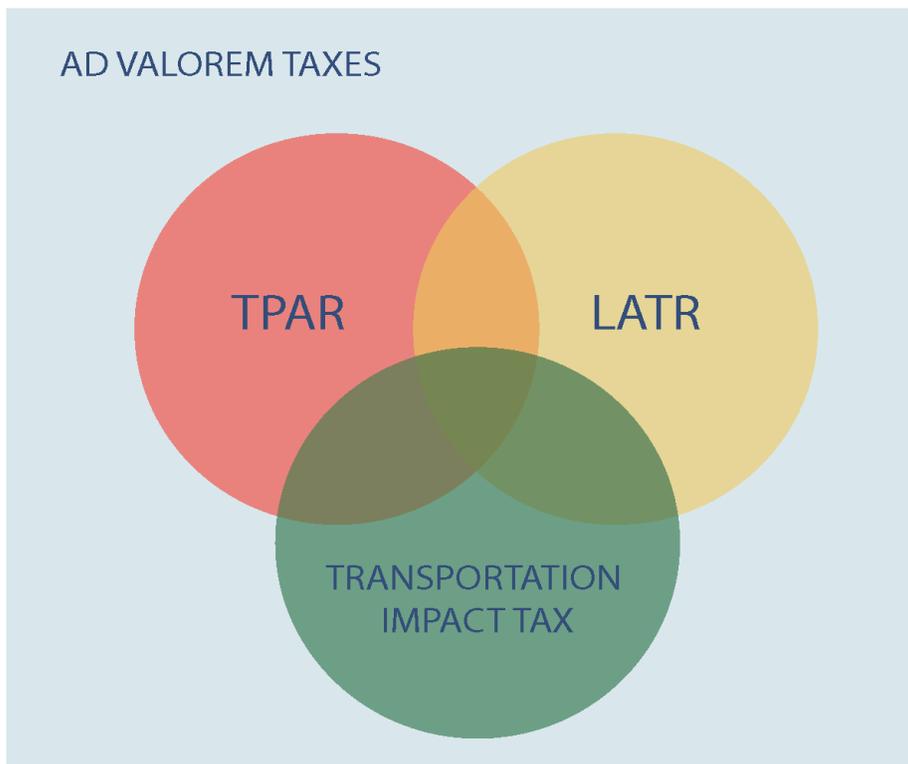


well as in comparison to other regional jurisdictions. In addition to fiscal impacts, predictability and timeliness of the review process are critical ingredients to continued investment in high-quality development in the County

- **The traveling community:** The residents and business owners in the County use the transportation system on a daily basis, and while many of the prior three stakeholder groups belong to this group also, there are over a million residents and non-resident employees who are not otherwise directly involved in the discussion. The Subdivision Staging Policy does not set the total amount of growth (which is accomplished primarily through zoning) or the ultimate transportation network (which is accomplished primarily through master plans), but it does greatly influence the pace and design of planned facility implementation.

### Coordinating The Two Study Technical Components

The two technical components, LATR and TPAR, can be developed on separate schedules to coordinate with the development of the Travel/4 forecasting model as indicated in the RFP. However, there are several benefits to synchronizing these schedules to the extent practical, as described below.



## PRIVATE SECTOR TRANSPORTATION FUNDING MECHANISMS

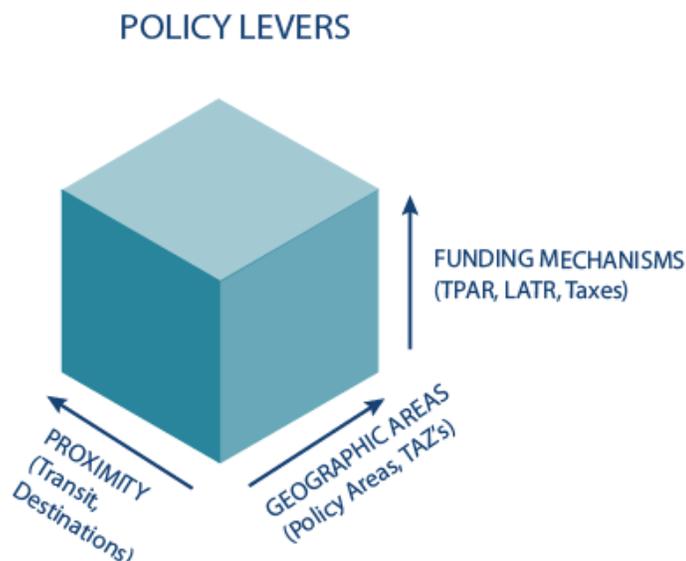
*The County's current funding mechanisms form an intricate and overlapping "belt and suspenders" approach to private sector transportation network investment.*



Transportation impact mitigation can span four related analytic and funding elements the local area (LATR) and policy area (TPAR) exactions that are the subject of this study, as well as the transportation impact tax and potentially pay-and-go mechanisms such as a VMT tax or other ad-valorem taxes such as established in the White Flint Special Taxing District.

Many stakeholders, particularly on the private sector side, will be interested in how these interlocking exaction techniques are inter-related. While the technical details of how pedestrian, bicycle, transit, and vehicular quality of service are measured are generally independent across LATR and TPAR platforms, the establishment of metric goals, objectives, and mitigation requirements are interrelated. A holistic picture of how all exaction methods combine to affect a pro-forma's bottom line will be of interest.

Just as there are multiple funding mechanisms, there are several other policy levers that can be moved to influence the extent to which development pays for the transportation network.



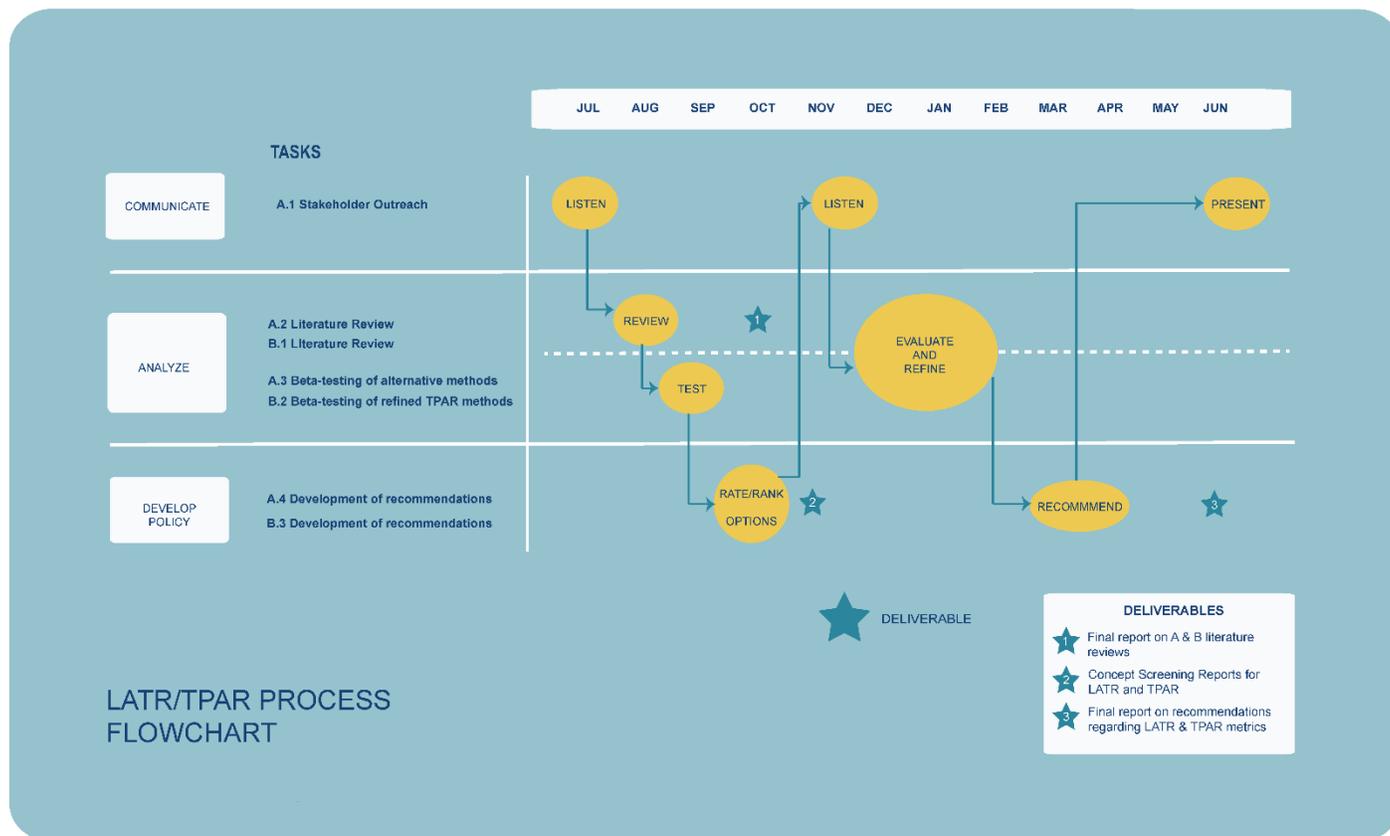
- Many of the jurisdictions to be included in the literature review have also integrated multiple analysis techniques with impact taxes or fees, so the literature review can be streamlined by conducting both TPAR and LATR simultaneously.
- The establishment of different formally-designated geographic areas of analysis might consider changes to the current designation of urban, suburban, and rural policy areas, or stronger incorporation of the Council-designated Urban Areas for implementation of the County's Road Construction Code. A more finely-grained type of overlay zone could be developed to incorporate non-Metrorail forms of transit such as the CTCFMP BRT network or other transit centers or activity centers. A similar investigation is being undertaken by the VHB/Renaissance team in establishing context-sensitive trip generation rates for the Planning Department and development of a single set of context zones for both trip generation and impact mitigation would likely be a desirable outcome. Renaissance Planning Group has also recently completed the *Multimodal System Design Guidelines* for VDRPT, which may provide useful guidance on transect zone development to discriminate across different types of suburban environments.
- Similarly, a more nimble and flexible approach to measuring proximity might be explored. The LATR trip generation reduction for proximity to

Metrorail stations is one current example; this approach could be expanded to consider proximity to other types of transit. The use of a connectivity index, such as applied in the Alachua County Mobility Plan, could be considered a proximity measure for walking/bicycling facilities. Alternatively, an approach similar to the LEED-ND Mixed Use Activity Centers (NPD C3) might be considered.

In addition to coordinating the two technical components of this study, the analysis needs to be correlated with the development of the Travel/4 model and refined LATR trip generation rates. The two primary partner firms in this proposal, Renaissance Planning Group and VHB, are also on the team working for the Planning Department on this important parallel study. Selection of Renaissance Planning Group for the LATR and TPAR analyses would facilitate and streamline coordinated efforts, an element reflected in our technical and cost proposals.

### Synthesizing Communications, Analysis, And Policy Development

Our approach to the beta-testing and development of recommendations for both LATR and TPAR will leverage our skills in communicating, analyzing, and developing policy. We will conduct two iterations of this approach for both LATR and TPAR, with the following approach:



Iterative approach to synthesize communications, analysis, and policy development



- **Communications:** Our initial communications with the Planning Department staff and the TISTWG will be primarily a listening event, to understand each stakeholder's interests and concerns, and to tailor the work scope and, most importantly, the elements to be incorporated into the literature review.
- **Analysis:** Our first analysis step will be the literature review elements for both the LATR and TPAR tasks. The key elements are pros and cons of alternative approaches and a sense of transferability to Montgomery County.
- **Policy Development:** Our literature review will be conducted in two stages, with preliminary recommendations for screening alternatives incorporated into our presentation. The two stage process allows the TISTWG to ask questions on the initial findings while we are conducting the literature review. At the end of the literature review phase we will have identified those alternatives which warrant beta-testing in a Concept Screening Report, and a rationale for screening out those not carried forward for more detailed study.
- **Communications:** As we vet the list of policy approaches for beta-testing as described in the Concept Screening Report, we will also engage the TISTWG on their interests and concerns regarding alternative approaches to be tested.
- **Analysis:** We will work with M-NCPPC staff to develop the hypothetical case studies and will test those case studies under different land use environments
- **Policy Development:** The most promising policy alternatives will be carried forward with a final set of iterations between analysis and policy development in review with the Planning Department staff and the TISTWG.

## TECHNICAL COMPONENT A. LOCAL AREA TRANSPORTATION REVIEW (LATR)

The value of this effort under Technical Component A has been recognized by the Planning Department for several years. Project Manager Dan Hardy is perhaps uniquely familiar with the work scope for this task, having worked with Eric Graye on the first draft of the work scope in 2009. On behalf of the Montgomery County constituency, we are pleased to see the project moving forward.



### ***Task A-1. Stakeholder Outreach***

Stakeholder buy-in is a critical element of Subdivision Staging Policy changes as both private sector development interests and transportation implementing agencies have vested interests in the outcome of policy actions, valuable perspectives on the pros and cons of alternative approaches, and influence on decisionmakers. The Renaissance Team will assist M-NCPPC in the development of the Transportation Impact Study Technical Working Group (TISTWG). We expect that the following agencies should be included in the TISTWG:

#### **Core Technical Team**

- MCDOT
- Maryland SHA
- WMATA

#### **Advisory Team**

- Maryland-National Capital Building Industry Association
- Montgomery Civic Federation
- Montgomery County Department of Economic Development
- Montgomery County Council staff

The Core Technical Team members comprise the transportation implementing agencies that are already working together on transportation impacts of site development on a regular basis through the Planning Department's Development Review Committee (DRC). These members are well-versed in the day-to-day concerns from folks "in the trenches" on the issues, and should be invited, and expected, to attend each TISTWG meeting (which could be scheduled adjacent to the DRC meetings to minimize travel time).

The Advisory Team consists primarily of stakeholders representing the development and traveling communities. These representatives bring perspectives to the table that are equally valid as those on the core team. However, they typically benefit from a little more context-setting and explanation will be valuable for them to both understand the impacts of potential study decisions and to continue to act as ambassadors for the audiences they represent. They would be invited to each meeting, but perhaps only expected to attend meetings in advance of key decision points, to recognize the fact that this topic is neither on the critical path of their daily workload nor are they necessarily interested in the detailed discussion topics in which the Core Technical Team will need to engage. This will also facilitate the development of meeting agendas and handout materials; those prepared for the Core Technical Team will be more technical in nature and less polished than the study deliverables that will be the key review products for the Advisory Team.



While the focus of the TISTWG will be on the LATR study processes, we expect the same group will be valuable for consideration of the TPAR changes, particularly since the development review implementation

We envision 10 meetings of the TISTWG covering the following topics:

- **July 2014:** Kickoff: review of project scope/schedule, listening to stakeholder interests, concerns, input on literature review
- **August 2014:** Discussion of Draft Literature Review; Q&A on pros/cons as applicable to Montgomery County
- **September 2014:** Delivery of Final Literature Review and framing of potential options
- **October 2014:** Presentation of Concept Screening Report with recommendations for beta-testing
- **November 2014:** LATR and TPAR Beta-Test Round #1; examination/confirmation of desirability to bifurcate LATR and TPAR findings
- **December 2014:** Status report on LATR beta-testing
- **January 2015:** Review of Draft Final Report on LATR elements
- **February 2015:** Status report on TPAR beta-testing
- **March 2015:** Status report on TPAR beta-testing
- **April 2015:** Review of Draft Final Report on TPAR elements (plus any revisions to LATR elements)
- **May 2015:** Review of Final Report on TPAR and LATR elements and draft presentation materials to Planning Board and County Council

We have provided a full schedule showing the relationship among all seven technical tasks at the end of this section.

A key element to maintaining the project schedule is to facilitate quick consensus building at decision milestones. The Renaissance Team is keenly aware that each stakeholder group has unique perspectives, and that in particular, the Planning Department staff and Executive Branch agencies have formal and independent paths toward affecting any policy decision requiring County Council action. The Planning Department staff will need to make the final call on any decision on which there is a lack of consensus among TISTWG members. We recognize that in such cases, the advice of the Planning Board during a Roundtable discussion (for which no votes are taken and minimal preparation time is needed) can be an effective way to either confirm or refine Planning Department staff positions. We have assumed participation in two Planning Board roundtable events in our cost estimate.



### **Task A-2. Literature Review**

The Renaissance Team will conduct the literature review as described in the RFP, although as noted above, we would conduct the two literature review efforts (A-2 and B-1) simultaneously to streamline the process. When the list of jurisdictions was originally developed, the focus was on communities that had a robust and/or unusual network analysis process. So at that time, jurisdictions that had abandoned their analytic process, such as San Francisco's Auto Trips Generated (ATG), were not included in the literature review list. We will work with the Planning Department and then with the TISTWG to consider additional jurisdictions to add to the literature review, selecting places that best meet the interests of the study team.

The evolution of California's approach to multimodal transportation impact analysis has been accelerated by the passage of SB 743. Under SB 743, the Governor's Office of Planning and Research (OPR) has been directed to revise the guidelines for conducting transportation analyses under the California Environmental Quality Act (CEQA). The primary change that has been requested in SB 743 is to reduce reliance on roadway capacity, level of service, and delay and replace these performance measures with analysis based on vehicle miles travelled (VMT) or similar performance measures. The intent is to encourage smart growth and infill developments and reduce the amount of greenhouse gas emissions produced by vehicle travel. OPR identified several alternative measures to vehicle LOS in February 2014 and asked stakeholders for comments on them.

<http://opr.ca.gov/docs/PreliminaryEvaluationTransportationMetrics.pdf>

The Renaissance Team is able to leverage the investment that Erik Ruehr of VRPA has already made as the Chair of the ITE Western District *SB 743 Task Force*. Erik's leadership of that task force, and his letter to OPR on behalf of the more than one thousand members of ITE's Western District, forms the starting point for our efforts on communicating the impacts and effects of SB 743 to the Planning Department and the TSITWG:

[http://www.opr.ca.gov/docs/ITE\\_Final\\_Letter\\_to\\_OPR\\_2-14-14.pdf](http://www.opr.ca.gov/docs/ITE_Final_Letter_to_OPR_2-14-14.pdf)

Erik is also familiar with the work of several California jurisdictions in responding to this initiative. OPR will be developing formal guidelines on implementing SB 743 during summer 2014, so the evolution of that state law will occur in a timely manner to provide insight for this study.

During this interim period while guidelines for SB 743 are drafted, most agencies in California are simply waiting for the new rules to be published rather than taking steps to prepare for this change in policy. However, some agencies had begun to implement alternative transportation impact measures prior to the passage of SB 743. The City and County of San Francisco's alternative measure was automobile trips generated (ATG), based on a program in which any project that generated new automobile trips was considered to create traffic impacts and would pay an impact fee based on the number of trips generated. The fee would



be paid instead of conducting a traffic impact analysis based on more traditional roadway level of service methods:

<http://www.sfcta.org/sites/default/files/content/Executive/Meetings/pnp/2008/10/oct07/100508%20ATG%20Impact%20Measure%20Final%20Report.pdf>).

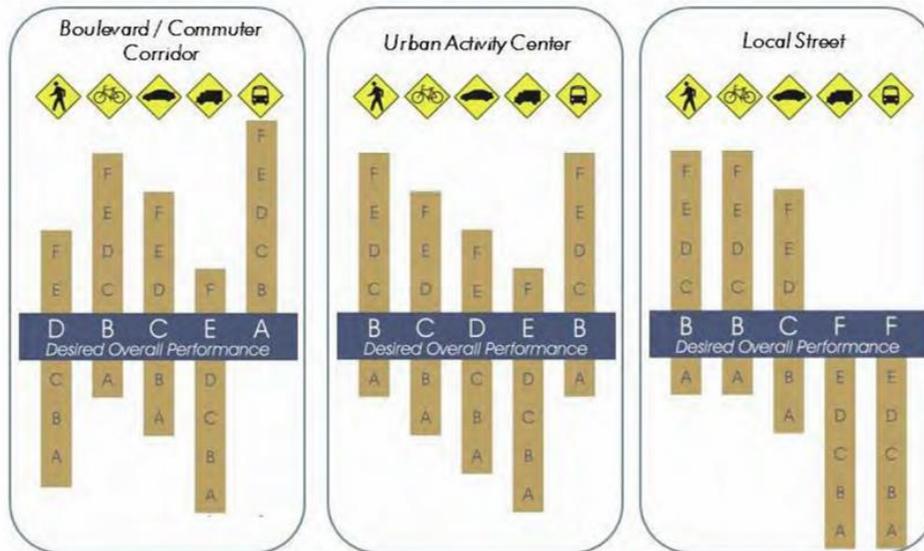
In addition, Yolo County (located west of Sacramento) has adopted a General Plan Circulation Element that uses VMT as an impact measure for the Dunnigan Specific Plan, its largest proposed development project:

<http://www.yolocounty.org/home/showdocument?id=14467>).

We expect the screening of alternatives for the LATR process to include:

- A pay-go system or other exaction process for measuring Auto Trips Generated (as in San Francisco) or VMT (as contemplated in SB 743)
- A centralized system of updating transportation model simulation in urban areas of the County to better assess operational constraints associated with short blocks and high levels of pedestrian and transit activity such as in Boston
- Multimodal Transportation Districts, such as Renaissance has helped pioneer in Florida communities like Kissimmee, and Destin
- Accessibility analysis; in which the measure of success is not the speed of motorized travel, but the number of destinations reachable within a given travel budget. Such an approach could either incorporate robust analysis as applied in the MWCOG TLC study Renaissance conducted for the Planning Department on parking credits for bikeshare. Conversely, it could be simplified in a manner akin to the LEED-ND credits for Mixed Use Neighborhood Centers (NPD C3).

Rich Kuzmyak has recently completed the research that will be published this summer as NCHRP Report 770: *Estimating Bicycling and Walking for Planning and Project Development*. The toolbox in this report will be used by the VHB/Renaissance team in developing context-sensitive trip-generation rates for the Planning Department and will be equally applicable to identifying smart growth and TOD environments in the suburban realm of the County where pedestrian and bicycle network infrastructure is likely to have the greatest value.



ITE recommends considering context-sensitive Quality of Service objectives for each mode of travel.

The challenge of blending very disparate multimodal system performance measures is a topic considered in the Institute of Transportation Engineers (ITE) 2013 document *Planning Urban Roadway Systems Recommended Practice*, for which Project Manager Dan Hardy served as a contributing author. The Recommended Practice suggests a context-sensitive approach to the expectation for quality of service across different modes in different context zones. For instance, on a boulevard that connects two somewhat distant activity centers (perhaps Georgia Avenue between Wheaton and Silver Spring), quality of service for longer-distance modes like transit, bicycles, and autos are more important than the quality of service for pedestrians. In an urban activity center, perhaps pedestrians and transit are the modes deserving of the highest quality of service, and on local neighborhood streets transit vehicles and trucks do not require a particularly high quality of service. While each street would still be a complete street designed to accommodate all users, the concept of modal emphasis helps identify which modes deserve the greatest attention to user comfort, convenience, and perceived safety.

### Task A-3. Beta-Test Alternatives

We expect to carry three materially different types of LATR network tests forward into beta-testing; each of which might be considered to have different performance standards or levels of detail based on factors such as geographic area or proximity factors. For instance, the three types of tests might include:

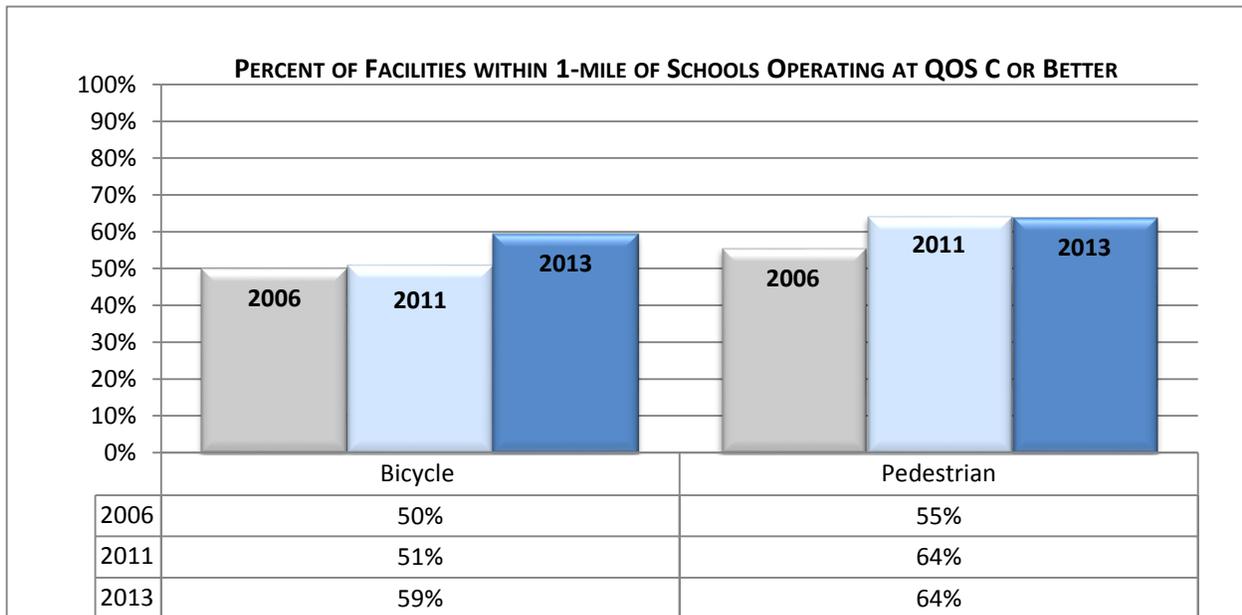
- A process to incorporate non-auto elements into the CLV calculation such as the approach to include pedestrian crossing times into the signal phasing element of the CLV calculation that was developed by team member VHB for the Silver Spring downtown circulation study,
- A process to include Highway Capacity Manual LOS calculations for pedestrians, bicyclists, and transit vehicles in selected cases (similar to

the current reference to HCM for auto delays at intersections with >1600 CLV), and

- A process to incorporate an assessment of bicycle and pedestrian system adequacy, such as a quantification of the level of gaps in master planned sidewalk and bikeway system, as a firm requirement to satisfy LATR in parallel with the current intersection analysis element (essentially placing a higher analytic value on the current Pedestrian and Bicycle Impact statement element of the LATR study submission).

The Renaissance Team will conduct three types of beta-tests for the alternatives:

As described in the CBD, we will select a hypothetical 500,000 SF mixed-use development in a selected TOD area of the County. It may be useful to consider this development as being in the Bethesda CBD, considering the concurrent Sector Plan amendment process. However, we also recommend that the location and type of development remain hypothetical, to avoid biasing any results with perceptions about a specific development proposal or location, as well as to facilitate the incorporation of pertinent analysis elements for sensitivity testing.



*Our Kissimmee MMTD monitoring report demonstrates the City's progress implementing bicycle and pedestrian improvements where they are most needed.*

These sensitivity testing elements may include:

- The presence of a Metrorail station, BRT station, or other transit center,
- The proximity to nearby destinations that would affect walking/biking trips
- The consideration of alternative TDM policies or programs that would affect non-auto driver mode shares for either journey to work trips (per current County policy) or all trips (if desired)
- The consideration of nearby bicycle and pedestrian environments conducive to Quality of Service evaluations

We will also conduct a series of simpler, non-network constrained tests to examine the likely synergies (or conflicts) between the different funding mechanisms that would be applicable to the hypothetical 500,000 square foot development, depending upon its location in different areas of the County. This type of approach would be similar to the analysis led by Dan Hardy as part of the 2009 Growth Policy evaluation that demonstrated the combined effects of transportation tests and transportation impact taxes for elements the Planning Board considered at that time, including benefits for proximity to transit and basic services.

2009-2011 Growth Policy					Page 6 of 8
Case Study Examples of Smart Growth Criteria Effects					
Case Study #1. Metro Station Policy Area With 35% PAMR Mitigation Requirement					
STAFF DRAFT RECOMMENDATIONS					
COMPARISON OF PAMR AND IMPACT TAX COSTS					
	Sample Proposal Without Smart Growth Criteria	Alternative Review Proposal #1 - Mixed Use Transit Proximity	Alternative Review Proposal #2 - Proximity to Basic Services	Comparison: Increased FAR Without Residential	
<b>IMPACT TAX COSTS TO APPLICANT</b>					
Transportation Impact Tax Office					
GSF	82500	75000	75000	165000	
Rate	\$ 4.85	\$ 4.85	\$ 4.85	\$ 4.85	
Extension	\$ 400,125	\$ 363,750	\$ 363,750	\$ 800,250	
Transportation Impact Tax Retail					
GSF	67500	60000	60000	135000	
Rate	\$ 4.34	\$ 4.34	\$ 4.34	\$ 4.34	
Extension	\$ 292,950	\$ 260,400	\$ 260,400	\$ 585,900	
Transportation Impact Tax - High Rise Residential DU (subject to impact taxes)	0	129	136	0	
Rate	\$ 2,420.00	\$ 2,420.00	\$ 2,420.00	\$ 2,420.00	
Extension	\$ -	\$ 312,180	\$ 329,120	\$ -	
School Impact Tax - High Rise Residential DU (subject to impact taxes)	0	129	136	0	
Rate	\$ 4,127.00	\$ 4,127.00	\$ 4,127.00	\$ 4,127.00	
Extension	\$ -	\$ 532,383	\$ 561,272	\$ -	
<b>TOTAL IMPACT TAX</b>	<b>\$ 693,075</b>	<b>\$ 1,468,713</b>	<b>\$ 1,514,542</b>	<b>\$ 1,386,150</b>	
<b>PAMR COSTS TO APPLICANT</b>					
Applied toward MPDUs	\$ -	\$ 731,500	\$ 376,750	\$ -	
Applied toward transportation projects	\$ 1,342,000	\$ -	\$ 753,500	\$ 2,662,000	
<b>TOTAL PAMR COST</b>	<b>\$ 1,342,000</b>	<b>\$ 731,500</b>	<b>\$ 1,130,250</b>	<b>\$ 2,662,000</b>	
<b>TOTAL PAMR COST PLUS IMPACT TAX</b>	<b>\$ 2,035,075</b>	<b>\$ 2,200,213</b>	<b>\$ 2,644,792</b>	<b>\$ 4,048,150</b>	
Total Development GSF	150000	300000	300000	300000	
<b>TOTAL PAMR COST PLUS IMPACT TAX / GSF</b>	<b>\$ 13.57</b>	<b>\$ 7.33</b>	<b>\$ 8.82</b>	<b>\$ 13.49</b>	
Resources Provided for Transportation	\$ 2,035,075	\$ 936,330	\$ 1,706,770	\$ 4,048,150	
Resources Provided for Schools	\$ -	\$ 532,383	\$ 561,272	\$ -	
Resources Provided for Affordable Housing	\$ -	\$ 731,500	\$ 376,750	\$ -	
<b>TOTAL</b>	<b>\$ 2,035,075</b>	<b>\$ 2,200,213</b>	<b>\$ 2,644,792</b>	<b>\$ 4,048,150</b>	
Transportation Resources Per New Vehicle Trip	\$ 5,848	\$ 2,471	\$ 4,354	\$ 5,867	

Note: All scenarios reflect adoption of \$11,000 value for vehicle trips requiring mitigation Under FY 2007-2009 Growth Policy, PAMR costs range estimated to average \$3,000 per vehicle trip.

Finally, we will conduct simpler assessments of the overall projected fiscal benefits of alternative approaches to estimate the fiscal effect on private transportation sector funding by policy area, using Department-provided estimates of growth through 2024, 2026, and 2040. These types of sensitivity analyses provide a quick-response sense of scale for decisions such as varying:

- The definition of de-minimis impacts (for instance, the LATR minimum threshold of 50 peak hour vehicle trips is lower than the ITE Recommended Practice of 100 peak hour vehicle trips),



- The applicable CLV threshold warranting mitigation (a new overlay approach of a 1700 CLV for BRT station areas has been suggested), or
- The relationship between the funding mechanisms (LATR, TPAR, transportation impact tax, and other types of impact or ad-valorem taxes).

#### **Task A-4. Develop Recommendations**

As noted under Task A-1, we view the development of recommendations as an iterative process for both Technical Components A and B, including the types of elements to be considered in the literature review, the selection of concepts to be included in the detailed beta-tests, and the development of final concepts for presentation to the Planning Board and County Council.

## **TECHNICAL COMPONENT B. TRANSPORTATION POLICY AREA REVIEW**

The incorporation of transit service into the policy area review of the Subdivision Staging Policy has had a pendulum effect in recent years. Up until 2007, transit system adequacy was assessed using an estimated or forecasted mode share and then used only to set the corresponding highway level of service standards.

In 2007, the Policy Area Mobility Review (PAMR) approach assessed transit system accessibility using the *Transit Capacity and Quality of Service Manual* concept of transit system (measured as relative transit mobility, or the speed with which the journey to work can be made by transit relative to the auto). The calculation was weighted by transit ridership so that origin-destination pairs with highest transit ridership (due not only to relative modal speed, but also to influences such as parking charges) received the highest weights. While reflecting a level of technical elegance, the primary limitations to this approach were that:

- The relative transit mobility scores by policy area did not lend themselves towards promoting any particular transit solutions, particularly those that private sector applicants could influence,
- The relationship between arterial and transit level of service was entirely mechanical, developed inside the “black box” of the travel demand model which was both difficult to understand and did not provide the Planning Board or Council any levers with which to exercise policy judgment, and
- The transit performance metrics were not aligned with any other transit system metrics used in the County to assess quality of service.

The 2012-2016 Subdivision Staging Policy addressed these concerns, but may have moved the pendulum too far in the other direction towards the provision of the number of buses, but without considering. The Planning Department is



interested in incorporating alternative level of service measures such as travel time or person-throughput into the process. The use of a person-throughput measure could help align the Subdivision Staging Policy with a similar measure being explored by MDOT and WMATA for gauging transit system investment potential, and will be feasible using the Travel/4 model.

### **Task B-1. Literature Review**

The Renaissance Team will conduct the TPAR literature review commensurate with the LATR literature review described in Task A-2 to look for commonalities and synergies among the jurisdictions cited.

Given the focus on transit performance measures that both consider the level of service elements in TRB's *Transit Capacity and Quality of Service Manual* as well as the interest in aligning development review objectives with local, regional, and federal transit investment policies, Tim Crobon with Connetics will play a key role in this evaluation. Our literature review will not only provide an in-depth assessment of development review policies in use by other jurisdictions, but also an evaluation of the degree by which other emerging metrics might be applicable from national perspectives. Consideration (for both TPAR and LATR Technical Components) will be given to elements that particularly seek to measure and recognize sustainable solutions, such as NCHRP Report 708: *A Guidebook for Sustainability Performance Measurement for Transportation Agencies*, and the EPA's *Guide to Sustainable Transportation Performance Measures*.

The range of conceptual alternatives for the areawide TPAR test could potentially be as wide-ranging as for the LATR test. We propose to purposefully narrow the TPAR analytic process to focus on the primary challenge to incorporate BRT solutions into the existing TPAR process. We understand that more comprehensive changes to TPAR are generally not desired by the Planning Department or County Executive staff, and would likely only be explored if taken in concert with specific small-area plan geographies such as yielded the White Flint Special Taxing District. For instance, such an approach may be appropriate for implementing the upcoming Bethesda CBD Sector Plan amendment.

Per the project schedule, we would develop recommendations for TPAR approaches to beta-test as part of the Concept Screening Report in December 2014, concurrent with the LATR approaches. As with the LATR approaches in Technical Component A, we expect to carry forward three basic TPAR approaches in Technical Component B, which could include options such as:

- An approach based on synchronizing policy area transit ridership levels to the current policy service levels (akin to the transit productive measure described in EPA's *Guide to Sustainable Transportation Performance Measures* that might both refine the service thresholds in the current growth policy,
- An approach relying more heavily on average transit speed and ridership, similar to the *Transit Capacity and Quality of Service* approach used in PAMR, but without the rigorous linkage to the arterial mobility, and

- An approach considering transit system ridership for cordons around key activity centers that would help assess person-throughput and non-auto driver mode shares.

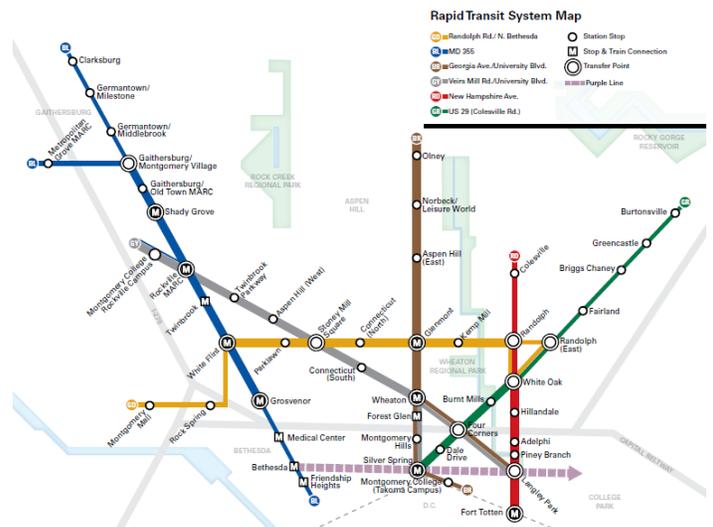
### Task B-2. Beta-Test Alternatives

The Renaissance Team will guide the development and execution of alternative TPAR tests for 2024, 2026, and 2040 as described in the RFP. The analysis of TPAR results is expected to take considerably more time, however, due to the need to consider three separate timeframes (2024, 2026, and 2040) and potentially conduct some fairly intensive BRT system coding options in the Travel/4 model. Furthermore, the use of the Travel/4 model facilitates transit system assignment, but introduces a potential complicating factor in correlating Travel/4 model output to the operating system data in the current policy.

In each alternative we would recommend an evaluation approach wherein minimal post-processing of travel model data is needed to develop the appropriate transit performance metrics to streamline the analysis process both during this research and development phase as well as for future master planning and implementation efforts. For instance, given the fact that the Travel/4 model is not calibrated to station-specific boardings, such an approach might mean that it may be feasible to readily assess person-throughput on all facilities connecting the Bethesda/Chevy Chase and Silver Spring/Takoma Park policy areas, but it would likely not be prudent to assess the relative performance on transit and auto use of the Capital Beltway, East-West Highway, and the Purple Line independently.

We appreciate the statement at the pre-bid meeting that M-NCPPC plans to perform model runs in-house using Planning Department staff. This both facilitates a cost savings for the consulting team, but more importantly it helps the Planning Department staff become more engaged and vested in the TPAR modification process, understanding the new Travel/4 model strengths and weaknesses, a process that will result in more brainstorming power for ensure that the approaches being considered are both innovative and practical.

We would propose to provide assistance to M-NCPPC in guiding the development of both BRT network definition and extracting relevant data from the model runs. Team member VHB has provided consulting services to MCDOT on BRT network development which will prove valuable in defining BRT system elements in Travel/4 that are consistent with MCDOT expectations. VHB will also provide services in developing model scripts for Planning Department staff to report relevant model outputs at the policy area level.



VHB's work for MCDOT on the CTCFMP service plan will streamline our technical analysis.



### ***Task B-3. Develop Recommendations***

As noted under Tasks A-1 and A-4, we view the development of recommendations as an iterative process for both Technical Components A and B, including the types of elements to be considered in the literature review, the selection of concepts to be included in the detailed beta-tests, and the development of final concepts for presentation to the Planning Board and County Council.

## **PROJECT SCHEDULE**

The Renaissance Team will complete this project by June 2015, as indicated in the attached schedule chart. The chart follows the iterative approach of communication, analysis, and policy development summarized in the description of the study understanding. The monthly TISTWG meetings are identified (with the agendas outlined in the description of Task A-1). The major deliverables are identified below, and will be delivered 15 days in advance of the relevant TISTWG meeting to facilitate TISTWG member review and discussion at the meetings:

- The draft Literature Review (Tasks A-2, B-1) will be delivered in August 2014
- The final Literature Review (Tasks A-2, B-1) will be delivered in September 2014
- The Concept Screening Report (Tasks A-4, B-3) will be delivered in October 2014
- The draft LATR Recommendations (Task A-4) will be delivered in January 2015
- The draft TPAR Recommendations (Task B-3) will be delivered in April 2015
- The final LATR and TPAR Recommendations (Tasks A-4, B-3) will be delivered in May 2015
- Presentations to the Planning Board and County Council will be delivered in June 2015.



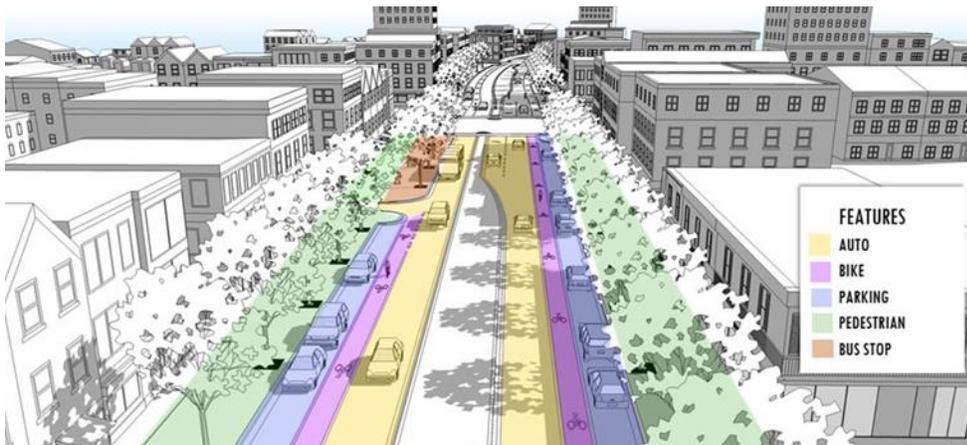
**Project Schedule – LATR and TPAR Refinement**

Study Tasks	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
A.1. Stakeholder Outreach	Work											
A.2. Literature Review		Work	Work	Work								
A.3. Beta Testing of Alternatives					Work	Work	Work	Work				
A.4. Development of Recommendations				Work	Work	Work	Work	Work	Work		Work	Work
B.1. Literature Review		Work	Work	Work								
B.2. Beta Testing of Alternatives					Work							
B.3. Development of Recommendations				Work	Work				Work	Work	Work	Work

Duration of Work
  TISTWG Meeting
  Workshops & Presentations
  Literature Review , Concept Screening Report, and Final Report Deliverables



### 3. EXPERIENCE AND REFERENCES



The Renaissance Team brings relevant experiences and technical skills that are directly aligned with the needs of this project. In particular, we offer qualifications in:

- Innovative Transportation Analysis and Performance Measures
- Multimodal Planning and Implementation
- Integrated Land Use and Transportation Policy Development
- Stakeholder Engagement, Training and Communications

The following pages highlight our general understanding of the key issues within each of these topic areas and highlights some relevant experiences of our team members and sub-consultant partners. Following this narrative is a summary matrix demonstrating our project experiences and the associated skills and technical areas of expertise as well as select full page project descriptions and client references.

#### INNOVATIVE TRANSPORTATION ANALYSIS & PERFORMANCE MEASURES

As more and more communities transition towards a performance based approach to planning, there is a growing need to develop new tools, analyses and measures of effectiveness for integrated growth management and multimodal transportation policies. The establishment of innovative performance measures such as multimodal levels of service and multimodal accessibility are emerging areas of practice that are also often supported with design guidelines and other frameworks to ensure that development patterns and transportation performance align to support a community's desired quality of life goals.

In the most traditional sense, Renaissance has worked with local governments and MPO's to address performance based approaches to align long range transportation planning with federal transportation such as MAP-21, or to align corridor transportation strategies in support of livability outcomes at the local level. Currently we are working with the **Maryland Department of Transportation (MDOT)** to develop a new tool for evaluating multimodal accessibility which can be used to supplement other measures of

The Renaissance Team has a wealth of experience leading projects that have a strong **integrated transportation and land use planning, analysis and policy development** process. This experience is supported by professionals with in-depth engineering, traffic, travel demand modeling, transit operations, land use and transportation policy development and communication skills.

performance when evaluating development proposals or strategic transportation investments. Under a contract with **US EPA's Office of Sustainable Communities**, Renaissance help developed transit accessibility measures in support of the **Smart Location Database**, which is a national GIS-based resource to aid in locational decision-making for the General Services Administration. In addition, our firm recently completed the soon to be published **National Highway Cooperative Research Program (NCHRP 08-78)** research report that outlines a new method and process of estimating bicycle and pedestrian demand based on both facility and land use variables. Finally, our firm has worked with the **Virginia Department of Rail and Public Transportation** to development statewide **Multimodal and Public Space Design Guidelines** aimed at helping communities better adapt local corridors and streets to accommodate multimodal transportation investments and the **Florida Department of Transportation** to create guidance on implementing transit oriented development (TOD) statewide.

## MULTIMODAL PLANNING, ANALYSIS & IMPLEMENTATION

Renaissance integrates its expertise and innovative tools in transportation planning, land use planning, and urban design to develop comprehensive, multimodal strategies for communities. Multimodal planning is about more than just facilities. Successful multimodal planning also requires a thorough understanding and analysis of the mix and arrangement of land uses, the density of development, and the design of buildings and streetscapes. Each of these elements is an essential component of a multimodal plan, whether for a master plan, corridor study, transportation plan, comprehensive plan, or visioning exercise. With an additional emphasis on funding mechanisms, design guidelines, and other implementation strategies, Renaissance provides its clients not only with a planning framework but also with the various tools required for seeing the plan through to reality.

Multimodal planning includes an integrated approach to addressing auto, bicycle, pedestrian and transit modes. Our team has skills in has skills in traffic simulation, multimodal quality of service evaluations, bicycle and pedestrian planning, transit planning and operations, transit oriented development, walkability and development reviews in support of advancing multimodal transportation investments. The development of transportation impact analysis policy often occurs during the development review process itself, and Renaissance Team members have extensive experience in reviewing development review applications for public sector agencies. Project manager Dan Hardy **managed development reviews** for much of his career in Maryland, and senior planner and analyst Nick Lepp has worked on call with the cities of **Ocoee and Kissimmee, FL and Manatee County, FL conducting development reviews.**

Most recently we completed an integrated land use and transportation plan for the **Charleston Neck area of Charleston, SC that included a MMQOS evaluation.** Working with the Metropolitan Washington County of Governments and Montgomery County, members of the Renaissance also lead the development of an analysis to look at impacts relative to development review considerations associated with **Capital Bike-Share** locations. In 2013, Renaissance wrapped up work with the Brevard County MPO to complete a **comprehensive bicycle and pedestrian plan.** Finally

Dan Hardy helped navigate a creative response to development review in Montgomery County. Under the then-current LATR Guidelines, a major hospital relocation to the county would have required widening a portion of Cherry Hill Road and adding a turn lane. At the same time, the adjacent FDA headquarters complex was under development, including parcels along Cherry Hill Road that would ultimately be part of a mixed-use environment.

Dan helped the hospital applicant establish an escrow fund to contribute to for FDA internal street construction in lieu of building the \$488,000 turn lane. This approach required extensive coordination with a variety of stakeholders and helped establish the practice of accepting policy area improvements at the equivalent of \$11,000 per peak hour vehicle trip.

our team is currently wrapping up the **long range transit plan for Fairfax County, VA** which looks at long range transit improvements and strategies at the corridor and system levels.

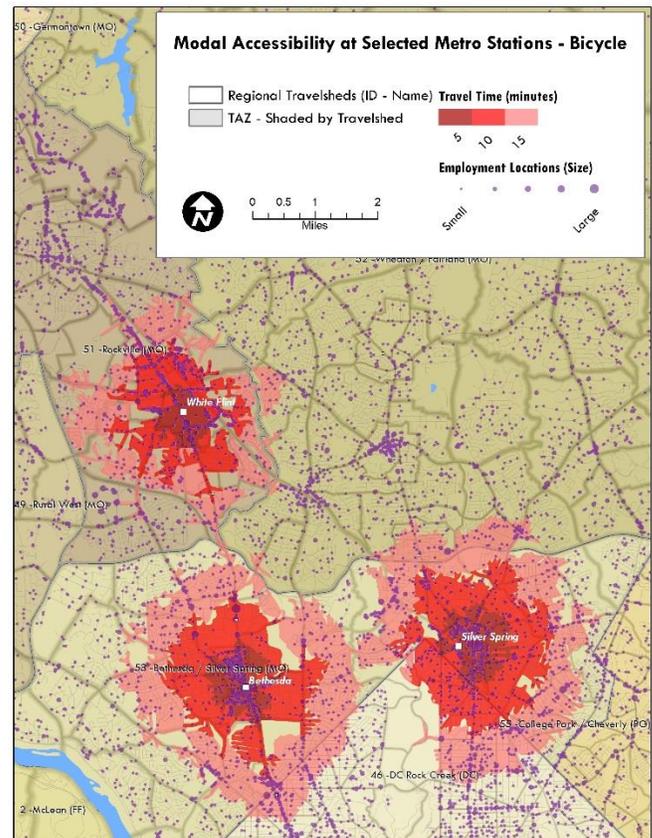
Our subcontracting partners at Connetics have in-depth expertise in transit planning having recently completed a **Comprehensive Operations Analysis (COA) for the Capital Area Transit System (CATS)**. In addition, our teaming partners with VHB worked closely with partners in Maryland on the **Montgomery County Bus Rapid Transit System**.

Our team also has specialized experience and understanding of the State of California's innovative new policies associated with **SB 743 legislation** which provides new guidance and analysis on local traffic reviews. Team member Erik Rueher provided expert analysis and opinion on suggested improvements and other considerations of the bill on behalf of Institute of Traffic Engineers (ITE).

## INTEGRATED LAND USE & TRANSPORTATION POLICY DEVELOPMENT

Renaissance Planning Group has been at the forefront of innovative land use and transportation policy development that aims to break down silos and better integrate growth management and multimodal transportation objectives into local plans. Of note, professionals in our firm led the development of **Multimodal Transportation Districts (MMTDs)** throughout the state of Florida over the last 10 years working the communities such as Destin and Kissimmee to establish an alternative to concurrency that helps communities seeking to create more walkable, compact centers address their multimodal transportation needs and priorities. In addition, project manager Dan Hardy was directly involved in the **White Flint Sector Plan** and subsequent analysis and monitoring to review and update policies in support of **travel demand management (TDM)** goals. Team members from VHB and Renaissance both have experience with Montgomery County in the development and application of the **LAR/TAPAR** approaches. On the long range and comprehensive planning fronts, Renaissance Planning Group has led the development of policies and implementation strategies for MPOs in updating **Long Range Transportation Plans (LRTPs)** and working with local governments such as Kissimmee, FL and Chesterfield County, VA on updating their **comprehensive plans** to better align land use and transportation objectives and policies.

Finally, our team also has experience in innovative implementation strategies having worked with Charlotte, NC and Kissimmee, FL to develop **Mobility Fees** as a supplement to traditional impact fees.



Dan Hardy of Renaissance was directly involved in the White Flint Sector Plan and subsequent analysis and monitoring to review and update policies in support of travel demand management.

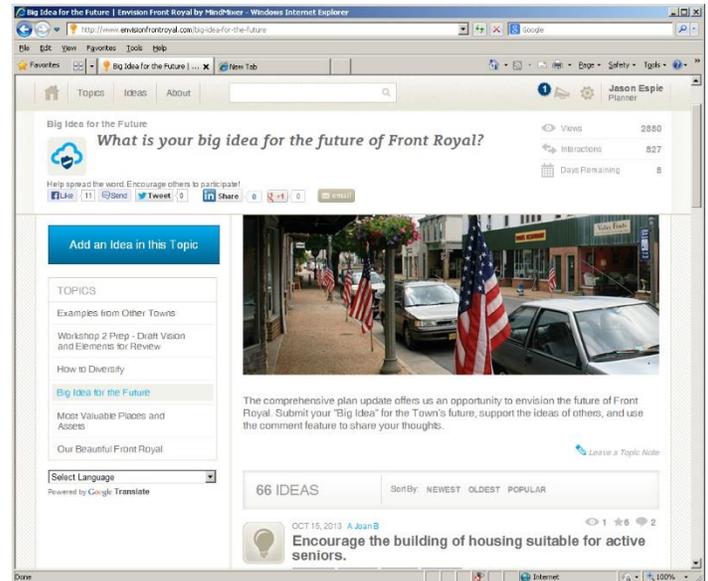
## STAKEHOLDER ENGAGEMENT, INTERAGENCY COORDINATION & TRAINING

The Renaissance Team specializes in meaningful and proactive public participation that covers a wide range of transportation and community planning issues. This experience includes work with individual MPOs on a wide variety of plans and project activities, as well as with inter-city councils and commissions. We believe in integrating the technical analysis with public participation methods using visualization techniques, surveys and facilitated exercises to enable people to understand key issues, assess various trade-offs, and make an informed decision about the preferred course of action.

Our communications strategies are integrated into public outreach strategies aimed at providing strategic communications both to the general public and key stakeholders and decision makers. Our techniques include interactive workshops, use of online forums and social media, highly synthesized communications and briefing papers and other methods of communication that help participants understand, weigh in on and ultimately reach consensus on key policy decisions. Most recently we employed **MindMixer**, an online collaborative tool to engage citizens of Front Royal, VA in a visioning process.

We are currently working in the **Wilmington, NC** region with a regional consortium on advancing conversations on livability which includes the development of a regional forum that includes **interactive key-pad polling** to help answer questions and gauge insights in real time on quality of life issues and goals.

In addition, team member Kate Ange is an adept facilitator and instructor. She has led many of the firm's interagency coordination efforts, public workshops and training exercises. Since 2009 Kate and other Renaissance staff have developed and taught the **two-day Transit Oriented Development course** for the **National Transit Institute (NTI)**, an educational center funded by the Federal Transit Administration. In addition Renaissance has been providing **national technical assistance** through the **US Environmental Protection Agency's (EPA) Sustainable Community Building Blocks program**. This work entails policy reviews, stakeholder engagement and education, and action planning on topics such as implementation of walkability, Complete Streets, sustainable design and development, livability and local food systems planning. Finally, Renaissance has worked with the **Federal Highway Administration (FHWA)** on developing workshops and primers on the topics of **Livability in Transportation Decisionmaking and Scenario Planning for Management and Operations**.



*Renaissance employed MindMixer, an online collaborative tool to engage the citizens of Front Royal, VA in a visioning process.*

## REFERENCES

Included below are references for both Renaissance and our subconsultants.

CLIENT NAME	RELATIONSHIP	CONTACT INFO
<b>Montgomery County Department of Transportation</b>	Renaissance is developing the TDM strategies for the White Flint Sector Plan to achieve the Plan's recommended 50 percent non-auto driver mode share goal.	Sandra Brecher, Chief, Commuter Services Montgomery County DOT (P) 240.777.2989 Sandra.brecher@montgomerycountymd.gov
<b>Fairfax County Department of Transportation</b>	Renaissance is conducting a countywide transit network study to determine the type of transit systems needed to accommodate desired economic growth throughout the County over the next several decades.	Tom Burke, PE, AICP, Project Manager Fairfax County DOT (P) 703.877.5681 thomas.burke@fairfaxcountygov.org
<b>City of Kissimmee (FL)</b>	Renaissance has completed an array of transit-focused projects for Kissimmee since 2005, including the development of a Multimodal Transportation District (MMTD), a transit circulator feasibility study and the creation of a new multimodal mobility fee.	Bob Wright, Project Manager City of Kissimmee (P) 407.518.2373 bwright@kissimmee.org
<b>Sarasota/Manatee Metropolitan Planning Organization</b>	Renaissance has completed several projects as general planning consultants to help integrate land development and public investment policies, including a Public Transportation System Analysis and Latent Demand Transit Studies	Michael Howe, Executive Director Sarasota/Manatee Metropolitan Planning Organization (P) 941.359.5772 michael@mymppo.org



CLIENT NAME	RELATIONSHIP	CONTACT INFO
<b>Montgomery County Department of Transportation (VHB)</b>	VHB completed a Montgomery County Bus Rapid Transit System concept plan for the Montgomery County Department of Transportation.	Mr. Gary Erenrich, Project Manager Montgomery County DOT (P) 240.777.7156
<b>Maryland-National Capital Park and Planning Commission (VHB)</b>	VHB completed a Montgomery County Department of Planning Local Area Model Technical Assistance contract for M-NCPPC.	Eric Graye, AICP, PTP, Project Manager Travel Forecasting and Monitoring Unit (P) 301.495.4632
<b>Capital Area Transit System (Connetics)</b>	Connetics Transportation Group (CTG) was part of a team conducting the three-part study effort, which included a Comprehensive Operations Analysis (COA), a Market Research Analysis (MR), and an Alternatives Analysis (AA).	Todd Mance, Project Manager (P) 225.389.8929 tmance@brgov.com
<b>March Joint Powers Authority (VRPA)</b>	VRPA Technologies has been working as the on-call traffic engineering consultant for the March JPA for several years.	Dan Fairbanks, Project Manager (P) 951.656.7000



## PROJECT MATRIX SEPARATED BY TASK AREA

Included below are relevant projects separated out by task category. Full project descriptions can be found in the following pages. Work samples can be found in the Key Personnel and Experience section.

		Innovative Transportation Performance Measures	Accessibility	Innovative Tools and Analysis	Guidelines	Multimodal Planning and Implementation	Travel Demand/Traffic	Multimodal Quality of Service	Bicycle/Pedestrian	Transit	Development Review	Land Use and Transportation Policy Development	MMTD	LAR/TPAR	Long Range Trans. Planning	Comprehensive Planning	Impact Fee/Mobility Fees	Stakeholder/Agency Outreach	Interagency Coordination	Workshops/Social Media	Training	
Relevant Local Experience	Fairfax County DOT Countywide Transit Network Study		•	•			•			•					•				•			
	Maryland DOT Assessment of Analytic Needs and Tools		•	•															•			
	Chesterfield County (VA) Comprehensive Plan Update			•															•			
	Metropolitan Washington Council of Governments Montgomery Bikeshare Policy			•					•													
	Front Royal (VA) Envision Front Royal			•	•																•	
	Montgomery County (MD) White Flint TDM		•	•							•			•						•		
	Montgomery County BRT System			•			•			•					•					•		
	Montgomery County Local Area Model - MNCPPC			•			•															
	Virginia DOT Office of Intermodal Planning Investment On-Call															•				•	•	
	Virginia Department of Rail and Public Transportation Multimodal System Design Guidelines			•																•	•	
	Virginia DOT VTrans2035/Virginia Surface Transportation Plan			•												•				•	•	



		Innovative Transportation Performance Measures	Accessibility	Innovative Tools and Analysis	Guidelines	Multimodal Planning and Implementation	Travel Demand/Traffic	Multimodal Quality of Service	Bicycle/Pedestrian	Transit	Development Review	Land Use and Transportation Policy Development	MMTD	LAR/TPAR	Long Range Trans. Planning	Comprehensive Planning	Impact Fee/Mobility Fees	Stakeholder/Agency Outreach	Interagency Coordination	Workshops/Social Media	Training			
Relevant National/Southeast Experience	Bradenton-Palmetto Downtown Mobility Study		•	•			•	•	•										•					
	Destin Multimodal Transportation District (MMTD)			•	•			•	•		•		•											
	Charlotte DOT Multimodal Traffic Impact Analysis Revisions				•												•		•					
	Kissimmee Multimodal Planning & Development		•	•				•	•	•	•		•		•	•	•		•	•				
	Capital Area Transit (CATS) Comprehensive Op Plan									•														
	MetroPlan Orlando Regional Land Use Performance Measures		•	•	•										•				•					
	NCHRP 08-78 Bicycle & Pedestrian Demand		•	•					•															
	Ocoee Continuing Transportation and Development Review Services											•						•						
	Master Plan for the Neck Area of Charleston & North Charleston					•		•						•					•	•				
	Sarasota/Manatee MPO US 41 Latent Demand Transit Studies			•			•			•														
	Sarasota/Manatee MPO Mobility 2035 LTRP														•									
	Space Coast Bike/Pedestrian Plan		•	•					•						•				•					
	FHWA Strategies for Livable Communities Guidebook																		•			•		
	Space Coast TPO Bicycle and Pedestrian Mobility Plan		•	•					•						•				•					
	National Transit Institute TOD Training																						•	

# WHITE FLINT TDM

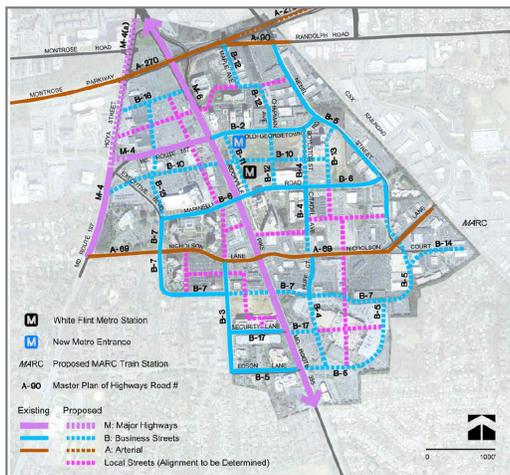
## MONTGOMERY COUNTY

### DEPARTMENT OF

### TRANSPORTATION

The White Flint Sector Plan is a 430-acre activity center oriented toward the White Flint Metrorail Station. The White Flint Sector Plan was the first area plan to implement the County's new CR (commercial-residential) zone with the objective to spur redevelopment of auto-oriented uses along Rockville Pike (MD 355). The Plan's implementation process includes replacing site-specific traffic impact studies with an alternative review procedure that includes a special taxing district and a three-tiered staging plan that requires phased implementation of a robust local street network, reconstruction of MD 355 to incorporate bus priority treatments, and an areawide transportation monitoring program that measures progress toward commute mode share goals.

Renaissance analyzed the feasibility of alternative commute strategies to achieve the progressive non-auto-driver mode share goals of 50% for employees working in the plan area and 51% for employed residents living in the plan area. The analysis included an assessment of the commute pattern changes due to land use density and diversity, to design elements such as more walkable blocks and complete streets, and to programmatic elements including improved transit services, parking management tools, and alternative commute program options.



#### Contact:

Sandra Brecher, Chief  
 Commuter Services Section  
 Montgomery County DOT  
 101 Monroe Street, 10th Floor  
 Rockville, MD 20850  
[sandra.brecher@montgomerycountymd.gov](mailto:sandra.brecher@montgomerycountymd.gov)

#### Total Value of Services:

\$100,000

#### Dates of Service:

December 2012 – June 2014



RENAISSANCE PLANNING GROUP

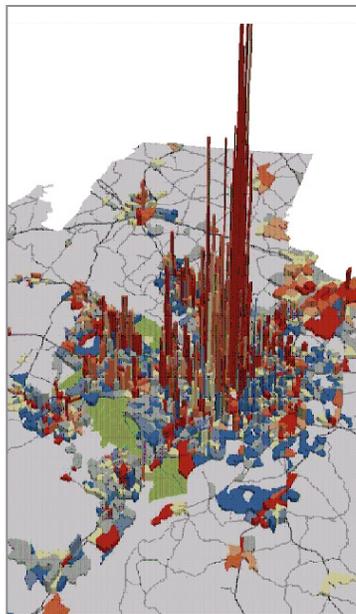
# COUNTYWIDE TRANSIT NETWORK STUDY

## FAIRFAX COUNTY DEPARTMENT OF TRANSPORTATION

The Fairfax County Department of Transportation needed to determine the type of transit systems needed to accommodate desired economic growth throughout the County over the next several decades. The County has a series of Enhanced Public Transit Corridors in their 2006 transportation plan and the Silver Line Metrorail Extension is under construction in the Dulles Toll Road corridor. In most other cases, however, potential long-term fixed guideway transit system expansion concepts do not have fixed alignments, modes, or station locations. Alignment and station locations are needed to establish and preserve appropriate rights-of-way as development occurs and seek implementation of value capture mechanisms.

The study scope includes developing recommendations for potential Metrorail extensions, appropriate locations for streetcar or light-rail systems, and where dedicated lanes for bus rapid transit systems or bus priority treatments should be located. The study integrates multimodal performance measures, using traveler desire lines and forecasted highway congestion to help identify candidate transit line functions and demand elasticities. The study also includes recommendations on how the full transit system can be phased in and funded over time, identifying trigger points in corridor evolution that support increased transit investment.

The study is coordinated with ongoing regional transportation studies by MWCOG, WMATA, and the state of Virginia and master plans for adjacent jurisdictions. The study includes land use forecasting to consider both the long-range development potential beyond the current regional planning horizon as well as how increased density and diversity in activity centers can help manage highway congestion and reduce per capita VMT.



### Contact:

Tom Burke, P.E., AICP  
Fairfax County Department of Transportation  
4050 Legato Road, Suite 400  
Fairfax, VA 22033  
(P) 703.877.5681  
(F) 703.877.5697  
[thomas.burke@fairfaxcounty.gov](mailto:thomas.burke@fairfaxcounty.gov)

### Total Value of Services:

\$1,200,000

### Dates of Service:

December 2011 – December 2013



RENAISSANCE PLANNING GROUP

# MULTIMODAL PLANNING AND DEVELOPMENT

## CITY OF KISSIMMEE, FLORIDA

Working with the City in some capacity since 2005, Renaissance has completed an array of transit-focused projects, including the development of Multimodal Transportation District (MMTD), a transit circulator feasibility study and the creation of a new multimodal mobility fee, per Florida Statutes.

Following Renaissance's market analysis and existing conditions study for the redevelopment of the Vine Street/US 192 corridor, Renaissance assisted the City in the adoption of a strategy to guide multimodal transportation improvements that would help encourage the redevelopment and revitalization of the downtown Community Redevelopment Area and the Vine Street corridor.

The resulting MMTD became part of the City's Comprehensive Plan in 2010, setting the stage for compact, mixed use development and supportive transportation accessibility and mobility strategies.

Plans for the redevelopment of Vine Street and the City of Kissimmee's adopted MMTD called for improved transit service and better connectivity for existing and potential transit riders to reach their destinations within the City and elsewhere. To assist,

Renaissance was tasked by the City, through a general planning contract, to assess the feasibility of a local transit circulator route that would link Vine Street, SunRail and key destinations within the MMTD.

Additionally, Renaissance worked with the City on a related update of the transportation impact fee that transitioned into a mobility fee and provided a level of funding support from future development and redevelopment activity. The project work plan guided City staff and elected officials in considering the options and financial feasibility to establish a local transit circulator service focused on the Multimodal District.

In 2014, the City issued a new task order for Renaissance to update the transportation element of the City's Comprehensive Plan.



### Contact:

Bob Wright  
Project Coordinator  
City of Kissimmee  
Community Development  
101 North Church Street  
Kissimmee, FL 34741  
(P) 407.518.2373  
(F) 407.846.8369  
bwright@kissimmee.org

### Total Value of Services:

\$210,000

### Dates of Service:

2006 – Ongoing



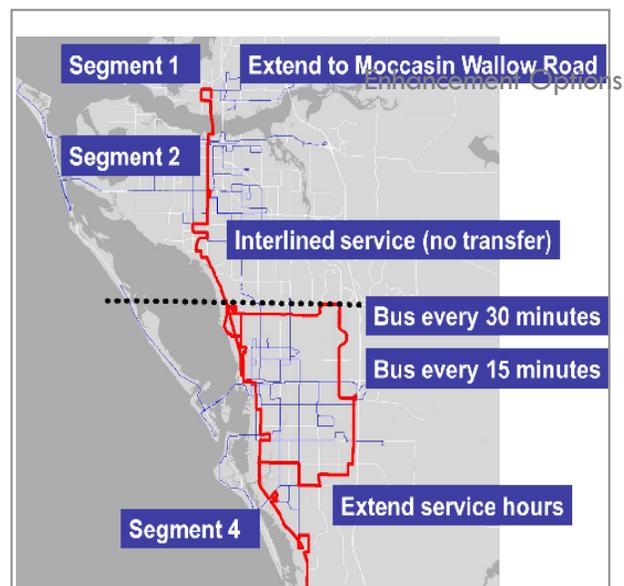
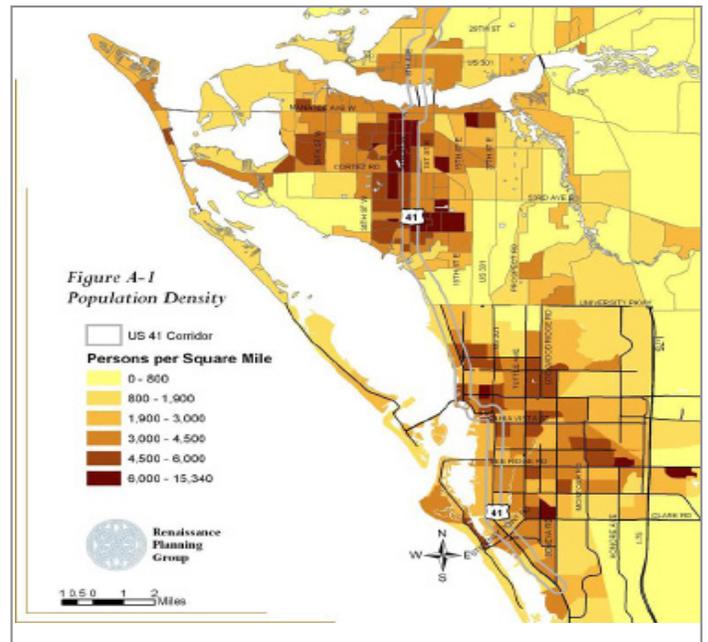
# LATENT DEMAND TRANSIT STUDIES

## SARASOTA/MANATEE MPO & CHARLOTTE COUNTY-PUNTA GORDA MPO, FLORIDA

Building upon the successful completion of the Public Transportation System Analysis (PTSA) completed for the Sarasota/Manatee MPO in 2002 that called for a complete restructuring of the transit service in both counties, Renaissance was hired by the MPO to conduct a more detailed analysis of service improvement options in the US 41 corridor. US 41 – the Tamiami Trail – is an urban arterial roadway that traverses the entirety of both Manatee and Sarasota County, connecting the downtowns of Palmetto, Bradenton, Sarasota, Venice and the rapidly growing City of North Port, as well as four universities, an international airport and key points of access to the region’s outstanding beaches and resort destinations.

The US 41 Latent Demand Transit Study examined several routing and service alternatives to determine the preferred strategy to connect service between the two counties, each with its own county-operated transit provider. The study looked at trade-offs in ridership based on a longer span of service, more frequent service, different alignments and stop locations, and fares. Through close coordination with both county transit providers (Manatee County Area Transit and Sarasota County Area Transit), Renaissance developed a recommended service plan, which the MPO adopted in 2004 and both counties approved for funding. After working through inter-local agreements, the new Route 99 went into service in 2006, connecting downtown Bradenton and downtown Sarasota with service every 30 minutes using buses owned and operated by both counties. Within one year, the route became the most productive in both counties, with ridership far surpassing all other existing routes.

The success of Route 99 led the Sarasota/Manatee MPO and Charlotte County-Punta Gorda MPO to again hire Renaissance to conduct the South Sarasota/North Charlotte Latent Demand Transit Feasibility Study in 2012. Similar to the US 41 study, the South Sarasota/North Charlotte Latent Demand Study evaluated routing and service options to develop a recommended route connecting employment, shopping and institutional land uses in Charlotte County with fast growing residential areas in the City of North Port in Sarasota County. The recommendations were accepted by both MPOs in 2013 and efforts are underway to implement the service in 2014, operated by Charlotte County.



### Contact:

Michael Howe, Executive Director  
Sarasota/Manatee MPO  
941.359.5772

Bob Herrington, Staff Director  
Charlotte County-Punta Gorda MPO  
941.883.3535  
bob@ccmpo.com

### Total Value of Services:

US 41 Study: \$35,000  
Sarasota/North Charlotte Study: \$50,000

### Dates of Service:

US 41 Study: 2004,  
Sarasota/North Charlotte Study: 10/2012 - 6/2013





## Montgomery County Bus Rapid Transit System

Montgomery County, Maryland

CLIENT

Gannett Fleming/  
GPI Joint Venture

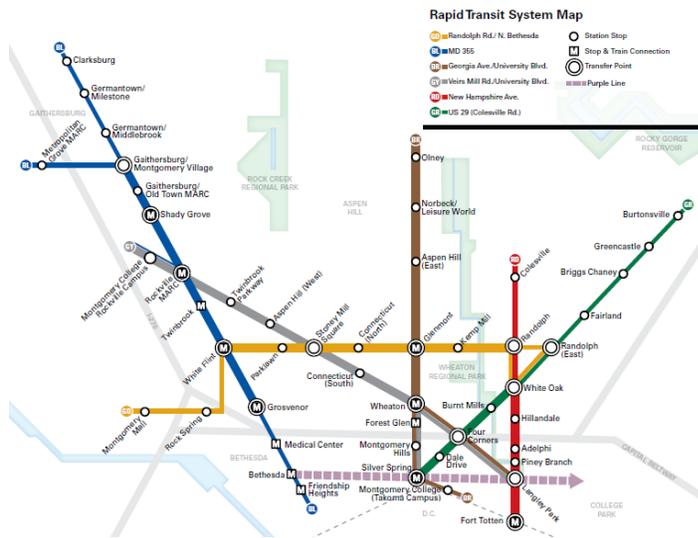
STATUS

Ongoing

HIGHLIGHTS

Conducting a detailed review of existing systems and the planned RTS operations

Developing operating criteria for the proposed RTS, including service standards, ridership and roadway criteria



As part of an ongoing contract with Montgomery County Department of Transportation VHB has been providing transportation consulting services for a bus rapid transit (BRT) system known as the the rapid transit system (RTS). Our firm is currently working to develop a comprehensive service plan for the proposed system, which includes 10 corridor routes. This effort requires coordination of the Ride On, Metrobus, and other bus operations within Montgomery County with the proposed RTS.

As part of the coordination plan, VHB is conducting a detailed review of existing systems and the planned RTS operations. A service plan will require characterization of the RTS system, including identification of the operating parameters. This includes an assessment of the type of operations to be accommodated in the RTS runningways, whether vehicles will be required to serve center platform stations necessitating left as well as right side doors, whether non-RTS vehicles would use the RTS runningways (and, if so, whether they would serve center platform stations), whether local operations would parallel RTS operations, and the approximate location of stations and accommodations to facilitate transfers between RTS and non-RTS operations. The study is analyzing the degree to which RTS service should vary, if at all, for every corridor. Key activities include:

- Review of existing studies conducted by the County, MWCOG, and MTA. The review is focusing on operating issues such as: exclusive lane locations, queue jumps and Traffic Signal Priority (TSP) locations, travel demand forecast, and understanding the travel demand impacts of future planned developments that are currently in the review process and not included in the existing travel demand forecast.
- Development of the operating criteria for RTS, including service standards, ridership and roadway criteria.
- Route planning for each corridor including operating plans, updated sketch level ridership estimates, operating cost, and phasing plans.
- Identifying physical design for the RTS, including runningway and station areas.
- Determination of capital needs including rolling stock, shelter design and passenger amenities, technology applications, and fare collection equipment.



## Montgomery County Department of Planning Local Area Model Technical Assistance

Montgomery County, Maryland

### CLIENT

Maryland-  
National Capital  
Park & Planning  
Commission

### STATUS

Completed 2013

### HIGHLIGHTS

Provided technical  
assistance for  
the Montgomery  
County Planning  
Department's LAM  
application

Focused on  
developing  
forecasts and  
calculating the  
CLV in support of  
various master plan  
updates



VHB provided the Functional Planning and Policy Division of Montgomery County Planning Department with technical assistance pertaining the Department's Local Area Transportation Model (LAM) application. VHB's assistance focused primarily on developing forecasts and calculating the Critical Lane Volumes (CLV) in support of various master plan updates. Additional activities included:

- Providing on call assistance pertaining to the LAM application, including evaluating preliminary results derived from this tool and providing guidance to staff in developing and validating the model in order to achieve reasonable results
- Assisting with travel demand forecasts and migrating to the new TPB Version 2.3 model framework
- Reviewing measures of effectiveness calculated from the LAM process and possible ways to redefine quantitative output from the process
- Providing over-the-shoulder support for the continuation of the Clarksburg, Glenmont, and White Oak sector plan updates
- Developing guidelines for application of CLV analysis, HCM level of service, and traffic micro-simulation modeling for subarea plans.

## Capital Area Transit System (CATS) Comprehensive Operations Analysis (COA)

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Connetics Transportation Group (CTG) was part of a team conducting the three-part study effort, which included a Comprehensive Operations Analysis (COA), a Market Research Analysis (MR), and an Alternatives Analysis (AA). This study is called the "My CATS Study". CTG was tasked with leading and completing the COA for CATS. In April 2012, voters in Baton Rouge and Baker County passed a 10.6-mill property tax to enhance transit service. The basis of the referendum was the Short-range service plan developed as part of the COA Study. CTG has continued to work with CATS throughout 2013 to refine COA recommendations, develop new route schedules and complete a driver run-cut in advance of implementation on March 30, 2014.

COA work tasks included:

**Staff and Public Input** – The COA effort involved an extensive public outreach effort. A series of meetings and interview sessions were held with CATS staff. Stakeholder interviews were held with Louisiana State University, Metro Council, City Parish Planning, Ascension and Livingston Parishes, the City of Zachary, City of Baker, City of Denham Springs and the Center for Planning Excellence. Two public meetings were held to solicit public input for the service plans completed in October 2010.

**Data Collection** – Data collection included a 100 percent ridecheck survey for weekdays, Saturdays and Sundays, an on-board passenger survey and a route level transfer analysis.

**Fieldwork** – A substantial amount of time was spent in the field, riding CATS buses, driving route alignments and observing existing transit operations.

**Existing Service Evaluation** – A comprehensive evaluation of the service was completed based on the collected data and fieldwork. Detailed route profiles were developed to understand route, segment and stop level performance.

**Latent Demand Analysis** – A latent demand analysis was completed to determine if there are unserved or underserved areas within the Baton Rouge region.

**Service Standards and Policies** – Specific route-level standards and systemwide policies have been developed to provide CATS with a means to continually monitor service in the future.

Final COA recommendations were developed for three time periods: Near-Term (1-3 years), Short-Range (4-7 years) and Long-Range (8-15 years). A financial plan also was prepared to insure recommendations are financially feasible and implementable. CTG continued to work with CATS after the COA Study to support service planning, scheduling and public involvement activities prior to implementation of the Short-Range Plan.



**Project Dates:**  
May 2010 – December 2013

**Client Contact:**  
Todd Mance  
Capital Area Transit System  
2250 Florida Blvd  
Baton Rouge, LA 70802  
(225) 389-8929  
[tmance@brgov.com](mailto:tmance@brgov.com)

**Contract Amount:**  
\$181,360 (CTG portion)

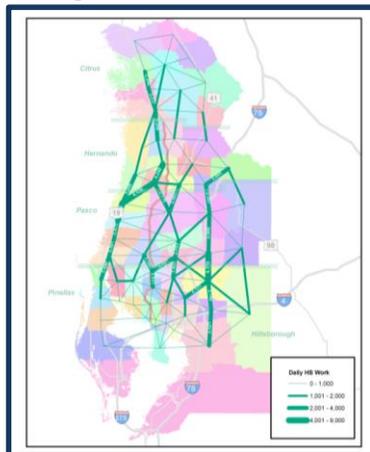
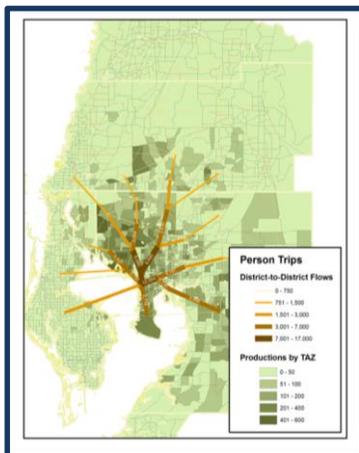
**CTG Role:**  
Bus Service Plans  
O&M costing  
Passenger Surveys

Subconsultant to  
URS Corporation

## Westshore to Inverness/Crystal River Transit Evaluation Study

The Florida Department of Transportation (FDOT) and the Tampa Bay Area Regional Transportation Authority (TBARTA) recently completed a Transit Master Plan for a seven-county area consisting of Hillsborough, Pinellas, Pasco, Hernando, Citrus, Manatee and Sarasota Counties. TBARTA and FDOT are conducting transit studies on many of the corridors identified in the TBARTA Master Plan. The Westshore to Inverness / Crystal River Transit Evaluation Study is similar to a traditional alternatives analysis in that it follows a similar alternatives development, screening and evaluation process. This project examines transit service alternatives within the Veteran's / Suncoast Expressway Corridor spanning a four county area from the Westshore Business District in Hillsborough County, through Pasco, Hernando and Citrus Counties. The major work efforts include development of a Purpose and Need Statement; generation of capital and operations/maintenance cost estimates; estimates of year 2035 transit ridership; identification of potential economic, social and environmental impacts; and the recommendation of a final study alternative.

CTG has taken a significant role in this project leading alternatives development and screening, operations & maintenance cost estimation, ridership modeling coordination and identification of staging and implementation strategies. Additionally, CTG has participated in the development of the Existing Conditions Report, Purpose and Need Statement and led the Corridor Travel Patterns Analysis and Report development. CTG recently completed the Screen 2 Analysis which established station locations, screened transit technologies, and screened corridor alignments down to viable alternatives for screen 3 analyses including travel demand, operating scenarios and phasing. Final recommendations will examine possible integration of new transit services into the existing toll expressway facility and determine capital and operating requirements associated with new transit service operations.



**Project Dates:**  
September 2010 – Present

**Client Contact:**  
Elba Lopez  
Project Manager  
Florida Department of  
Transportation  
11201 N McKinley Dr  
MS 7-500  
Tampa, FL 33612  
(813) 975-6403  
[elba.lopez@dot.state.fl.us](mailto:elba.lopez@dot.state.fl.us)

**Contract Amount:**  
\$78,000 to date

**CTG Role:**  
Corridor Analysis  
Alternatives Development &  
Screening  
Multimodal Operations Plans  
O&M Cost Estimation  
Travel Demand Modeling  
Coordination

Subcontractor to  
Stantec

## Projects:

Agency: **March Joint Powers Authority**  
Agency Address: 23555 Meyer Dr., Riverside, CA 92518  
Project: *March JPA Traffic Impact Study Guidelines*  
Contact: Dan Fairbanks, March JPA  
(951) 656-7000

The March Joint Powers authority was formed for the purpose of redeveloping land formerly occupied by the former March Air Force Base near Riverside, California. VRPA Technologies has been working as the on-call traffic engineering consultant for the March JPA for several years. The Metrolink Perris Valley commuter line has been proposed to extend from Perris to Riverside, with one of the stations proposed to be located at March JPA. VRPA conducted a review of the traffic impact for the station and recommended revisions to the proposed access plan. Key issues in the traffic analysis included ridership forecasts for the commuter rail station and the need for signalized access to the local street system.



Agency: **Caltrans District 6**  
Project: *San Joaquin Growth Response Study, Phase III*  
Contact: Paul Albert-Marquez  
1352 West Olive  
Fresno, California 93778  
Email: Paul-Albert\_Marquez@dot.ca.gov  
Phone: (559) 445-5867



VRPA Technologies, Inc. was retained to lead a team to conduct Phase III of the San Joaquin Valley Growth Response Study. The study consists of a three phase process to develop sustainable long-term land use and transportation strategies. Phase III will result in a macro-level regional land use modeling tool integrated with the existing transportation model and using Geographic Information System (GIS) data. These models will result in an additional tool for use by land use and transportation agencies to plan for the Valley's future growth.



In addition to leading the team, VRPA Technologies, Inc. is in charge of an extensive agency education process including elected officials. The outreach program included a series of public workshops held with local jurisdictions and interested stakeholders, presentations at City Council and County Board of Supervisor meetings, as well as presentations for various groups upon request. The workshops also included an interactive polling technique to help shape the alternative scenarios that are being used for the final steps of the project.

Agency: **Institute of Transportation Engineers**  
Project: *California SB 743 Analysis*  
Contact: Monica Suter, International Director  
(714) 647-5645



This was a volunteer effort undertaken by Mr. Erik Ruehr of VRPA Technologies. Mr. Ruehr was appointed by the Western District of the Institute of the Transportation Engineers (ITE) to be the Chair of the California SB 743 Task Force. The intent of the SB 743 legislation, passed in the fall of 2013, is to revise the guidelines for transportation analyses conducted under the California Environmental Quality Act (CEQA) to encourage reductions in greenhouse gases, promote infill developments, and support multimodal transportation. Under Mr. Ruehr's leadership, the role of the task force is to keep ITE members informed of the SB 743 legislation and to work with the California Governor's Office of Planning and Research (OPR) to create effective SB 743 guidelines that will support the goals of SB 743 while making the most efficient use of available tools and resources. Mr. Ruehr's work on this analysis included meetings with OPR and the provision of written materials to help guide OPR in the development of new CEQA guidelines.

## 4. ITEMIZED COSTS



The Renaissance Team will conduct the study for a lump sum fee of **\$193,725**. The following pages include:

- The RFP pricing schedule showing the total cost by task for the Renaissance Planning Group team,
- a breakdown of costs by task for each of the team member firms, and
- a buildup of costs by task by firm by key staff member and labor category, with direct costs itemized separately (and included as part of the Task B-3 cost in the summary tables).

Connetics and VRPA are MFD firms:

- Connetics's cost is \$9,536, or 4.9% of the total cost
- VRPA's cost is \$10,560, or 5.5% of the total cost.
- The total amount to be subcontracted to MFD firms is 10.4%

Our proposal remains valid for 120 days.

**Local Area Transportation Review (LATR)/Transportation Policy Area Review (TPAR) Update for Montgomery County**

**Pricing Schedule**

**RFP #34-148**

The Offeror certifies that this cost proposal is made without any previous understanding, agreement, or connection with any person, firm, or corporation making a bid for the same project, without prior knowledge of competitive prices, and is in all respects fair, without outside control, collusion, fraud, or other illegal action.

The M-NCPPC reserves the right to award all or part of the scope of services in this RFP. Please submit separate costs for each deliverable.

Offeror will fully complete all information below:

<b><u>TECHNICAL COMPONENT A – LATR OPTIONS</u></b>	<b>PROPOSED COSTS</b>
Task 1: Stakeholder Outreach	\$27,000
Task 2: Literature Review	\$18,064
Task 3: Beta-testing of Alternative Methods in Montgomery County	\$21,880
Task 4: Development of Recommendations	\$25,056
<b><u>TECHNICAL COMPONENT B –TPAR REFINEMENTS</u></b>	<b>PROPOSED COSTS</b>
Task 1: Literature Review	\$15,324
Task 2: Beta-testing of refined TPAR Methods in Montgomery County	\$61,429
Task 3: Development of Recommendations	\$24,172
<b>ALL-INCLUSIVE TOTAL LUMP SUM FEE (COMPONENTS A &amp; B)</b>	<b>\$193,725</b>

**Note:** The cost for each of the Deliverables/Tasks listed above should be inclusive of direct costs. If proposal includes subcontracting for part of the work, please provide a breakdown of the prime costs and the subcontractor costs by Task/Deliverable.

Firm Name: Renaissance Planning Group Date: 5/20/2014

Address: 1901 N. Moore Street, Suite 1204, Arlington, VA 22209

Telephone Number: 703.776.9922 x502 Fax: N/A E-mail address: dhardy@citisethatwork.com

Authorized Representative: Katharine Ange, Principal   
 (Print) (Signature)

## BREAKDOWN OF COSTS BY TASK FOR EACH OF THE TEAM MEMBER FIRMS

	Renaissance Planning Group	Vanasse, Hangen Brustlin	Connetics	VRPA Technologies	Total Team Cost
<b>Technical Component A. LATR Assessment</b>					
Task 1. Stakeholder Outreach	\$ 26,480	\$ -	\$ -	\$ 1,320	\$ 27,800
Task 2. Literature Review	\$ 10,368	\$ 2,544	\$ 1,192	\$ 3,960	\$ 18,064
Task 3. Beta-Testing of Alternative Methods	\$ 21,880	\$ -	\$ -	\$ -	\$ 21,880
Task 4. Development of Recommendations	\$ 23,736	\$ -	\$ -	\$ 1,320	\$ 25,056
<b>Technical Component B. TPAR Assessment</b>					
Task 1. Literature Review	\$ 8,280	\$ 3,212	\$ 1,192	\$ 2,640	\$ 15,324
Task 2. Beta-Testing of Refined TPAR Methods	\$ 30,096	\$ 24,181	\$ 7,152	\$ -	\$ 61,429
Task 3. Development of Recommendations	\$ 22,852	\$ -	\$ -	\$ 1,320	\$ 24,172
<b>All Inclusive Total Lump Sum Fee</b>	<b>\$ 143,692</b>	<b>\$ 29,937</b>	<b>\$ 9,536</b>	<b>\$ 10,560</b>	<b>\$ 193,725</b>

## BUILDUP OF COSTS BY TASK BY FIRM BY KEY STAFF MEMBER AND LABOR CATEGORY

	Renaissance Planning Group										Vanasse Hangen Brustlin				Connectics			VRPA			TEAM TOTALS					
	Dan Hardy Project Manager	Kate Ange Responsible Principal	Rich Kuzmyak Senior Advisor	Whit Blanton Senior Advisor	Nick Lepp, Senior Planner	Scott Sinclair, Planner	Planner/Designer	Production	Firm Hours by Task	Firm Cost by Task		Dan Goldfarb, Senior Planner	Nat Grier Senior Planner	Engineer/Planner	Firm Hours by Task	Firm Cost by Task		Tim Crobbon, Senior Transit Planner	Firm Hours by Task	Firm Cost by Task		Erik Ruehr, Planner	Firm Hours by Task	Firm Cost by Task	Team Total Hours	Team Total Costs
<b>COMPONENT A. LATR</b>																										
A.1. Stakeholder Outreach	60	60	0	0	0	0	0	20	140	\$ 26,480					0	\$ -		8	0	\$ -		8	8	\$ 1,320	148	\$ 27,800
A.2. Literature Review	8	4	4	4	8	40	12	4	84	\$ 10,368	12	4			16	\$ 2,544		8	8	\$ 1,192		24	24	\$ 3,960	132	\$ 18,064
A.3. Beta Testing of Alternatives	24	0	8	8	24	80	24	4	172	\$ 21,880					0	\$ -			0	\$ -		0	0	\$ -	172	\$ 21,880
A.4. Development of Recommendations	40	24	8	8	24	16	12	8	140	\$ 23,736					0	\$ -			0	\$ -		8	8	\$ 1,320	148	\$ 25,056
<b>COMPONENT B. TPAR</b>																										
B.1. Literature Review	8	4	4	4	8	16	12	4	60	\$ 8,280	16	4			20	\$ 3,212		8	8	\$ 1,192		16	16	\$ 2,640	104	\$ 15,324
B.2. Beta Testing of Alternatives	40	12	12	4	40	80	24	4	216	\$ 30,096	115	16	32		163	\$ 24,181		48	48	\$ 7,152		0	0	\$ -	427	\$ 61,429
B.3. Development of Recommendations	40	24	8	4	16	24	12	8	136	\$ 22,376					0	\$ -			0	\$ -		8	8	\$ 1,320	144	\$ 23,696
<b>LABOR HOUR TOTAL</b>	<b>220</b>	<b>128</b>	<b>44</b>	<b>32</b>	<b>120</b>	<b>256</b>	<b>96</b>	<b>52</b>	<b>948</b>		<b>143</b>	<b>24</b>	<b>32</b>	<b>199</b>			<b>64</b>	<b>64</b>			<b>64</b>	<b>64</b>				
Labor Rate	\$ 226	\$ 192	\$ 224	\$ 226	\$ 144	\$ 87	\$ 90	\$ 70			\$ 167	\$ 135	\$ 88				\$ 149				\$ 165					
<b>LABOR COST SUBTOTAL</b>	<b>\$ 49,720</b>	<b>\$ 24,576</b>	<b>\$ 9,856</b>	<b>\$ 7,232</b>	<b>\$ 17,280</b>	<b>\$ 22,272</b>	<b>\$ 8,640</b>	<b>\$ 3,640</b>		<b>\$ 143,216</b>	<b>\$ 23,881</b>	<b>\$ 3,240</b>	<b>\$ 2,816</b>		<b>\$ 29,937</b>		<b>\$ 9,536</b>		<b>\$ 9,536</b>		<b>\$ 10,560</b>		<b>\$ 10,560</b>	<b>1275</b>	<b>\$ 193,249</b>	
Direct Costs (included in Task B.3. in summary costs)																										
Reproduction @ \$.10/copy						1000 copies			\$100																	
Local mileage @ \$.56/mi						500 miles			\$280		200 miles		\$112													
Parking @ \$3/trip									\$96																	
Other																										
<b>DIRECT COST SUBTOTAL</b>										<b>\$476</b>					<b>\$112</b>				<b>\$0</b>				<b>\$0</b>			
<b>TOTAL</b>										<b>\$143,692</b>					<b>\$30,049</b>				<b>\$9,536</b>				<b>\$10,560</b>		<b>\$ 193,837</b>	

## 5. APPENDIX



Included in the following pages are full resumes for each staff member as well as all required forms as specified by the Request For Proposals.





**DANIEL HARDY, P.E., PTP  
PRINCIPAL**

**EXPERIENCE**  
25 Years

**EDUCATION**  
Masters of Science in Civil  
Engineering, Michigan State  
University, June 1988  
  
Bachelor of Science in Civil  
Engineering, Michigan State  
University, June 1986

**REGISTRATIONS**  
Professional Engineer, Virginia,  
No. 0402 030062  
  
Professional Engineer,  
Maryland, No. 23060  
  
Professional Transportation  
Planner, No. 213

**AFFILIATIONS**  
ITE Sustainability Task Force  
Chair, 2009–2012  
  
ITE Transportation Planning  
Council Chair, 2007–2009  
  
ITE Transportation Planning  
Council Executive Committee,  
2003–present  
  
Washington DC Section ITE  
(WDCSITE) President, 2000  
  
TRB Transportation &  
Sustainability Committee

**SUMMARY**

Dan Hardy is a principal with Renaissance Planning Group and has experience in developing transportation solutions that balance transportation and land use options to optimize multimodal travel demand and transportation network services in congested communities.

Prior to joining Renaissance, Dan served as the Transportation Planning Chief for the Montgomery County Planning Department. Dan managed a 15-person Transportation Planning Division responsible for transportation elements of Countywide growth policies, master plans, and development review cases in a rapidly growing County of nearly one million residents with high expectations for involvement in decision making. His expertise includes both developing and applying growth management policies and practices.

**Biennial Growth Policy – Montgomery County Planning Department**

Dan led the biennial review and amendment process for the Montgomery County Growth Policy transportation analyses used to guide both long-range plans and development review from 2007 to 2011. The County uses a two-tiered transportation test consisting of a Policy Area Mobility Review and a Local Area Transportation Review to define mobility expectations, set corresponding Level of Service standards, and establish private sector exactions and impact tax rates for transportation and schools. The Growth Policy serves as the County's policy document. Detailed information on transportation impact analyses for site development is contained in the Planning Board's *Local Area Transportation Review and Policy Area Mobility Review Guidelines*.

**Countywide Transit Network Study - Fairfax County Department of Transportation**

Renaissance Planning Group is conducting a countywide transit network study to determine the type of transit systems needed to accommodate desired economic growth throughout the County over the next several decades. The study includes developing recommendations for the location of the Metrorail extension, streetcar or light-rail systems, and dedicated lanes for bus rapid transit systems or treatments. The study also includes recommendations on how the system can be phased and funded over time, identifying trigger points in corridor evolution that support increased transit investment. Dan serves as the project manager.

**Parking Policy Study – Montgomery County Planning Department and Department of Transportation**

Dan led the Planning Department's participation in this multi-agency study that will guide the revision of sections of the County code addressing parking standards for new development (Section 59-E). The proposal strengthens the linkage between parking policy and alternative commute objectives and emphasizes private sector provision of publicly available parking to serve the County's next generation of mixed-use, infill development. The study recommends developing shared parking benefit districts with progressive parking minimums related to commute mode share goals in area master plans.

**White Flint TDM CIP – Montgomery County Department of Transportation**

The Montgomery County Department of Transportation is leading a multidisciplinary effort to implement the White Flint Sector Plan per the staging requirements adopted by the County Council. These requirements include TDM programs to achieve steady progress in three phases towards an



ultimate 50% non-auto-driver mode share goal for area employees. Dan is leading the development of a comprehensive TDM program to assist the County in achieving the goals at each stage.

#### **Parking Credits for Bikeshare – Montgomery County Planning Department**

Dan led the development of a study to assess the value of private-sector provision of Capital Bikeshare stations in reducing site parking requirements and Adequate Public Facilities impacts. The study assessed alternative methods for calculating peak hour trip generation and peak parking demands associated with the mode share attributable to bikeshare stations, as well as the process for incentivizing developer participation in the implementation and expansion of the regional bikeshare system in Montgomery County.

#### **Montgomery County Planning Department – Development Review Overview**

The Montgomery County Planning Department encourages collaboration between private sector interests and community stakeholder groups to address compatibility concerns prior to Planning Board review and action on development review cases. Primary objectives include ensuring APFO compliance, protecting master planned rights-of-way, and developing context-sensitive mitigation requirements. Dan manage the review of special exceptions and mandatory referral cases from 1999 through 2011 and all development review cases from 2007 through 2011. Representative projects involving substantial technical analysis and stakeholder engagement included the Washington Adventist Hospital expansion and relocation, the French International School special exception, and the National Naval Medical Center BRAC mandatory referral.

#### **Montgomery County Planning Department – Master Planning Overview**

Dan managed the development of transportation recommendations for area master plans and sector plans from 1999 through 2011. These efforts included analysis of land use and transportation balance achieved through both network analysis and crafting quick-response relationships between the Planning Department's Travel/2 and Travel/3 forecasting models, project-level trip generation rates from ITE and LATR Guidelines sources, and estimates of modal share changes associated with TDM initiatives. Particularly notable plan efforts included the Shady Grove Sector Plan, the White Flint Sector Plan, the Great Seneca Science Corridor Master Plan, and the staging analyses for the Bethesda CBD Sector Plan.

#### **SELECT PUBLICATIONS**

“Reworking Suburbia,” ITE Journal, Institute of Transportation Engineers, Vol. 79, No. 9, September 2009

ITE Transportation Planning Council Executive Committee Project Manager for ITE's Recommend Practice “Transportation Impact Analyses for Site Development”, ITE Publication RP-020D, 2010

ITE Transportation Planning Council Review Committee for ITE's Recommended Practice “Planning Urban Roadway Systems”, September 2013

ITE Sustainability Task Force Review Committee for ITE's Informational Report “Sustainable Transportation: State of the Practice Review”, August, 2013)





**KATHARINE ANGE, AICP  
PRINCIPAL**

**EXPERIENCE**  
13 Years

**EDUCATION**  
Master of Planning in Urban  
and Environmental Planning,  
University of Virginia

Bachelor of Arts in  
Environmental Studies,  
Rollins College

**AFFILIATIONS**  
American Institute of Certified  
Planners, No. 17917  
  
American Planning Association,  
Virginia and Florida Chapters

## SUMMARY

Kate Ange is a principal with Renaissance Planning Group and serves as practice leader for the firm's new Washington, DC area office. Her experience includes visioning and scenario planning, transportation planning, transit oriented development, corridor studies, urban design, park planning, feasibility studies and public involvement. Kate excels in persuasive communications and effectively framing planning issues to help elected officials, stakeholders and the public clearly understand tradeoffs associated with differing policy decisions. She has worked at the local, regional and statewide scales to advance integrated approaches to land use, urban design and transportation in support of community livability and sustainability goals. The following provides a sampling of her diverse project experiences.

### **Transit Network Study – Fairfax County Department of Transportation**

Renaissance Planning Group is conducting a countywide transit network study to determine the type of transit systems needed to accommodate desired economic growth throughout the County over the next several decades. The study includes developing recommendations for the location of the Metrorail extension, streetcar or light-rail systems, and dedicated lanes for bus rapid transit systems or treatments. The study also includes recommendations on how the system can be phased and funded over time, identifying trigger points in corridor evolution that support increased transit investment. Kate serves as the resource principal for this project.

### **Vine Street/US 192 Corridor Redevelopment Vision Phase I & II – City of Kissimmee, Florida**

This project involves the development of a vision plan and implementation strategies to redevelop an aging commercial corridor that serves as a critical east-west connector for the City. The Phase I vision included the creation of an overall redevelopment strategy to transform the suburban style strip-mall development patterns into a series of mixed-use centers. Renaissance is currently working on Phase II of the effort, which further defines the mixed-use centers into transit-oriented station areas in support of a future transit alignment along the corridor. The Phase II work product entails the development of an overlay district and design guidelines. Kate serves as the project manager for both phases of this project.

### **Community Redevelopment Area Design Guidelines – City of Kissimmee, Florida**

The City of Kissimmee's downtown is rich with historic character. Its collection of buildings and grid street patterns create a strong urban fabric that is also reminiscent of its railroad, main street past. Preserving this historic feel while encouraging redevelopment is a major goal of the City's Community Redevelopment Agency. Renaissance partnered with the City to finalize a set of design guidelines aimed at achieving these goals. Kate served as project leader for this project.

### **General Services – Space Coast Metropolitan Planning Organization**

Renaissance holds a professional services contract with the Space Coast Metropolitan Planning Organization (MPO) in Brevard County, FL to provide a full range of transportation planning services. This includes preparation of an annual State of the System (SOS) Report and special projects such as the SCAT Transit Development Plan the Brevard Community Characteristics Inventory, and five-year updates to the Long Range Transportation Plan.



Kate served as the overall project manager for the contract managing various task work orders.

#### **Lake Toho Development of Regional Impact Reviews – City of Kissimmee, Florida**

Osceola County is currently considering significant growth in the area east of Lake Tohopekaliga. Five Development of Regional Impacts (DRIs) are in various stages of submittal to the East Central Florida Regional Planning Council. The City of Kissimmee retained Renaissance to help review the potential transportation impacts of these developments on the City's historic downtown core. In particular, Renaissance is helping the City formulate the desired multimodal improvements, in lieu of capacity adding projects, for their proportionate share. Kate was a team member on this project and participated in a DRI charrette, contributing comments on the transportation methodology corridor studies.

#### **Comprehensive Land Use and Zoning Code Analysis for the Development of a Heliport Systems Plan – Maryland Aviation Administration and the Metropolitan Washington Council of Governments**

Working with the Maryland Aviation Administration and the Metropolitan Washington Council of Governments, this project involves the development of a heliport systems plan for the region. Kate was involved in the land use analysis phase, where she was responsible for developing a questionnaire and summarizing data related to the regulation of heliports for over 120 jurisdictions. This information was used to create a draft policy concerning the regulation of helicopter activities throughout the region.

#### **Multimodal and Public Space Design Guidelines, Virginia Department of Rail and Public Transportation, Richmond, VA**

Renaissance Planning Group just initiated a project with the VDRPT in the Spring of 2011 to prepare statewide guidelines for multimodal planning and design. The project entails looking at existing conditions statewide to assess the range of place types and potential corridor typologies. Renaissance is working with a 30-member steering committee to help develop and shape the ultimate work product. The guidelines will address a range of land use, urban design, transportation and public space design considerations. Kate serves as a Principal/senior planner on for this project.

#### **Transit Oriented Development Training Course – National Transit Institute**

Kate serves as a co-instructor and course developer for the TOD training course offered by the National Transit Institute. The class is targeted to transit agency professionals and other community stakeholders to address step-by-step processes to optimize urban design, economic development and community livability considerations associated with transit investments and station area planning. The two-day session targets practitioners and others involved in transportation planning, project development, and project implementation as well as land use planning. Primary audiences include state Department of Transportation planners and transportation specialists, city and county engineers and planners, metropolitan planning organization staff, transit operators, federal employees, resource agency staff, and consultants. In 2012, Renaissance team members assessed coursework materials and helped develop a series of refinements to better address issues of housing affordability, economic development and private development market analyses.





**WHIT BLANTON, FAICP**  
**VICE PRESIDENT**  
**PRINCIPAL**

**EXPERIENCE**  
 25 Years

**EDUCATION**  
 Bachelors Degree in Journalism,  
 University of Florida  
 Masters Program in Urban and  
 Regional Planning,  
 Florida State University

**AFFILIATIONS**  
 American Institute of Certified  
 Planners, No. 9851  
 Chair, City of Winter Park  
 Pedestrian and Bicycle  
 Advisory Board, 2010-current  
 American Planning  
 Association— Board of  
 Directors, 2012-2016; Chair,  
 Legislative & Policy Committee,  
 2009 to current; Divisions  
 Council Chair, 2006 – 2008;  
 Transportation Planning  
 Division, Chair (2000-2005);  
 Newsletter Editor (1994-  
 2001); Divisions Council  
 Executive Committee 2004-06;  
 President, Central Florida  
 Chapter, 1997-1998

**AWARDS**  
 2011 AICP President's Award  
 for Exemplary Practice

## SUMMARY

Whit specializes in multimodal transportation planning, land use-transportation integration and strategic communications, leading many of the firm's major planning projects. His experience entails working with a diverse array of regional planning organizations, federal and state agencies, transit providers and local governments. He is a nationally recognized expert in transportation planning for compact, mixed-use development, performance measurement in transportation planning and funding/governance. Tapping into his journalism background, he brings the unique skill of storytelling to projects, with a focus on translating complex technical issues into understandable policy considerations for elected officials, agency staff, the media and the public. Whit is active in the leadership of the American Planning Association and is a member of the AICP College of Fellows.

### Local Government Experience

Whit's local government experience includes analysis and preparation of comprehensive plans, corridor studies, transportation mobility alternatives, redevelopment and funding/financing strategies. He has managed long-term continuing planning services engagements for several cities and counties.

#### *Master Plan for The Neck Area of Charleston and North Charleston*

Whit served as project manager for a multidisciplinary team that completed a \$1.5 million comprehensive, multimodal master plan for a 27-square-mile area covering major portions of both the City of North Charleston and the City of Charleston that are home to the Port of Charleston and a range of neighborhood types. The plan entails an integrated housing, economic development, transportation and open space/environmental framework.

#### *Imagine Sanford: Community Vision & Strategic Plan*

Whit is leading a team that is assisting the City of Sanford in its vision process, as well as developing a strategic plan to set a clear course for the future that links the community's values and vision to specific actions and outcomes. A major part of the process consists of engaging the public and stakeholders in a consensus-building effort that uses core community values as a basis for examining how best to position Sanford for success.

#### *Mount Dora Visioning Study*

In 2011, Whit led a team that completed citywide vision and strategic plan for the historic railroad town of Mount Dora, which examined a wide range of major development and planning-related issues facing the City including various capital programming, policy and budgeting items. Whit's team developed the vision through scenario planning and engaging the public and stakeholders in a consensus-building effort that began with defining key values and examining potential changes in the downtown and several target growth and redevelopment areas.

#### *Special Area Plans, Subarea Plans and Multimodal Transportation Districts*

Since 2001, Whit has managed successful development, adoption and implementation of multimodal transportation districts as allowed by Florida law in the cities of Destin, Tarpon Springs and Kissimmee. He has also managed similar areawide multimodal planning efforts for Boca Raton and the Gateway area of Pinellas County. He has also served as project manager for multimodal mobility plans/policies in the cities of Lakeland and Oviedo.

In 2003, Whit managed the landmark Plan East Gainesville project, which was a land use, transportation and conservation plan for the predominantly



minority and lower income community of East Gainesville. This was a joint project of the MPO, City, Alachua County, the FDOT and Gainesville Regional Utilities to craft a shared vision and modify local government plans to reflect a special area plan promoting economic and neighborhood revitalization.

### **Public Engagement and Strategic Communications**

Whit specializes in communications and consensus building for transportation and land use planning. He is very comfortable working with citizens and elected officials, particularly engaging diverse community interests to tell a meaningful story and establish an action plan for sensitive or complex projects. He has developed and led public involvement plans for projects that include strategic visioning and broad-based community outreach, as well as intensive charrettes and neighborhood plans. He has served as a trained facilitator to national state agencies, such as the Florida Department of Transportation, Florida Department of Community Affairs, US EPA and the US Department of Transportation.

#### *Mississippi Gulf Coast Sustainable Communities Plan For Opportunity Project*

Whit is currently leading a team charged with providing strategic communications and facilitation expertise to the Gulf Regional Planning Commission to advance their long-term regional sustainability plan for economic growth and development along the Mississippi Gulf Coast. Whit's team is responsible for an integrated communications and marketing strategy that will help translate large amounts of data and analysis concerning various sustainability issues and opportunities into meaningful messages that resonate with community leaders and the public.

### **Metropolitan Planning Organization Plans and Programs**

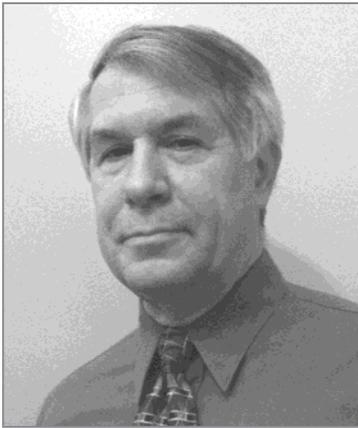
Whit has served as project manager for general planning consultant contracts for the Pinellas, Hillsborough, Sarasota/Manatee, St. Lucie, Brevard and Volusia County Metropolitan Planning Organizations (MPOs), and has provided services to other MPOs in Florida, North Carolina, Alabama and Virginia. Of note, for the better part of the last 20 years, he has supported the Pinellas County MPO on a wide range of assignments for the MPO, its partners and on regional transportation plans.

### **Transit Planning**

Whit has extensive experience conducting planning and operations analyses for public transit service. In 2007, he assisted the Tampa Bay Partnership with strategic planning and analysis leading to the creation of the Tampa Bay Area Regional Transportation Authority (TBARTA). In his role as project manager, he wrote much of the legislation covering the agency's powers and duties and governance framework based on best practices research from around the country. He also has recently led transit feasibility studies for the City of Kissimmee, City of Bradenton and Harrisonburg, VA. He has led two Water Taxi Feasibility Studies for the Pinellas and Sarasota/Manatee MPOs.

### **Bicycle and Pedestrian Planning**

Beginning with his work as lead planner to develop an adult school crossing guard training program for Brevard County, Whit has maintained a professional focus on bicycle and pedestrian planning. He managed the first countywide bicycle and pedestrian master plan for the Tallahassee-Leon County MPO, and also led the Westshore Pedestrian Master Plan and the Countywide Pedestrian Plan, both for the Hillsborough County MPO. He served as project manager of a Countywide Bicycle and Pedestrian Plan for the Pinellas County MPO.



**J. RICHARD KUZMYAK**  
**PRINCIPAL**

**EXPERIENCE**  
35 Years

**EDUCATION**  
Master of Science, Public  
Management and Public Policy,  
Carnegie-Mellon University  
  
Bachelor of Science, Civil  
Engineering, University of  
Pittsburgh

**AFFILIATIONS**  
Transportation Research Board:  
Member of Transportation and  
Land Development Committee

## SUMMARY

Rich is a transportation planner and policy analyst with extensive experience in the areas of travel demand analysis, the integration of transportation and land use, smart growth, performance based planning, travel demand management and air quality. He has done leading research on many of these issues, created special tools to bring the findings into planning practice, and worked with federal, state and local governments and public/private organizations in their application.

## TRANSPORTATION AND LAND USE PLANNING

### **NCHRP 08-78: Estimating Walking and Bicycling Demand for Planning and Project Development**

Leading a multi-disciplinary team in creating a guidebook for practitioners on estimating and forecasting bicycling and walking activity. The guidebook will include methods for estimating bike/pedestrian demand and activity at the regional, corridor, activity center and site levels. In addition to a thorough assessment and synthesis of existing models, data and procedures being used for bike/pedestrian planning, an essential and unique step will entail original research by the study team using data from two major metropolitan areas that will endeavor to measure and quantify the key socioeconomic, environmental, and transportation system factors that influence non-motorized tripmaking, including rates, route/path choice, destination choice, land use design and facilities. A critical objective is to better quantify the benefits of smart growth development policies on mobility, accessibility, and traffic congestion.

### **Quantifying the Importance of Land Use at Trip Destinations on Travel Choice**

Mr. Kuzmyak is leading a team that has been awarded a Planning and Urban Form Research Fellowship grant from the Lincoln Institute of Land Policy to extend the study of land use design on travel behavior to the conditions that exist at destinations. Most analytic work on the link between land use and travel behavior has focused on household trip production, but has largely omitted consideration of land use characteristics at the destination end. This information is critical for realistically being able to forecast travel decisions with regard to destination and mode. The project will be working with a special trip-based database derived from the Southern California Association of Governments regional household travel survey of the Los Angeles region, and will involve extensive GIS development of land use characteristics and travel behavior analysis.

### **SHRP 2 Project C-16: Effects of Smart Growth Policies on Travel Demand**

Part of a research team that is studying the relationship between Smart Growth development and travel demand, including peak period congestion and the demand for additional highway capacity. The objective is to provide transportation planning agencies with improved tools and methods for more accurately and comprehensively integrating transportation investment decision-making with land development and growth management.

### **On-Call Support Services for Maryland Department of Transportation**

Part of contractor team that is providing planning and environmental support to Maryland DOT's Office of Planning and Capital Programming. Recent



assistance has involved defining the agency's position on Sustainability in policies and programs, and development of a methodology to prioritize projects for programming based on sustainability criteria.

#### **Maryland Department of Transportation**

Retained as staff consultant to assist MDOT with integrating Smart Growth requirements into plans and programs. Led agency response to legislative requirement to shape state transportation plan and capital program to prioritize Smart Growth goals, and subsequently to generate an annual Attainment Report to the governor and legislature on how funding programs were serving to achieve these goals. Also led research on benefits of and impediments to transit oriented development to support Secretary's and Governor's desire to shape legislation and financial incentives.

#### **Maryland Department of Planning**

Retained as staff consultant to assist MDP in developing the necessary tools, products and procedures to encourage incorporation of Smart Growth features in local transportation and land use plans. Used EPA grant to develop new technical methods to guide planning and design of TOD projects; developed and led visioning exercises in local communities to reshape growth plans.

#### **Maryland Governor's Office of Smart Growth**

Transportation/land use specialist on staff of Maryland agency created by Governor to spearhead implementation of Smart Growth law. Coordinated with state, regional and local agencies and developers to improve tools and remove impediments to incorporate smart growth principles into plans and projects, including strong advocacy and technical support for TOD.

#### **NCHRP Project 20-83(6): Effects of Socio-Demographic Trends on Travel Demand**

Member of a multi-disciplinary research team which is studying the potential impact of major sociodemographic and technological trends on long term travel patterns and transportation system needs. The objective is to provide guidance to state DOTs that will prepare them for possible futures such that they can preemptively act rather than react with policies and investments that can either address or help productively shape these trends.

#### **TCRP Report 95 – Traveler Response to Transportation System Changes**

Principal or co-author of several individually-published chapters in this major research synthesis project, including: Chapter 15 -- Land Use and Site Design, Chapter 13 -- Parking Pricing and Fees, Chapter 18 -- Parking Supply Management, and Chapter 19 -- Travel Demand Management. These reports compile, digest and summarize empirical evidence on the travel impacts of a wide range of transportation policy, service and management actions.

#### **Statewide Performance-Based Planning and Evaluation**

Assisted state DOTs in Pennsylvania, Florida, Colorado, Maryland, Oregon and Washington in employing multimodal concepts in developing statewide transportation plan, framing goals and objectives, monitoring performance and prioritizing projects for funding.

Multimodal System Performance Audits (1997-1998): Designed and directed policy-driven, multimodal transportation system performance audits in Twin Cities and Seattle, where major questions regarding transit's role and funding were under study.





NICK LEPP, AICP  
PROJECT  
MANAGER/SENIOR  
TRANSPORTATION  
PLANNER

**EXPERIENCE**  
12 Years

**EDUCATION**  
Bachelor of Science in Urban  
and Environmental Planning,  
State College, Salem,  
Massachusetts

**AFFILIATIONS**  
American Institute of Certified  
Planners No. 021835  
American Planning Association

## SUMMARY

Nick Lepp has over ten years of experience in travel demand modeling, and integrated land use and transportation planning. He excels at technical analysis and has a keen focus on practical, results-oriented approaches to development review, transportation analysis and long range planning. He is a responsive and service-oriented project manager who has demonstrated the ability to thoroughly understand local community issues, context and perspectives as a framework for development of transportation. He uses his knowledge of Geographic Information Systems (GIS) to work with Renaissance's own community-based land-use planning model CorPlan, and multimodal sketch planning Tool CorMap with the Florida Standard Urban Transportation Model Structure (FSUTMS) to evaluate scenarios based on performance measures developed for the context of the community.

### **South Sarasota County / North Charlotte County Transit Latent Demand Study – Sarasota / Manatee MPO & Charlotte County – Punta Gorda MPO, Florida**

The Sarasota/Manatee Metropolitan Planning Organization (MPO) and the Charlotte County – Punta Gorda MPO have been discussing additional transit service connecting the North Port/South Sarasota County area and northern Charlotte County over the last decade. The purpose of this study is to develop the data and analysis to determine if there is enough latent demand to justify fixed-route transit service in the study area and to determine whether it would be cost-feasible. The study area is southern Sarasota County, including Venice and North Port, to northern Charlotte County, including Port Charlotte. Nick was the project manager for this project and was responsible for submitting the plan.

### **Manatee Complete Streets - Manatee County, Florida**

Renaissance Planning Group created a Complete Streets policy in Manatee County by collaborating with the Manatee County Government, Manatee County Health Department, and the American Public Health Association that includes all new, maintenance, and retrofit roadway projects in the County. Nick was project manager and responsible for developing the policy, projects and typical sections for the County to include into their capital improvement program.

### **Impact Fee / Mobility Fee Update - City of Kissimmee, Florida**

The City of Kissimmee has a transportation impact fee in place, which is used to help fund needed roadway capacity projects caused by growth from land development activity. Recent legislation in Florida enables local governments to approach impact fees differently, creating a mobility fee that covers multimodal transportation projects (not just road capacity), and structuring impact fees to support land use, redevelopment and economic objectives. The elements of the plan included strategy that complements the Multimodal Transportation District and the rest of the City with a funding mechanism would use in place of Transportation Impact Fees to fund the projects in the plan. Nick is the project manager for this project and is responsible for submitting the plan.

### **Land Use Performance Measures for Travel Demand Modeling- METROPLAN Orlando, Florida**

Renaissance is developing land use performance measures and a tool for METROPLAN Orlando to be used for the development of 2040 Socio-

economic data scenarios. The tool and performance measures will evaluate the balance of jobs and households as they relate to the productions and attractions generated by the model. The tool will assist local governments in the development of their 2040 socio-economic data sets to balance the jobs and households in a geographic area the shorten trip lengths and reduce Vehicle Miles of Travel (VMT)

#### **Multimodal Mobility Plan - City of Ocoee, Florida**

The plan developed a short and long term strategy of transportation improvements as well as a financial strategy to meet the mobility needs in the city for the future. The elements included a short term strategy that complemented the CRA master plan with multimodal transportation improvements, and a longer term strategy that addressed mobility throughout the city with improvements and upgrades to roadways that included multimodal elements. The plan also included a Mobility Fee funding mechanism that the city would use in place of Transportation Impact Fees to fund the projects in the plan. Nick was the project manager for this project and was responsible for submitting the plan.

#### **Downtown Mobility Study – Cities of Bradenton and Palmetto, Florida**

The study evaluated and defined innovative mobility strategies to enhance multimodal accessibility to balance the redevelopment and local circulation goals of both cities. Nick was responsible for the traffic analysis, which included the forecasting of future traffic, the evaluation of the network scenarios, and development of the recommended strategy.

#### **Continuing Transportation Services - City of Kissimmee, Florida**

As the City's transportation planning consultant, Renaissance summarizes and analyzes the traffic count data for the biannual Multimodal Monitoring report, reviews traffic studies and site plans for transportation impacts, prepares population and employment projections for the transportation model. Nick serves as project manager for this contract and is responsible for providing comprehensive transportation planning support for the City of Kissimmee.

#### **Continuing Transportation Services – Space Coast Transportation Planning Organization, Florida**

As the TPO's General Planning Consultant Renaissance has produced the annual State of the System Report to track transportation trends in the County, the report provides key transportation statistics, needs, and recommended solutions for congestion to help prioritize projects for the Transportation Improvement Plan (TIP). Nick was responsible for summarizing and analyzing the yearly traffic count data for the annual State of the System Report that included a complete review of each road segment on the Congestion Management System (CMS).

#### **Development of Regional Impact (DRI) Review Services – Gainesville Metropolitan Transportation Planning Organization, Florida**

As the MTPO's transportation planning consultant, Renaissance reviews traffic studies and procedures addressing concurrency and operational impacts on the roadway network. Nick serves as project manager for this contract and is responsible for providing comprehensive transportation planning support for the Gainesville MTPO.



**SCOTT SINCLAIR**  
PLANNING TECHNICIAN

**EXPERIENCE**

4 Years

**EDUCATION**

Bachelor of Science in  
Geography,  
Florida State University

**SUMMARY**

Scott has four years of land use and transportation planning experience with both the public and private sector through his work on various projects, including neighborhood redevelopment, comprehensive plans, long-range transportation plans, scenario planning, and corridor studies. He uses his knowledge of Geographic Information Systems (GIS) to work with Renaissance's own community-based land-use planning model CorPlan, and multimodal sketch planning Tool CorMap with the Florida Standard Urban Transportation Model Structure (FSUTMS).

**Land Use Performance Measures for Travel Demand Modeling-  
METROPLAN Orlando, Florida**

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**Multimodal Mobility Plan - City of Ocoee, Florida**

The plan developed a short and long term strategy of transportation improvements as well as a financial strategy to meet the mobility needs in the city for the future. The elements included a short term strategy that complemented the CRA master plan with multimodal transportation improvements, and a longer term strategy that addressed mobility throughout the city with improvements and upgrades to roadways that included multimodal elements. The plan also included a Mobility Fee funding mechanism that the city would use in place of Transportation Impact Fees to fund the projects in the plan. Scott was the project planner for this project and was responsible for the technical analysis of the plan.

**Master Plan for International Corporate Park – Suburban Land Reserve,  
Inc.**

International Corporate Park (ICP) is a 2,500 acre site located adjacent to SR 528 (the Beachline Expressway) in southeastern Orange County. Renaissance is redesigning the site from an industrial park to a mixed use, transit oriented development as envisioned by Orange County's Innovation Way Plan. The new design for ICP focuses on four transit station areas, one of which is a town center and the other three high-density, high-tech employment centers. The design orients around three transit alignments to maximize densities within



half mile transit-sheds around proposed stations. The transit lines crossing the site include a regional commuter rail connecting the Orlando International Airport with Port Canaveral, a more local light rail system that will become the spine of Innovation Way, and a north south light rail/bus rapid transit line. Scott was responsible for coding, editing and running the FSUTMS model for level of service analysis, developing maps and graphics.

#### **Price Boulevard Corridor Study – City of North Port, Florida**

The City of North Port contracted Renaissance Planning Group to perform a corridor study for this major east/west thoroughfare to determine geometric improvements to increase capacity and decrease safety concerns. Scott serves as a transportation analyst on this project. His duties include updating the Florida Standard Urban Transportation Model System model, determining future year traffic projections, assisting the development of alternatives to widening to six-lane facility, analyzing traffic volumes, determining roadway level of service, and a detailed crash data analysis.

#### **Citywide Traffic Study – City of Palmetto, Florida**

The City of Palmetto contracted Renaissance Planning Group to conduct a citywide traffic study to determine short and long-range transportation strategies to incorporate into their Capital Improvement Program and Long Range Transportation Plan. Scott served as a transportation analyst on this project. His duties included analyzing raw traffic count data, determining existing/future (2006, 2012, 2030) roadway and intersection level of service, (Synchro), creating circulation models (SimTraffic) for analysis purposes, implementing alternative roadways, analyzing signal and roundabout needs, and displaying level of service data.

#### **EAR Based Comprehensive Plan Amendments – City of Kissimmee, Florida**

Renaissance Planning Group served as a planner responsible for incorporating the City's Evaluation and Appraisal Report policy recommendations, and objectives and policies needed to comply with new State laws regarding mobility planning and energy efficiency. Scott provided accompanying data and analyses to support the City's plan amendments and overall community vision.

#### **State of the System Report – Space Coast Transportation Planning Organization**

In order to track transportation trends in the County, the Space Coast TPO annually produces a State of the System Report that provides key transportation statistics, needs, and recommended solutions for congestion. Scott was responsible for summarizing and analyzing the yearly traffic count data for the annual State of the System Report that included a complete review of each road segment on the Congestion Management System (CMS).

#### **2035 Long Range Transportation Plan – Sarasota/Manatee Metropolitan Planning Organization**

Renaissance led the development of the Sarasota/Manatee MPO's 2035 LRTP, a major update focusing on the role of all transportation modes and land use strategies in helping the MPO and its partners meet its numerous transportation needs within projected financial resources. Scott was responsible for developing 2035 socioeconomic data projections, coding, editing and running the FSUTMS model for level of service analysis, developing maps and graphics to present multimodal system plans in the region, and organizing the flow of data for analysis purposes.



**M-NCPPC, Technical Assistance for the Local Area Transportation Model, Montgomery County, MD**

Mr. Goldfarb is providing technical assistance to the Maryland-National Capital Park and Planning Commission (M-NCPPC) Montgomery County Planning Department on issues related to the application of its Local Area Transportation Model tool. He provides advice on calibration and validation, as well as application of the tool. As part of this work effort, he has been providing the County assistance with several sector/subarea studies.

**Dulles Greenway Peer Review of Benefits to Patrons and Use of Roadway Review**

Mr. Goldfarb provided a peer review and testimony before the Virginia State Corporation Commission (SCC) for analysis of the Dulles Greenway toll increase. The review addressed user benefits as compared to the user cost and focused on the disutility of toll cost, vehicle cost, and traveler cost.

**Rapid Transit System (RTS) Service and Integration Study, Montgomery County, MD**

Mr. Goldfarb is serving as the Project Manager for this study being done for the Montgomery County Department of Transportation. This effort includes review of the existing studies and development of a service plan for all ten RTS corridors. As part of this study, the ridership forecasts are being reviewed to reflect the corridor specific service plans, as well as determination of required capital needs and cost.

**MWCOG, Travel Demand Model Technical Assistance**

Mr. Goldfarb assisted in providing technical assistance to the Metropolitan Washington Council of Governments (MWCOG) staff on travel demand forecast modeling issues. Key assignments included review of current assignment algorithms and methodologies to address issues related to equilibrium convergence and stability, evaluation of transit assignment methods and tools, and the impact of fuel prices in travel demand forecast modeling.

**NCHRP Project 8-36, Task 89 – Evaluating and Communicating Model Results**

While at another firm, Mr. Goldfarb was the lead author for a guidebook on evaluating and communicating model results for the National Cooperative Highway Research Program (NCHRP). The guidebook presents an overview of the modeling process and focuses on functionality, applications, limitations, sources of error, reasonableness, sensitivities, and guidance on communicating results.

**NCHRP Project 8-61, Travel Demand Forecasting: Parameters and Techniques**

While at another firm, Mr. Goldfarb assisted in the research for this report. He worked on material for the trip generation and assignment sections of the report. He reviewed the information collected from the various MPOs and documented what the state of the practice was, as well as current trends.

**Travel Demand Forecasting Tool Development, Frederick County, MD**

While at another firm, Mr. Goldfarb was the Project Manager and Lead Planner on this project for the Frederick County Planning Department. The tool developed for the County uses the regional National Capitol Regional Transportation Planning Board travel model and assigns the final trip tables to a refined network that addresses the County's planning needs. Mr. Goldfarb assisted County staff in applying the forecasting tool for a subarea study in the New Market area.

**MDSHA, Travel Forecasting and Traffic Engineering Analysis Services, MD**

Mr. Goldfarb has worked in the transportation field for two decades, both in the United States and abroad. He has experience in multimodal analysis and transportation modeling for planning applications, as well as traffic operational analysis.

22 years of professional experience

For the Maryland State Highway Administration (MDSHA), Mr. Goldfarb served as the Lead Engineer and Task Manager for this task order contract. He was responsible for developing traffic forecasts for environmental assessments, design volumes, model validation, development of travel forecasts for major corridor studies involving highway and transit alternatives, traffic capacity analysis, determination of regional impacts and accessibility, and development of travel demand for congested pricing highway facilities. Major assignments included the I-270 Multimodal Corridor Study, the Intercounty Connector Environmental Impact Study, and the Capital Beltway HOV/Express Toll Lane Study.

**FHWA Peer Exchange Validation Guidelines**

Deputy Project Manager for this study for the Federal Highway Administration (FHWA). This effort involved updating the Travel Model Improvement Program (TMIP) Model Validation and Reasonableness Checking Manual with new guidelines.

**Maryland Department of Transportation US 40 Carbon Neutral Corridor Study**

While at another firm, Mr. Goldfarb led the travel forecasting effort on this project to develop a carbon neutral corridor along US 40, north of Baltimore. As part of this study, Mr. Goldfarb evaluated strategies to decrease VMT including cordon and congestion pricing, decrease single occupancy vehicle mobility, increase transit use, and improved non-motorized trip making.

**Education**

MS, Civil Engineering, Virginia Polytechnic Institute & State University, 2003

BS, Civil Engineering, University of Maryland College Park, 1996

BA, Political Science, University of Florida, 1990

**Professional Registrations/  
Certifications**

Professional Engineer (Civil) MD 2002

Professional Engineer (Civil) VA 2002

**Affiliations/  
Memberships**

Institute of Transportation Engineers, 1996

**US 29/Cherry Hill TOD Scenario Planning, Montgomery County, MD**

As Project Manager, Mr. Grier oversaw the development of a transportation/transit-oriented design (TOD) scenario planning exercise for the employment area and the adjacent Federal Research Center for the Metropolitan Washing Council of Government. The work included the development of a sketch planning tool to test the feasibility and cost of various transit alignments and modes to serve the area and estimate future development necessary to ensure the viability of the transit. The second phase of the study included the use of INDEX software to evaluate the site’s sensitivity to land-use, jobs-housing balance, transit and other TOD factors. As the project is part of the larger Master Plan update for the area, it included extensive coordination with an intra-agency working group, as well as presentations to the citizen’s advisory committee. The project was undertaken as part of the Metropolitan Washing Council of Government’s Transportation and Land use Connections program.

**Transitway Systems Planning Study, Prince George’s County, MD**

Mr. Grier was Project Manager for developing a countywide transitway plan for Prince George’s County, including light rail transit, bus rapid transit, and enhanced bus service. The project included a detailed, GIS-based corridor evaluation of roughly 30 corridors for potential transit improvements. Based on the evaluation, several high-priority corridors were identified. The study has also included a series of first-of-their-kind region-wide transit stakeholders meetings helping to aid regional coordination of future transitway plans. Mr. Grier was retained for follow-on work to further the functional plans for priority transit corridors.

**East Campus TIA Review, College Park, MD**

As Project Manager, Mr. Grier performed review of a traffic impact analysis (TIA) for a proposed large mixed-use development adjacent to the University of Maryland – College Park campus for the City of College Park. He assisted City staff and Council in understanding the traffic implications of the project and sensitivity of conclusions to the underlying assumptions.

**Waldorf Urban Transportation Improvement Plan, Charles County, MD**

As Project Manager, Mr. Grier oversaw the development of an implementation plan for the transportation components of the recently completed Waldorf Urban Design Study for the Metropolitan Washing Council of Government. The plan included the development of goals for the transportation aspects of the design study, costing of the proposed improvements and prioritization of elements. The effort also included recommendations for funding the various improvements and allocation of resources between the public and private sector. The report includes case studies of other successful transit oriented developments. The project was undertaken as part of the Metropolitan Washington Council of Government’s Transportation and Land use Connections program.

**Loyola University, Master Plan Update, Baltimore, MD**

As Project Manager, Mr. Grier oversaw the transportation component of an update to the Campus Master Plan. His work included an analysis of existing and future parking needs, pedestrian safety and circulation, and shuttle bus improvements. The effort also included analysis of the parking and traffic impacts of potential arena and a performance hall. A central part of the project involved examining the circulation between the multiple areas of the campus and providing recommendations to improve and strengthen those connections.

**Cornell University, East Hill Village Master Plan, Ithaca, NY**

Mr. Grier was Project Leader to assist the University and architect on the transportation aspects of the plan for the proposed mixed-use community on University land. The work included

Mr. Grier has extensive experience in a broad set of disciplines within the field of transportation. His primary areas of interest include multimodal transportation planning, demand modeling, and GIS applications. He has worked extensively on campus transportation planning projects across the country, including as project lead for the innovative, multi-year t-GEIS at Cornell University. In addition to transit, bike and pedestrian planning, his multimodal work includes TOD, scenario analysis and small area planning. He also plays a key role in the development of travel demand models and forecasting. Mr. Grier has experience with a wide array of transportation planning projects including CTP, LRTP development and traffic forecasting, as well as air quality modeling and emissions estimates.

**12 years of professional experience**



ensuring appropriate elements to promote walking, biking, and transit usage. He performed shared parking analysis to minimize required parking needs. The work also included coordination to ensure compatibility with the recently completed Transportation Impact Mitigation Strategies (TIMS) and transportation-Generic Environmental Impact Statement. Mr. Grier oversaw and coordinated work on vehicle access, circulation, and traffic impacts.

**Rochester Institute of Technology, Comprehensive Parking, Transportation and Urban Design Strategy, Rochester, NY**

As project manager, developed a plan to transportation on the campus with a strong focus on transit and pedestrian movement about the campus. A core component of the project included evaluating parking needs over the coming decade and identifying ways to satisfy that demand through a combination of reduced demand and increased supply. The project led to a larger reenvisioning of transportation at RIT and ways to improve transportation choices for commuting employees and students.

**Rutgers University, Campus Master Plan, New Brunswick, NJ**

Mr. Grier is the Project Manager for overseeing the transportation elements of a campus master plan. Transportation affects each of the University's campuses in unique ways, but perhaps none more so than the New Brunswick/Piscataway campus, which is spread across five campuses on either side of the river and connected by a transit system carrying over 70,000 riders per day. The master plan attempts to understand that movement and propose physical and programmatic changes to reduce its impact on students, staff, and faculty, as well as the host communities. In addition to analyzing the transit needs of the university, the plan will identify physical and programmatic improvements to the parking system, street network and pedestrian and bicycle networks. The plan will also be the first comprehensive plan to incorporate planning for Rutgers Biomedical and Health Sciences (former UMDNJ).

**Education**

MS, Transportation, Massachusetts Institute of Technology, 2002

BS, Civil Engineering, Massachusetts Institute of Technology, 2000

**Professional Registrations/  
Certifications**

Professional Engineer NC 2005

Professional Engineer MD 2008

**Affiliations/  
Memberships**

Institute of Transportation Engineers

Transportation Research Board, TDM Committee, Friend of the Committee

**Awards**

Student of the Year, Awarded by US DOT's UTC Program, 2003

## ERIK O. RUEHR, P.E.

### Director of Traffic Engineering

#### EDUCATION

- University of Michigan, Ann Arbor 1980-1981, Master of Science in Engineering (Civil Engineering)
- University of Michigan, Ann Arbor 1976-1979, Bachelor of Science in Engineering (Civil Engineering)

#### YEARS OF EXPERIENCE

- Thirty (32) years [Fifteen (15) years with VRPA]

#### REGISTRATION

- California, Civil Engineer, 1983
- California, Traffic Engineer, 1986
- Oregon, Professional Engineer, 1986
- Washington, Professional Engineer, 1986
- Minnesota, Professional Engineer, 1986
- Florida, Professional Engineer, 1990
- Institute of Transportation Engineers, Professional Traffic Operations Engineer, 2007

#### AFFILIATIONS

- Institute of Transportation Engineers (ITE), Fellow 2007-2012; Member 1992-2007; Associate Member 1981-1992; Student Member 1979-1981; President, California Border Section, 1999-2000; Vice President, California Border Section, 1998-1999; Treasurer, California Border Section, 1997-1998; Secretary, California Border Section 1996-1997
- Technical Program Chair, ITE District 4 Annual Meeting, Minneapolis, 1990
- Local Arrangements Committee, ITE District 6 Annual Meeting, San Diego, 2000
- Transportation Research Board, Associate Member 1989-2014; Member, Committee on Highway Capacity and Quality of Service 1996-2006; Subcommittee Member, Committee on Highway Capacity and Quality of Service 1990-1996 and 2006 - 2014
- San Diego Regional Transportation Technology Alliance, Member 1993-2001; Board of Directors 1996-2001; President 1998-1999
- Member, San Diego Highway Development Association, 1991-2014
- Member, Women's Transportation Seminar, 1987-2012
- Member, Southwest Region Transportation Model Users Group, 1991-2014

#### EXPERIENCE

##### Transportation Planning

###### *Corridor Studies*

- State Route 56 Corridor (San Diego, California)
- State Route 11 Corridor/Otay Mesa East Land Port of Entry EIR/EIS (San Diego County, California)
- I-5 South Multimodal Corridor (Chula Vista, California)
- Mid County Parkway (Riverside County, California)
- State Route 125 Tollway (San Diego County, California)
- I-215 Widening, Nuevo Road to I-15 (Riverside County, California)
- State Route 7 Major Investment Study (Imperial County, California)
- Mira Mesa Boulevard Bus Rapid Transit Corridor Roadway Improvement Analysis (San Diego, California)
- Mira Mesa/Scripps Ranch Community Direct Access Ramps/I-15 Freeway System Analysis (San Diego, California)
- State Route 91 Corridor (Riverside County, California)
- Cajalco Road/State Route 91 Toll Feasibility Analysis (Riverside County, California)
- State Route 137 Major Investment Study (Tulare County, California)
- Interstate 494 Corridor (Minneapolis/St. Paul, Minnesota)
- Interstate 25/Interstate 40 Major Investment Study (Albuquerque, New Mexico)
- South Tulare County East-West Road Study (Tulare County, California)
- Glendale – Palmdale Toll Corridor Feasibility Study (Los Angeles County, California)

###### *Transportation Plans*

- Circulation Elements of the General Plan: Solana Beach, California; Palm Springs, California; Imperial Beach, California; Brawley, California; Dixon, California; Sanger, California; Holtville, California; El Centro, California; Perris, California
- Riverside County Integrated Plan – Comprehensive analysis of transportation corridors, multiple species habitat conservation, and update of the circulation element of the General Plan (Riverside County, California)
- Ann Arbor Transportation Plan (Ann Arbor, Mi.)

## ERIK O. RUEHR, P.E.

### Director of Traffic Engineering

#### EXPERIENCE, Continued

- Hennepin County, Minnesota Light Rail Transit System (Feasibility Study, Environmental Impact Analysis, Conceptual Design of Traffic Improvements)
- Bakersfield, California Transportation System Study
- Southern California Association of Governments 2001 Regional Transportation Plan
- Fresno County Measure "C" ½ % Sales Tax Extension Expenditure Plan
- Traffic Engineering Analysis for the Laguna Public Facilities Financing Plan (Sacramento County, California)
- Madera County, California Traffic Impact Fee Program
- City of Madera, California Traffic Impact Fee Program

#### Traffic Engineering

##### *Traffic Operations*

- I-15 Managed Lanes Traffic Incident Management Plan (San Diego County, California)
- On-Call Traffic Engineering Analysis for the March Joint Powers Association (Riverside County, California)
- On-Call Traffic Engineering Analysis for Caltrans - District 11 (San Diego, California)
- San Diego-Coronado Bay Bridge Toll Removal Traffic Analysis
- Mira Mesa Boulevard Bus Rapid Transit Corridor Traffic Analysis (San Diego, California)
- Carlsbad, California Growth Management Plan Traffic Monitoring Program, 1994-2001
- Traffic Control Plans for Rancho Bernardo Pipeline No. 2, City of San Diego
- Traffic Control Plans for the Manchester Wetland Mitigation Project (Encinitas, California)
- Southern California Association of Governments Regional Highway Monitoring System
- 1983 Cordon Count of Downtown San Francisco, California
- Traffic engineering assistance to the City of Danville, California in the role of City Traffic Engineer
- City of Santa Clarita High Accident Location and Mitigation Analysis

- City of San Diego Bicycle Accident Records System
- Comprehensive Traffic Engineering Study for the City of Dublin, California (Accident Analysis, Speed Limit Study, Traffic Control Device Inventory, Computerized Database of Accidents and Traffic Control Devices)
- Comprehensive Speed Limit Study, City of Fremont, California
- Traffic Engineering Analysis of the Two-Phased Intersection Concept for the San Diego Association of Governments

##### *Roadway Design*

- Conceptual design of the roadway system serving the Minneapolis/St. Paul International Airport
- University of Minnesota Transitway Design (Traffic Signal Design, Signing, and Pavement Marking)

##### *Traffic Signal Systems*

- South Bay Traffic Signal System - Signal Timing Analysis (100 signals), Los Angeles County, California
- Honolulu Traffic Signal System – Signal Timing Analysis (100 signals), Honolulu, Hawaii
- Ann Arbor, Michigan Traffic Signal System (150 signals)
- Casper, Wyoming Traffic Signal System (75 signals)
- Traffic Signal Timing Analysis and Implementation: Berkeley, California (72 signals); St. Paul, Minnesota (15 signals); Anoka County, Minnesota (14 signals); Riverside County, California (15 signals)

##### *Traffic Signal Design*

- On-Call Traffic Signal and Ramp Meter Design for Caltrans - District 11 (San Diego, California)
- City of Santa Clarita, California Traffic Signal Design Standards
- Design of 50 traffic signals at various locations in California, Arizona, and Minnesota

##### *Traffic Impact Analysis*

- San Diego Association of Governments Smart Growth Trip Generation and Parking Guidelines Study
- Transportation and Parking Analysis of the San Diego State University Foundation Master Plan
- Traffic Impact Analysis of the San Diego State University Student Activities Center and Basketball Arena (Cox Arena)
- Traffic Impact Analysis of the Mall of America (Bloomington, Minnesota)
- Traffic Impact Analysis of Rosenblatt Stadium



## Tim Crobons

### Vice President

Mr. Tim Crobons has 28 years of transportation planning experience. He has worked on studies and projects in numerous cities across the country with extensive experience in multimodal transit operations planning, O&M cost estimation, and short and long-range transportation planning.

## Corridor Projects

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### ***Minneapolis/St. Paul Central Corridor Engineering Services***

Mr. Crobons was responsible for preparing bus and Light Rail Transit (LRT) operations plans for the SDEIS project alternatives. He worked closely with Metro Transit service planning staff and ridership forecasters in defining the operations plans, estimating operating statistics and annual O&M costs. Operating plans developed for this study effort included a No Build, Baseline and a Build LRT Alternative, which were used for FTA New Starts submittals. Additionally, he was responsible for developing LRT run times used for travel demand modeling. Other tasks included development of a resource build-up Metro Transit O&M cost model and development of a train simulation model to examine downtown Minneapolis LRT operations with combined Central Corridor line and Hiawatha line operations. The Central Corridor has received a Full Funding Grant Agreement by FTA and is currently under construction

### ***Ft. Worth Southwest to Northeast (SW2NE) Corridor EIS***

Mr. Crobons developed bus and rail operations plans and annual operating and maintenance (O&M) cost estimates for a No Build, Baseline and Build Alternatives, which were used for FTA New Starts submittals. The location and alignment of this rail corridor results in a significant restructuring and expansion of the existing Ft. Worth Transportation Authority (The "T") transit system. This rail corridor is designed with connections to two commuter rail lines and one LRT rail line, as well as the Dallas/Ft. Worth International Airport (DFW).

### ***Other Representative Projects***

BRT: Lansing Michigan/Grand Avenue, Grand Rapids Division Avenue; Streetcar: Columbia Pike Arlington, VA, Miami, FL, Washington DC; LRT: Pinellas County Alternatives Analysis, Denver West and I-225 corridors, Minneapolis Central Corridor, Minneapolis Hiawatha (Blue Line) Corridor, Dallas, TX Northwest and Southeast (Green Line) Corridors; Commuter Rail: Orlando Central Florida Commuter Rail; Ft. Worth, TX TexRail

## Systems Plans

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### ***Virginia DRPT – Statewide Transit/TDM Plan***

Mr. Crobons recently served as Deputy Project Manager for the development of the Virginia Statewide Transit / TDM Plan. This plan was completed in February 2013. Mr. Crobons was responsible for the development of Statewide transit need for all plan capital and operating investment strategies (Low, Moderate and High investment strategies) including state of good repair, service capacity enhancements and major transit capital investments; guiding financial planning and cash flow analysis; and development of financially constrained and unconstrained statewide transit plans.

### ***TBARTA Regional Master Transit Plan (Tampa)***

Mr. Crobons developed multimodal transit operating plans for regional transit services identified in the Regional Master Plan, as well as developed background bus networks for an eight county region. Additionally, he was responsible for developing annual operating and maintenance cost estimates for all transit modes identified in the Master Plan. This study effort involved three screening analysis to narrow the final alternative corridors / and transit modes. Mr. Crobons

## Professional Background

- Contributes to a wide variety of transit-related projects including Service Plans and O&M Cost Estimates for numerous systems plans
- Projects include: FTA Section 5309 New Starts Corridor Planning (AA, DEIS, FEIS, PE), Comprehensive Operations Analysis (COA); Transit Development Plans and Systems Planning

## Education

- B.S., Business Administration, University of South Florida, Tampa, FL 1990
- M.B.A., Masters of Business Administration, University of Central Florida, Orlando, FL, 1999

was responsible for developing operating plans, modal run time estimates, coordination with travel demand modeling tasks and annual O&M cost estimates for all phases on this plans development, as well as coordinating these operating plans with eight counties, seven transit operators, and six Metropolitan Planning Organizations (MPO's).

#### ***Grand Rapids Transit Master Plan (The Rapid – ITP, Grand Rapids, Michigan)***

Mr. Crobons performed two roles as part of the Transit Master Plan, 1) Update the previous Comprehensive Operations Analysis (COA), and 2) Assist with the Transit Service Assessment for the Transit Master Plan (TMP). The COA update provided a transitional service expansion plan for the longer range Master Plan. The Transit Master Plan is envisioned as a tool that would provide a strategic direction for *The Rapid* over the next twenty years. The TMP identifies current and future transit needs, examines alternate courses of action, and targets transit improvements that should be pursued by *The Rapid* over the next 20 years to accommodate the region's growth and enhance the quality of life for area residents.

#### ***Other Representative Projects***

Cook-DuPage (Chicago) Corridor Subarea Transit Planning Study, South Florida Regional Transit Authority Strategic Regional Plan, Pittsburgh Strategic Regional Transit Visioning Study

## **Bus Service Studies**

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#### ***Comprehensive Operations Analyses (COA's)***

#### ***RTS, Gainesville, FL; JTA, Jacksonville, FL; CATS, Baton Rouge, LA; GPMTD, Peoria, IL; IndyGo, Indianapolis, IN; LYNX – Orlando, FL; The Rapid (ITP), Grand Rapids, MI***

Mr. Crobons served as Project Manager and prepared a Comprehensive Operations Analysis (COA) for the select transit authorities listed above. Each COA consisted of public involvement, staff input, comprehensive service area analysis and field work, extensive data collection including on-board surveys and full ridecheck surveys, detailed existing service evaluation, a latent demand analysis and preparation of service concepts that led to the development of specific route recommendations.

Service plans included Near-Term, Short-Range and Long-Range (except ITP and GPMTD) recommendations. Service plans developed for CATS, IndyGo and LYNX reflected significant restructuring of bus service with a stratification of “transit emphasis corridor routes” (routes with high levels of service along major arterials), regional routes to major destinations and an extensive network of local routes. CATS, LYNX and The Rapid are all currently developing funding strategies to implement the COA recommendations. COA's conducted for CATS and IndyGo where part of larger studies and were conducted prior to second phases of the Studies that included Alternatives Analysis for the preferred transit corridor within the region. Major Transit Investment and Streetcar Feasibility Studies were also conducted in Grand Rapids (with Connetics Transportation Group participation) following the completion of the COA.

#### ***Transit Development Plans for Various Virginia Transit Agencies***

Connetics Transportation Group has completed Transit Development Plans (TDP's) for numerous Virginia transit agencies under an on-call services contract with the Virginia Department of Rail and Public Transportation (DRPT). Mr. Crobons was responsible for completing TDP's for Roanoke, VA, Arlington County, VA, Virginia Railway Express (VRE) and the City of Falls Church. He has also assisted in TDP efforts for Potomac Rappahannock Transportation Commission (PRTC). Each TDP has a unique scope of work to address each agencies' specific data collection and service planning needs. Each TDP identifies a six year capital improvement and operations plan.

#### ***Other Representative Projects***

Comprehensive Operations Analyses: MARTA in Atlanta, GA, COTA in Columbus, Oh. Other bus studies include: Orlando, LYNX Downtown Central Station Study and Implementation Plan, Seattle Regional Express Bus Service Implementation Plan

**THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION  
INSURANCE CHECK LIST**

COVERAGE REQUIRED	LIMITS (Minimums)
<b>1. Worker's Compensation</b> ■ Accident (Each) ■ Disease (policy limits) ■ Disease (each employee)	Statutory Employer's Liability \$100,000 per person \$500,000 aggregate \$100,000 per disease
<b>2. General Liability</b> ■ Products Liability & Completed Operations ■ Contractual Liability ■ Premises & Operations ■ XCU for explosion and/or cave in ■ Independent Contractors ■ Personal Injury and Advertising ■ Medical Payment any one person	All items in No. 2: \$1,000,000 Combined Single Limit of Bodily & Property Damage per Occurrence  \$5,000 per occurrence
<b>3. Contractual Indemnity/Hold Harmless Exactly as Specified</b>	
<b>4. Automobile Liability</b> Owned Hired, Non-owned & Leased ■ Bodily Injury Each person Each occurrence ■ Property Damage Each occurrence Or Combined Single Limit	\$ 500,000 \$1,000,000  \$ 300,000 \$1,000,000
<b>5. Excess Liability</b> Combined Single Limit	\$1,000,000
<b>6. The Maryland-National Capital Park and Planning Commission named as additional insured on all policies. The coverage is primary to all coverage the Commission may possess.</b>	
<b>7. Other Insurance</b> ■ Renovation over \$50,000 All Risk Builders Coverage ■ Professional Liability For errors, omissions and negligent acts, per claim and per aggregate, with one year discovery period and no greater than a \$25,000 deductible. Combined Single Limit (Professional services contracts only)	Not included  \$250,000.00
<b>8. 30 days Cancellation Notice Required</b> <b>45 days Cancellation Notice Required</b>	Under \$500,000 Over \$500,000
<b>9. Best's Guide A rating or better/ S&amp;P Rating of BBBq</b>	
<b>10. The Certificate Must State Bid Number and Bid Title.</b>	

**BIDDER AND INSURANCE AGENT STATEMENT**

We understand the insurance requirements of these specifications and will comply in full if awarded this contract.

**Offeror Signature**

**Insurance Agency Signature**

*Sevel Donda*





# CERTIFICATE OF LIABILITY INSURANCE

RENAI-2

OP ID: JT

DATE (MM/DD/YYYY)  
05/20/2014

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

**IMPORTANT:** If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

<b>PRODUCER</b> Brown & Brown of Florida, Inc. 2600 Lake Lucien Dr., Ste. 330 Maitland, FL 32751-7234 House - Brown & Brown	<b>Phone: 407-660-8282</b> <b>Fax: 407-660-2012</b>	<b>CONTACT NAME:</b> PHONE (A/C, No, Ext): E-MAIL ADDRESS:	<b>FAX (A/C, No):</b>
	<b>INSURER(S) AFFORDING COVERAGE</b>		<b>NAIC #</b>
<b>INSURED</b> Renaissance Planning Group Inc 121 S Orange Ave #1200 Orlando, FL 32801	<b>INSURER A:</b> Associated Indemnity Corp		<b>21865</b>
	<b>INSURER B:</b> Technology Insurance Company		<b>42376</b>
	<b>INSURER C:</b>		
	<b>INSURER D:</b>		
	<b>INSURER E:</b>		
	<b>INSURER F:</b>		

**COVERAGES****CERTIFICATE NUMBER:****REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> GENERAL LIABILITY <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR	X		AZC80848645	12/14/2013	12/14/2014	EACH OCCURRENCE \$ <b>2,000,000</b>
	<input type="checkbox"/> GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC						DAMAGE TO RENTED PREMISES (Ea occurrence) \$ <b>1,000,000</b> MED EXP (Any one person) \$ <b>10,000</b> PERSONAL & ADV INJURY \$ <b>2,000,000</b> GENERAL AGGREGATE \$ <b>4,000,000</b> PRODUCTS - COMP/OP AGG \$ <b>4,000,000</b>
A	<input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS			AZC80848645	12/14/2013	12/14/2014	<input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS
	<input type="checkbox"/> COMBINED SINGLE LIMIT (Ea accident) \$ <b>1,000,000</b> <input type="checkbox"/> BODILY INJURY (Per person) \$ <input type="checkbox"/> BODILY INJURY (Per accident) \$ <input type="checkbox"/> PROPERTY DAMAGE (Per accident) \$						
A	<input checked="" type="checkbox"/> UMBRELLA LIAB <input type="checkbox"/> EXCESS LIAB			AZC80848645	12/14/2013	12/14/2014	<input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> CLAIMS-MADE
	<input type="checkbox"/> DED <input checked="" type="checkbox"/> RETENTION \$						EACH OCCURRENCE \$ <b>3,000,000</b> AGGREGATE \$
B	<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) <input type="checkbox"/> Y/N If yes, describe under DESCRIPTION OF OPERATIONS below			TWC3396275	01/02/2014	01/02/2015	<input checked="" type="checkbox"/> WC STATUTORY LIMITS <input type="checkbox"/> OTH-ER
	<input type="checkbox"/> N/A						E.L. EACH ACCIDENT \$ <b>1,000,000</b> E.L. DISEASE - EA EMPLOYEE \$ <b>1,000,000</b> E.L. DISEASE - POLICY LIMIT \$ <b>1,000,000</b>

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

Local Area Transportation Review (LATR)/Transportation Policy Area Review (TPAR) Update for Montgomery County. Cert holder has Addtl Ins status as granted by Gen Lian policy only w/respects to the operations of the named insured. The coverage is primary to all coverage the Commission may posses. 30 days notice of cancellation except for 10 days non-payment on Gen Liab.

**CERTIFICATE HOLDER****CANCELLATION**

<b>Maryland-National Capital Park and Planning Commission</b> <b>Purchasing Division, Suite 300</b> <b>6611 Kenilworth Avenue</b> <b>Riverdale, MD 20737</b>	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.
	AUTHORIZED REPRESENTATIVE 

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Firm Name: Renaissance Planning Group

IFB/RFP No. P34-148

## The Maryland-National Capital Park and Planning Commission Nondiscrimination in Subcontracting Form

It is the policy of the Commission that any bidder/offeror seeking to contract with the Commission shall not discriminate against MFDs in the selection of subcontractors/suppliers on Commission projects. Specifically, bidder/offerors are required to provide MFDs the opportunity to submit bids/offers as subcontractor/suppliers and to award those MFDs submitting low bids the subcontracts unless there are legitimate reasons not to do so.

INDICATE COMPLIANCE WITH THIS POLICY BY CHECKING ONE OF THE FOLLOWING TWO STATEMENTS.

**Statement 1.** The bidder/offeror will not contract with any subcontractors or materials suppliers to perform any portion of this contract and has not normally contracted with subcontractors or materials suppliers as a part of similar contracts in the past two years. Within five (5) days of notice, the bidder/offeror will show evidence as requested that it has not normally subcontracted portions of similar contracts within the past two years.

**Statement 2.** The bidder/offeror has made efforts to provide MFD firms the opportunity to submit bids for subcontracting and/or materials supply components of this contract, and will document same using one of the two (2) options:

Option A Within five (5) days of notice, the bidder/offeror will show evidence of the efforts described by providing the Commission copies of documents such as letters or faxes to MFDs; advertisements for bids; telephone logs or other notes concerning contacts with MFDs; evidence of participation in pre-bid conferences where interest in MFD bids was communicated; bids received from MFDs and notes concerning evaluation of those bids. (The above mentioned documents are only examples of possible documentation and are not exhaustive.) OR

Option B Within five (5) days of notice, the bidder/offeror will show evidence of efforts by producing letters of intent from MFD subcontractors and/or materials suppliers to perform at least 10% to the total dollar value of the contract. Letters of intent from MFD subcontractors and suppliers will be accompanied by a completed Bidders List Registration Form for any MFD subcontractor or supplier who does not have current Forms on file with the Commission. (A blank copy of the Bidders List Registration Form is attached.)

Contractors are encouraged to contact the Commission's Fair Practices Office (301/454-1740) or the Purchasing Office (301/454-1600) with any questions concerning compliance with the nondiscrimination in subcontracting requirements. Either office can also provide a listing of firms, including MFD firms, that have submitted Bidders List Registration Forms to the Commission.

I hereby declare and affirm under penalties of perjury that the contents of the foregoing document are true and correct to the best of my knowledge, information and belief.

Date: 5/19/2014

By:

Authorized Signature



Printed Name/Title

NOTE: FAILURE TO FULLY COMPLETE AND RETURN THIS FORM MAY DEEM THE BID NON-RESPONSIVE, RESULTING IN THE BID BEING REJECTED.

Revised: 8/1/2000



