June 13, 2018

Lew May
BPTC General Manager
Bloomington Public Transportation Corporation
130 W. Grimes Lane
Bloomington, IN 47403

Re: Proposal for Route Optimization Study

Dear Mr. May and the Selection Committee:

Foursquare Integrated Transportation Planning, Inc. (Foursquare ITP) is pleased to submit our response to the Bloomington Public Transportation Corporation and Indian University Request for Proposals for a Route Optimization Study. Transit planning is the at the core of our mission, and we have assembled a strong team of experienced planners to ensure the success of this very important project.

Foursquare ITP takes a data-driven, collaborative, and context-sensitive approach, that ensures that projects are not only innovative and cost-effective, but also implementable. For example, we recently led the complete redesign of the entire bus network in Baltimore, MD, beginning with market assessment and service evaluation, and continuing all the way through to planning, scheduling, and implementation.

Foursquare ITP is a growing firm that now includes more than 30 transit professionals. Boris Palchik, our proposed Project Manager, joined the firm last year, but has more than 18 years of experience as both a consultant and staff planner. Boris' extensive transit planning experience includes dozens of similar route optimization studies throughout the United States, including in communities like Charlottesville, VA; Fayetteville, AR, and Bloomington-Normal, IL; which share many community characteristics to Bloomington, IN. For this project, we have also partnered with Mobility e3 (Me3), industry leaders in the design, planning, and deployment of automated mobility systems.

We hope you will recognize the strengths of our proposal, staff capabilities, and firm experience as indications of our capacity to successfully conduct the Route Optimization Study. We are prepared to enter into a contract with the Bloomington Public Transportation Corporation in accordance with the terms and conditions set forth in the RFP.

If we can provide any additional information about our firm or this proposal, please do not hesitate to contact Boris Palchik at bpalchik@foursquareitp.com or 214-766-7144, or me at lbyala@foursquareitp.com or 301-774-4566 x401.

Sincerely,

Lora Byala, AICP
President & CEO

# CONTENTS



# FIGURES



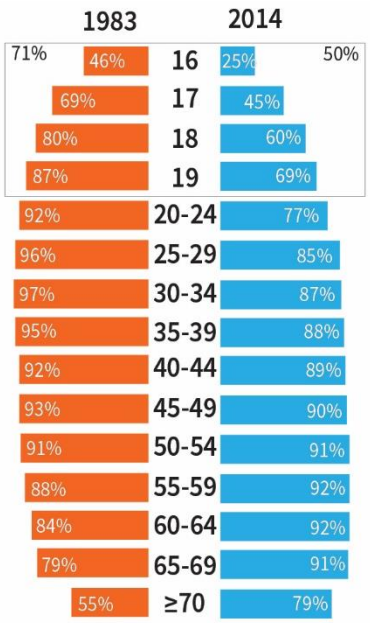
# TABLES

# A. PROPOSED STUDY APPROACH AND METHODOLOGY

## Background

While Bloomington, Indiana is not a large city, its status as a major college town puts it at the forefront of various national trends. This includes trends related to culture, technology, and mobility. Among young people in the United States, the rate of automobile ownership, and even driver's license possession, has declined dramatically in recent years. In 1983, nearly 90 percent of 19-year-olds in the country had a driver's license, compared to just 55 percent of Americans over 70. In 2014, fewer than 70 percent of 19-year-olds were licensed to drive, while nearly 80 percent of Americans over 70 had a license (**Figure 1**).

*Figure 1: Percentage of Age Group with a Driver's License*




*Source: University of Michigan Transportation Research Institute*

In Bloomington, where the median age of residents is 23, these statistics have contributed to 35 years of nearly-continuous transit ridership growth and, more recently, a renewed interest in transit-supportive development. However, the same trends that have helped spur transit use in Bloomington have also facilitated the growth of other modes, including walking, biking, tele-commuting, and app-based ride hailing services. These new options create a challenge, in the form of competition, for traditional transit operators like BPTC, but they also create opportunities by allowing transit providers to better align their services with market demands. Traditional fixed-route service is not necessarily the best mobility solution for every environment, and the availability of new, more flexible mobility models now let fixed-route providers focus their services where they can be most productive.

The purpose of this study is to identify the strengths and weaknesses of the existing transit network in Bloomington, and to develop recommendations that optimize the use of existing resources and improve

services in terms of ridership, productivity, and on-time performance. The study will also examine the role of new and emerging technologies in improving transit operations and the overall user experience.

The following work plan presents our proposed approach for carrying out the Route Optimization Study. Tasks are organized to reflect the anticipated flow of the project based on our team's experience with similar transit studies around the country. Overall, this work plan is intended to meet or exceed the requirements of the RFP.

# Approach

## Task 1: Project Management and Oversight

### *Task 1.1: Kick-Off Meeting*

The Route Optimization Study will begin with a project kick-off meeting. The aim of this meeting is to bring together staff from BPTC, IU, and the consulting team, who will have key roles in the management and oversight of the project. This initial meeting serves multiple purposes:

- Clarify project goals, objectives, priorities, and work products;
- Identify community stakeholders who will form the core of a study steering commitee;
- Discuss opportunities to obtain available data, including GIS files and relevant previous plans; and
- Plan immediate next steps, upcoming meetings, and deliverable dates.

To quickly gain momentum, during this same visit, members of the Foursquare ITP team will spend time riding Bloomington Transit and IU Campus Bus services, visiting key stops and transfer locations, and generally familiarizing ourselves with the study area. If available, we invite BPTC and IU staff to join us in our field work in order to provide context to our observations. We hope to use this time to observe route alignments, areas with strong and weak ridership, emerging markets, transfer and connection procedures, and the general transit and pedestrian environment in the study area.

### *Task 1.2: On-Going Project Management*

Our project management approach is centered on regular communication with the client's project manager to facilitate coordination and to keep the project on schedule. After the initial kick-off meeting, we propose to hold bi-weekly telephone/video conferences with the designated project manager, adding other participants as needed depending on the topic of discussion. The purpose of the bi-weekly conferences will be to review recent deliverables, upcoming tasks, and any data needs, issues, or concerns. We will also provide a monthly progress report covering major items completed.

The Foursquare ITP team will visit the region at key times during the course of the project, as indicated in the proposed project schedule (Figure 10). These visits are described in more detail in Task 2.4: Stakeholder Outreach. In addition, Foursquare ITP staff will be readily available to respond to BPTC or IU staff inquiries by phone or e-mail throughout the course of the project.

***Deliverables:***

1. Project Kick-Off Meeting and meeting minutes
2. Bi-Weekly Project Update Calls
3. Monthly Progress Reports

## Task 2: Data Collection and Analysis

Good data is a critical element of all meaningful transit studies. This includes market data, service performance data, and data collected from stakeholder input. Task 2 consists of four sub-tasks aimed at assessing the Bloomington transit network and service area from various perspectives. These sub-tasks focus

on reviewing relevant planning documents; examining the market for transit service in the region; analyzing the performance of existing transit services; and documenting stakeholder input.

### *Task 2.1: Document Review*

The Foursquare ITP team will work closely with BPTC and IU staff to identify all relevant planning and policy documents related to or impacting transit service in the city. This includes plans for the relocation of the regional hospital and redevelopment of the old hospital site, as well as plans for Bloomington's new Pace bike-share service. Service performance and financial documents, such as annual reports, fare policies, and agency/departmental budgets will also be reviewed. In addition, the study team will request any available mobility-related electronic or GIS files, including route alignments, bus stop locations, passenger amenities, and bicycle/pedestrian infrastructure layers. A summary of key findings from the document review will be included in project's first technical memorandum: Tech Memo #1 - Existing Conditions and Market Analysis.

*Figure 2: Bloomington Hospital Redevelopment Plans*

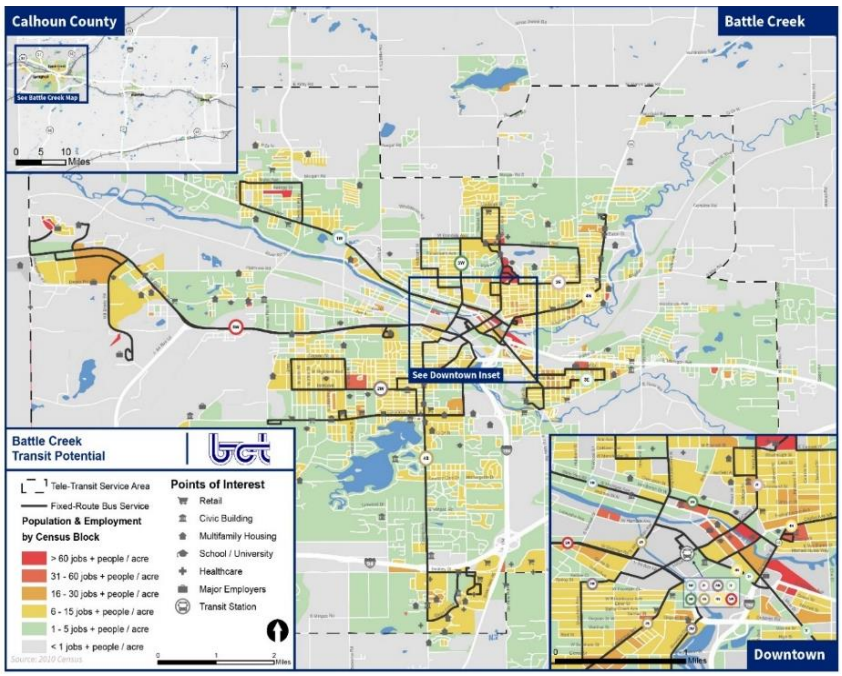

### *Task 2.2: Market Analysis*

Understanding existing and future markets for transit service is a fundamental part of identifying service gaps and opportunities to make better use of existing resources. Bloomington Transit and IU Campus Bus services must be well matched to market demand to be most effective.

The Foursquare ITP team will examine service area characteristics to better understand the market for transit in Bloomington. This analysis will focus on the following service area attributes:

Population and Employment Densities: Of all the factors that impact the demand for transit, the most important is that sufficient numbers of people live and work in close proximity to service. For local service, most people walk to or from a transit stop on at least one end of their trip. In densely developed areas, there are typically large numbers of residents and employees who are able to easily access transit service, thus supporting higher capacity and more frequent service. In less densely developed areas, fewer people will be able to easily access traditional fixed-route transit service (although other service models may be more successful), and overall demand will be lower. Foursquare ITP staff will map the population and employment densities of the

*Figure 3: Example of Transit Potential Index*



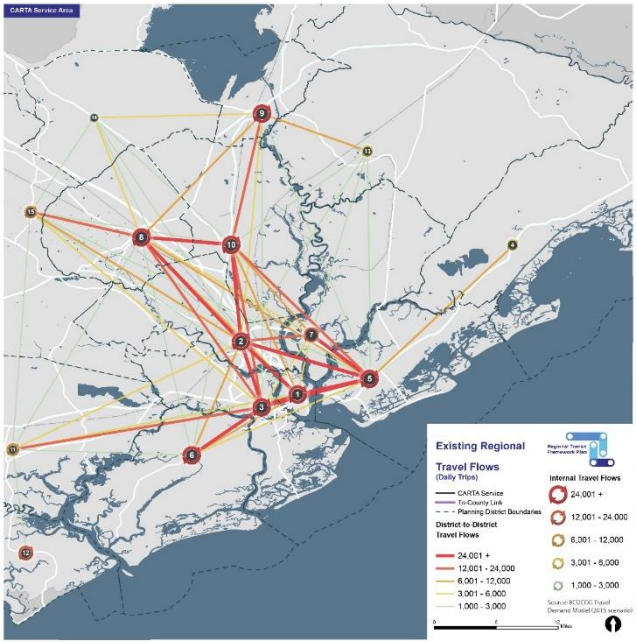
study area and develop a graphical transit potential index, which will clearly illustrate where conditions exist to support various levels and various types of transit service.

Demographic Characteristics: Certain market segments — particularly students, seniors, low income residents, persons with disabilities, and zero-vehicle households — tend to use transit to a greater degree than other groups. They are not only more likely to use transit to get to work or school, but also to access retail and services. Foursquare ITP has developed a unique model to identify where in the service area there currently exists a high propensity for transit use.

Travel Patterns and Activity Centers: In general, transit users want to access the same regional destinations as travelers who use other modes. Thus, to understand the overall market for transit service, the study team will refer to the Regional Travel Demand Model to assess how well the existing transit network facilitates the most prevalent regional travel patterns. In most communities, a large proportion of transit trips are to and from activity centers such as major employers, educational institutions, hospitals, social service providers, and large retail centers. The locations of these major trip generators will be mapped to help inform the study team's understanding of travel patterns in Bloomington.

While the market analysis is not prescriptive, it helps illustrate how transit opportunities vary within the study area. It also highlights where the demand for transit may be out of line with supply.

*Figure 4: Example of Regional Travel Patterns Analysis*




### *Task 2.3: Service Analysis*

Our experience has taught us that in many cases transit services are initially well designed and thought out. Yet, over time, incremental changes in land use, demographics, and travel patterns, may result in a service that is no longer optimized to the community it services. The Service Analysis aims to identify the strengths and weaknesses of each Bloomington Transit and IU Campus Bus route in the context of the current market for transit and major planned developments.

Data Collection: As a first step in the service analysis process, the Foursquare ITP team will collect stop and trip-level ridership data for all scheduled trips on every route during each unique service day type (i.e. weekday, Saturday, and Sunday data for the summer service period; and Monday/Wednesday, Tuesday/Thursday, Friday, Saturday, and Sunday data for long semester service period). Data will be collected through a combination of driver inputs to the DoubleMap tablets and an on-board ridecheck conducted by surveyors. The ridecheck method will be employed on the busiest routes, where ridership volumes are too high for drivers to reasonably be expected to record all activity.

A ridecheck is a manual survey of boardings, alightings, and on-time performance. Data will be collected by local surveyors, hired, trained, and managed by the Foursquare ITP team. Using the ridecheck and DoubleMap data, the Foursquare ITP team will construct a "virtual day of service" for each service day type. For example, while half of the trips on one route may be sampled on a Monday and the other half may be sampled on a Wednesday, the data from both weekdays will be combined to form a full sample of every trip listed on the

route's schedule for the service day type. Transit ridership patterns are typically similar across similar day types, but different for different day types. Thus, weekday and Saturday data would never be mixed, even if service schedules for the two day-types were the same.

Origin/destination and transfer data for Bloomington's fixed route services will be collected through a transit survey described in Task 2.4. For BT Access, origin/destination data will be taken from the scheduling software used by BPTC staff to set pick-up and drop-off times and locations.

Route Profiles: For each Bloomington Transit and IU Campus Bus route, the study team will develop a detailed diagnostic route profile using the previously collected ridership and on-time performance data. Each route profile will include the following elements:

*Figure 5: Example of Ridership-by-Stop Analysis*


- A description of the route and major markets served;
- A description of the route's alignment and service patterns;
- Service and operational characteristics including frequency and span of service;
- Ridership characteristics by stop and by trip;
- Productivity and performance characteristics including financial effectiveness, on-time performance, and capacity utilization;
- An overall assessment of the strengths and weaknesses of the route; and
- An initial list of potential service improvement opportunities.

A service profile will also be developed for BT Access to show service "hotspots" in terms of geography (origins and destinations) and time of day. Both the fixed-route and demand response profiles will be written in a manner that all stakeholders can clearly understand, and will provide transparent information to support all conclusions and recommendations.

System-Level Analysis: The diagnostic route profiles will be packaged together with a set of system-level analyses in Technical Memo #2 – System and Service Analysis. The system-level analyses in this memo will include a transfer matrix based on data reported by current riders (see transit survey in Task 2.4). The memo will also document the availability of passenger amenities in the study area and provide a contextual comparison to a set of peer systems with similar service and community characteristics.

### *Task 2.4: Stakeholder Outreach*

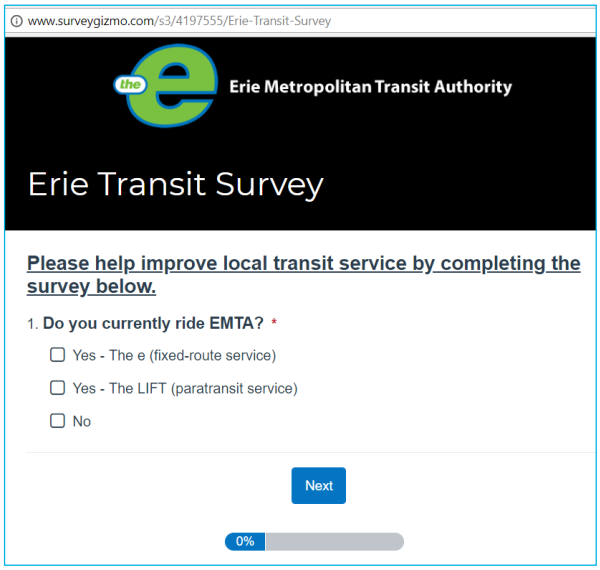
Foursquare ITP prides itself in its ability to effectively engage with a range of diverse stakeholders, including riders, non-riders, community leaders, and transit front-line staff. This ability is based on our staff's background as both transit professionals and daily transit users.

**Transit Survey with Origin/Destination Questions:** Among the best ways to determine how to improve transit service is to ask the riders themselves. The Foursquare ITP team will develop a transit survey to determine where passengers are traveling to and from, who they are, how and why they currently use transit, and the types of improvements that they would most like to see.

The survey will be designed to accommodate the responses of Bloomington Transit, Bloomington Access, and IU Campus Bus riders, as well as non-riders who would like to contribute their feedback. To understand the profile of existing passengers, the survey will pose several basic questions including the following:

- Approximate trip origin and destination
- Typical transfer patterns
- Length and frequency of use
- Trip purpose
- Auto availability
- Satisfaction with and importance of service characteristics
- Suggestions for new service or destinations
- Basic demographic information.

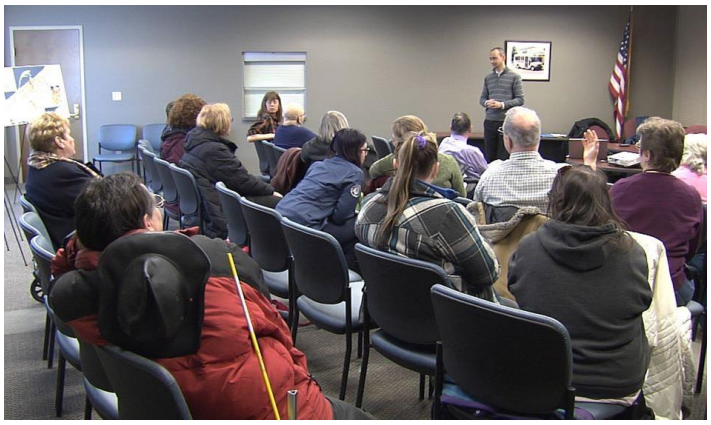
*Figure 6: Example of Online Transit Survey*




From a budget standpoint, the most efficient way to administer and analyze the transit survey is to host it online. In addition, an online survey allows for the participation of non-riders, whose perspective regarding transit service can help identify service features that may attract new riders.

A link to the online survey will be provided to BPTC and IU staff, as well as to members of the study advisory committee. This core group will be encouraged to post the link online and to distribute it as widely as possible through email lists and social media platforms. In our experience, online access is high in communities like Bloomington that host major educational institutions. However, if hard copy surveys are desired as well, the Foursquare ITP team can make them available to BPTC and IU staff for distribution and collection. Hard copy surveys can also be made available to riders and non-riders who attend public meetings over the course of the study.

**Public Meetings and Stakeholder Focus Groups:** In most communities, there is a wide variety of viewpoints on how and where transit should be provided. The Foursquare ITP team recommends at least one round of stakeholder focus groups and two rounds of public meetings over the course of the study. The focus group and first round of public meetings will be held after the collection and analysis of data for Technical Memo #1 - Existing Conditions and Market Analysis. These preliminary meetings are intended to be a frank and open discussion about the market for transit service in the study area and the perceived strengths and weaknesses of the existing services. The public meetings will be open to the entire community, while the focus groups will be by invitation only, and are intended to bring together key stakeholders in



the community. One focus group will consist of members of the study oversight committee. Another will include elected and appointed officials, major employers, social service agency representatives, and heads of advocacy organizations. The Foursquare ITP team will work closely with BPTC and IU staff to recruit focus group participants, select meeting dates and venues, and advertise the public meetings. Typically, public meetings are promoted through a combination of email blasts, online posts, on-board notices, and outreach to local media and advocacy groups.

A second round of public meetings will be held later in the study to present initial recommendations. Each round of meetings will include a combination of daytime and evening meetings to allow for maximum participation of residents with various schedules. Some meetings may also take the form of an informal "pop-up event." For example, a mid-day pop-up event may be scheduled on the IU campus, followed by a more formal public meeting in the evening.

Interviews with Front-Line Staff: As the front-line staff responsible for delivery of transit services, Bloomington Transit and IU Campus Bus operators, dispatchers, and customer service representatives likely know more about the transit services than anyone else, and almost certainly have opinions about how to improve it. Seeking their input and perspective can be a useful and effective strategy, both for identifying ways to improve the system and at building support and momentum for the project overall. The Foursquare ITP team usually engages with front-line staff through informal interviews in break rooms or other areas where drivers tend to gather. We will work with BPTC and IU Campus Bus management to determine the best approach to this strategy in Bloomington.

***Deliverables:***

1. Technical Memo #1 – Existing Conditions and Market Analysis
2. Technical Memo #2 – System and Service Analysis
3. Technical Memo #3 – Stakeholder and Public Outreach Summary

## Task 3: Develop Service Alternatives and Recommendations

### *Task 3.1: Service Scenarios*

Building on the technical findings of the market and service analyses, along with internal and external input received from BPTC and IU staff, stakeholders, and members of the public, the study team will develop two distinct service improvement scenarios which will be presented first to BPTC and IU staff and then to the public for feedback and discussion. Potential service changes may include (but are not limited to) the following:

- **Route re-alignments** to better serve current markets given any revised demand estimates, changes in infrastructure, or other relevant changes;
- **Route interlinings (a.k.a. interlockings)** to provide one-seat rides or standardize headways among routes of different lengths;
- **Route extensions** to serve new developments or areas of changing demographics;
- **New routes** to increase coverage to un-served areas and/or address un-met travel patterns;
- **Revised spans of service** to provide either longer or shorter hours of service to better reflect demand levels;
- **Service frequency adjustments** to better match service levels with demand;
- **Elimination or reduction of non-productive services** to improve overall performance and redistribute resources to the highest demand areas;
- **Development of transit emphasis corridors** by leveraging existing resources to provide higher quality services and provide a framework for future capital investments;
- **Bus stop enhancements**, such as improved passenger information, more shelters, and improved bicycle and pedestrian connections;
- **Fare, pass, or transfer policy changes** to increase ridership or revenue; and
- **Operations and facilities recommendations** to reduce deadhead and other service inefficiencies.

Each service improvement scenarios will incorporate a subset of potential service changes and differ in approach. For example, one scenario could be designed to maximize service coverage, while another may be designed to maximize frequency. For this project, both scenarios will be cost-neutral.

For each scenario, the study team will develop a system map and a basic overview of service characteristics, including preliminary span and frequency of service, vehicle requirements, and approximate operating costs. However, the scenarios are intended to represent different combinations of approaches, rather than entire packages that would need to be selected as a whole. The aim is to determine which individual recommendations, or combinations of recommendations in each scenario, would generate the highest levels of support, and then to combine the best elements of each scenario into a final recommended service improvement scenario.

### *Task 3.2: Technology Strategies*

Traditionally, transit operators have felt compelled to provide broad service coverage in the communities they serve, to ensure equitable access to all stakeholders. However, traditional fixed-route transit service requires specific market characteristics such as suitable densities and supportive infrastructure to operate most efficiently. As these characteristics do no always exist throughout a service area, most transit systems in the United States include a mix of high and low-performing routes.

In recent years, there has been a boom in new mobility technologies ranging from app-based ride-hailing services (also known as transportation network companies or TNCs) to fully automated transit vehicles. These technologies have expanded the tool set for transit operators to consider when planning for new service or making improvements to existing routes.

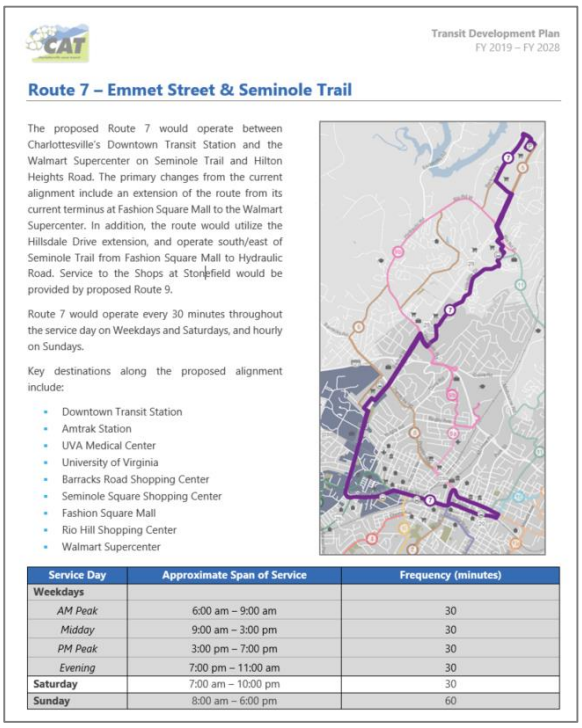

The study team will identify opportunities where new mobility technologies can be harnessed to improve ridership, productivity, on-time performance, and/or the overall user experience for transit riders in Bloomington. Examples may include (but are not limited to):

- **Subsidized TNC (Uber, Lyft, etc.) service** for BT Access users to reduce per-passenger costs and service wait times
- **Subsidized TNC service for general public** to expand service span or coverage area
- **In-house app-based demand response service (Via, TransDev, etc.)** to serve low-density areas or replace underperforming fixed-route service
- **Autonomous transit vehicles** as first mile/last mile connectors and/or site-specific circulators
- **Fully electric vehicles** to mitigate environmental impacts and hedge against future energy price volatility

### *Task 3.3: Preferred Alternative*

Following the presentation of technology strategies and the two service improvement scenarios to the public and project steering committee, the Foursquare ITP team will refine the alternatives and develop a preferred service improvement plan that reflects the input provided by transit staff and stakeholder throughout the study. Our experience from other projects shows that when client staff work closely with the consulting team, there are much better opportunities to address operating and other issues, and the resulting recommendations are much stronger. This process also helps to develop buy-in from the staff that will ultimately be responsible for implementing the recommendations.

*Figure 7: Example of Service Change Route Sheet*



Transit Development Plan
FY 2019 – FY 2028

**Route 7 – Emmet Street & Seminole Trail**

The proposed Route 7 would operate between Charlottesville's Downtown Transit Station and the Walmart Supercenter on Seminole Trail and Hilton Heights Road. The primary changes from the current alignment include an extension of the route from its current terminus at Fashion Square Mall to the Walmart Supercenter. In addition, the route would utilize the Hillsdale Drive extension, and operate south/east of Seminole Trail from Fashion Square Mall to Hydraulic Road. Service to the Shops at Stonefield would be provided by proposed Route 9.

Route 7 would operate every 30 minutes throughout the service day on Weekdays and Saturdays, and hourly on Sundays.

Key destinations along the proposed alignment include:

- Downtown Transit Station
- Amtrak Station
- UVA Medical Center
- University of Virginia
- Barracks Road Shopping Center
- Seminole Square Shopping Center
- Fashion Square Mall
- Rio Hill Shopping Center
- Walmart Supercenter

| Service Day | Approximate Span of Service | Frequency (minutes) |
|---|---|---|
| **Weekdays** | | |
| *AM Peak* | 6:00 am – 9:00 am | 30 |
| *Midday* | 9:00 am – 3:00 pm | 30 |
| *PM Peak* | 3:00 pm – 7:00 pm | 30 |
| *Evening* | 7:00 pm – 11:00 am | 30 |
| **Saturday** | 7:00 am – 10:00 pm | 30 |
| **Sunday** | 8:00 am – 6:00 pm | 60 |

The preferred service improvement plan will provide an overview of the proposed network and detailed descriptions of all individual changes. For each proposed route, the plan will include a route sheet with the following elements:

- A description of proposed changes
- The rationale for the change
- Maps of proposed changes
- Proposed service frequencies, by day and time of day

Additional service characteristics will be presented in a summary table including all routes. This table will allow BPTC and IU staff to easily compare the impact of each individual route on the over-all system cost and fleet requirements. The summary table will present the following information by route:

- Scheduled running time
- Proposed layover time
- Vehicle requirements
- Estimated revenue hours and operating costs
- Projected ridership

Together, the route sheets and service characteristics summary table will provide BPTC and IU staff with the tools necessary for a successful implementation of the preferred service improvement plan. These items will be included in Technical Memo #4 - Service Alternatives and Recommendations, along with additional supporting recommendations related to route naming/numbering and passenger amenities deployment, that are designed to complement and reinforce the service improvement plan.

### *Task 3.4: STIC Optimization Strategy*

The FTA's Small Transit-Intensive City (STIC) program is a potential source of increased funding for BPTC and IU. STIC funding is determined based on how many performance factors a region exceeds; Bloomington exceeded three factors in FY2017: Passenger Miles per Vehicle Revenue Hour, Vehicle Revenue Hour per Capita, and Passenger Trips per Capita. Moreover, the region is close to meeting Vehicle Revenue Miles per Capita.

Foursquare ITP proposes to include STIC performance factors as an additional set of measures to evaluate and prioritize service recommendations. STIC funding should not be used as the sole determining factor for new service as the net gain in revenue is unlikely to exceed the marginal cost of service expansion. We plan to pay special attention to factors that the Bloomington region is close to exceeding. To expand STIC eligibility BPTC

and IU would have to expand service, notably higher speed services that generate a greater than average number of vehicle or passenger miles per revenue hour.

***Deliverables:***

1. Two Service Improvement Scenarios
2. Technical Memo #4 – Service Alternatives and Recommendations

## Task 4: Draft Final and Final Report

The products of the previous tasks, along with an executive summary will be summarized and compiled in the form of a Draft Final Report prior to the submittal of a Final Report document. 20 color copies and an editable, electronic file of the Draft Final Report will be submitted to BPTC and IU staff for review and comment.

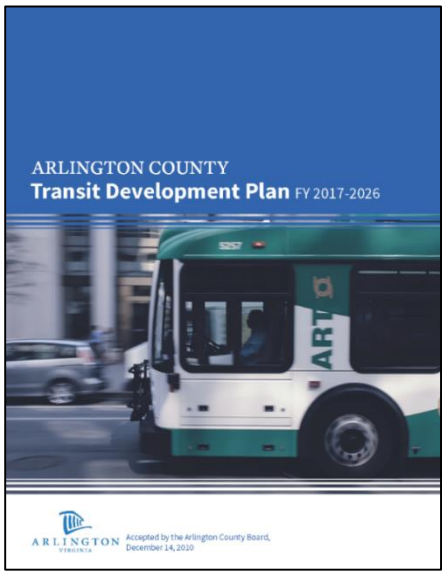
A PowerPoint presentation summarizing key findings and recommendations of the Draft Final Report will also be produced for presentation to the study steering committee, BPTC Board of directors, the MPO Technical Advisory Committee, and the MPO Citizens Advisory Committee.

Following the receipt of all comments, the Draft Final Report document will be revised as necessary to produce the Final Report. 50 color copies of the Final Report will be produced and supplied to the BPTC Board of Directors along with an electronic version of the document in PDF format.

***Deliverables:***

1. Draft Final and Final Report
2. Summary Presentation

*Figure 8: Example of Final Report Document*



# B. QUALIFICATIONS AND PREVIOUS EXPERIENCE OF FIRM

**Foursquare ITP** is an award-winning transportation planning firm that provides innovative transportation solutions that are practical, focused, and implementable. Founded in 2006, we are a woman-owned business headquartered in Rockville, Maryland with one other office in Boston, MA. The company is DBE certified in 19 states plus the District of Columbia.

Foursquare ITP has more than 30 full-time transportation and transit planners, data analysists, and GIS experts. Many of our key staff are former transit agency employees, allowing us to cover a range of service areas through deep technical expertise along with an understanding of how transit operates. Our proposed project team has extensive experience in transit planning specifically for communities that host major colleges and universities. In fact, our current work includes Transit Development Plans for Charlottesville and Blacksburg, VA, home to The University of Virginia and Virginia Tech, respectively.

Our work is data-driven and informed by meaningful stakeholder engagement. Key service areas are: transit service and operations planning; regional transportation planning and corridor studies; transportation demand management planning and implementation; strategic planning and performance measurement; station access and capacity planning; and Title VI plan development and implementation. The company has conducted a wide range of plans in these and other areas. Our smaller size and dedicated employees allow Foursquare ITP to offer clients a nimble organization that provides unparalleled customer-focused service. Our team is comprised of smart, driven, creative, and passionate transportation and transit planners who take great pride in their work and in getting the best solutions for their clients.

In addition to our extensive technical expertise, Foursquare ITP brings the following characteristics to all of our work:

- **Collaborative:** We believe that our clients best understand their systems and we leverage that institutional knowledge in our work. Through interactive workshops and shared online work sites we are able to integrate with the agencies we plan for.
- **Data-Driven:** By combining analysis of large datasets with qualitative inputs from our traditional and grass-roots outreach programs we provide a multi-faceted data-driven approach that incorporates many inputs.
- **Customized, Context-Sensitive Approach:** We leverage our broad experience but tailor our work to the agency and its local context.
- **Honesty & Transparency:** We maintain open lines of communication with our staff and our clients so everyone is on the same page. Our employees yearn to make a difference in the everyday lives of the people and communities where transit is offered.
- **Value:** Our combination of low overhead, and smart and innovative staff members provide our clients with more hours, and more productive hours, for the money.

Established in January 2018, **Mobility e3** (**Me3**) is at the forefront of the automated transit industry, working with cities, campuses, and transit agencies to plan and deploy automated vehicle (AV) technology. Me3 bring unparalleled AV expertise and experience, and a track record of mobility innovation across all transportation modes.

Me3 is passionate about designing, planning, and deploying automated mobility systems for safer and healthier communities that are both smarter and more accessible. This is achieved by:

- Using AV technology to meet real transportation needs
- Building a strong mobility network that is shared, electric, automated and active
- Building teams in communities to create the AV future
- Educating and training leaders across public, private and non-profit sectors

Me3 has amassed achievements in several key areas of automated mobility:

- **Safety:** Creating a safety tool kit that includes test and verification technologies, operator safety best practices, operational audits, and model state and federal safety policies. A first-of-its-kind risk management program is set to be launched at the end of 3Q 2018.
- **Planning:** Partnering with three cities, two transit agencies, and multiple Federal campuses to plan and launch pilots.
- **Education and Training:** APA Automated Mobility Hub, featuring interactive AV shuttles and related technologies, ten practitioner workshops, and three days of on-street demonstration rides in an AV
  - First AV community planning guide.
  - 12 podcasts and workshops on AV readiness.
  - Graduate level curriculum on AV Planning and Policy.
- **Research:** Pending research efforts include Scenario Analysis for Low Speed Autonomous Vehicle Use Cases; Transit Agency Checklists for LSAV Deployment; workshop and study on Mitigating Workforce Impacts from Transportation Automation; case study on Public Safety and AV Deployments.

*Table 1: Client List for Whom Recent Studies of a Similar Nature Have Been Performed*

| Client Name | Contact Person | Mailing Address | Email Address | Phone Number | Dates of Work Undertaken |
|---|---|---|---|---|---|
| **Foursquare ITP** | | | | | |
| Charlottesville Area Transit | John Jones | 1545 Avon Street Ext. Charlottesville, VA 22902 | jonesjo@ charlottesville.org | 434-970-3844 | 07/2017–Present |
| Brown University | Lichen Grewer | 97 Waterman Street Box 1941 Providence, RI 02912 | lichen_grewer@ brown.edu | 401-863-9389 | 06/2017–08/2017 |
| Erie Metropolitan Transit Authority | Paul Kierzek | 127 E. 14th Street Erie, PA 16503 | PKierzek@ ride-the-e.com | 814-459-8922 x103 | 12/2017–Present |
| Battle Creek Transit | Rich Werner | 339 West Michigan Avenue, Battle Creek, MI 49037 | rwwerner@ battlecreekmi.gov | 269-966-3588 x1703 | 09/2017–Present |
| Connect Transit* | Isaac Thorne, CEO | 351 Wylie Drive Normal, IL 61761 | ithorne@connect-transit.com | 309-829-1130 | July 2014–April 2016 |
| **Mobility e3** | | | | | |
| AAA/ Northern California | Suna Taymaz | 1277 Treat Blvd., 10th Floor Walnut Creek, CA 94597 | Suna.taymaz@ norcal.aaa.com | 415-5271-9794 | 10/2017–Present** |

| Client Name | Contact Person | Mailing Address | Email Address | Phone Number | Dates of Work Undertaken |
|---|---|---|---|---|---|
| Robotic Research | Edward Mottern | Quince Orchard Rd. Ste. #300 Gaithersburg, MD 20878 | emottern@ roboticresearh.com | 240-631-0008 x215 | 01/2018–Present |

** Client is from a project performed by Boris Palchik, prior to joining Foursquare ITP*
*** Predates formation of Me3*

## CHARLOTTESVILLE AREA TRANSIT DEVELOPMENT PLAN

**CHARLOTTESVILLE AREA TRANSIT**

Charlottesville, Virginia

**Project Duration:**
July 2017–July 2018

**Project Cost:**
$143,000

**Project Role:**
Subcontractor (in lead role)

**Client Reference:**
John Jones
Transit Director
1545 Avon Street Extended
Charlottesville, VA 22902
434-970-3844
jonesjo@charlottesville.org

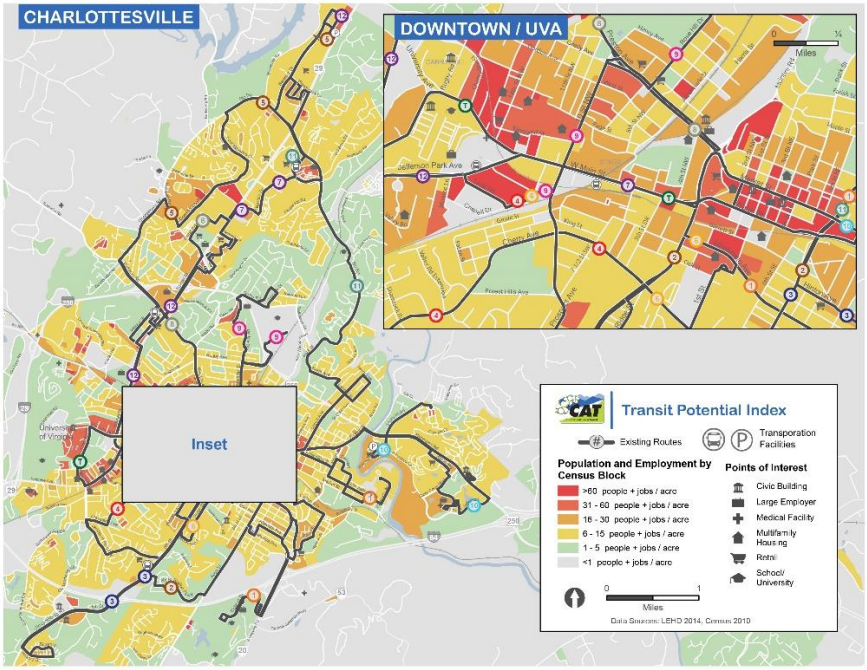
**Staff:**

- Boris Palchik, Project Manager
- Jamie Roberts, Transportation Planner

Foursquare ITP is currently leading a Transit Development Plan (TDP) in Charlottesville, VA – home of the University of Virginia. The TDP will provide a framework for actionable plans for service delivery and improvement that incorporate existing capital and operating revenue constraints, while also identifying unmet or unfunded needs and a mid- and long-term visions for transit in the region.

The TDP study will include an overview of the existing transit system, a review of the agency's progress in meeting previously established goals and objectives, and analyses of current service performance and the market for transit service in the Charlottesville region.

Foursquare ITP staff is developing service improvement recommendations and a phasing plan informed by a three-variable financial model. In addition, the study includes a robust outreach process focused on engaging key stakeholders, members of the public, and front-line staff such as drivers and dispatchers.



# BROWN UNIVERSITY BUS STOP SIGN DESIGN

**BROWN UNIVERSITY**

**Providence, Rhode Island**

**Project Duration:**
June 2017–August 2017

**Project Cost:** $16,000

**Project Role:** Prime

**Project Reference:**

Lichen Grewer, Planner
97 Waterman Street
Box 1941
Providence,RI, 02912
401-863-9389
lichen_grewer@brown.edu

**Staff:**

- Boris Palchik, Project Manager


Foursquare ITP led the redesign of the bus stop signage and naming convention of the Brown University Shuttle network. This project was the final step of a comprehensive redesign of the University's shuttle routes (which Boris Palchik also led, prior to joining Foursquare ITP). Foursquare ITP staff developed several design concepts and worked with Brown University staff to select a final sign design and service naming and color-coding approach. We also coordinated with a sign fabricator to ensure timely and accurate sign production. Forty new bus stop signs were installed in August 2017, in preparation for the launch of the redesign Brown University Shuttle network at the start of the Fall 2017 semester. The new naming convention and color-coding were also incorporated into the University's shuttle tracker application to improve the overall user experience.

# ERIE 5-YEAR TRANSIT DEVELOPMENT PLAN

## ERIE METROPOLITAN TRANSIT AUTHORITY

Erie, Pennsylvania

**Project Duration:**
December 2017–Present

**Project Cost:** $144,000

**Project Role:** Prime

**Project Reference:**

Paul Kierzek, Service Planner
127 E. 14th Street
Erie, PA 16503
814-459-8922 x103
PKierzek@ride-the-e.com

**Staff:**

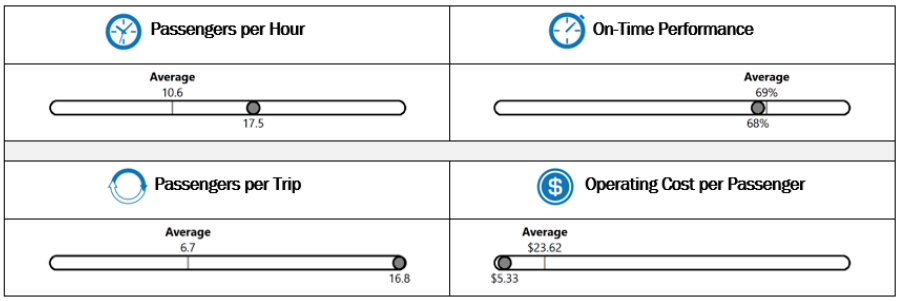
- Boris Palchik, Project Manager

The Erie Metropolitan Transit Authority (EMTA) currently finds itself at a crossroads. To ensure its future success, in light of economic, demographic, and land-use changes, EMTA must find ways to "right-size." Right-sizing does not have to mean eliminating service, but rather reinvesting it in ways that yield the most positive results.

The Five-Year Transit Development Plan is an opportunity to conduct a comprehensive analysis of the existing EMTA system, to identify the strengths and weaknesses of every route, and to highlight opportunities for service improvement, expansion, and/or reinvestment.

In addition to developing service improvement recommendations, the Foursquare ITP team is also advising EMTA staff on performance measures that will help the agency assess service efficiency and effectiveness over time, in order to identify and address poor performing routes as early as possible.

*Route 3 Weekday Service Productivity Metrics*



# CONNECT TRANSIT COMPREHENSIVE OPERATIONAL ANALYSIS

## CONNECT TRANSIT

Bloomington-Normal, Illinois

**Project Duration:**
July 2014–April 2016

**Project Cost:** $150,000

**Project Reference:**
Isaac Thorne, CEO
309-829-1130
ithorne@connect-transit.com

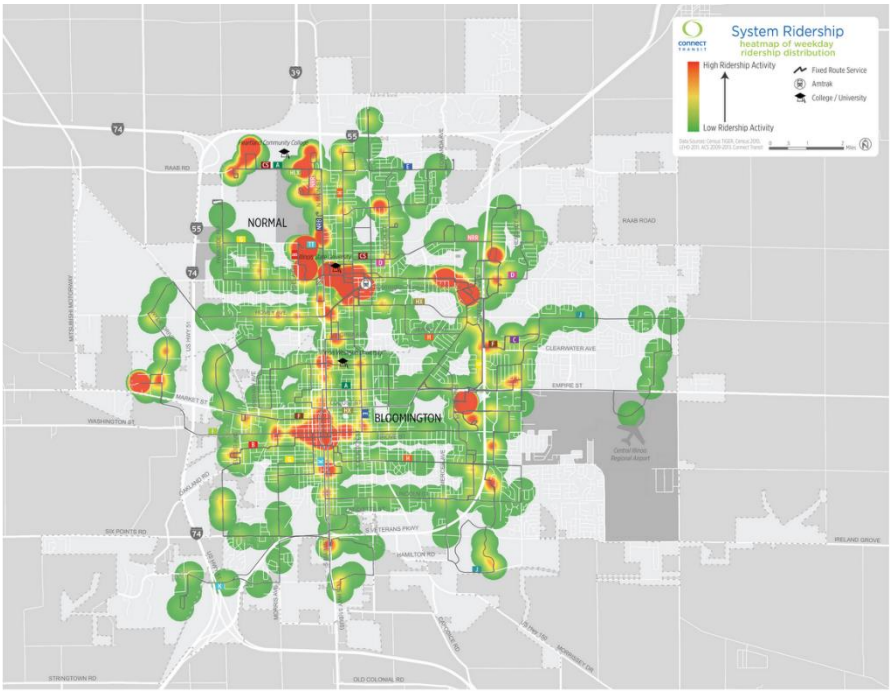
**Staff:**

- Boris Palchik, Project Manager

Before joining Foursquare ITP, Boris Palchik led the analysis and complete redesign of the Connect Transit network, serving Bloomington-Normal and Illinois State University. The project included onboard surveys and a 100% ridecheck, providing Connect Transit staff with a comprehensive look at existing ridership patterns and passenger preferences as the agency prepared to transition from a flag-stop system to a marked-stop system.

The project team developed detailed profiles of each Connect Transit route, highlighting strengths and weaknesses and identifying preliminary service improvement opportunities. These route profiles, along with a market analysis of the Bloomington-Normal region, were used to develop a recommended fixed-route bus network that dramatically simplified the existing network structure and increased frequencies on major corridors. The recommended network also integrated existing ISU-specific services into the broader network, allowing Connect Transit to better serve students and the broader community.

Connect Transit implemented the recommended network and service changes on August 15, 2016. Ridership numbers initially appeared to drop as passengers were able to reach more destinations directly and without a transfer (resulting in fewer passenger trips on paper), but have since returned to double-digit month over month growth.



## Downtown Automated Shuttle, Las Vegas, NV

**PROJECT NAME:**
AAA Automated Shuttle

**LOCATION:**
Las Vegas, NV

**PROJECT COST:**
Undisclosed
(private sponsor)

**Me3 PROJECT LEAD:**
Corey Clothier

**PROJECT ROLE:**
Lead AV Strategist

**STRATEGY COMPONENTS:**
- AV Technology & Operations Partners
- Safety & Operations
- Funding
- Routing
- Marketing Support

**PROJECT REFERENCES:**
- Joanna Wadsworth, Lead, City of Las Vegas
- Suna Taymaz; Vice President, Autonomous Vehicle Strategy, AAA NCNU

Corey Clothier, Principal and Co-founder of Mobility e3 (Me3), advised AAA and the City of Las Vegas on the development, planning, and deployment of the first automated shuttle used for a public transit application and the first extended pilot in mixed traffic. The NAVYA shuttle, operated by Keolis, provides scheduled service seven days a week in downtown Las Vegas. To date, the shuttle has provided trips to more than 20,000 passengers, many of them tourists visiting Las Vegas. The shuttle operates Tuesdays through Sundays from 1:30 to 8:30 pm and travels on a fixed-route that crosses eight intersections, six traffic lights, and two stop signs on public roadways.

Among other things, Mr. Clothier:

- identified Las Vegas as a partner for automated transit pilot
- served as an intermediary between AAA and the City of Las Vegas transportation office. C
- Found appropriate technology and operations partners to ensure rapid deployment and feasibility.
- developed the drafted initial concept of operations which framed the business opportunity and project requirements of principal stakeholders; and
- advised on all aspects of technology, operations, safety, funding, routing, and marketing.

Launched in November 2017, the one-year pilot is the longest running self-driving, low-speed shuttle project in the United States to operate in live traffic. This project anchors other activities supported by Me3 including development of a case study of the pilot, review of public safety and law enforcement issues, with respect to the shuttle, and identification of additional opportunities for Las Vegas to foster advanced mobility operations.

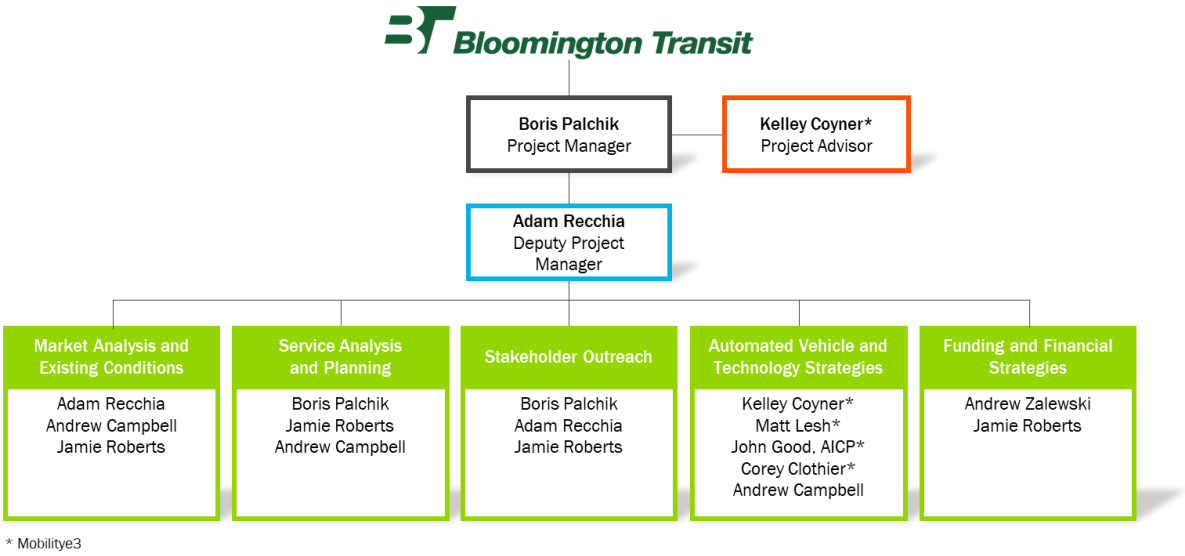
# C. KEY PERSONNEL AND SUBCONTRACTOR CREDENTIALS

To ensure the success of the Route Optimization Study, Foursquare ITP has assembled a highly qualified team of industry experts, both in transit planning and automated vehicle operations. The Foursquare ITP team will be led by Project Manager Boris Palchik who has more than 18 years of transit planning experience. Boris is currently leading similar fixed-route transit studies in Battle Creek, MI and Erie, PA, and led the successful implementation of a complete service redesign in Bloomington-Normal, IL in 2016.

Boris will be supported by Adam Recchia, Jamie Roberts, Andrew Campbell, and Andy Zalewski. Adam, Jamie, Andrew, and Andy are experienced in the specific skills required in this RFP, gained through multiple projects focused on transit service analysis and optimization. Our team is also strengthened by Mobility e3, a firm specializing in automated vehicle operations planning and implementation.

The figure below shows our proposed staff, organized by areas of responsibility. Full resumes for each staff member have been included.

*Figure 9: Organizational Chart*



# Staff Résumés

## BORIS PALCHIK | PROJECT MANAGER

**Years of Experience**

18

**Years with Foursquare ITP**

1

**Education**

- Master of City and Regional Planning, University of Texas at Arlington
- Bachelor of Civil Engineering, University of Texas at Austin

**Prior Experience**

- Principal, Nelson\Nygaard Consulting Associates, Inc., Boston, MA
- Senior Planner, Denton County Transportation Authority, Denton County, TX
- Service Planner III, Dallas Area Rapid Transit, Dallas, TX

Boris Palchik has 18 years of experience in the transit field. He has developed service plans for both large and small transit systems with a focus on improving ridership and system productivity. Boris takes a holistic approach to service development by addressing route and schedule issues, as well as the overall passenger experience in terms of wayfinding, data availability, and service environments. At Foursquare ITP, Boris focuses primarily on Comprehensive Operational Analyses (COA) and Transit Development Plans (TDP). He also specializes in schedule run-cutting, and site-specific transit planning for airports, universities, and other large campuses. Boris' key projects at Foursquare ITP include the Charlottesville Area Transit Development Plan, Battle Creek Transit Master Plan, and Brown University Bus Stop Sign Design project.

### Example Projects

**Erie Metropolitan Transit Authority, Erie 5-Year TDP, Project Manager, Erie, PA.**
The five-year transit development plan aims to identify opportunities to restructure the EMTA network to better serve the mobility needs of a changing market. As project manager, Boris is leading the service analysis and development phases of the project, as well as the stakeholder outreach including public meetings and focus groups.

**Virginia Department of Rail and Public Transportation (DRPT), Charlottesville Area TDP, Project Manager, Charlottesville, VA.**
The Virginia Department of Rail and Public Transportation requires all public transit operators that receive state funding to submit a transit development plan (TDP) at least every six years. Boris is the project manager for an on-going transit development plan focusing on Charlottesville, Albemarle County, and surrounding communities. The TDP will provide a framework for actionable plans for service delivery and improvement that incorporate existing capital and operating revenue constraints, while also identifying unmet or unfunded needs and a mid- and long-term visions for transit in the region.

**Brown University, Brown University Bus Stop Sign Design, Project Manager, Providence, RI.**
Foursquare ITP led the redesign of the bus stop signage and naming convention of the Brown University Shuttle network. Boris was the project manager for a redesign of the bus stop signage and naming convention of the Brown University Shuttle network. This project was the final step of a comprehensive redesign of the University's shuttle routes. Forty new bus stop signs were installed in August 2017, in preparation for the launch of the redesigned Brown University Shuttle network at the start of the Fall 2017 semester.

**BCDCOG Regional Transit Framework Plan, Project Manager, Charleston, SC.**
The Regional Transit Framework Plan is aimed at identifying opportunities to implement high-capacity transit service in key corridors of the Charleston

region. In addition to the project manager, Boris was also a task lead for several tasks including needs assessment, identification of alternatives, and local bus service planning for an on-going regional transit framework plan in Charleston, SC. The regional transit framework plan (RTFP) will set the stage for how the region begins to establish a true multi-modal transit-rich network. The results of this study will be incorporated into the region's long range transportation plan (LRTP) and set the stage for future premium transit infrastructure.

**City of Battle Creek, Battle Creek Transit Master Plan, Project Manager, Battle Creek, MI.**
The Battle Creek Transit Master Plan aims to identify the strengths and weaknesses of the existing network, and to develop recommendations for improving ridership and productivity. Boris is the project manager for an on-going transit master that will examine different strategies to connect the Battle Creek community in faster, more convenient ways, and will create an implementable action plan to improve and/or expand the system across different financial scenarios. The TMP will be data-driven, including detailed market and service analyses, but will also incorporate a robust public engagement process that seeks to engage riders and non-riders, along with key stakeholders and front-line staff.

## Previous Projects (Prior to Joining Foursquare ITP)

**Connect Transit, Comprehensive Operational Analysis, Bloomington-Normal, IL**
Project Manager for the comprehensive assessment of Connect Transit's fixed-route bus services and development of service improvement recommendations aimed at simplifying service, reducing redundancies, and proving more direct service between key origins and destinations. Connect Transit implemented the recommended network and service changes on August 15, 2016. Ridership numbers initially appeared to drop as passengers were able to reach more destinations directly and without a transfer (resulting in fewer passenger trips on paper), but have since returned to double-digit month over month growth.

**Brownsville Metro, Comprehensive Strategic Plan, Brownsville, TX**
Project Manager for the analysis and redesign of Brownsville's 13-route network, as well as the regional Metro Connect service linking Brownsville to McAllen, Harlingen, and South Padre Island. Recommendations included cost-neutral short-term service improvements and longer-term improvements accompanied by funding strategies.

**Augusta Public Transit, Augusta Comprehensive Operational Analysis, Augusta, GA**
Project Manager for the first comprehensive analysis of fixed-route bus service in the City of Augusta in 30 years. Recommendations included reorienting service around more relevant destinations than the old Kmart stores that the system had been designed around previously, and long-term recommendations for improved connections to Fort Gordon.

**Capital Region Council of Governments, Comprehensive Transit Service Analysis for the Greater Hartford Area, Hartford, CT**
Project Manager for a comprehensive assessment of CT Transit's fixed-route bus services in the Hartford region and development of service improvement recommendations. Key recommendations included implementing a family of services approach to more clearly differentiate different service types, and developing several transit emphasis corridors through a combination of high service frequency and complementary investments in passenger amenities and transit-priority treatments.

**Wichita Transit, Transit Performance Analysis, Wichita, KS**
Project Manager for the analysis of fixed-route bus service in the Wichita area, with a particular focus on reducing costs and improving service efficiency. Study was prompted by a budget shortfall at the City of Wichita, but study convinced city officials to spare transit service from cuts.

# ADAM RECCHIA | DEPUTY PROJECT MANAGER

**Years of Experience**

13

**Years with Foursquare ITP**

5

**Education**

- M.P.S., Community and Economic Development, Pennsylvania State University
- B.A., Urban Studies and Planning, State University of New York at Albany

**Prior Experience**

- Principal Transportation Planner, Southeastern Regional Planning & Economic Development District (SRPEDD), Taunton, MA
- Intermodal Planning Intern, Rhode Island Department of Transportation (RIDOT), Providence, RI

**Certifications, Awards, and Associations**

- I-95 Corridor Coalition Freight Academy
- Member, TRB Subcommittee on Transformative Trends in Transit Data
- Member, Young Professionals in Transportation, Boston

Adam has successfully implemented several bus network redesigns and led operational analyses for transit facility expansions and new transit facilities. He specializes in working with large datasets related to transit, transportation and demographics that aid in the evaluation of existing networks, service areas, and individual facilities. As Foursquare ITP's Transit Facilities and Multimodal Access Practice Lead, Adam has lead several transit facility expansion projects and access projects that sought to improve bicycle, pedestrian and bus access to major transit hubs. His key projects at Foursquare ITP have included BaltimoreLink, the Mark Center Station Expansion Feasibility Study, and several transit development plans and corridor plans in the Mid-Atlantic, New England, and North Carolina.

## Example Projects

**Blacksburg, Radford, and Pulaski Area Transit Development Plan, Deputy Project Manager, Blacksburg, Radford, and Pulaski, VA.**

This study is evaluating the transit needs of three adjacent systems in the New River Valley region of Virginia and recommending improvements to each system to address growth and regional connectivity. As deputy project manager, Adam oversaw a market analysis and existing conditions analysis of the three transit systems and led the development of recommendations for each system and the region as a whole. He also managed the data processing for the project and oversaw two rounds of public outreach and an on-board rider survey effort.

**Fredericksburg Area Metropolitan Planning Organization (FAMPO), Caroline and King George County Transit Studies, Project Manager, Fredericksburg, VA.**

This project is evaluating existing transit service in Caroline County, VA and determining the market for new service in adjacent King George County, VA; recommendations are being developed to improve transit connectivity and efficiency in both counties. As project manager for this study, Adam performed a detailed market analysis for transit service in both counties, including a transit propensity analysis and a travel flow analysis. He developed service recommendations that concentrated service in areas of highest demand while also providing lifeline service for transit dependent populations. Finally, he will be providing notional schedules for all recommended services and detailed vehicle and cost estimates.

**Hagerstown/Eastern Panhandle Metropolitan Planning Organization (HEPMPO), Long Range Multimodal Transportation Plan Update, Task Lead, Hagerstown, MD.**

Developed a series of phased recommendations for transit service and facilities for the transit chapter of the 2014 Long Range Transportation Plan. Adam led the public transit portion of this plan, including a demographic and transit need analysis of the MPO area, an inventory of existing services and recommendations for new services and new capital needs.

**Washington Metropolitan Area Transit Authority (WMATA), Mark Center Transit Center Study, Project Manager, Alexandria, VA.**
This project analyzed existing operations and developed operational expansion recommendations and conceptual designs for Mark Center Station in Alexandria, VA. As project manager for this project, Adam led the existing conditions, future facility needs and stakeholder outreach tasks. He documented existing transit services at the Mark Center and calculated occupancy at the transit center located at the facility. He also calculated the future number of bus bays needed at the transit center to accommodate planned service changes, including the introduction of two new bus rapid transit (BRT) lines to the facility. Adam also led efforts to document pedestrian and bicycle circulation and safety issues at the station and recommended access improvements. He then went on to inform the preliminary design process and alternatives analysis for an expansion of the transit center, including number of bus bays, bus circulation, layover locations, revised route alignments to the site, passenger amenity locations, and bicycle and pedestrian access improvements.

**Rhode Island Public Transportation Authority (RIPTA), Quonset Transit Plan, Task Lead, Providence, RI.**
Performed a detailed transit market analysis for the Quonset Business Park in Rhode Island and developed service recommendations to better serve the park. Adam used a transit propensity analysis, an analysis of LEHD origin-destination data, and an employee survey to determine the market area for transit service to the park. He led efforts to develop transit alternatives to serve the park and a detailed service plan for two flex route alternatives that would serve the park and connect with existing RIPTA fixed routes. He calculated potential ridership on the two flex route alternatives and recommended other operational improvements including new bus turnarounds in the park and schedule adjustments to other routes to improve transfer times to the proposed flex routes.

**Charlotte Area Transit System (CATS), Southeastern Corridor Transit Study (Silver Line), Task Lead, Charlotte, NC.**
Adam led the existing conditions and service plan alternatives task for this project. He summarized existing conditions data for CATS routes on the corridor, including demographic profiles of the area, ridership by route and stop, on time performance, route efficiency measures, transit speeds, overcrowding, and roadway characteristics. He also developed service plan alternatives for the US-74 corridor managed lanes, currently under construction, and general service recommendations for the 16 routes included in the study. Recommendations included route alignment changes to better match demand and to make use of the managed lanes, managed lane entry and exit locations, stop consolidation on express routes, and future infrastructure improvements to make access to the managed lanes more efficient.

# ANDREW ZALEWSKI | SENIOR TRANSPORTATION PLANNER

**Years of Experience**

8

**Years with Foursquare ITP**

6.5

**Education**

- M.C.P., Transportation and Infrastructure Planning, University of Pennsylvania
- B.S., Urban and Regional Studies, Cornell University

**Prior Experience**

- Transportation Planning Associate, Delaware Valley Regional Planning Commission, Philadelphia, PA
- Planner/Analyst Intern, Mayor's Office of Transportation and Utilities - City of Philadelphia, Philadelphia, PA
- Intern, Bicycle Coalition of Greater Philadelphia, Philadelphia, PA

**Certifications, Awards, and Associations**

- American Institute of Certified Planners, ID: 286368
- American Planning Association, MA Chapter & Transportation Planning Division
- Committee Member, Transportation Research Board Committee on Transportation Issues in Major Cities

Andrew Zalewski, AICP is a Senior Transportation Planner with experience in transportation and urban planning, design, and geographic information systems (GIS). At Foursquare ITP he plays a number of roles. He has worked as the project manager and task lead on public transit, bike share, strategic planning, and environmental assessment projects. Andrew leads the firm's bike share planning practice, and has been involved in helping a range of communities plan for and implement bike share and active transportation infrastructure. Andrew excels at detailed GIS analysis and financial modeling. He has developed GIS market assessments for transit and bike share, as well as dynamic financial models for a range of transportation programs. He is also a skilled designer and has overseen the development of wayfinding, branding, and urban design components of projects. Andrew manages the firm's Boston office.

## Example Projects

**Brown University, Brown University Bus Stop Sign Design, Deputy Project Manager, Providence, RI.**

Foursquare ITP led the redesign of the bus stop signage and naming convention of the Brown University Shuttle network. Deputy project manager in project to redesign signage for the Brown University shuttle system. Participated in stakeholder meetings and guided the process of creating a new sign design and flexible graphic standards. Advised on logistics related to sign re-design and installment.

**Rhode Island Public Transportation Authority (RIPTA), Quonset Transit Plan, Project Manager, Providence, RI.**

Performed a detailed transit market analysis for the Quonset Business Park in Rhode Island and developed service recommendations to better serve the park. Project manager for study on the feasibility of expanding transit service at the Quonset Business Park. Managed extensive outreach initiative with employers and employees at the Business Park, including the distribution of commuter surveys to thousands of workers, and a focus group for key Business Park tenants. Handled survey logistics and the development of collateral material. Oversaw market study and development of service recommendations, including transit service plan, TDM strategy, and alternative transportation options.

**Arlington County, Transit Development Plan, Task Lead, Arlington, VA.**

Led the development of a six-year financial plan for Arlington Transit. Estimated the future cost of service improvements to the ART and Metrobus systems within the county. Conducted analysis to illustrate the cost savings from transferring service between operators.

**Montgomery County, US 29 Bus Rapid Transit Service Plan, Transportation Planner, Montgomery County, MD.**

Responsible for identifying existing BRT systems with similar characteristics to the proposed US-29 service. Developed case studies

with key lessons from peer systems. Assisted in development of presentation materials intended to communicate key service concepts associated with the implementation of BRT on US-29.

**District Department of Transportation (DDOT), Capital Bikeshare Development Plan, Project Manager, Washington, DC.**
Created a multi-year strategic expansion plan for Capital Bikeshare in the District of Columbia. Oversaw work on all tasks, including: the creation of strategic goals, objectives, and performance measures; development of a market study outlining the programs strengths and weaknesses; creation of a program expansion plan; and, the development of a multi-year financial plan. Project incorporated extensive amounts of GIS and demographic data to ascertain program strengths, weaknesses, opportunities and threats. Worked closely with DDOT staff to identify financial trends, culminating in the program's first long-range operating and capital financial plan.

**Hampton Roads Transit (HRT), Capital Improvement Plan and Transit Development Plan Update (FY2017), Deputy Project Manager, Norfolk, VA.**
Annually for the past five years have collaborated with members of HRT's senior executive team and other key staff to develop annually both a fiscally constrained and visionary capital improvement plan. Helped develop a prioritization and screening process for more than 90 projects proposed by HRT. Updated a six-year cost and revenue model for capital and operating expenses based on a variety of assumptions regarding federal and state funding and advertising and fare revenue. Incorporated the capital plan results into an updated operating budget for the agency's transit development plan that has resulted in an ongoing open dialogue between staff and board members regarding the long-term financial future. Worked with agency stakeholders to develop a financially sound turn-around plan for the capital program. Identified steps the organization needs to take to improve its capital funding outlook. Led efforts to develop capital investment advocacy material targeted at educating local stakeholder and state legislators on the need for dedicated funding at HRT.

**Fairfax County Department of Transportation, Comprehensive Transit Plan/Transit Development Plan, Task Lead, Fairfax County, VA.**
Responsible for developing a six-year operating budget forecast for Fairfax Connector service. Assisted in creating a cost calculator for Fairfax County that estimate service statistics and operating costs for proposed route changes. Authored the operational and financial plan chapters of the TDP.

**City of Falls Church, Falls Church Bike Share Ridership Analysis, Project Manager, City of Falls Church, VA.**
Project manager on project to assist the City of Falls Church in implementing Capital Bikeshare. Conducted a market study to help the City finalize the location of bike share stations. Developed a cost, revenue, and ridership forecast for the program to support future grant asks. System slated to launch in 2018.

**Northeast Corridor Infrastructure and Operations Advisory Commission, Northeast Corridor Commission Special Stations Cost Allocation Study, Transportation Planner, Washington, DC.**
Assisted with primary research on cost allocation agreements, interviewing stakeholders at multi-user rail stations across the United States and abroad, with the aim of developing an understanding of how are station costs allocated in other shared-use corridors in the U.S. and abroad, what drivers are used to allocate the costs, what governance structures have allowed certain approaches to cost allocation to be successful, and other relevant lessons learned. Information synthesized in the research will inform the development of a cost sharing agreement for stations in the Northeast Corridor. Researched station access charge structures for rail stations managed by Deutsche Bahn (Germany) and Network Rail (UK). Completed an asset inventory of 31 shared use station along the Northeast and Keystone rail corridors.

# ANDREW CAMPBELL | TRANSPORTATION PLANNER

**Years of Experience**

5

**Years with Foursquare ITP**

4.5

**Education**

- M.S. Urban Spatial Analytics, University of Pennsylvania
- B.S. Architecture, University of Maryland-College Park

**Prior Experience**

- GIS Intern, University of Maryland Center for Advanced Transportation Technology, College Park, MD
- GIS Intern, Montgomery County Department of Transportation, Rockville, MD

Andrew Campbell is a Transportation Planner with a focus on geographic information systems (GIS) and graphics. Andrew's work combines quantitative and spatial data analysis with graphic design. He excels in conducting spatial analysis and visualizing solutions to difficult transit questions. He has been closely involved with a number of projects, including: Connect Hampton Roads, Metro Bus 17 and 18 Lines Service Evaluation, and the MTA Bus Network Improvement Project.

## Example Projects

**Maryland Transit Administration (MTA), BaltimoreLink Implementation Planning Support (Phase 2), Data/GIS Analyst, Baltimore, MD.**
Evaluated the change in level of service, brought on by the transit system redesign, for all block groups in the transit service area. This was used to ensure an equitable distribution of resources as part of the Title VI service equity analysis. Developed GTFS feed of proposed services for use in the service equity analysis.

**Fairfax County Department of Transportation, Comprehensive Transit Plan/Transit Development Plan, Data/GIS Analyst, Fairfax County, VA.**
Developed event and advertising material to promote the plans outreach events. Outreach was done in two phases and involved holding public workshops and popup events around Fairfax County. Materials included system wide service map, route sheet maps, display boards, bus banners, and flyers. Assisted in communicating the proposed TDP changes to the public. Developed a series of maps to visualize the changes to the system. This included generating a full system map, local area maps and individual route maps for all Fairfax Connector and Metrobus route in Fairfax County. Created and maintained shapefiles of proposed route changes.

**Montgomery County, MD 355 Bus Rapid Transit (BRT) Study, Transportation Planner, Rockville, MD.**
Supported the development of alignments and operating plans for four BRT routes to meet the growing demand and capacity issues along the MD 355 corridor. Performed a detailed analysis of alignment alternatives which included examining potential turning issues, pedestrian access, and service area demographics. Evaluated the operations of 40+ Ride On and WMATA local bus routes that interact with the BRT.

**Central Oklahoma Transportation & Parking Authority (COPTA), Oklahoma BCA STOPS Model Development, Data/GIS Analyst, Oklahoma City, OK.**
Used the Federal Transit Administration (FTA) Simplified Trips-on-Project Software (STOPS) travel demand model to predict the ridership and travel flow impact for two BRT transit scenarios. Forecast transit ridership for both BRT Scenarios along the North West Corridor using the FTA's Simplified Trips-on-Project Software (STOPS). This included data input creation and modification, generating GTFS feeds for both scenarios, running the STOPS Model, results validation and creating a final memo detailing the results of both model runs.

**Rhode Island Public Transportation Authority (RIPTA), Quonset Transit Plan, Data/GIS Analyst, Providence, RI.**
Performed a detailed transit market analysis for the Quonset Business Park in Rhode Island and developed service recommendations to better serve the park. Developed ridership estimates of the proposed commuter bus routes using existing and future population estimates, demographic information, and estimated travel time. Generated heat maps showing the prospective riders trip origins.

**Roanoke Valley-Alleghany Regional Commission (RVARC), Roanoke Valley Transit Vision Plan, Data/GIS Analyst, Roanoke, VA.**
Responsible for evaluating the benefits of transitioning away from a pulse system as part of Roanoke's 40-year Transit Vision Plan. This was performed by analyzing the regional travel model to identify local travel patterns.

**Virginia Department of Rail and Public Transportation (DRPT), Richmond Regional Transportation Vision Plan, Data/GIS Analyst, Richmond, VA.**
Evaluated the market for transit by combining various demographic factors into a transit propensity for each block group and comparing it to the expected travel flows.

**Hampton Roads Transit (HRT), Transit Development Plan 2017, Data/GIS Analyst, Norfolk, VA.**
Assisted in the development of recommendations for the local and commuter bus network. Managed the GIS shapefiles for the project and generated various maps to visualize the 10-year implementation plan for the bus network. Estimated the costs, resource requirements, and ridership changes for the proposed recommendations.

# JAMIE ROBERTS | TRANSPORTATION PLANNER

**Years of Experience**

3

**Years with Foursquare ITP**

1

**Education**

- Master of City and Regional Planning, Focus in Transportation Planning, The Ohio State University
- B.S., Communication Studies, Ohio University

**Prior Experience**

- Capital Projects and Planning Intern, Central Ohio Transit Authority

**Certifications, Awards, and Associations**

- Women's Transportation Seminar, Northeast Ohio Graduate Scholarship Award, 2017
- American Planning Association
- Women's Transportation Seminar
- Young Professionals in Transportation

Jamie is a Transportation Planner focused on creating innovative and effective transit systems. Jamie has expertise in data analysis, geographic information systems (GIS), and graphic design. She is passionate for finding new ways to communicate complex information, and to make transit easy to understand and navigate for every user. Jamie's key projects at Foursquare ITP include the Mankato Transit Development Plan and Charlottesville Area Transit Development Plans. Jamie joined Foursquare ITP after two years at the Central Ohio Transit Agency (COTA) where her work as an intern was a vital component to the successful implementation of the Transit System Redesign.

## Example Projects

**Virginia Department of Rail and Public Transportation (DRPT), Charlottesville Area TDP, Transportation Planner, Charlottesville, VA.**

The Virginia Department of Rail and Public Transportation requires all public transit operators that receive state funding to submit a Transit Development Plan (TDP) at least every six years. As a transportation planner, Jamie provided in-depth analysis on existing services for the three involved transit agencies. This included collecting and analyzing census and spatial data using GIS. Jamie created maps for service analysis, including transit propensity, heat maps, and transit potential maps. She developed ridership maps from on-board ride check data and recorded manifests. Jamie was also involved with creating and visualizing proposed fixed route, demand response, and TNC partnership recommendations.

**Mankato Transit, Mankato Transit Development Plan, Transportation Planner, Mankato, MN.**

As a transportation planner, Jamie provided an in-depth evaluation of existing MTS services and area demographics and trends. She created materials used in analysis and outreach, including in-depth route profiles. The analysis guided recommendations with input from stakeholders and the public. Jamie contributed to the creation of the recommendations that met the agency goals as well as a complex implementation plan that considered multiple funding scenarios. Jamie developed schematic system maps for each scenario and profiles for recommended routes. She was also involved with developing costs and operations plans for each recommendation.

**Central Florida Regional Transportation Authority, State Road 436 Transit Corridor Study, Transportation Planner, Orlando, FL.**

As a transportation planner on this project, Jamie created innovative graphic visualizations of projected ridership data along the 436 corridor. Jamie was also involved with the creation of GTFS transit feeds for recommended route alternatives.

**Maryland Transit Administration (MTA), BaltimoreLink Implementation Planning Support, Transportation Planner, Baltimore, MD.**

As a transportation planner on this project, Jamie created 3D-rendered examples of ideal bus stops using Sketchup and Adobe Illustrator. These

images depict realistic scenarios for Baltimore streets that will guide bus stop placement and makeup for MTA in the future.

**Metropolitan Washington Council of Governments (MWCOG), Performance Monitoring for Washington, DC Regional Bus Priority TIGER Grant, Transportation Planner, Washington, DC.**
As a transportation planner, Jamie assists with on-going data collection and analysis for performance monitoring reports. Jamie developed many first round after-reports for corridors that implemented bus priority projects funded through TIGER Grant money.

**Hampton Roads Transit (HRT), Capital Improvement Plan Update, Transportation Planner, Norfolk, VA.**
As a transportation planner on this project, Jamie was involved with the collection and analysis of agency-wide capital projects and needs. Jamie assisted with the prioritization of all projects for the 2018 Capital Improvement Plan update that covered FY18 through FY24. Jamie was also involved with the creation of a Fleet Plan that complemented the CIP.

**Maryland Transit Administration (MTA), MTA Title VI Program Support, Transportation Planner, Baltimore, MD.**
As a transportation planner, Jamie completed a Service Equity Analysis for services changes to MTA Route 425.

**Hampton Roads Transit (HRT), HRT West Side Alternatives Analysis, Transportation Planner, Norfolk, VA.**
As a transportation planner on this project, Jamie was involved with creating an operations plan for each of the alternatives. This included calculating speeds, dwell times, and trip characteristics.

# Kelley Coyner

*CEO / AV Policy and Project Advisor*

An innovator in research and practice, Kelley currently focuses on helping communities assess, implement, and fund AV shuttles and fleets. Past positions have included: Senate-confirmed CEO of the Research and Special Program Administration, a federal multimodal transportation agency; and Executive Director of Northern Virginia Transportation Commission. Also, as a researcher for MIT, Harvard's Kennedy School, George Mason University, and the National Academy of Engineering, Kelley has married practice and research expertise to move the needle on mobility innovation, transportation governance, performance metrics and assessments, project prioritization, funding and finance, and asset management.

**EDUCATION**

Juris Doctorate, School of Law, University of Virginia

BS, School of Foreign Service, Georgetown University

**PROFESSIONAL HIGHLIGHTS**

Founder & CEO, Mobility e3 (Me3)

Strategic Advisor, Alta Planning + Design, 2017

Senior Fellow, Adjunct Faculty and Practitioner-in-Residence, George Mason University, 2016-

Executive Director, Northern Virginia Transportation Commission, 2013-2016

Senior Advisor, Center for Public Health and Homeland Security, 2007-2013

**PROFESSIONAL AFFILIATIONS**

Eno Transportation Center

TRB

Virginia Bar Association

## RELEVANT EXPERIENCE

- Creator of APA National Planning Conference, Automated Mobility, featuring interactive AV shuttles and related technologies, ten practitioner workshops, and three days of on-street demonstration rides in an AV shuttle
- Co-Author, *Preparing Communities for Autonomous Vehicles*, American Planning Association (2018); "Big Data and AVs," *Encyclopedia of Big Data*, Springer (pending); *Taking AV Shuttles to the Streets: What Communities Should Learn from New Modes and Emerging Technologies*, Eno Center for Transportation (pending)
- Designer and Co-Lead, a dozen scenario-based planning exercises on shared, AV, electric vehicle deployment, and shared mobility
- Faculty, Council of State Governments, 2017 AV Policy Academy
- Adjunct Professor, AV Policy and Planning graduate seminar, Schar School of Policy and Government, George Mason University
- Peer Reviewer, Commonwealth of Virginia's AV Strategy
- Program Lead, FHWA-funded research symposium on AVs, equity, transportation planning and land use impacts; co-hosted by American Planning Association, National League of Cities, Mobility Lab, Eno Center for Transportation, and Brookings
- Advisor and researcher, shared mobility governance and funding issues focused at the state, regional, and local levels
- Member, National Highway Cooperative Research Program and National Academy of Sciences, Research Committees
- Executive Director, Northern Virginia Transportation Commission, developed regional transportation programs including:
  - The Transform 66 Multimodal Program
  - Next Generation Fare Payment Program/National Capital Region providing technical assistance and coordinated procurement to regions transit systems

# Corey Clothier

*Technology Advisor*

Former Marine Aviator and Technology Development and Deployment expert, Corey led the first AV pilot in the United States, the Ft. Bragg Wounded Warrior Project. Corey works with a range of organizations from start-ups and auto OEMs to transit operators, airports and cities, deploying automated mobility systems that serve real transportation needs. Corey leads Me3's safety testing efforts and AV shuttle pilots and fleet deployments.

**EDUCATION**

MBA, Baker College

BS, Aircraft Engineering, Northrop University

**PROFESSIONAL HIGHLIGHTS**

Mobility e3 (Me3), 2018-

Coast Autonomous, COO, 2017

Local Motors, VP Product Management, 2015-2016

Comet Consulting, US Army Strategy Consultant, 2008-2015

Saber Leadership, Owner/COO, 2003-2008

DE-STA-CO/Robohand, Director Channel Management, 2001-2003

**PROFESSIONAL AFFILIATIONS**

Innomobility Global Advisory, 2013

FTA Advisor Automated Vehicle Research, 2013

DARPA FANG, Co-Creation Lead, 2014

## RELEVANT EXPERIENCE

- Strategist, Las Vegas AV Pilot (current), San Francisco (in development)
- Local Motors VP Product Management "Car Chief." Accomplishments include:
  - Built Olli, the first cognitive AV shuttle
  - Commercialized 3D printed car
  - Initiated innovation programs with IBM Watson Automotive IoT, Mouser, and NXP
- Lead, national automated/self-driving vehicle pilot team with DOD, DOT (state and federal), White House Office of Science and Technology Policy, NIST and DOE
- Consultant and advisor, Munich Reinsurance Transportation Innovation team to develop the first autonomous vehicle insurance product
- Autonomous Vehicle Advisor, DOT Accessible Transportation Technologies Research Initiative
- Advisor, USMC's autonomous vehicle test-bed at Miramar
- Consultant, NASA's future mobility visioning
- Co-Developer of US Army Applied Robotics for Installation and Base Operations program (ARIBO): program installs self-driving as operational pilots on military bases. Co-lead Wounded Warrior transport, first U.S. AV pilot
- Team Co-Lead, ARIBO, Smart America Challenge. Leveraged disruptive technologies like "The Internet of Things" and cyber-physical systems test-beds for cities
- ARIBO Team Lead, NIST Global City Challenge
- Member, advisory board for autonomous vehicle xPrize

# Matt Lesh

*Transit Planning / Operations Advisor*

With more than 20 years' technology and transportation experience, Matt helps transit agencies, cities, states, and technology companies across the United States, Europe and Asia with policy, research, and strategic planning. Matt is an expert in Transit Oriented Development (TOD), Intelligent Transportation Systems (ITS), mobility on demand, accessible technology and paratransit service, shared use, and automated mobility systems. Currently, Matt is working on deploying emerging automated technology, including pilots of shared use autonomous vehicles and fixed guideway autonomous solutions, identifying federal funding opportunities for TOD and emerging transit technologies, and public engagement on secondary impacts of AVs.

**EDUCATION**

MA, Transportation Policy, Operations, & Logistics, George Mason University: School of Public Policy, 2006

BA, International Studies, Butler University, 1995

**PROFESSIONAL HIGHLIGHTS**

Mobility e3 (Me3), 2018-

Independent Consultant, 2017

Local Motors, 2016

Noblis, 2015-2016

Federal Transit Administration, 2006-2015

**PROFESSIONAL AFFLIATIONS & ACTIVITIES**

Transportation Research Board Vice-Chair, Section on Automated Transit Systems

American Society of Civil Engineers (ASCE), Member, Committee on Public Transportation

Advanced Transit Association, Board Member

## RELEVANT EXPERIENCE

- Planner, low-speed AV pilots for communities, transit agencies, and campuses
- Lead, go-to-market strategy for the world's first cognitive, self-driving, shuttle, the Local Motor's Olli
- Team Leader, Accessible Technology Transportation Research Initiative (ATTRI)
- Coordinator, U.S. DOT for Intelligent Transportation Systems Joint Program Office connected vehicle program
- Subject matter expert, U.S. DOT's Automation Program Plan. Liaison, Smart City Challenge Initiative of U.S. DOT
- Founder, Federal Transit Administration's Mobility On-Demand (MOD) program
- Manager, Mobility Services for All Americans (MSAA) Deployment Planning Program. Led program for Transportation Management Coordination Centers (TMCCs) to improve human service transportation delivery through data interoperability efforts
- Analyst, Program Lead for Transit Investment for Greenhouse Gas and Energy Reduction (TIGGER) Program
- Team Lead, Innovative Safety, Resiliency, and All-Hazards Emergency Response and Recovery Research Demonstrations
- COTR, Veteran's Transportation Community Living Initiative (VTCLI)
- Member, Transportation Systems (ITS) Joint Program Office (JPO) Vehicle Automation Coordination Team
- Agency Lead, Office of the Secretary's Pedestrian and Bicycle Safety Initiative
- Advisory Panel member; Mineta Transportation Institute (MTI) Project 1227, Automated Transit Networks (ATN): A Review of the State-of-the-Industry and Prospects for the Future
- Co-Author, FTA policy on bicycle and pedestrian catchment areas eligible for Federal Transit funds

# John Good

*Shared Mobility / AV Planner*

An urban and transportation planner in Singapore and the United States, John focuses on new mobility innovation, and strategic land use design around infrastructure. For five years, John worked in the Singapore national urban planning agency, specializing in transportation systems research. He managed the scope and scenario definition for an autonomous vehicle and land use study that examined how to incorporate AVs as a complement to public transit. Since early 2017, John has served as a consultant for the World Bank, specializing in transit-oriented development (TOD) and station access, with projects in India and Bangladesh. From Detroit, John works on automated and shared mobility systems, new land use concepts, and strategic economic development.

**EDUCATION**

Master of Environmental Management, School of Forestry & Environmental Studies, Yale University

BA, Environmental & International Studies, Yale University

**PROFESSIONAL HIGHLIGHTS**

Advisor, Mobility e3

Consultant, Transport & Digital Development, The World Bank, 2017-

Executive Planner, Strategic Research, Urban Redevelopment Authority, 2016-2017

Planner, Strategic Research, Urban Redevelopment Authority, 2012-2016

**PROFESSIONAL AFFILIATIONS**

American Institute of Certified Planners (AICP), American Planning Association

Urban Land Institute

## RELEVANT EXPERIENCE

- Research Lead, "Federal and State AV Regulator Policy Landscape," Me3 Working Paper (2018)
- Project Lead, "Urban Planning for District-Based AVs in Singapore," Urban Redevelopment Authority, with academic and agency partners
- Lecturer on TOD and Future Mobility, Singapore Institute of Planners, 2018
- Knowledge Coordinator, TOD Community of Practice for The World Bank
- Co-Manager, Global Platform for Sustainable Cities TOD Resource
- Co-Author, "Jobs, Michigan, and Leadership in the Economy of Tomorrow," with John Austin and Akaash Kolluri, Michigan Economic Center (2017)
- Author, "The New Mobility Landscape," Part 6, Detroit Visions series (2016)
- Panelist and speaker, Yale School of Forestry & Environmental Studies Leadership Forum, 2016
- Member, American Institute of Certified Planners (APA)
- Researcher, Automated and Shared Mobility

# D. PROPOSED CONSULTANT COSTS

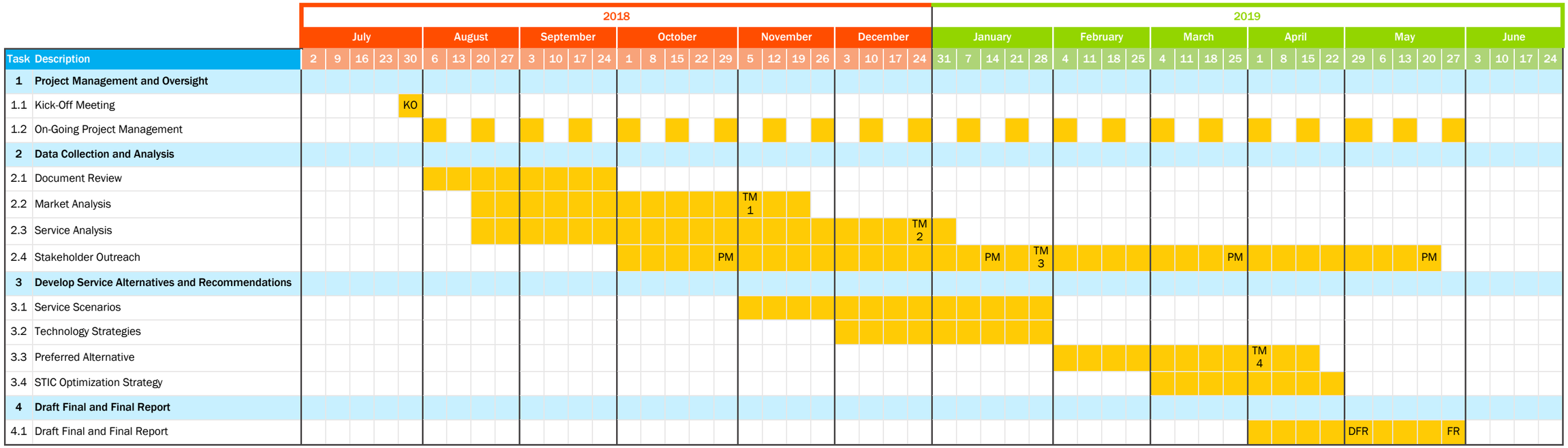
| | | Foursquare ITP Labor Costs | | | | | | | Subconsultant Costs | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Mobility e3 | | | | | | | | | | | |
| | | Boris Palchik | Adam Recchia | Andrew Zalewski | Andrew Campbell | Jamie Roberts | Foursquare ITP Labor Costs | | Kelley Coyner | Corey Clothier | Matt Lesh | John Good | Mobility e3 Labor Costs | | Total Labor Hours | Total Labor Costs | Total Travel Expenses | Total Misc. Expenses | Direct Total Expenses | Total Cost |
| | | *Project Manager* | *Deputy Project Manager* | *Senior Transportation Planner* | *Transportation Planner* | *Transportation Planner* | | | *AV Policy and Project Advisor* | *Technology Advisor* | *Transit Planning/ Operations Advisor* | *Shared Mobility/ AV Planner* | | | | | | | | |
| | **Total Billing Rate** | **$146.94** | **$118.91** | **$116.41** | **$96.53** | **$83.44** | **Hours** | **Cost** | **$100.00** | **$100.00** | **$100.00** | **$100.00** | **Hours** | **Cost** | | | | | | |
| **Task** | **Description** | | | | | | | | | | | | | | | | | | | |
| **1** | **Project Management and Oversight** | | | | | | | | | | | | | | | | | | | |
| 1.1 | Kick-Off Meeting | 16 | 16 | | | | 32 | $4,253.60 | | | | | 0 | $0.00 | 32 | $4,253.60 | | | | **$4,253.60** |
| 1.2 | On-Going Project Management | 40 | 32 | | | | 72 | $9,682.72 | | | | | 0 | $0.00 | 72 | $9,682.72 | | | | **$9,682.72** |
| | Task Total | 56 | 48 | 0 | 0 | 0 | 104 | $13,936.32 | 0 | 0 | 0 | 0 | 0 | $0.00 | 104 | $13,936.32 | $2,050 | $0 | $2,050 | $15,986.32 |
| **2** | **Data Collection and Analysis** | | | | | | | | | | | | | | | | | | | |
| 2.1 | Document Review | 12 | 12 | 16 | 12 | 40 | 92 | $9,548.72 | | | | | 0 | $0.00 | 92 | $9,548.72 | | | | **$9,548.72** |
| 2.2 | Market Analysis | 24 | 32 | | 32 | 40 | 128 | $13,758.24 | | | | | 0 | $0.00 | 128 | $13,758.24 | | | | **$13,758.24** |
| 2.3 | Service Analysis | 48 | 52 | | 120 | 180 | 400 | $39,839.24 | | | | | 0 | $0.00 | 400 | $39,839.24 | | | | **$39,839.24** |
| 2.4 | Stakeholder Outreach | 40 | 40 | | | 32 | 112 | $13,304.08 | | | | | 0 | $0.00 | 112 | $13,304.08 | | | | **$13,304.08** |
| | Task Total | 124 | 136 | 16 | 164 | 292 | 732 | $76,450.28 | 0 | 0 | 0 | 0 | 0 | $0.00 | 732 | $76,450.28 | $0 | $77,706 | $77,706 | $154,156.28 |
| **3** | **Develop Service Alternatives and Recommendations** | | | | | | | | | | | | | | | | | | | |
| 3.1 | Service Scenarios | 48 | 52 | | 52 | 80 | 232 | $24,931.20 | | | | | 0 | $0.00 | 232 | $24,931.20 | | | | **$24,931.20** |
| 3.2 | Technology Strategies | 18 | 24 | | | 24 | 66 | $7,501.32 | 20 | 48 | 80 | 52 | 200 | $20,000.00 | 266 | $27,501.32 | | | | **$27,501.32** |
| 3.3 | Preferred Alternative | 32 | 48 | | 40 | 120 | 240 | $24,283.76 | | | | | 0 | $0.00 | 240 | $24,283.76 | | | | **$24,283.76** |
| 3.4 | STIC Optimization Strategy | 12 | | 40 | | 24 | 76 | $8,422.24 | | | | | 0 | $0.00 | 76 | $8,422.24 | | | | **$8,422.24** |
| | Task Total | 110 | 124 | 40 | 92 | 248 | 614 | $65,138.52 | 20 | 48 | 80 | 52 | 200 | $20,000.00 | 814 | $85,138.52 | $7,550 | $0 | $7,550 | $92,688.52 |
| **4** | **Draft Final and Final Report** | | | | | | | | | | | | | | | | | | | |
| 4.1 | Draft Final and Final Report | 40 | 48 | 12 | 40 | 52 | 192 | $21,182.28 | | | | | 0 | $0.00 | 192 | $21,182.28 | | | | **$21,182.28** |
| | **Total Hours** | **330** | **356** | **68** | **296** | **592** | **1642** | | **20** | **48** | **80** | **52** | **200** | | **1842** | | | | | |
| | **Total Labor Cost** | **$48,490.20** | **$42,331.96** | **$7,915.88** | **$28,572.88** | **$49,396.48** | | **$176,707.40** | **$2,000.00** | **$4,800.00** | **$8,000.00** | **$5,200.00** | | **$20,000.00** | | **$196,707.40** | | | | |
| | Total Direct Expenses | | | | | | | $89,456.00 | | | | | | $0.00 | | | | | | |
| | **Total Project Costs** | | | | | | | **$266,163.40** | | | | | | **$20,000.00** | | | | | | **$286,163.40** |

| Breakdown of Direct Expenses | Travel | | | | | | |
|---|---|---|---|---|---|---|---|
| | Air Fare | Hotel | Per Diem | Rental Cars and Gas | Other Ground Transportation (Mileage, Transit, Parking) | Miscellaneous Project Expenses (On-board ridecheck conducted by surveyors) | TOTAL |
| Foursquare ITP | $6,000 | $2,100 | $1,800 | $1,100 | $750 | $77,706* | $89,456 |

** Ridership data will be collected by Bloomington-based surveyors recruited through a local staffing agency.*

# E. PROJECT SCHEDULE

*Figure 10: Proposed Project Schedule*




**KO** = Kick-off meeting
**TM** = Technical Memo
**PM** = Public Meeting (may also include stakeholder focus group, advisory committee, and/or Board presentation)
**DFR** = Draft Final Report
**FR** = Final Report

# F. LEVEL & TYPE OF ASSISTANCE REQUIRED OF BPTC/IU STAFF

The Foursquare ITP team will work closely with BPTC and IU staff throughout the project. Generally, BPTC and IU staff will be asked to participate in project update calls, attend public meetings, and review project deliverables to provide feedback. However, certain task will require a higher level of assistance from BPTC and/IU staff. These include the following:

- Identify all relevant planning and policy documents related to or impacting transit service in the city
- Recruit focus group participants, select meeting dates and venues, and advertise the public meetings
- Distribute and collect hard copy surveys, if desired (survey will primarily be administered online, but hard copies can be made available upon request)

# G. DBE QUALIFICATIONS

Foursquare ITP is a woman-owned business headquartered at 51 Monroe Street, Suite 1103, Rockville, MD 20850. While not yet DBE certified in Indiana, we are DBE-certified in 19 states plus the District of Columbia. Foursquare ITP intends to utilize DBE certified printers in the state of Indiana during this project. This will help BPTC in its overall goal of 0.48% DBE participation.

# H. EXECUTED CERTIFICATIONS AND AFFIDAVITS

E-Verify Affidavit, Iranian Affidavit, Debarment and Suspension Certification and a Lobbying Certification