May 15, 2026

Fresno Council of Governments

Fresno Metropolitan Light Rail Feasibility Study

Technical Proposal (Revised)

AECOM

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A. Transmittal Letter

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May 15, 2026

Paul Herman, Project Manager
Fresno Council of Governments
2035 Tulare Street, Suite 201
Fresno, CA 93721

RE: Fresno Council of Governments – Fresno Metropolitan Light Rail Feasibility Study

Dear Mr. Herman and Members of the Proposal Review Committee:

AECOM appreciates the opportunity to support the Fresno Council of Governments (Fresno COG) in evaluating the potential for a metropolitan light rail transit (LRT) system that can enhance mobility, support compact growth, and improve access throughout the Fresno–Clovis area. We understand that this Feasibility Study is intended to analyze how a high-capacity LRT network may connect the future California High-Speed Rail station, Downtown Fresno, key educational and employment hubs, key corridors, and Fresno Yosemite International Airport in ways that align with local and regional plans. The work will draw on transportation planning, travel demand analysis, station area considerations, land use and housing policies, cost estimation, environmental review, and a phased implementation plan, consistent with the Fresno COG's scope of services.

A central aspect of this Study will be understanding how an LRT network can serve transit-dependent households, reduce barriers to opportunities, and support investment in growth areas. The analysis will need to examine various transit technologies, focusing on their mobility benefits, compatibility with existing and planned transit services, development opportunities, and long-term operational factors. AECOM will coordinate closely with the Fresno COG, City of Fresno, Fresno Area Express (FAX), stakeholder working groups, community-based organizations, and local jurisdictions to promote a transparent process, develop practical alternatives, and will prepare information to support informed decisions.

Offer
This proposal is a firm offer for 90 days after submission on May 15, 2026.

Negotiation
Name of individual authorized to negotiate and contractually bind the company:

Veronica Siranosian, AICP
Senior Vice President
300 Lakeside Drive, Suite 400
Oakland, CA 94612
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Understanding
AECOM has full understanding of the RFP.

Why AECOM?

AECOM's approach will be grounded in the following three strengths, aligned with the Fresno COG's expectations for this Feasibility Study:

Integrated System-Level Planning: working with the Fresno COG, FAX, local jurisdictions, and community partners to evaluate the LRT network as a coordinated system that links mobility, land use, housing priorities, and economic development, with each task contributing to a shared understanding of long-term feasibility.

High-Capacity Transit Expertise with Strong Fresno Knowledge: blending AECOM's experience in LRT, bus rapid transit (BRT), and streetcar planning with our knowledge of Fresno's corridors, growth patterns, and community priorities to support a Feasibility Study shaped by both national perspectives and local insights.

Equity-Focused, Bilingual Community Engagement: AECOM will support the City of Fresno and Fresno COG in partnering with community-based organizations to reach Fresno's diverse populations, through accessible, bilingual, and culturally informed engagement activities that reflect the region's voices and priorities.

AECOM combines statewide and local experience, tailored to the Feasibility Study's scope and schedule. Project Manager **Daniel Krause** supports regional and multimodal planning efforts across California and will coordinate the work program, schedule, and communication with the Fresno COG. **Jennifer Love, PE, AICP, LEED AP, ENV SP** has direct LRT/BRT feasibility experience from recent high-capacity transit studies. **Brian Smart, PE** offers his streetcar planning insights, including development of alternatives and approaches used in funding applications. **Jeff Saldin, PE**, is well-versed in all phases of design for light rail and streetcar track design and experienced in leading the design of transit projects.

We look forward to collaborating with the Fresno COG and its partners on this significant effort. Our team is ready to support a participatory process, provide the technical analysis as outlined in the scope of services, and help develop a clear understanding of the opportunities and considerations associated with a potential LRT network. We appreciate your review of our proposal and are available to offer additional details.

Sincerely,

AECOM TECHNICAL SERVICES, INC.

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C. Overview

Project Understanding/Nature of the Work

The Fresno Council of Governments (Fresno COG) is leading the Fresno Metropolitan Light Rail Feasibility Study (Study) in partnership with the City of Fresno and City of Clovis. The Study will provide a pathway for development of an integrated light rail transit (LRT) system of corridors with the greatest potential in terms of feasibility, not only to integrate with the existing bus transit system, but also potentially to include other supporting transit modes, such as enhanced bus rapid transit (BRT) and streetcars.

This Study will define a system vision as well as define an LRT pilot project as a first step in implementing the vision. This pilot may include other corollary improvements to the transit system as part of defining the initial project. Therefore, developing a well-conceived and strategic implementation and phasing plan will be essential for translating the larger vision that will be generated from the Study—a practical project, realistic in scope, with a high potential to gain funding. Underlying the work to develop this vision will be careful consideration of connections to key destinations—downtown amenities, universities, business districts, and neighborhoods—while assessing the potential for land uses to support the transit improvements that will be proposed.

Existing and potential land use will be a critical aspect of the Study by providing a rationale for advancing the Project. Transit and land-use will need to work together. Better transit can make areas of Fresno more attractive for development and investment, and can support economic activity by improving accessibility to jobs, education, and services across the city and region.

This Study will seek to build on Fresno's rich transit history, which has included rail service. Fresno developed its comprehensive streetcar network between 1901 and 1939. The Fresno City Railway Company was established in 1901 and was rebranded as the Fresno Traction Company by 1903. Fresno Traction continued to operate 42 miles of streetcar service until 1939 at which time the streetcar lines were converted to Fresno City Lines bus service.

Figure 1. Fresno's Rich Transit History. *Fresno Traction Company operated a comprehensive street railway system from 1901 through 1939, when the streetcar lines were converted to bus lines.*

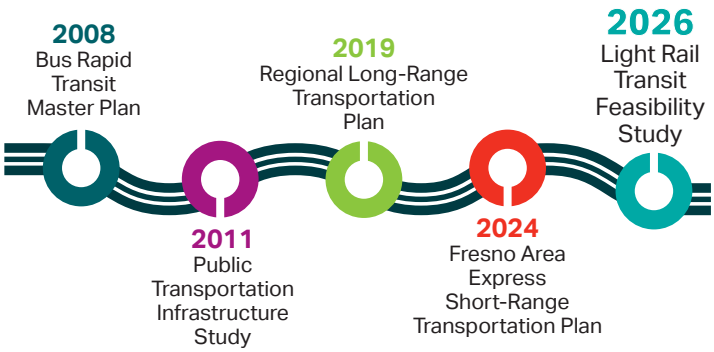
Source: Reddit

In 1961, the City of Fresno acquired controlling interest in the bus services, and Fresno City Lines became the Fresno Municipal Bus Service. In 1969, the name was changed to Fresno Transit, and in 1989, it became Fresno Area Express (FAX).

FAX currently operates 19 routes with more than 100 buses and over 1,600 bus stops. In 2024, the system had a ridership of approximately 9.6 million passengers, translating to about 39,700 passengers per weekday. With this significant demand, many in the Fresno community have expressed a desire for further improvements to transit service.

Many relevant studies have been done for the Fresno transit system, beginning with the Bus Rapid Transit Master Plan in 2008. In 2011, the Fresno COG sponsored the Public Transportation Infrastructure Study (PTIS) to examine land use policies and transportation investments, aimed at reducing vehicle miles traveled (VMT) and expanding mobility options for Fresno residents. This 2011 study identified BRT for the initial transit investment and emphasized the need for higher density development, to support BRT and any future transition to LRT. Furthermore, the 2011 study explored the feasibility of a streetcar system to stimulate economic activity in downtown Fresno, particularly taking into consideration the proposed high-speed rail (HSR) station that is planned for the area. This new Study will leverage these previous planning efforts.

Fresno's Record of Transit Planning



In 2018 FAX opened the initial 15+miles of it's bus rapid transit (BRT) with its "Q" Line. The Q line runs on Blackstone Avenue from North Fresno Street to downtown. It was later extended out to Ventura Avenue/Kings Canyon Road to Clovis Avenue (now East Cesar Chavez Boulevard). This system has many of the features of a "full" BRT system (nice shelters, ticketing machines, real-time arrival signage, etc.), but doesn't not have dedicated lanes. The Q Line is the type of BRT that is sometimes referred to a "BRT Lite."

The Fresno COG 2019 Regional Long-Range Transportation Plan emphasized that future expansion of BRT and any future LRT plans would require more favorable land use patterns.

The Fresno Area Express Short Range Transit Plan (SRTP) for 2024–2028 identifies challenges and opportunities, particularly for low-income residents who rely on affordable transit. In fiscal year 2024, FAX served more than 9.6 million passengers, a 17 percent increase from the previous year, while maintaining an 87 percent on-time performance rate. Most riders are transit-dependent, and over half lack a vehicle. For these residents, transit is not a choice but a necessity. Yet gaps remain: unsafe or missing sidewalks, limited bus stop amenities, and language barriers affecting roughly 15 percent of residents. To manage growth and congestion, as well as to increase sustainability, improving service for existing riders and attracting new transit riders is essential. The SRTP calls for

equity-focused improvements and connectivity to underserved neighborhoods.

Recognizing these needs, Fresno COG and FAX are embarking on this Study to evaluate the feasibility of an LRT system, potentially complemented by other high-capacity transit modes, such as an "full" BRT (which could be applied to new corridors or as an upgrade to the existing Q Line corridors. To properly evaluate the multi-faceted objectives of this Study, the work will include high-level planning to develop a vision for an integrated LRT system, while also clearly defining an initial pilot project that will be the first step in implementing the overall system.

Developing a vision will include a series of screening processes for what corridors to prioritize for the system, along with determining the most appropriate transit technology by corridor. This screening work will be supported by a high-level technical analysis. The Study will result in a preferred vision for an LRT system. As the Study progresses, the focus then will shift to identifying an initial LRT pilot and related transit improvements in the system. This will include further screening. From vision to project definition, the technical analysis will become more detailed during each step in the evaluation process that the AECOM team is proposing (summarized under the General Approach subheading).

More specifically, the Study will include an analysis to identify high-potential corridors for LRT and complementary modes, such as BRT and streetcar, to create an integrated, high-capacity transit network. This effort will define a fully integrated LRT system that will improve connectivity across the region and enhance access to jobs, schools, and recreation, making transit a convenient and reliable choice for all daily activities. The Study will provide robust, decision-ready data on ridership potential, capital expenditures, and operating and maintenance costs, revenue projections, and system performance, as well as connections to existing and planned transportation modes. It also will evaluate potential station locations and passing sidings, while supporting coordination among local jurisdictions and agencies to enable seamless integration across corridors and modes. In parallel, the effort will identify and assess governance structures, funding strategies, and financing options necessary to advance implementation. The final plan will outline the technical, financial, and design foundation that will be needed for informed decision-making and future funding pursuits.

A robust community and stakeholder engagement effort will support the entire Study to meet the challenges, needs, trade-offs, opportunities, and constraints of an improved LRT system, clearly communicating for broad buy-in. AECOM will support FCOG and the City of Fresno on engagement to take the pulse of the community travel patterns and residents desires for better transit. Then, given the need to develop a vision followed by the recommended pilot project, AECOM will support multiple rounds of direct community outreach so that issues are identified and resolved as the Study proceeds.

The AECOM team understands that the Fresno COG and FAX will be jointly responsible for the project, and we will work very closely on all aspects of the project with both. The project stakeholders also will be consulted and included in every step, namely: the California Department of Transportation, County of Fresno Public Works, Fresno Unified School District, State Center Community College District, California State University, Fresno, California High-Speed Rail Authority, Fresno Bicycle Coalition, Fresno Cycling Club, the Transportation for All community groups coalition, business representatives, and the public.

Purpose of the Project

The primary purpose of this Study will be to evaluate the feasibility of an LRT system to meet the future travel demands for the Fresno-Clovis Metropolitan Area (FCMA), and to improve service for existing users. In outreach conducted for the renewal of the County transportation sales-tax measure (Measure C), public transportation was consistently among the top priorities for thousands of people who were surveyed—just behind road repairs and sidewalks.

The analysis will identify high-potential corridors for inclusion into an integrated, high-capacity LRT system, including complementary modes to LRT, such as BRT and streetcar. Together, this effort will define a fully integrated LRT system that improves connectivity across the region and enhances access to jobs, schools, recreation, etc. making transit a convenient and reliable choice for all daily activities. The LRT system will provide key connections to the future HSR station and Fresno-Yosemite International Airport. Furthermore, the Study will develop an implementation strategy and phasing plan to provide a roadmap for the phased implementation of an LRT system, including an initial project definition as a first step.

In addition to producing an overall plan for an LRT system, the following specific outcomes will be achieved by the Study:

- The findings will feed into the Fresno COG's Regional Transportation Plan-Sustainable Communities Strategy (RTP-SCS) by promoting a transit-oriented and pedestrian-friendly urban form. A new LRT system can serve as a catalyst for coordinated land use, housing, and transportation investments that align both the near-term priorities and long-range regional transit plans and housing goals, thereby producing a pathway to reduced greenhouse gas emissions.
- The findings will feed into urban and rural short-range and long-range transit plans.
- Transit operators and local governments will be able to draw on the analysis to pursue additional funding for further project development and produce successful applications for funding through various grant programs.
- The initial project definition will set the foundation for pursuing CEQA and NEPA environmental certification.

To support these outcomes, engaging with the community and local stakeholders will be important; to receive input on how a light rail network can support higher density land use development and more efficient mobility in the FCMA.

General Approach to the Work

AECOM's general approach to the work will be to pair an objective, transparent evaluation of alternatives with meaningful engagement, delivering actionable technical and financial analysis together with a clear, shared vision for transit investment. This process will foster collaboration and project ownership among agencies, decision-makers, the public, and the business community, positioning Fresno for a future of equitable, efficient, and sustainable transportation that also supports long-term economic development.

Our approach will be to start with an alternatives analysis, starting at the macro-level to develop a transit vision for the region. Then, through careful screening, a preferred LRT system will be identified. With the understanding that the entire system cannot be built as one project, a subsequent screening process will be conducted to define an initial project (i.e., the LRT pilot plus any other transit system improvements that are feasible as a first step). **Figure 2** shows this process.

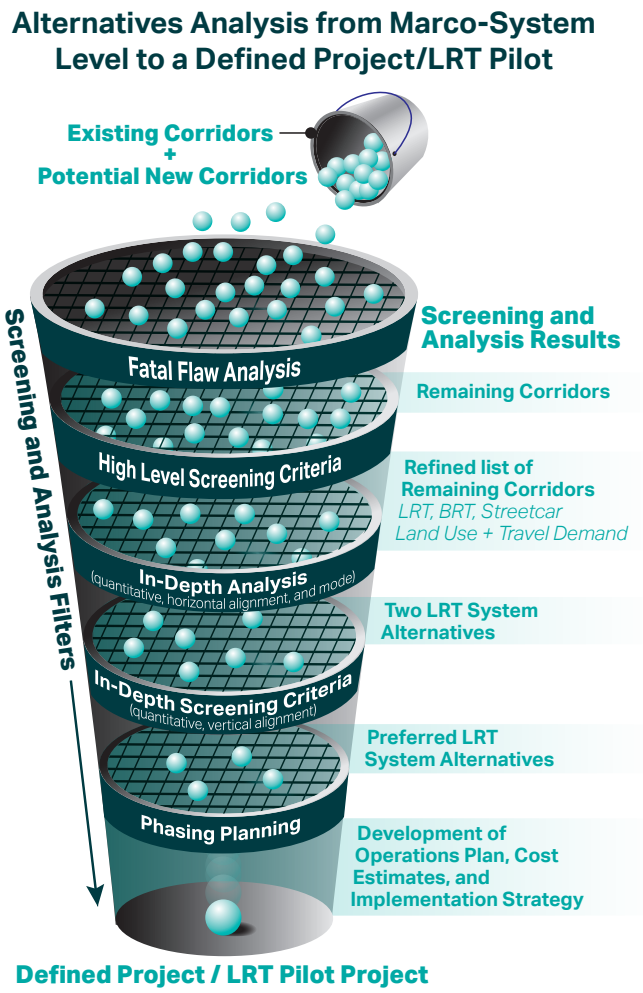


Figure 2. Alternatives Analysis and Project Definition Framework. *With the understanding that the entire system can't be built as one project, a subsequent screening process will be conducted to define an initial project*

Our alternative analysis will be mindful of the current Federal Transit Administration project appraisal and evaluation process for advancing fixed guideway transit projects. This process also will be organized in a way that it can be advanced into future environmental compliance, under both CEQA and NEPA.

A comparative evaluation of advantages, disadvantages, and cost differences of the transit investment alternatives will be analyzed for the impact on the regional transportation system, environment, and costs and financial feasibility.

The AECOM team is committed to a collaborative planning process. The process will be broad, diverse, inclusive, engaging, objective and transparent. We will design the process to strengthen the foundation for project decisions. We understand that successfully implementing a transit project is based on the art of balancing the trade-offs required among local benefits, community impacts, and regional consequences.

A more detailed summary of our project approach is discussed in the "Summary of the Proposed Approach" section.

Organization of the Project Effort

The Study will be delivered through a coordinated structure that will support the Fresno COG, FAX, and partner agencies throughout all project phases. Our organization will align with the RFP tasks, and subtasks have been added where we think additional technical categories will be necessary to arrive at the desired outcomes. All work will be organized to ensure clear communication, efficient workflow, and consistent coordination with local jurisdictions, regional partners, and community stakeholders.

AECOM's organization is based on certain principles that have repeatedly proven to be the keystones to our past success in achieving a "fully integrated" project team effort, high standards of technical excellence, adherence to cost estimates and schedules, and interagency coordination and public acceptance. These principles include:

- Selecting a proven leadership team
- Assigning staff with successful technical knowledge and experience
- Establishing clear lines of authority and responsibility
- Setting and maintaining project budgets, and schedules
- Addressing key challenges and leveraging opportunities

Project Leadership Team

The project will be led by Project Manager Daniel Krause. Daniel will use his extensive experience in rail planning to manage the entire planning process. He will be responsible for delivery of high-quality work products and will be the main point of contact.

Daniel will be supported by Deputy Project Manager Divya Gandhi. Divya will manage daily operations, coordinate tasks, tracks schedules, and work with our Quality Manager Mark Lippert to maintain quality control. This leadership structure will provide a single point of accountability and help foster consistency across all eight RFP tasks.

These three key leaders will be supported by a group of very senior LRT, BRT and Streetcar expert advisors. They will be part of a brain trust that Daniel will consult regularly, throughout the Study. These advisors will give feedback on proposed planning as well as provide consultation to resolve complex issues.

Technical Delivery Teams

Planning an LRT system is a complex endeavor. Wide-ranging expertise will be necessary for technical competency. The AECOM team will include a team of specialists who lead technical disciplines. These specialists will lead their respective technical disciplines. Our specialists' involvement will strengthen technical accuracy, inform assumptions, and serve as the foundation of all the analysis.

Task-specific delivery teams will consist of a lead and support staff who will conduct the core technical work, including:

- Existing conditions, policy review, and best practices research
- Alternatives development
- Operations and service planning
- Ridership forecasting
- Station siting, land use, and Transit-Oriented Development (TOD) assessment

- Environmental screening
- Capital and O&M cost estimation
- Implementation and phasing strategy

These teams will work together throughout the Study to maintain consistency among model outputs, operational concepts, cost estimates, and land use considerations, directly supporting the RFP's integrated approach to planning, development capacity, and multi-agency coordination. Resumes for all team members are provided in Section J, Qualifications.

Establishing Clear Lines of Authority and Responsibility

Clearly defined lines of authority and responsibility for the entire Project Development Team will be developed in close consultation with the Fresno COG and FAX at the outset of the Study. This project in particular will need to establish these roles very clearly, because the project is being led by the Fresno COG (a regional agency) and the City of Fresno via FAX (the jurisdiction of the project). To accomplish this, AECOM will develop a Project Management Plan (PMP). AECOM considers a PMP to be a blueprint for any successful project undertaking, and this is in internal requirement for projects of a significant size and complexity, such as this Study. After the draft PMP is completed and meets the approval of the Fresno COG and FAX, it will be finalized and updated when needed.

The PMP will present our understanding of the project management issues associated with this undertaking, laying out the process by which we propose to bring the project to fruition and the organizational structure we intend to use. The PMP will be based on plans we have used to deliver similar projects successfully, refined through developing our management methods. The AECOM management approach is described in Section E of this proposal.

Setting and Maintaining Budgets and Schedules

A broad, powerful set of project controls will be instituted, based on realistic expectations to maintain project budget and schedules to provide timely, quality deliverables. Weekly review of both project charges and progress meeting schedules will be conducted by the project leadership team.

Addressing Key Challenges

In addition to the organization of team and project administration, a deep understanding of project challenges and opportunities will be key to organizing our technical planning approach and how we will work with the Fresno COG and FAX to engage stakeholders and the public. As part of this proposal, our team has performed an initial survey of the key challenges and opportunities on the following topics:

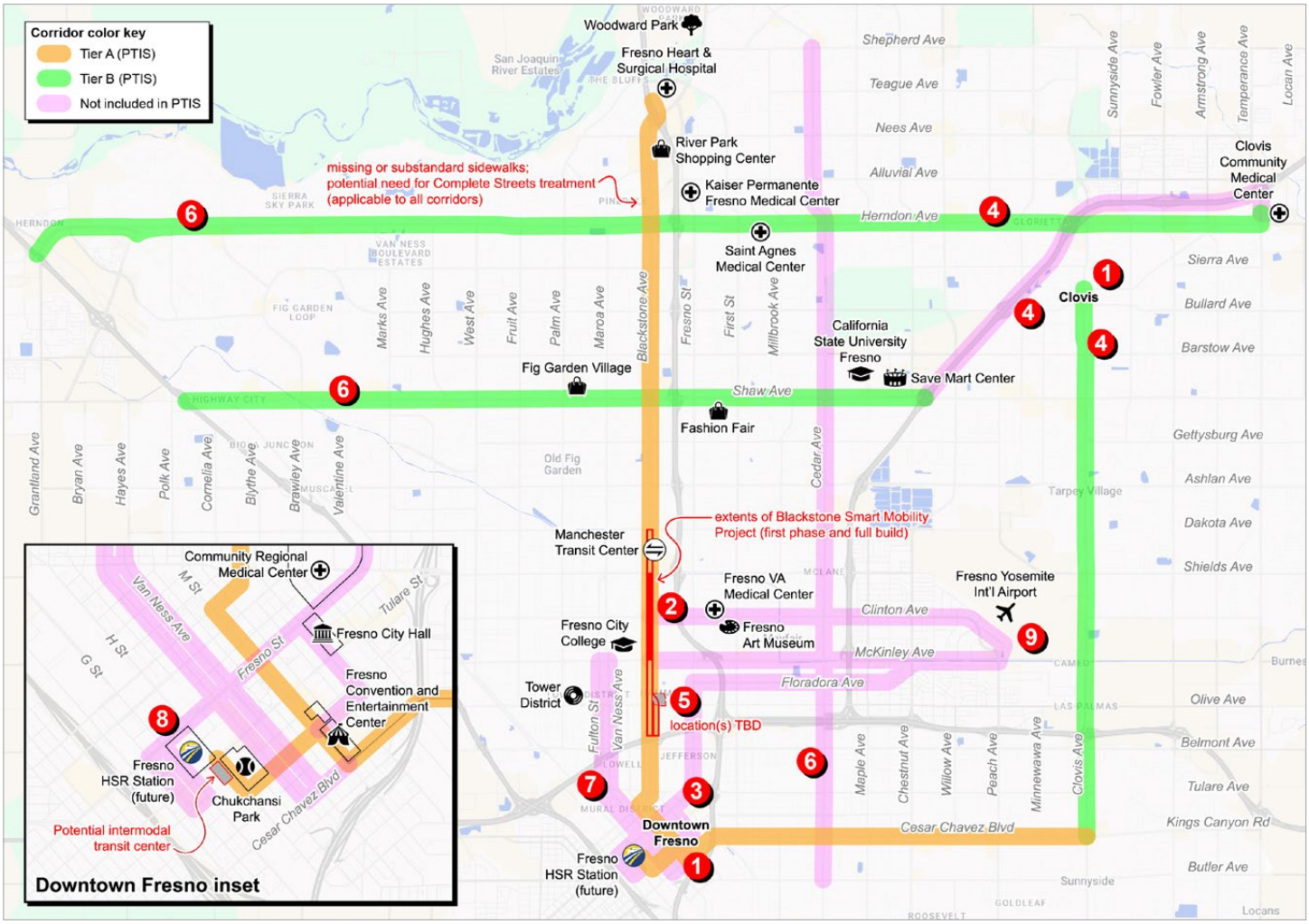
- Planning
- Technical challenges and opportunities
- Cost challenges
- Key stakeholders' sensitivities
- The project's technical challenges and opportunities also are shown in **Figure 3** and by potential corridors in **Figure 4**.

Planning Context

Several planned infrastructure improvements currently are in various stages of implementation that will provide both challenges and opportunities related to environmental and community impacts on Fresno. These include:

- **Fresno High-Speed Rail Station Implementation.** Connecting to the new Fresno HSR Station will be critical for the success of any transit facility, whether LRT, full BRT, or streetcar. The station's downtown location will offer a unique opportunity to enhance statewide connectivity as well as the connection to the airport. The HSR station also will be likely to stimulate development in its vicinity, further supporting transit ridership and system expansion.
- **Fresno Yosemite International Airport Expansion.** Significant improvements have been implemented recently to prepare for future growth. As part of the FATForward modernization program, a large terminal expansion has just opened, and a new parking garage has been built. This growth is expanding the airport's capacity, and it will increase the importance of the airport as a transportation hub for the entire Central Valley as well as foster growth and economic development in the community. With more people anticipated to use the airport, providing robust transit will be key. In addition to providing a key link to FCMA residents, an opportunity will exist to connect the future Fresno HSR station to the airport as part of the LRT system. This connection will enable travelers arriving via HSR to travel to Fresno and seamlessly transfer to the airport.
- **Southern Blackstone Smart Mobility Strategy Implementation.** This project, which currently is at the 90% design level, is anticipated to start construction in 2026. A lane reduction is envisioned along the initial stretch of Blackstone between Shields to the north and University Avenue to the south, to accommodate bike lanes and pedestrian improvements. Accommodating a dedicated transit lane for LRT (or another supporting transit mode) will be a much more significant challenge in the new street profile.
- **Blackstone/McKinley Grade Separation Project.** This project involves major grade separation at the Blackstone/McKinley intersection. Blackstone is a strong candidate for a future LRT corridor, and this improvement will eliminate conflicts with the existing at-grade BNSF tracks, by depressing both streets and elevating the rail line.

Figure 3. Challenges and Opportunities Map



1. Potential loss of on-street parking in downtown Fresno and downtown Clovis and along major commercial corridors.
2. Compatibility and coordination with Blackstone Smart Mobility Strategy improvements.
3. Potential corridor conflicts due to at-grade crossings with BNSF and SJVR corridors.
4. Multi-jurisdictional coordination required for corridors crossing Fresno–Clovis border.
5. Example of an opportunity site for maintenance and layover facility.
6. Confirming land-use policies and zoning are compatible with TOD in LRT and other high-capacity transit corridors.
7. Integrating streetcar corridors within an overall LRT system.
8. Determining New Alignment to Connect to Fresno High-Speed Rail Station.
9. Determining New Alignment to Connect to Fresno-Yosemite International Airport.

Figure 4. Corridor Specific Challenges and Opportunities

Potential Corridor	Challenges	Opportunities
Blackstone Avenue (Q Line BRT Corridor) 	» Transition from two-way street to a one-way couplet just north of downtown. » Length of Blackstone to downtown could require phasing LRT if funding is limited. Phasing could require awkward transfer to existing Q Line. » Missing sidewalks and/or narrow sidewalks, especially in the vicinity of Pinedale neighborhood.	» Status as a corridor for FAX's Q Line indicates it is a high ridership corridor. » Street ROW north of Hedges is quite wide (approx. 100'); high potential for the accommodation of dedicated transit lanes. » Consider utilizing existing use one-way couplets and curb lanes facilities built for Q Line BRT. » Key Destinations: River Park Shopping Center, Fresno City College, Manchester Transit Center
E. Cesar Chavez Boulevard (Q Line BRT Corridor) 	» Crossing with BNSF tracks to get downtown. » While street ROW is generally wide east of downtown (approx. 85'; 2-lanes/each direction), there are competing elements (landscaped median and bike lanes). » Missing sidewalks and/or narrow sidewalks, so not a "complete street".	» Status as a corridor for FAX's Q Line indicates it is a high ridership corridor. » Key Destinations: The Big Fresno Fair.
Shaw Avenue/SR 168 Corridor (PTIS Study Tier 2 Corridor) 	» Would likely need to be a branch line off a potential Blackstone line, potentially necessitating transfer.	» Street ROW north of Hedges is quite wide (approx. 100'); high potential for the accommodation of dedicated transit lanes. » Potential to pursue partial segment along Shaw Avenue to gain high ridership CSU Fresno. » Key Destinations: CSU Fresno University, Save Mart Center, Valley Children's Stadium Fashion Fair Mall, Clovis Community Medical Center.
Consider multiple corridors for connection to Fresno HSR Station 	» Connecting transit to HSR site will need careful evaluation to determine routing (Fresno and Tulare Streets, and Cesar Chavez Boulevard could be considered from the east; H and G Streets could be north-south connection). » Downtown streets are generally narrower.	» Development of a transit hub will be needed, which can be leveraged as a major transit hub downtown (parking lots immediately south of the Historic Depot could be considered for a transit hub). » Key Destinations: Fresno Convention Center, Chukchansi Park, Chinatown, HSR station.
Clinton Avenue (Potential Airport Corridor) 	» Street profile narrow for dedicated transit lanes (approx. 55'-65'; generally, 2-lanes/each direction). » Several segments between Blackstone and the Airport run through residential neighborhoods.	» Key Destinations: Fresno VA Medical Center, Fresno Art Museum, Fresno Yosemite International Airport.
McKinley Avenue (Potential Airport Corridor) 	» Street profile varies, making dedicated transit lanes difficult (approx. 60'-100'; generally, 2-lanes/each direction). » Several segments between Blackstone and the Airport run through residential neighborhoods. » Would likely need to be a branch line off a potential Blackstone line, potentially necessitating transfer.	» Corridor contains short segment of existing rail corridor near the airport. » Key Destinations: Fresno Yosemite International Airport.

Potential Corridor	Challenges	Opportunities
Floradora Avenue/Fresno Street (Potential Airport Corridor)* 	» Street profile narrow for dedicated transit lanes (approx. 40'-65'; 1-lane/each direction). » Several segments between Blackstone and the Airport run through residential neighborhoods. **Note: a connection through an industrial area and then to McKinley would be needed to reach the airport.*	» Existing track in the median of the Floradora, which provides an opportunity for re-use for passenger service. » Fresno Street could provide links downtown including City Hall and HSR Station.
Cedar Avenue, Herndon Avenue, and Clovis Avenue (PTIS Study – Tier 2 Corridors)	» Previous opposition to connecting BRT to downtown Clovis. » No direct connection to downtown.	» Key Destinations: Cedar (CSU Fresno University, Valley Children's Stadium); Herndon (SR 99, Kaiser and St. Agnes Medical Centers); Clovis Avenue (Downtown Clovis, Sierra Vista Mall, Fresno Yosemite International Airport).

Technical and Operational Challenges and Opportunities

Additionally, there are several technical challenges of implementing a light rail transit system, including:

» **Maintenance and Layover Facility.** Identification of a large site for a maintenance and layover facility will be required for a future LRT fleet, as it will be an entirely new mode for the FCMA. Locating this facility will be a challenge because much of the FCMA already is built up. However, certain sites will need to be explored (refer to **Figure 3 on Page 9** for possible sites).

» **Transit Technology (i.e., LRT, BRT, and Streetcar).** Although the Study's primary intent will be to pursue an LRT system, the definition of "system" may include corridors that support LRT but use other high-capacity transit technology (e.g., upgraded BRT or streetcar). Some corridors ultimately may be planned for LRT, but as part of a phased approach, may begin with interim modes (e.g. upgrading BRT-lite to full-BRT designed for future conversion to LRT). Thus, these scenarios must be evaluated carefully, along with transit technologies, to determine the most appropriate solution for each corridor and how different modes can serve as stepping stones toward a comprehensive LRT system.

» **Competing modes within the street right-of-way (ROW).** A key challenge for street-running LRT and other dedicated high-capacity transit modes will be limited street ROW. Other active transportation modes, including bicycles, pedestrians, and micromobility are becoming an increasing priority in urban areas. These priorities, although generally positive enhancements, can impact the ability to implement dedicated lanes for LRT or full BRT, as they often also require dedicated street space. An example of this locally is the planned reduction in automobile lanes from three to two along Blackstone as part of the Blackstone Smart Mobility Strategy, to add bike lanes and widened sidewalks. This may present a challenge for establishing dedicated transit lanes. During examination of each corridor, the street ROW will need to be measured and considered for feasibility, to accommodate dedicate transit modes like LRT. **Figure 4 on Page 10** summarizes the challenges and opportunities regarding street ROW for the potential corridors.

Cost Challenges

Capital costs will be a central factor in determining the feasibility and selection of a preferred LRT system. The LRT system will require a significant financial investment, typically ranging from $50 million to $200 million per mile, depending on the design (i.e., at-grade, elevated, or underground), land acquisition, and infrastructure complexity. Because of this scale, a phased implementation strategy will be essential. Initial phases will need to focus on high-demand corridors, connecting neighborhoods to major destinations (e.g., downtown Fresno, universities, hospitals), to demonstrate success and build public support.

Financial feasibility will depend on strong alignment between transit investment and land use policy. Higher density, mixed-use zoning around stations can spur development, drive ridership, and enable value capture opportunities such as special assessment districts and development impact fees. Public-private partnerships also can help share costs for station-area improvements and infrastructure upgrades, creating not just a transit system, but also a framework for economic and community revitalization.

One of the current limitations is that BRT-lite corridors have not catalyzed infill development, which will be critical for generating the ridership needed for LRT and other high-capacity transit modes. Unlike side-running BRT-lite, center-running LRT (or full BRT as a precursor) would require significant street reconstruction. This will create an opportunity to use a major transit project as an excuse to modernize water and sewer infrastructure concurrently. Coordination of the multiple investments will have the potential to reduce costs for developers, making large-scale in-fill development more feasible in the Fresno market, where housing prices limit returns. The experience along Blackstone illustrates this; since BRT-lite implementation in 2018, little in-fill development has occurred. A higher quality LRT line will offer permanence and reliability, motivating investment in ways that BRT-lite cannot.

Ultimately, this Study will be more than an evaluation of new transit technology. It will be an opportunity to shape how the city grows. By pairing high-capacity transit with supportive land use, housing, and equity policies, Fresno can create connected, affordable, and sustainable neighborhoods that offer expanded opportunities while managing growth responsibly.

Stakeholder Sensitivities

Not everyone in Fresno is sold on light rail yet. Some of the concerns expressed by people and documented through materials from recent transit planning meetings indicate doubts about whether population density and ridership in many parts of Fresno are sufficient to justify the capital cost needed for light rail transit, which may make bus-based options (like BRT) more cost-effective. Building and operating rail will involve high upfront costs and long-term commitments. Thus, even with political support, financing and execution likely will be challenging, especially if the ridership falls short of the projections.

Some elected officials and constituents remain focused on traditional priorities, such as paved roads, sidewalks, and basic maintenance, because many neighborhoods still lack safe pedestrian infrastructure.

Figure 5. Delivering Successful Transit. *Ribbon cutting ceremony for Charlotte LYNX Gold Line Streetcar (planned and designed by AECOM).*

What people in the community are saying in local forums and social media

Many residents have **voiced genuine enthusiasm** for light rail:

> ***"We need one to go from Clovis community . . . all the way to Herndon/99."***
>
> ***"If we could afford billions to bulldoze neighborhoods to build freeways, we can afford light rail."***

Others are more cautious. Some people argue there might not be enough demand:

> ***"Compared to other cities of the same size, Fresno just wouldn't have the demand or money to fund this."***

These diverging opinions capture much of the contemporary debate: hope for transformative transit versus realism about cost, demand, and trade-offs.

The AECOM team's objective will be to keep public agencies, stakeholders, and the public informed while soliciting their feedback on the project at each phase of analysis.

Summary of the Proposed Approach

Reflecting the preceding discussion, AECOM's general approach to managing the Study can summarized in three words: objective, transparent, and informative. Our multidisciplinary team will integrate transportation planning, land use policy, environmental screening, economic development, financial analysis, and community engagement.

Our team understands that a successful LRT system cannot be evaluated in isolation, but it must be studied within the context of where people live, work, and travel, and where Fresno plans to guide its future growth. Light rail and similar systems perform best when paired with supportive land use frameworks that promote compact, mixed-use, and walkable neighborhoods near stations. The City's 2023–2031 Housing Element, which identifies numerous publicly owned and high-density sites along major corridors, offers an opportunity to coordinate transit expansion with housing and economic development goals.

Our process will begin with comprehensive background research, including review of existing plans, policies, and infrastructure conditions, as well as case studies of LRT systems domestically and abroad, for best practices, challenges, and lessons learned. We also will evaluate existing transit corridors for routing, ridership, and infrastructure conditions. This foundation will inform development of a purpose and need statement for the project, in close collaboration with the Fresno COG, FAX, the technical and stakeholder working groups, and the public.

The work associated with this Study will be to conduct a planning process that leads to a preferred LRT system alternative and an initial definition for an LRT pilot project. The term system will be critical because this Study will not be about just a single corridor but about designing an integrated network to support Fresno's long-term mobility, land use, and economic development goals. Although previous efforts, such as the 2011 PTIS, have identified high-capacity transit corridors and will serve as a foundation for

this Study, they have not looked at the entire system or accounted for evolving priorities, such as connecting to the future HSR station and the growing Fresno International Airport.

This effort will begin without a designated LRT corridor. Our approach will start at the system level. The first step will be to identify options (or alternatives) for an integrated "system" rather than a single line. The RFP highlights the two existing BRT corridors that are served by the FAX "Q" BRT (the north-south Blackstone and east-west Cesar Chavez) as potential candidates for an initial operating segment, or by an LRT pilot, and will be considered as part of all the system alternatives. This will require significant up-front planning, to develop and evaluate a set of LRT system alternatives (or options).

Corridor screening will consider current ridership, market assessment, travel demand patterns, community and stakeholder input, and opportunities for land-use intensification near stations to boost future ridership. Moving from a macro scale of the system alternatives to distilling down to a recommended initial operating segment (i.e., the LRT pilot) will require an iterative process of screening, transit technology options, and phasing strategies through a structured decision-making framework.

After the LRT system alternatives are established, detailed planning will include operating planning, station spacing analysis, and land use analysis to enable an apples-to-apples comparison and selection of a "preferred LRT system alternative." In parallel, we will define a feasible first phase, likely an initial operating segment, as the LRT pilot, which may emanate from the current BRT-lite corridors of Blackstone and Cesar Chavez, unless the analysis demonstrates higher performing corridors.

Supporting all this will be an ongoing and very robust stakeholder and public outreach effort that will contribute to the overall decision-making. Above all, this Study will be intended to provide the Fresno community with clear, accessible information about fixed-guideway transit options, and to engage residents, businesses, and institutions in shaping the City's transit future. Through an integrated and equity-driven approach, Fresno can establish a vision for high-capacity, sustainable transit that enhances access, supports smart growth, and strengthen the region's overall livability.

Intersection of Blackstone and Clinton

D. Detailed Work Plan

1. Task Description

Task 0 Project Management

Project Manager **Daniel Krause** will be the point of contact for the team. He will confirm that tasks and deliverables are prepared on time and provide a solid foundation for project results. At the project onset, Daniel will meet with the project sponsors to clarify roles and responsibilities; discuss the scope, schedule, and budget in detail; and prepare for the project kick-off meeting. He will be responsible for keeping the project within budget, on schedule, for maintaining communications, and for overseeing invoice and contractual requirements.

Task 0.1 General Project Management

Task 0 includes the project kickoff and regular project management tasks, such as staff management, schedule maintenance, project accounting, general correspondence with the Project Management Team (PMT), project partners, and stakeholders. AECOM offers a deep understanding of managing complex projects, backed by decades of experience in urban and transportation planning, rigorous training for our project management professionals, and adherence to ISO 9001 quality standards. A Project Management Plan (PMP) will be developed to document the general project management approach.

Project Management Plan (PMP). On project award, AECOM will prepare a detailed PMP that sets forth the vision for delivering the project's goals, objectives, and expectations. The PMP will describe the essential elements of the AECOM management system, the requirements, the processes, and the procedures needed for successful project implementation, including management of the schedule, costs, quality, human resources, communication, changes, risks, and environmental compliance.

Managing Communication. Effective project management begins with clear and open communication. Before the project starts, the PMT will work with the Fresno COG, FAX, and key project partners to establish a communication protocol for the entire project life cycle, which will be included in the PMP. For each task, the entire PMT (described in Task 0.2 below) will need to have a clear understanding of goals, objectives, processes, and deliverables. These detailed communication parameters will be critical to meeting the successful delivery of a high-quality project within the established timelines.

Managing Cost. Cost control will be a critical element of AECOM's project management methodology and an important part of our team's mission throughout the project life cycle. Having completed projects of various scales and complexities for decades, AECOM has developed extensive cost tracking and reporting systems and procedures. This project management element will provide an open-book, up-to-date assessment of current and projected costs, allowing our management team to provide status updates regularly to Fresno COG and quickly identify and resolve any issues that may arise throughout the project life cycle.

Managing Schedule. We will begin every task by working with Fresno COG and FAX to determine the timeline and critical paths. We will define deliverables based on project goals and work backwards into a schedule. In the planning process, we have found that effective stakeholder engagement and consensus-building efforts are critical to keeping a project on schedule. Our team is well-versed and highly experienced in change management and consensus building. Our experience has taught us that schedule adherence requires substantial pre-planning and flexibility to account for unforeseen conditions, operational constraints, and other factors. AECOM will emphasize appropriate up-front planning and risk analysis, to control costs and maintain project execution on schedule. We will work closely with Fresno COG to address or recover from unexpected situations that may arise during the project

Quality Control. AECOM will use our internal quality control procedures to confirm the technical analysis, accuracy of findings, and readability of deliverables. Project Manager Daniel Krause, in conjunction with our subject matter expert advisors, will conduct technical reviews of all work products. Quality Manager Mark Lippert will provide quality control checks, to verify that work products are accurate, complete, and easy to read and understand.

Task 0.2 Project Management Team Meetings

In partnership with Fresno COG, we will establish a PMT comprised of staff from Fresno COG, City of Fresno, FAX, Caltrans (as required), other key project partners (if desired), and AECOM. Daniel will support the PMT with bi-weekly meetings throughout the project.

Following the Notice to Proceed (NTP), Daniel will plan a kick-off meeting with the PMT, to align on the scope and schedule for the work plan. This will include careful discussion of the scope, to confirm that everyone is on the same page regarding:

- Project goals
- Scope, schedule and deliverables, which will include defining the study area, and types/limits of alternatives to be analyzed (e.g., technologies, routes)
- Members of the Stakeholder Working Group (SWG)
- Members of the Technical Working Group (TWG)
- Best methods for community/stakeholder engagement

Task 0.3 Project Invoicing

AECOM will submit invoices on a monthly basis. Note, AECOM has selected the actual cost plus fixed fee method of services. See the **Cost Proposal** for more details. The proposed **Project Schedule** (**Figure 10** on page 38) indicates where these milestones will occur, based on the key deliverables. Each invoice will include:

- Detailed reporting, breaking down expenses per task, including personnel, hours, and rates for AECOM and its subconsultants
- Deliverables by number and name for those being submitted for payment in that month's invoice
- A detailed progress report with a listing of the milestones completed by task number

Task 0 Deliverables

- ✓ Project Management Plan
- ✓ Monthly virtual PMT meeting agendas and meeting notes
- ✓ Invoices and progress reports

Task 1 Review Existing Plans, Policies, and Infrastructure Conditions

During Planning Stage 1 (Project Initiation), AECOM will collect, review, and synthesize the findings from prior studies and development policies. AECOM also will evaluate other successful LRT systems, to identify best practices, Additionally, existing transit routes and infrastructure conditions will be examined and documented. The goal of these reviews will be to understand the existing conditions, to better inform the feasibility analysis of LRT. With this background research and analysis completed and documented, AECOM will work with the PMT to identify goals and objectives for the Study.

Task 1.1 Review Relevant Existing Plans, Policies, Guidelines

AECOM will investigate, identify, review, and become thoroughly familiar with previous studies, plans, and other documents, to understand the historical and current planning context of the Fresno metropolitan region. Specifically, our team will review relevant existing transit plans applicable to the FCMA, as well as relevant policies, and guidelines in existing governing documents relevant to transit and land use. This data will serve as the basis over the technical analysis to be conducted in subsequent tasks. The data that is gathered will be displayed in an engaging way, potentially as a visual storyboard or other easy-to-understand graphic, and will be documented in the Summary Memo of Area Transit Plan, Policies, and Best Practices.

Task 1.2 Evaluate Other LRT Systems for Best Practices, Challenges, and Lessons Learned

AECOM will work with the PMT to identify and evaluate three relevant LRT systems that have been implemented (two domestic and one international), based on criteria to be defined (e.g., similar city size, mode, demographics, climate.) Then, AECOM will review the systems to identify relevant lessons learned, challenges, and best practices. Key elements of the systems to be examined will include system design, ridership trends, funding mechanisms, community engagement strategies, vehicle types, and integration and phasing with other modes, such as BRT and Streetcar. As part of this task, our team will give special consideration of LRT systems that include other transit modes (e.g., BRT-lite, Full-BRT, Streetcar), to determine their applicability to the Project. AECOM recently designed and delivered several light rail systems, and we will draw on this experience to inform this analysis. The finding will be documented in the Summary Memo of Area Transit Plan, Policies, and Best Practices.

Task 1.3 Evaluate Existing Transit Corridors

AECOM will identify all existing transit (bus) route alignments within the FCMA, based on the FAX system map as well as on the system map for Fresno County Rural Transit (FCRT) and Clovis Transit. All bus routes will be listed in a table, along with each route's most recent ridership (to be provided by FAX, FCRT, Clovis Transit, and/or Fresno COG). Furthermore, the alignments of each bus route will be mapped. The map also will indicate the ridership for each route, with the highest ridership routes highlighted. The information that is gathered will inform the feasibility analysis of potential light rail transit services by corridor, and the data will be included in the Summary Memo of Existing Transit Routes (Alignment and Ridership) and Infrastructure Conditions/Abandoned Infrastructure Assessment.

Task 1.4 Evaluate Existing Infrastructure Conditions

AECOM will conduct an evaluation of existing infrastructure along key transit routes throughout the FCMA, as identified in the PTIS Study, and potential corridors that connect to the Fresno HSR Station and Fresno-Yosemite International Airport (refer to **Figure 3** on Page 9). These corridors are likely to make up most of, if not all of the "Universe of Corridors" to be determined under Task 3.1. If additional corridors are defined in Task 3.1, the infrastructure assessment that will be part of this task will be updated.

Building on Tasks 1.1 and 1.3, desktop research will be conducted for segments of high-demand corridors. The types of infrastructure to be assessed will include sidewalks, roadway width and conditions, age of water and sewer lines, and presence of traffic signals. The infrastructure review will be based on desktop research of existing infrastructure data and observations from a one-day field survey of transit infrastructure, to gain a general understanding of the baseline level of infrastructure. Any abandoned infrastructure will be identified in addition to the assessment of existing infrastructure. The field survey will be approached by sampling certain segments of the aforementioned corridors (in conjunction with the Fresno COG and FAX). The results will inform high-level capital cost estimation for the first screening (as part of Task 5.1). The gathered data will be included in the Summary Memo of Existing Transit Routes (Alignment and Ridership) and Infrastructure Conditions/Abandoned Infrastructure Assessment.

Task 1.5 Purpose and Need

AECOM will develop a clear purpose and need statement, which will provide the foundation and starting point for identifying potential alternatives and evaluating their effectiveness as transit and investment choices. It will define the problem that this project will seek to solve and the context in which we will define the benefits of solving the problem.

A clear, well-justified purpose and need statement will explain to the public and decision-makers the framework around which decisions will be made for identifying the Preferred System Alternative, why expending funds for an LRT transit network is necessary, worthwhile, and warranted, for reasons including reinvigorating development. Building consensus around the purpose and need, in coordination with the public and stakeholders, will be essential for the project's success and will provide an opportunity for the Fresno COG and the project team to clearly communicate the rationale for conducting the study.

The purpose and need statement will be developed in coordination with the PMT, SWG (Task 2.1), TWG (Task 2.2) and input from the first round of community engagement (Task 2.8.1).

Task 1.6 Develop Screening and Evaluation Criteria

To perform the alternatives screening process, which will be undertaken as part of Task 3, a series of evaluation criteria will be developed. The criteria will be developed in cooperation with the PMT, as well as with the SWG and TWG for maximum effectiveness. See **Figure 6** for AECOM's **Work Plan Flow Chart.**

These screening processes will be structured to permit as many early decisions as possible, to simplify the alternatives so that both the technical work and the volume of information provided to decision-makers can be kept to a manageable level. The screening

criteria will outline the level of screening that will be implemented at each phase and any weighting to be assigned to the screening.

Task 1.6.1 Screening Criteria of the Universe of Corridors

This initial screening will be used to screen the Universe of Corridors, and will entail a fatal flaw analysis as part of Task 3.1.4, to identify corridors that are not worthy of further consideration. Potential evaluation criteria are shown in Figures 8 and 9. However, these criteria will be expanded, updated, or modified as part of this task in collaboration with the Fresno COG and project stakeholders. An outcome of this screening will be a set of Remaining Corridors.

Task 1.6.2 Screening Criteria of the LRT System Alternatives

The list of remaining corridors then will be used to develop two LRT system alternatives. These two alternatives will be pared down to one preferred LRT system alternative (Task 3), based on a further in-depth quantitative screening and further application of a technical analysis, conducted as part of Tasks 3, 4, and 5. Potential qualitative evaluation criteria will be developed in collaboration with the PMT and project partners.

Task 1 Deliverables:

- ✓ Summary memo of area transit plan, policies, and best practices (draft and final, with one consolidated set of comments)
- ✓ Summary memo—Existing Transit Routes (including alignment and ridership) and any existing and/or abandoned infrastructure within the metropolitan Area (draft and final, with one consolidated set of comments)
- ✓ Purpose and need statement (draft and final, with one consolidated set of comments)
- ✓ Alternative screening criteria memo (draft and final, with one consolidated set of comments)

Task 2 Collaboration and Community Engagement

Robust collaboration with stakeholders and engagement with the broader community are critical for a successful study. The City of Fresno will lead these efforts. As part of Task 2, AECOM will support the City of Fresno and Fresno COG as described in the subtasks below.

Task 2.1 Stakeholder Working Group

Per the RFP, AECOM is proposing a Stakeholder Working Group (SWG). With the City of Fresno leading the overall engagement efforts, it is assumed the City will utilize their networks to establish the appropriate membership for the SWG. AECOM will support the City of Fresno and Fresno COG in reviewing the draft stakeholder member list and providing feedback, assist in the preparations for SWG meetings (up to 5 meetings assumed) and participation in SWG meetings.

In addition to Fresno COG and the City of Fresno, stakeholders identified in the RFP include Caltrans, City of Clovis, County of Fresno Public Works, Fresno Unified School District, State Center Community College District, California State University at Fresno, California High-Speed Rail Authority, Fresno Bicycle Coalition, Fresno Cycling Club, Transportation for All community groups coalition, business representatives, and the public. The purpose of the SWG will be to inform stakeholders on all aspects of the Study and its planning process and to receive input from them.

Task 2.2 Technical Working Group (TWG)

AECOM is proposing an additional working group not listed in the RFP. This would be a Technical Working Group (TWG) consisting of only technical inter-agency staff. Having a collaborative body who can work through the technical aspects of the Study will be critical. It is proposed that the TWG would consist of the PMT (*see Task 1*), Fresno COG staff, City of Fresno staff (including several divisions within the City of Fresno such FAX, Public Works, Planning, etc.), officials from Fresno County, and staff the City of Clovis, including Clovis Transit. With the City of Fresno leading the overall engagement efforts, it is assumed the City will utilize their networks to establish the appropriate membership for the TWG. AECOM will support the City of Fresno and Fresno COG in reviewing the draft members list and providing feedback, assisting in the preparations for TWG meetings (up to 5 meetings assumed) and participation in TWG meetings.

Task 2.3 Public Engagement Plan

AECOM will support the City of Fresno in coordination with the Fresno COG to develop a Public Engagement Plan (PEP) by providing suggestions for the topics to include and reviewing drafts (up to two) produced by City staff. Having a plan in place for engagement will be critical to ensure there is a methodology for meaningful engagement and specific plans for interactions with key stakeholders and the public that is responsive to community needs while also meeting any Caltrans requirements.

Task 2.4 Engagement Support

AECOM will provide general outreach support to the City of Fresno in coordination with Fresno COG. This support would consist of providing advice and review of materials developed by the City of Fresno developed for the various engagement activities. Given the activities are not fully defined by the City of Fresno, who will lead engagement, AECOM would provide support to activities that may include the following:

- » Stakeholder interviews (up to 8 interviews) with stakeholders such as elected officials, developers, business leaders and other additional stakeholders not participating on the SWG
- » Community survey (assumes only one standard survey with no variations)
- » Project web development and maintenance (assumes support of one set-up of content and up to 4 refreshes of content during the project)
- » Community workshops (up to 6, with 2 workshops for each of the 3 rounds of community outreach proposed in **Figure 6, Work Plan Flow Chart**)
- » Public engagement summary report (assumes review of one draft)

Task 3: Preliminary Operations Plan and Ridership Demand Modeling

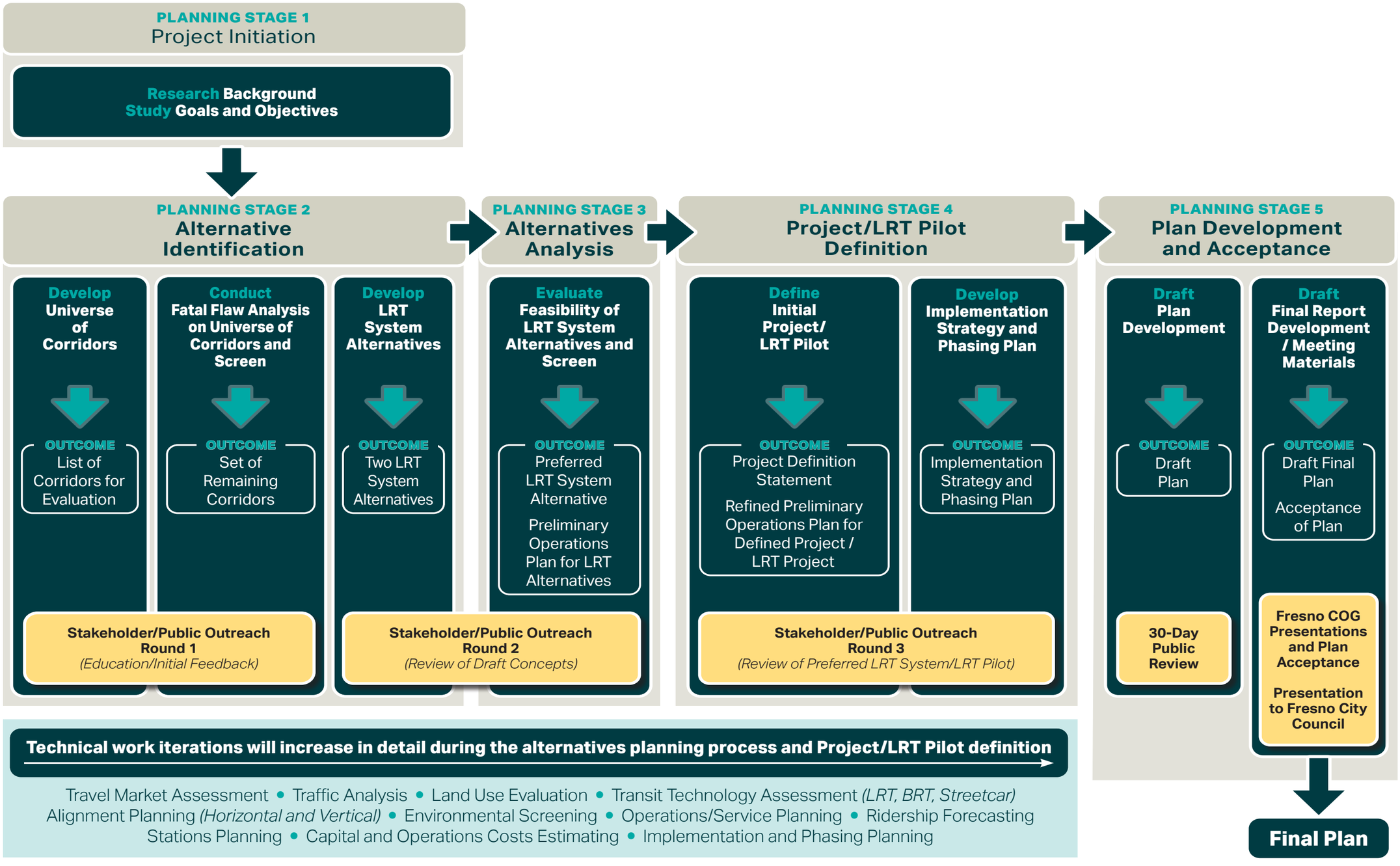
This will be an iterative task that will involve concurrent progress on tasks to inform the alternatives evaluation process. Task 3 will be performed during Planning Stages 2 and 3 (Alternatives Identification and Alternatives Analysis) (refer to the **Work Plan Flow Chart** shown in **Figure 6**). High-level analysis/assessments will be performed to help develop new potential LRT and other transit corridors and inform the initial screening of the Universe of Corridors to define the remaining corridors. As the process advances, the level of detail will increase to a planning-level assessment, to inform development of two LRT system alternatives. Although these alternatives will include a focus on LRT, by nature they will be multi-corridor and not all corridors necessarily will be identified for LRT. Some may be determined for BRT or Streetcar modes. Each LRT system alternative will include up to three identified corridors for significant transit investments. This will be followed by a screening of LRT system alternatives, which will determine the preferred LRT system.

To support this process, AECOM will supplement Task 3 with additional subtasks. Therefore, in addition to the technical task that will lead to Preliminary Operations Plan and a Ridership Modeling Report, we propose for Task 3 to house additional subtasks (Planning Stages 2, 3, and 4) to support the processes of developing alternatives, determining a preferred system alternative, and defining an initial project/LRT pilot.

Downtown Fresno

Figure 6

Detailed Technical Approach Flow Chart



Task 3.1 Identify Primary Corridors/Identify LRT System Alternatives.

Task 3.1 contains much of the technical planning work that will be utilized to conduct the development of alternatives. It also contains task related to performing the actual screening of alternatives and definition of a Project / LRT Pilot.

Task 3.1.1 Review Corridors from PTIS and Other Plans

AECOM will conduct a thorough review of the transit corridors identified in the PTIS and other plans and document information about these corridors in a table that will be utilized during Task 3.1.3 in the development of a Universe of Corridors.

Task 3.1.2 Conduct a Market Assessment

Using Replica data from the Fresno COG Replica account, AECOM will identify key origin-destination pairs within the FCMA, based on trip volume on a typical weekday. AECOM will make an inventory of major trip generators and attractors, such as hospitals, major employers, universities, schools, and large commercial developments. AECOM will identify available transportation options, specifically auto/roadway and transit options. Outputs will include a spider diagram map, showing demand flows throughout the FCMA. This diagram will help identify which corridors correspond to a high travel demand. The market assessment also will determine whether other corridors exist that are worthy of consideration for inclusion in the Universe of Corridors. The findings and diagrams associated with this subtask also will inform the screening of the Universe of Corridors, which will be documented in the Corridor Screening Memo.

Task 3.1.3 Develop the Universe of Corridors

Using the analysis performed under Tasks 3.1.1 and 3.1.2, AECOM will develop a list of corridors for inclusion in the Universe of Corridors. Furthermore, potential corridors providing access to the Fresno HSR station and Fresno Yosemite International Airport will be included. Finally, additional corridors that might emerge from the first round of public input will also be considered for inclusion in the Universe of Corridors. This will form the basis of Planning Stage 2 (Alternative Identification). A short memo will be produced that lists Universe of Corridors with a short description and map.

Task 3.1.4 Conduct Fatal Flaw Analysis on the Universe of Corridors and Screen

As defined under Task 1.6 Alternatives Screening Criteria, AECOM will conduct a fatal flaw analysis and screening on the Universe of Corridors, to identify a set of remaining corridors. This will include obvious fatal flaws or major deficiencies that may be present within a corridor. Most importantly, these flaws or deficiencies will need to be documented in a systematic way, with sufficient justification to provide evidence to decision-makers and other stakeholders that the corridors should not be pursued further.

Fatal flaws may include a lack of sufficient right-of-way, failure to adequately satisfy the Purpose and Need, overwhelming environmental challenges, insurmountable engineering constraints, and historical political factors. Corridors with fatal flaws are likely to be eliminated during the corridor screening process.

Following this analysis, AECOM will conduct a screening of the Universe of Corridors, paring them down to a set of remaining corridors, using the screening criteria developed under Task 1.6.1. The findings associated with this subtask will be included in the Corridor Screening Memo.

Task 3.1.5 Alignment Planning (for the Remaining Corridors)

Following identification of the remaining corridors, AECOM will develop a more detailed definition of the potential alignments. The focus will be on horizontal alignment planning, confirming specific alignments (e.g., specific streets or existing rail corridors) within an overall corridor. During this task, street cross sections will be utilized to determine the available street space to assess the feasibility of installing dedicated transit lanes. An initial consideration of vertical alignment planning also will be conducted by identifying key points within the identified horizontal alignments that may be good candidates for grade separation from street intersections. Furthermore, consideration will be given to joining multiple corridors into one integrated alignment. Potential alignments will be evaluated using a ranking and scoring system, to identify a set of final alignments to be carried into subsequent stages of the analysis. The findings of this subtask will be included in the Preliminary Operations Plan for the LRT system alternatives.

Task 3.1.6 Transit Technology Assessment (for the Remaining Corridors)

AECOM understands the focus of the Study will be development of an LRT system. As part of this system, as mentioned earlier in this proposal, other transit corridors may complement the LRT lines within an overall LRT system and where consideration of a range of different transit technologies may be most suitable, depending on demand, cost considerations, and other factors. Therefore, AECOM will approach this Study as technology-agnostic, so that our planning work is objective and analyzes potential transit technology options by corridor in a way that best meets the Purpose and Need of the overall LRT system. We will apply our extensive planning experience across multiple transit technologies in conducting a transit technology assessment for the Remaining Corridors. To inform this assessment, AECOM also will draw on case study research on integrated LRT systems that considered and/or constructed BRT or Streetcar elements.

The specification of system concepts and a list of technology groups will need to be identified that align with the overall parameters of each corridor, as follows:

- Capacity: The technology will need to provide adequate capacity to accommodate the expected demand. Typically, the demand is expressed in terms of the peak-hour, peak-direction passenger load, including future population and employment growth and other growth in ridership.
- Site-Specific Requirements: Site-specific requirements refer to the technology's ability to handle the geometric constraints and other parameters specific to each study corridor. Geometric (physical) constraints required of the technology will include estimated turning radius, space/right-of-way availability, profile grade, guideway length, and station spacing. Other parameters may include economic development potential, safety, and other considerations.
- Capital and Operating Costs: Costs are specific to each corridor and technology option, including initial capital investments to build and equip the system, periodic capital expenditures during project life to renew certain project elements, and ongoing costs to operate the service and maintain all the system elements in a state of good repair. AECOM will identify general rule-of-thumb" costs (e.g., by mile/by station) for each technology to compare them for the corridors under consideration.

The findings from this task will be included in the Transit Technology Report.

Task 3.1.7 Traffic Analysis (for the Remaining Corridors)

AECOM will conduct a planning-level traffic evaluation to confirm safety and operating speeds for each of the Remaining Corridors. In collaboration with other disciplines, AECOM's traffic experts will perform the following tasks:

- Evaluate the existing conditions in the corridor at a high level (annual average daily traffic [AADT], number of lanes, pinch points)
- Evaluate potential alternatives based on AADT, center-running impacts, general traffic signal impacts, and pedestrian safety, and develop a list of pros/cons for an evaluation matrix.
- Review each corridor for the potential to implement transit signal priority (TSP) based on street operations.
- Provide high-level input on traffic operations and safety to the roadway and track design teams.

The findings of this subtask will be included in the Preliminary Operations Plan for the Remaining Corridors.

Task 3.1.8 Operations and Service Planning (for the Remaining Corridors)

Operations and service planning will be key dimensions for developing and defining alternatives. The analysis in this subtask will focus on the Remaining Corridors, which will feed into development of LRT system alternatives.

Developing an operations plan will be an iterative process that will involve forecasting ridership and developing infrastructure requirements. It also will require coordination with the anticipated service operator. The final operations plan will balance service supply with forecasted demand.

Current service characteristics provide the key independent variables required for operations and service planning for the LRT system alternatives. For example, ridership on existing bus services, determined under Task 1.3, will be used to develop refined headways and total travel time estimates.

AECOM also will look at the impact from the transit technology perspective. The findings from the technology assessment that will be conducted under Task 3.1.6 will be applied to determine operational impacts based on the technology selected for the alignments of the LRT system alternatives (i.e., LRT, BRT, and Streetcar).

The planning approach will include the following elements for the remaining corridors:

- Validation of transit route alignment, conducted under Task 3.1.5 (Alignment Planning)
- Validation of the transit technology, selected by corridor under Task 3.1.6 (Transit Technology Assessment), including what portion of corridors are in dedicated lane/right-of-way or in mixed traffic
- Identification of general station locations, including existing and planned multi-modal transit hubs
- Recommendations for modified Fresno Area Express routes, to sync with the LRT system alternatives, including intersecting arterial, feeder, and circulator bus routes.
- Analysis of street space requirements for each mode and the determination of locations where additional right-of-way will be required (either horizontally or vertically)

With the above concepts defined for the Remaining Corridors, AECOM will conduct detailed operations and service planning for the overall operations concept. This planning will include:

- Service frequencies/headways for services along the proposed system routes
- Run-time estimates for each route
- Span of services
- Number of transit vehicles needed by transit mode
- Transit signal priority applications
- Station requirements
- Maintenance facility requirements and locations
- Identification of other infrastructure needs, including station sidings and layover tracks

Figure 7. Mode characteristics of LRT, BRT, and Streetcar

Characteristic	LRT	BRT	Streetcar
Purpose/Market Type	Higher-speed, higher-demand regional connectivity	Higher-speed, medium demand local or regional connectivity	Medium speed, medium demand, local connectivity
Operating Environment	Dedicated guideway	Semi-dedicated guideway or mixed traffic	Semi-dedicated guideway or mixed traffic
Spacing of Stops	1/2 to 1 mile	1/2 mile to 1 mile	1/4 to 1/2 mile
Passenger Capacity per Vehicle	160 to 200	60 to 90	125 to 150
Flexible Routing	No	Yes	No
Economic Development Potential	High	Low	Medium to High

Task 3.1.9 Ridership Demand Forecasting (for Remaining Corridors)

Ridership scenarios will be developed for each Remaining Corridor, applying the three transit technology modes (LRT, BRT, and Streetcar) and three land-use growth scenarios (low, medium, high). Forecasts will be developed that will assess the ridership for each. The results will be shown in a matrix for easy comparison, to assist in development of two LRT system alternatives.

For this subtask, AECOM will use a Federal Transit Administration (FTA) compliant travel demand forecasting method. AECOM will develop a forecasting model based on the FTA's System Trips-on-Project Software (STOPS) software package, or enhance an existing STOPS model if one already exists. STOPS is cost-effective and relatively straightforward to implement, and it can provide an early look at FTA Capital Investment Grant (CIG) eligibility and be updated/enhanced easily as conversations with FTA begin and new counts become available.

AECOM will use STOPS version 2.53 (or later if a new version is released) to implement the model. Inputs needed for the calibration will include: (1) Fresno Area Express (FAX) APC Boarding Data, (2) a FAX on-board survey (if one exists), (3) FAX GTFS data, and (4) Adopted Population and Employment forecasts at the Traffic Analysis Zone level and highway travel time (skim) files from the Fresno COG travel demand model. A route-and-stop-level calibration (Type 12) is anticipated for districts and station groups in Fresno. The findings from this task will be included in the Ridership Demand Modeling Report.

Task 3.1.10 Develop LRT System Alternatives

AECOM will take the analysis on the Remaining Corridors as conducted under Task 3.1.5 through Task 3.1.9 and will define up to two LRT system alternatives. This process will use the screening criteria as developed under Task 1.6.2, to evaluate each of the remaining corridors and identify groups of one or more corridors to comprise each of the LRT system alternatives. Developing the LRT system alternatives also will touch on system-level considerations that are not addressed by the evaluation of individual corridors. These will include operational considerations (e.g., intersecting or branching corridors); opportunities to share stations, maintenance facilities, vehicles, and other infrastructure; and other factors to help identify a functional system from each group of corridors.

This process will be conducted in close coordination with the Fresno COG and project partners. An internal half-day in-person workshop will be conducted to collaboratively generate two LRT system alternatives. The findings of this subtask will be incorporated into the Preliminary Operations Plan for the LRT system alternatives.

Task 3.1.11 Traffic Analysis (for LRT System Alternatives)

During Stage 3 (Alternatives Analysis), our traffic experts will perform a more in depth analysis of the corridors that comprise the two LRT system alternatives. While still at a high level, traffic analysis will identify any capacity issues, evaluate TSP options, and assure safe pedestrian crossings (including to and from stations). The following traffic tasks are proposed:

- Obtain turning movement counts and signal timing (from existing City and/or Fresno COG sources).
- Develop a Synchro model of key segments of the corridor (or update an existing model if available from the City or County) for existing conditions.
- Project future volume growth, in collaboration with the City/County, and will include accounting for future population and employment growth and potential mode shifts associated with the new transit service.
- Prepare No Build and Build Synchro models and produce measures of effectiveness to compare future conditions.

The Synchro model cannot directly incorporate transit operations, and therefore this will be accounted in the assumed timing plans. The models also will incorporate full pedestrian crossings and movements of bicyclists and other micromobility, for the safety of all users. This level of model is proposed as a preliminary screening tool, to assist in the decision-making process. The findings from this task will be included in the LRT System Alternatives Screening Memo.

Task 3.1.12 Operations and Service Planning (for the LRT System Alternatives)

Following the determination of the LRT system alternatives under Task 3.1.10, the AECOM team will refine the operations and service planning as conducted under Task 3.1.8, to accommodate a system-level analysis, which will alter plans from those that looked at the individual remaining corridors. This work also will build off the initial considerations as identified from development of the LRT system alternatives under Task 3.1.10.

Work during this subtask will include the following:

- Refinement of projected operational speeds
- Refinement of conceptual system schedule/timetable
- Service hours and headways, by day of the week and time
- Underlying local bus services, shadow services, and their relationship to the LRT/BRT network
- Consideration of vehicle types, capacity, and characteristics
- Potential system-level connections and service integration schemes
- Fare payment systems (onboard, offboard, pre-payment, proof-of-payment)

The findings from this task will be included in the Preliminary Operations Plan for the LRT system alternatives.

Figure 8. Sample Ridership Comparison Matrix for Each Corridor

Corridor X Mode/Land-Use Intensity	Low Grow Scenario (approved MPO assumption)	Medium Growth Scenario	High Growth Scenario
BRT-Lite			
Full-BRT			
LRT			
Streetcar			

Sample structure of Matrix.
Data to come during the Study.

Task 3.1.13 Ridership Demand Forecasting (for the LRT System Alternatives)

The second round of ridership forecasting will be conducted at a system-level for each of the LRT system alternatives. The ridership forecasting at this stage will refine the previous ridership analysis, conducted for the remaining corridors under Task 3.1.9, taking into account the technology selected for each corridor and the network effect on ridership. The refined forecasts also will include a re-assessment of land use scenarios at a system level. The forecasts will be summarized at the route and stop/station (for the LRT service) level, as well as for measures of effectiveness to evaluate a potential CIG project (e.g., trips on the project, new riders, VMT savings).

Task 3.1.14 Evaluate Feasibility of Alternatives and Screen to Preferred LRT System Alternative

AECOM will apply the screening criteria as identified under Task 1.6. to each of the two alternative systems, to determine the Preferred LRT System Alternative to be carried forward into Stage 4 of the analysis. A comparison matrix will be produced and included in the LRT System Alternatives Screening Memo, along with other findings from this subtask.

Task 3.2 Develop Preliminary Operations Plan for the Preferred LRT System Alternative

This task will refine the work done under Task 3.1.12 for the two LRT system alternatives in more depth, including more precise station layouts, more detailed schemes for system-level connections and service integration, and other elements. The findings from this task will be included in the Project Definition Memo. Cost estimates for the Preferred LRT System Alternative will be refined as part of Task 5.

Task 3.3 Develop Ridership Demand Modeling Report

The findings of the ridership forecasting efforts—conducted as part of Task 3.1.9 (for the remaining corridors), Task 3.1.13 (for the LRT system alternatives), and Task 3.4.3 (for the initial project/LRT pilot) will be compiled into a Ridership Demand Modeling Report. In addition to summary tables of the final forecasts and a discussion of the findings, the report also will describe the general approach and key modeling assumptions,

Task 3.4 Define Initial Project/LRT Pilot

The last step in the overall alternatives planning process will be to define a project that can be moved forward in the project development processes following this Study. This will require isolating a portion of the Preferred LRT System Alternative into a defined project, which will be constructed as an initial portion of the overall system.

Task 3.4.1 Refine Alignment Planning – Vertical

As part of defining the Initial Project/LRT Pilot, AECOM will conduct an in-depth review and refinement of the vertical alignments of the Preferred LRT System Alternative. This process will step back from the full-build system and consider what makes sense to build as an initial investment from an engineering and cost perspective, without precluding the longer term system-level vision. The findings of this subtask will be included in the Project Definition Memo.

Task 3.4.2 Refine Operations and Service Planning and Update Preliminary Operations Plan

Similar to Task 3.4.1, AECOM will refine the operations and service plan as developed under Task 3.2 to reflect the smaller Initial Project/LRT Pilot. Additionally, at this juncture, a table of conceptual rider fares will be established for the Initial Project/LRT Pilot to provide a high-level (non-investment grade) estimate of revenue. This will utilize the refined ridership number from Task 3.4.3. The results from this analysis will inform the funding assessment in Task 6.1. The findings of this subtask will be included in the Preliminary Operations Plan for the initial project/LRT pilot.

Task 3.4.3 Refine Ridership Demand and Update the Ridership Demand Modeling Report

The ridership analysis as conducted for the LRT system alternatives under Task 3.1.13 will be refined and isolated to reflect the smaller Initial Project/LRT Pilot, including the results of the refined operations and service planning under Task 3.4.2. The results will be incorporated into the Ridership Demand Modeling Report.

Task 3 Deliverables

- ✓ Corridor Screening Memo (one round of consolidated comments)
- ✓ Preliminary Operations Plan – LRT System Alternatives (one round of consolidated comments)
- ✓ Preliminary Operations Plan – Initial Project/LRT Pilot (one round of consolidated comments)
- ✓ Ridership Demand Modeling Report (one round of consolidated comments)
- ✓ Transit Technology Memo (one round of consolidated comments)
- ✓ LRT System Alternatives Screening Memo (one round of consolidated comments)
- ✓ Project Definition Memo (one round of consolidated comments)

Task 4: Station Siting Analysis and Environmental Screening

The three elements of this task will be as follows:

- » Identify and evaluate potential station locations along the route alternatives, to inform the screening of the corridors and the recommendation of the LRT system alternatives, and to inform an evaluation of the infrastructure needs and opportunities for right-of-way preservation to inform Task 5 for capital cost estimating.
- » Conduct an environmental screening to determine any environmental issues and what environment clearance documents are likely to be necessary to proceed in furthering project development.
- » Conduct a comprehensive land-use evaluation along corridors that may be part of a future LRT system. Like Task 3, the three elements of this task will be iterative to inform both the alternatives identification and alternatives evaluation process (Stages 2 and 3, respectively).

Task 4.1 Station Siting Analysis

AECOM will conduct initial stations planning on the Remaining Corridors to contribute to identification of the LRT system alternatives.

Task 4.1.1 Develop Station Siting Evaluation Criteria

AECOM will develop station siting evaluation criteria. This criteria may include ridership potential, cost, constructability, environmental impact, equity, land use compatibility and growth potential, access, and stakeholder and public input. AECOM then will screen candidate station locations, using this evaluation criteria.

Task 4.1.2 Conduct an Initial Station Siting Analysis–General Location (for the Remaining Corridors)

During Planning Stage 2 (Alternatives Identification), AECOM will identify station general locations for each Remaining Corridor. This will utilize the early research and wide-ranging analysis conducted in Tasks 1, 2, 3 and 4 to support the screening station locations. The screening will utilize the station siting evaluation criteria from Task 4.1.1.

Task 4.1.3 Conduct a Station Siting Analysis–Spatial (for the Defined Project/LRT Pilot)

After an Initial Project/LRT Pilot is identified and the project is defined (Stages 3 and 4), AECOM will validate preferred station locations by developing a site layout to confirm feasibility. A memo will be developed that identifies the station locations, station infrastructure needs, and opportunities for right-of-way preservation. The memo will include high-level illustrative exhibits of station layouts. This analysis will be an input into the preliminary capital and operation cost estimates. The finding of this analysis will be summarized in the Station Siting Analysis Memo.

Task 4.2 Comprehensive Land Use Evaluation

The evaluation of land use will be conducted in two stages during the Study: Stage 2 and 3 (Alternatives Identification and Alternatives Analysis, respectively).

Task 4.2.1 Conduct an Initial Land-Use Survey (for the Fatal Flaw Analysis)

During Planning Stage 2 (Alternatives Identification), a qualitative analysis of land use will be conducted for each corridor, to rate the corridors for potential future growth, either potential or planned. AECOM will conduct a comprehensive land use evaluation along existing and proposed alignments within 0.5 mile of the proposed station locations. This evaluation will include an assessment of current land use, ownership, zoning, parking, existing and projected population, employment, and development capacity within these areas. Special emphasis will be placed on identifying proposed and future opportunities for TOD that can drive economic investment and ridership demand.

Task 4.2.2 Conduct a Comprehensive Land Use Evaluation (for the LRT System Alternatives)

During Planning Stage 2 (Alternatives Identification), we will use these factors to determine whether a demand for additional development at or around the station exists, which in turn can increase ridership and inform the selection of a preferred LRT system in Stage 3. In addition to economic development, the analysis will identify opportunities for open space, mini-parks, or art areas that can enhance the transit experience and improve ridership.

As part of the Station Siting Analysis Memo, and subsequently the Final Plan, recommendations will be made for land use opportunities and policy changes that can be adopted to improve the feasibility of a successful LRT station.

Task 4.3 Environmental Screening Analysis

AECOM will conduct an environmental screening analysis for both CEQA and NEPA in Stage 2 (Alternatives Identification) and Stage 3 (Alternatives Analysis).

Task 4.3.1 Conduct an Initial Environmental Issues Survey (for the Fatal Flaw Analysis)

During the alternatives identification, AECOM will conduct an initial environmental assessment at the corridor level for the remaining corridors, focusing on identifying any major environmental issues that can lead to eliminating a corridor from consideration. We will not focus on station locations at this stage. Doing this early in the process will help ensure that data assessments and any new data collection efforts are focused on addressing specific concerns that agencies view as critical to their review and consideration of the project alternatives.

Figure 9. Environmental topics to be covered for CEQA and NEPA.

CEQA Topics*		NEPA Topics*	
» Aesthetics	» Land Use and Planning	» Acquisitions and Relocations	» Noise and Vibration Public Services and Community Facilities
» Agriculture and Forestry Resources	» Mineral Resources	» Aesthetics / Visual Resources	» Safety and Security
» Air Quality	» Noise	» Air Quality	» Section 4(f) Resources
» Biological Resources	» Population and Housing	» Biological Resources	» Section 6(f) Resources (LWCF)
» Cultural Resources	» Public Services	» Construction Impacts	» Transportation / Traffic
» Energy	» Recreation	» Communities & Neighborhoods	» Utilities and Energy
» Geology and Soils	» Transportation	» Cultural Resources	» Water Resources / Hydrology
» Greenhouse Gas Emissions	» Tribal Cultural Resources (TCRs)	» Geology, Soils, and Seismicity	» Wetlands
» Hazards and Hazardous Materials	» Utilities and Service Systems	» Hazardous Materials/ Contaminated Sites	
» Hydrology and Water Quality	» Wildfire Risk	» Land Use, Zoning, and Planning	

** All topic to be conducted at a high-level to identify key issues and to limit costs.*

AECOM will begin the baseline conditions data collection by quickly reviewing data available from previous studies and compiling a data inventory and corresponding GIS data, mapping layers. Our team will assemble the GIS data and shapefiles and provide them to the Fresno COG on completion of this task.

Task 4.3.2 Conduct a Comprehensive Land Use Evaluation (for the LRT System Alternatives)

A more fine-grained desktop environmental screening analysis will be conducted during the alternatives analysis, building on the initial analysis as conducted during the alternatives identification. AECOM will identify and document known environmental conditions associated with each proposed station site (and surrounding areas where infill development can take place to support the LRT system) and alignments contained within the two LRT system alternatives. AECOM will assess an inventory of environmental parameters typically considered for both CEQA and NEPA environmental documents. These parameters will include items such as impacts on neighborhoods, sensitive noise receptors (e.g., schools, libraries, hospitals), parklands, historical resources, water resources, natural habitat, displacing existing uses, and a number of hazardous materials sites (e.g., gas stations, dry cleaners, abandoned factories). Refer to **Figure 9** for the environmental topics to be covered.

The analysis level that will be completed under this task is expected to be sufficient to determine the environmental documentation level that will be required for the recommended preferred LRT alternative, if it enters the CEQA and/ or NEPA process. Because the purpose of environmental screening in this early feasibility analysis stage is to distinguish between station sites and alternative alignments, the work level that is completed on the environmental inventory will be only that which accurately differentiates alternatives. A summary of the environmental screening will be included in the Environmental Screening Memo and integrated into the Draft/Final Plan (Tasks 7 and 8).

Data collection efforts will focus on the resource areas shown in **Figure 13** and will use the most current, publicly available data

Task 4 Deliverables

- ✓ Station Siting Analysis Memo (one round of consolidated comments)
- ✓ Land Use Evaluation Memo (one round of consolidated comments)
- ✓ Environmental Screening Memo (one round of consolidated comments)

Task 5: Develop Preliminary Capital Cost and Operational Cost Estimates

The AECOM team will develop capital cost and operational cost estimates. Three rounds of cost estimating will be conducted:

- » First, as part of Planning Stage 2, alternative identification process, a "rough-order-of-magnitude" (ROM) cost estimates for both capital and operations will be prepared for the remaining corridors (after corridor screening). These ROM estimates will inform the corridor screening, and development of the two (2) LRT System Alternatives.
- » Second, as part of Planning Stage 3, a high-level cost appropriate for a feasibility study will be conducted for the identified alternatives to provide a solid basis for cost comparisons.
- » Third, as part of the definition of the Recommended Project/LRT Pilot (Stage 4) a conceptual-level cost estimate be developed.

The specific cost estimating methods to be utilized are outlined in the following subsections.

Task 5.1 Capital Cost Estimation

The capital cost development results from the engineering analyses of alignment studies and transit technology assessment will define infrastructure and rolling stock requirements, respectively. Furthermore, the station siting work will inform capital cost estimates, based on the number of stations and standard amenities for stations associated with the type of transit technology selected.

The estimating process assumes that future conditions will be predictable, based on historical trends. A recurring issue in estimating capital costs during a project's conceptual phase is the evaluation and treatment of uncertainty. Uncertainty can result in a difference between a project's estimated cost, defined during the concept phase, and the project's actual cost ultimately implemented. As we build up estimates for each alternative, we will make explicit allowances for these risks, typically categorized as changes in project scope:

- » Changes in design or operating standards
- » Incorrect unit cost/quantity assumptions
- » Unforeseen issues in implementation
- » Impacts related to supply chain availability
- » Impacts related to inflation

The following is a discussion of the capital cost estimating process, divided into three rounds of iteration.

Capital Cost Estimates during Alternatives Identification (Stage 2)

After the initial corridor screening during Alternatives Identification, ROM cost estimates will be developed for each remaining corridor. These estimates will be based on recent construction costs for other systems, adjusted for system mileage and the number of stations as determined by the first round of station siting analysis.

Capital Cost Estimates During Alternatives Analysis (Stage 3)

Task 5.1.1 Conduct ROM Capital Cost Estimating (for the Remaining Corridors)

To preliminarily assess the capital needs of each remaining corridor, AECOM will take into account the assessment of existing infrastructure conditions under Task 1.4 and will identify up-front and long-term cost estimates for the track, signal systems, crossings, stations, vehicles, and other components for the fixed-guideway alternatives. AECOM will develop a preliminary capital and operating cost estimate, building on the tasks above. At this early stage of design, the conceptual cost estimate will use a parametric approach that incorporates additional unit cost details as they become available.

Task 5.1.2 Refine the ROM Capital Cost Estimating (for the LRT System Alternatives)

Task 5.1.2 Refine the ROM Capital Cost Estimating (for the LRT System Alternatives). AECOM will update and refine the preliminary ROM capital cost estimates from Task 5.1.1 (for the Remaining Corridors) to reflect the two LRT System Alternatives. The updated cost estimates will incorporate any new information gleaned through definition, refinement, and analysis of the LRT

System Alternatives under Task 3.1.11 (traffic analysis), Task 3.1.12 (operations and service planning), and Task 3.1.13 (ridership forecasting).

Task 5.1.3 Refine the ROM Capital Cost Estimating (for the LRT System Alternatives)

During Planning Stage 4, capital cost estimates will be conducted for the Recommended Project/LRT Pilot. It will use standard unit costs for the LRT and other transit as necessary. An assumed initial timeline will be used to established, a "year-of-expenditure" cost estimate for the first phase, based on the 2026 numbers cost assumptions.

Cost Estimating Assumptions

The basic assumptions and criteria that will be used to develop the cost data will be as follows:

- The estimate will be prepared using 2026 dollars (escalation will be factored as part of the phasing plan under Task 6.3).
- Based on the design's anticipated conceptual level, quantities may be restricted to a few, high-level quantities (e.g., route miles of guideway).
- The cost estimates are conceptual, based on recent unit costs from other projects in California and nationwide, as no engineering will be performed for this feasibility-level study.

The findings from this task will be included in the Preliminary Capital and Operational Cost Estimate Memo.

Task 5.2 Operating and Maintenance Cost Estimation

Having a reliable O&M cost estimate for each alternative will be crucial for accurately assessing alternative cost effectiveness and financial implications. The O&M cost estimates will be calculated based on the supplied service quantity and other system characteristics developed in the service planning tasks. The cost models will be consistent with the method specified in the FTA's Procedures and Technical Methods for Transit Project Planning.

An O&M cost model associates cost drivers related to the service level provided with specific cost elements. For example, service revenue hours drive the wages and fringe benefits for vehicle operators and street supervisors. In contrast, revenue miles drive wages and fringe benefits for vehicle mechanics, as well as for parts and fuel costs. Appropriate details must be applied to distinguish costs by mode (e.g., light rail, bus, and paratransit) and by vehicle sub-fleet (e.g., vehicles of the same age and manufacturer). O&M cost models also must reflect the backlog for state-of-good-repair investment, or deferred-maintenance level, and the impacts of future infrastructure investment on O&M costs.

The FTA requires a resource build-up model to be applied as the basis for projecting the O&M costs that is used for the analysis. This demonstrates the financial capacity for grantees to undertake New Starts projects. The model must reflect recent actual cost experience (preferably using FAX cost data) and be driven by service level indicators that are derived from and consistent with the travel demand analysis.

The O&M cost model will need to rely on off-the-shelf financial data (e.g., general ledger information) and operational data (e.g., labor hours, gallons of fuel, and estimated kilowatt-hours consumed) and leverage information from knowledgeable transit agency staff.

AECOM will develop a mode-specific O&M cost allocation model to prepare operating cost estimates for the retained Build alternatives and the Baseline. AECOM's proposed approach will leverage existing FAX cost and service data on current modes and off-the-shelf data from peer transit agencies, recognizing that FAX may not segregate costs for its existing BRT service. It may include them in the overall bus costs. The primary information sources to be used to develop the models include the following:

- **Cost drivers:** The cost drivers will describe the service level, peak vehicles, revenue vehicle-miles, revenue vehicle-hours, passengers, and physical characteristics, route, or track miles, or stations. This information will be derived from the operating plans developed jointly with FAX staff.
- **Unit costs:** The unit costs will be based on recent FAX experience for bus modes and on available peer transit agency O&M cost models and data from the National Transit Database (NTD) for LRT. We will apply INTDAS, a relational database application that is maintained by Florida International University under a contract with the Florida Department of Transportation, to provide rapid access to the NTD data. Costs will be estimated by object class (e.g., wages, health care fringes, fuel, and electricity), so that appropriate inflation rates can be applied to estimate design-year costs in year-of-expenditure, inflation-adjusted dollars.

AECOM will undertake the following steps to develop unit O&M costs by mode, cost driver, and object class.

- Assemble the mode-specific operating expenses by function, operations, vehicle maintenance, non-vehicle maintenance, and general and administrative expenses, and by object class, salaries, operator wages, materials, and fuel, for the most recent reporting year.
- Assemble the corresponding service level data, hours, miles, vehicles, and stations for the most recent reporting year. This will include peak vehicles, revenue vehicle-miles, revenue vehicle- or train-hours, route or track miles, and stations.
- Identify a cost driver for each operating expense line item by function and by object class. For example, for the function Vehicle Operations and the object class wages, the cost driver will be revenue, vehicle or train hours.
- For each function and object class, divide the O&M cost by the corresponding cost driver value, which will result in raw unit costs.
- Identify the General and Administrative (G&A) costs, which are an indirect function of the costs computed above, and determine a G&A factor, computed as G&A expenses as a percentage of direct O&M costs.
- Derive the average straight wage per straight hour paid to operators. If needed, this information will be applied as an index to adjust labor costs from the peer transit systems, to account for local prevailing wages.
- Apply this average unit cost, by cost drivers, by object class, to the design year cost drivers to estimate design year O&M costs.

We then will apply the O&M cost models that are developed using the above steps for the LRT system alternative and develop annual projections of O&M cost.

This analysis will include an assessment of the effects of the alternative on FAX's existing bus services.

Task 5.2.1 Conduct ROM Operating Cost Estimating (for the Remaining Corridors)

Using the aforementioned O&M cost models, AECOM will develop ROM estimates of operating costs for each of the Remaining Corridors. The cost estimates will incorporate information gleaned through definition and analysis of the Remaining Corridors under Task 3.1.5 (alignment planning), Task 3.1.6 (transit technology assessment), Task 3.1.7 (traffic analysis), Task 3.1.8 (operations and service planning), and Task 3.1.9 (ridership forecasting).

Task 5.2.2 Refine the ROM Operations Cost Estimating (for the LRT System Alternatives).

AECOM will update and refine the preliminary ROM operating cost estimates from Task 5.2.1 (for the Remaining Corridors) to reflect the two LRT System Alternatives. The updated cost estimates will incorporate any new information gleaned through definition, refinement, and analysis of the LRT System Alternatives under Task 3.1.11 (traffic analysis), Task 3.1.12 (operations and service planning), and Task 3.1.13 (ridership forecasting).

Task 5.2.3 Conduct Conceptual-Level Operations Cost Estimating (for the Defined Project/LRT Pilot)

AECOM will update and refine the ROM operating cost estimates from Task 5.2.2 (for the LRT System Alternatives) to reflect the smaller scope of the Defined Project/LRT Pilot). The updated cost estimates will incorporate any new information gleaned through definition, refinement, and analysis of the Defined Project/LRT Pilot under Task 3.4.1 (alignment planning), Task 3.4.2 (operations and service planning), and Task 3.4.3 (ridership forecasting).

Deliverables will be prepared in a manner consistent with professional practice in the financial planning area for major urban transportation investments and will satisfy FTA's expectations. The findings from this task will be included in the Preliminary Capital and Operational Cost Estimate Memo.

Task 5.3 Return on Investment

This task will evaluate the return on investment (ROI for the Initial Project/LRT Pilot) by assessing the impacts on property values, public tax revenues, job creation, and environmental and public health outcomes. The analysis will compare conditions with and without the transit investment, to isolate benefits attributable to improved transit access. It will be structured to support investment prioritization and funding decisions with clear, defensible evidence.

The property value impacts will be assessed using parcel-level data from the Fresno County Assessor, combined with the Regional Transportation Plan/Sustainable Communities Strategy land-use forecasts and local development information. The analysis will evaluate changes in assessed value and development potential near new transit corridors and station areas relative to comparable areas without enhanced service, applying conservative, locally appropriate assumptions and phasing benefits over time to reflect market conditions.

Public revenue impacts will be estimated by translating incremental property value growth and economic activity into property and sales tax revenues for Fresno County, incorporated cities, and special districts. The analysis will evaluate long-term fiscal returns using a net present value framework to support comparison across investment scenarios.

Job creation effects will include short-term construction jobs, permanent transit operations employment, and broader economic benefits associated with improved access to jobs and labor markets. Accessibility outputs from travel modeling will be used to quantify changes in job access, and to characterize how improved transit will support workforce participation and economic productivity, particularly in transit-dependent and disadvantaged communities.

Environmental and public health benefits will be evaluated through changes in vehicle miles traveled, greenhouse gas emissions, and criteria air pollutants, as well as increased physical activity associated with transit use. These outcomes will be reported using established performance indicators and, if appropriate, monetized to support the infrastructure investment. The findings from this task will be included in the Return on Investment Memo..

Task 5 Deliverables

- ✓ Preliminary Capital and Operational Cost Estimate Memo (one round of consolidated comments)
- ✓ Return on Investment Memo (one round of consolidated comments)

Task 6: Implementation Strategy and Phasing Plan

The implementation plan will be important because it will provide a clear roadmap for turning the project concept into reality. It will organize complex tasks into defined steps, so that planning, design, procurement, construction, and O&M occur in a logical sequence. The plan will align funding strategies with project phases, so that resources will be available when needed, reducing delays and cost overruns. It also will help to manage risks by identifying dependencies and milestones, facilitate coordination among agencies and stakeholders, and support informed decision-making. Furthermore, the implementation plan will connect transit investment with broader land use and economic development goals, creating a framework for community revitalization and long-term success. The plan will integrate the implementation strategy, phasing analysis, and funding assessment into a timeline with key milestones, aligning transit investment with land use strategies to support economic and community revitalization.

Task 6.1 Funding Assessment

A critical element in demonstrating the feasibility of any transit project is securing adequate funding for both implementation (i.e., planning, environmental review, design, procurement, and construction) and ongoing O&M. For the new LRT, this will require a mix of federal and/or State capital funding, along with new revenue streams for operations. The funding assessment will:

- » Inventory existing and potential federal, State, regional, local, and private funding sources.
- » Identify strategies, sources, and mechanisms most feasible to pursue.
- » Evaluate passenger fare levels to optimize revenue without significantly impacting ridership.

Federal programs, such as the FTA's New Starts and Small Starts, typically provide up to 50 percent of project costs but involve a complex, time-consuming process, with New Starts being more involved. LRT projects often use the New Starts program, while BRT projects have used both, depending on the scale of the project.

State programs like the Transit and Intercity Rail Capital Program can provide initial funding and match federal funds. Local funding also will be essential and may include public and private sources, value capture tools (e.g., tax increment financing, special

assessment districts), and public-private partnerships for station-area improvements.

For any funding programs, demonstrating ROI will be key for local funding decisions (refer to Task 5.3 for an initial assessment of ROI for the Recommend Project (LRT Pilot).

The findings from this task will be included in the Implementation and Phasing Plan.

Task 6.2 Implementation Strategy

The implementation strategy will serve as a roadmap for developing the new rapid transit service. It will outline steps such as planning, design, engineering, environmental review, right-of-way acquisition, vehicle selection, procurement, construction, and service initiation. Furthermore, the strategy will include an assessment of the potential ROI, incorporating findings from Task 5.3 to align development with long-term fiscal sustainability and economic benefits. The findings from this task will be included in the Implementation and Phasing Plan.

Task 6.3 Phasing Analysis

The analysis will be developed at two points during the Study. An initial phasing analysis will take place during Planning Stage 4, to inform the definition of the Initial Project/LRT Pilot. Thereafter, a more comprehensive phasing analysis will be conducted during Stage 5 (Implementation), incorporating the work done in Stage 4 as well as taking a longer view to produced multiple implementation phases of the entire preferred LRT system.

The phasing analysis during both Stages 4 and 5 will balance cost, construction feasibility, funding availability, and development plans along the corridors. Key considerations will include the following:

- Segments that can accommodate dedicated guideways with minimal traffic impact (e.g., Blackstone/Abby couplet)
- Segments that deliver the greatest reductions in travel time and ridership gains.
- Areas planned for higher density development (e.g., Better Blackstone plan)
- Multimodal connections, such as the planned HSR station

The phasing analysis will be closely linked to the funding strategy, so that initial segments or elements can advance while federal funds are pursued.

The findings from this task will be included in the Implementation and Phasing Plan.

Task 6 Deliverable

- ✓ Implementation and Phasing Plan (one round of consolidated comments)

Task 7: Develop the Draft Plan and Publish the Draft for Public Review

Based on all the technical work and stakeholder and public input received during the course of the Study, the AECOM team will produce three iterations of the Fresno Metropolitan Light Rail Feasibility Study—a Draft Plan, Draft Final Plan, and Final Plan.

Task 7.1 Draft Plan

Based on all the technical work and stakeholder and public input received during the course of the Study, AECOM will produce three iterations of the Fresno Metropolitan Light Rail Feasibility Study—a Draft Plan, Draft Final Plan, and Final Plan. After internal approval of the Draft Plan, it will be published for public review, which will include a 30-day public comment period.

Task 7.2 Draft Final Plan

Following the 30-day public review period, AECOM will work with the City of Fresno and Fresno COG to identify responses to comments, resolving issues as needed. AECOM will support the City of Fresno in the preparation of a summary of public input for inclusion in the presentations that are discussed under Task 8.2. After the responses to comments are developed and agreed on with the Fresno COG, a Draft Final Plan will be produced, incorporating relevant public comments on the Draft Plan.

Task 7 Deliverables

- ✓ Draft Plan (round of consolidated comments)
- ✓ Community Comment Record and Response
- ✓ Draft Final Plan (round of consolidated comments)

Task 8: Presentation & Public Board Acceptance

Task 8.1 Meeting Materials

AECOM will prepare a draft PowerPoint presentation, in close coordination with the Fresno COG. The presentation will be user-friendly and will highlight the major components of the Study. It will incorporate clear graphics, showing the alternatives considered, alignment views with surrounding areas, and the rationale behind the recommended option.

The presentation will include:

- Documentation of technical work
- Justification for the recommendation project (and other recommendations, including why other technology options and alternative alignments were not selected)
- Summary of the public involvement process
- Benefits of the project (i.e., economic, environmental, health, equity)
- Implementation and phasing approach

Task 8.2 Fresno COG and Fresno City Council Presentations

AECOM, along with Fresno COG staff, will present the Draft Final Plan and recommended project (LRT pilot) for acceptance at three Fresno COG standing meetings (i.e., to the Transportation Technical Committee, the Policy Advisory Committee, and the Policy Board). Furthermore, a presentation will be made to the Fresno City Council. All the presentations will be followed by a question-and-answer session, attended by AECOM who will answer questions.

Task 8.3 Final Plan

Based on the feedback from the Fresno COG's Transportation Technical Committee, Policy Advisory Committee, and Policy Board, as well as on the comments from the public attending these meetings, AECOM (under the direction of the Fresno COG) will update the Draft Final Plan and produce the Final Plan. AECOM assumes that the revisions will not be overarching and require major changes or rewriting of the plan.

Task 8 Deliverables

- ✓ PowerPoint Presentation (one round of consolidated comments)
- ✓ Final Plan (one round of consolidated comments)

2. Deliverables

Below, AECOM has summarized the deliverables for reach of the 9 tasks in our proposal (Task 0 – Task 8). Included in this summary are the names of the deliverables, the format, a short summary of the content, and the level of detail. Additionally notes and assumptions are provided to clarify the scope for deliverable as needed.

P**lease note**, following the summary of specific deliverables in the table below, a list of "Other Assumptions and Limiting Conditions" related to Project deliverables is provided.

Task 0 (Project Management) Deliverables		
Deliverable	*Versions (File Format)*	*Content/Level of Detail*
Project Management Plan	Digital (Word/PDF)	» Scope of services, schedule and budget. » Execution approach. » Quality management. » Risk management. » Communication and records management. » Project safety. » Project closeout. » Level of Detail: Up to 10 pages. » Notes/Assumptions: Quarterly schedule updates for the duration of the 22-month schedule.
Monthly virtual PMT Meeting Agendas and Meeting Notes	Digital (Word/PDF)	» First PMT meeting to be the Project Kick-Off Meeting. » Updates in project status. » Key assumptions or decisions requiring PMT input. » Near-term or upcoming meetings, milestones, etc. » Next steps or actions. » Level of Detail: Agenda – 1 page; Meeting Notes – varies depending on conversation. » Notes/Assumptions: Up to 3 AECOM staff will attend the virtual PMT Meetings (including the kick-off); Assumes up to 22 PMT meetings. Meetings are assumed to be between 1 and 1.5 hours.
Invoices and Progress Reports by Milestone	Digital (Word/PDF)	» Billings by staff and by top level task, for the invoicing period. » Work completed by task, for the invoice period. » Level of Detail: Short project summary plus bulleted notes for each task/sub-task will be reported. » Notes/Assumptions: Up to 22 invoices assumed per the project schedule.
Task 1 (Review Existing Plan, Policies, and Infrastructure Conditions) Deliverables		
Deliverable	*Format*	*Content/Level of Detail*
Summary Memo of Area Transit Plan, Policies, and Best Practices	Digital (Word/PDF) *Draft and Final, with one consolidated set of comments*	» Relevant information and key findings from existing plans. » Summary of existing policies. » Analysis of and best practices from selected case study systems. » Level of Detail: Up to 12 pages, including tables and images. » Notes/Assumptions: Assumes client/stakeholder comments to be returned within 2 weeks.
Summary Memo – Existing Transit Routes (including Alignment and Ridership) and Any Existing and/or Abandoned Infrastructure within the Metropolitan Area	Digital (Word/PDF) *Draft and Final, with one consolidated set of comments*	» Data, analysis, and findings related to existing transit corridors and existing or abandoned infrastructure. » Level of Detail: Up to 8 pages, including tables and images. » Notes/Assumptions: ▪ Data needed to assess ridership to be provided by Fresno COG or FAX. ▪ Latest route data assumed to be provide by FAX. ▪ For the assessment of infrastructure, up to 3 locations along primary transit corridors likely to be included in the Universe of Corridors will be examined as representative samples for that corridor. Up to 8 corridors in total will be examined. ▪ Assumes client/stakeholder comments to be returned within 3 weeks.

Task 1 (Review Existing Plan, Policies, and Infrastructure Conditions) Deliverables		
Deliverable	*Format*	*Content/Level of Detail*
Project Purpose and Need Statement	Digital (Word/PDF) *Draft and Final, with one consolidated set of comments*	» Document the project purpose and need » Level of Detail: Up to 4 pages, including tables and images. » Notes/Assumptions: Assumes client/stakeholder comments to be returned within 2 weeks.
Alternative Screening Criteria Memo	Digital (Word/PDF) *Draft and Final, with one consolidated set of comments*	» Final screening criteria for: 1) Screening from Universe of Corridors to Remaining Corridors; 2) LRT System Alternatives, Initial Project/LRT Pilot). » Level of Detail: Up to 5 pages, including tables and images. » Notes/Assumptions: ▪ Assumed up to up to 5 distinct main criteria, each with up to 3 distinct sub-criteria) for each screening process. ▪ Assumes client/stakeholder comments to be returned within 2 weeks.
Task 2 (Collaboration and Community Engagement) Deliverables		
No AECOM deliverables are identified for Task 2 as AECOM will be in a support role. It is assumed all deliverables related to Task 2 will be produced by the City of Fresno and/or Fresno COG		
Task 3 (Preliminary Operations Plan and Ridership Demand Modeling) Deliverables		
Deliverable	*Format*	*Content/Level of Detail*
Corridor Screening Memo	Digital (Word/PDF) *One round of consolidated comments*	» Corridors identified in previous plans and studies. » Market assessment approach and key findings. » Final Universe of Corridors. » Fatal flaw analysis and screening to Remaining Corridors. » Level of Detail: Up to 20 pages, including tables and images. » Notes/Assumptions: Assumes client/stakeholder comments to be returned within 3 weeks.
Preliminary Operations Plan – LRT System Alternatives	Digital (Word/PDF) *One round of consolidated comments*	» Initial Analysis and key findings from the following technical tasks for the Remaining Corridors: ▪ Horizontal and vertical alignment planning (right-of-way, grade separations, etc.). ▪ Traffic evaluation (AADT, high-level traffic impacts, multi-modal safety issues, signal priority opportunities, etc.). ▪ Operations and service planning (general route and stations, estimated running times, required fleet size, facility locations, etc.). ▪ Ridership demand forecasting. » Analysis and key findings from the following technical tasks for the LRT System Alternatives: ▪ Refinement of analysis done on the Remaining Corridors as necessary. Traffic evaluation (Synchro model outputs, etc.). ▪ Operations and service planning (service concept and approach, conceptual timetable, connecting transit services, fare collection approach, etc.). ▪ Ridership demand forecasting. » Level of Detail: Level of Detail: Up to 20 pages, including tables and images. » Notes/Assumptions: Assumes client/stakeholder comments to be returned within 3 weeks.

Task 3 (Preliminary Operations Plan and Ridership Demand Modeling) Deliverables *(continued)*		
Deliverable	*Format*	*Content/Level of Detail*
Preliminary Operations Plan – Initial Project/LRT Pilot	Digital (Word/PDF) *One round of consolidated comments*	» General description of technical elements of the Defined Initial Project/LRT Pilot: ▪ Conceptual operations and service plan for the Initial Project/LRT Pilot (route and stations, estimated running times, required fleet size, facility locations, etc). ▪ Development of a conceptual fare table for the Defined Initial Project/LRT Pilot to determine a high-level estimate of potential revenue generation based on the ridership done in Task 3.4.3. ▪ Horizontal and vertical alignment. ▪ Traffic context (traffic signals, TSP locations, etc. ▪ Forecasted ridership. » Conceptual operations and service plan for the Initial Project/LRT Pilot (route and stations, estimated running times, required fleet size, facility locations, etc.) » Level of Detail: This is a refinement of Preliminary Operations Plan done for the LRT System Alternatives, utilizing that data. Some data to be added to the Plan (see bullets above). A new section of the original Plan will be added for the Defined Initial Project/ LRT Pilot. Up to 12 additional pages, including tables and images. » Notes/Assumptions: ▪ Revenue forecasts from estimating revenue from a conceptual fare table will be conceptual and preliminary in nature and will need to go through several iterations and refinement in further phases before a formal decision is made to initiate operations. Revenue forecasts will not be investment grade. ▪ Assumes client/stakeholder comments to be returned within 3 weeks.
Ridership Demand Modeling Report	Digital (Word/PDF) *One round of consolidated comments*	» Technical approach and data sources. » Summary tables of forecasts. » List of ridership assumptions. » Key findings from ridership modeling. » Level of Detail: Up to 15 pages, including summary tables. » Notes/Assumptions: ▪ Revenue forecasts connected to this ridership work (i.e. conceptual fares multiplied by ridership estimates) will be conceptual and preliminary in nature and will need to go through several iterations and refinement in further phases before a formal decision is made to initiate operations. Revenue forecasts will not be investment grade. ▪ Assumes client/stakeholder comments to be returned within 3 weeks.
Transit Technology Memo	Digital (Word/PDF) *One round of consolidated comments*	» Potential technology options and key characteristics (purpose, operating environment, capacity, development potential, costs, etc.). » Recommended technology by corridor. » Level of Detail: Up to 12 pages, including tables and images. » Notes/Assumptions: Assumes client/stakeholder comments to be returned within 3 weeks.
LRT System Alternatives Screening Memo	Digital (Word/PDF) *One round of consolidated comments*	» Screening process for the LRT System Alternatives. » Description of the Preferred LRT System Alternatives. » Level of Detail: Up to 12 pages, including tables and images. » Notes/Assumptions: Assumes client/stakeholder comments to be returned within 3 weeks.
Project Definition Memo	Digital (Word/PDF) *One round of consolidated comments*	» Description of the Initial Project/LRT Pilot and associated analysis and key findings: ▪ Alignment planning refinements. ▪ Operations and service planning refinements. ▪ Ridership demand forecasting refinements. » Level of Detail: Up to 8 pages, including tables and images. » Notes/Assumptions: Assumes client/stakeholder comments to be returned within 3 weeks.

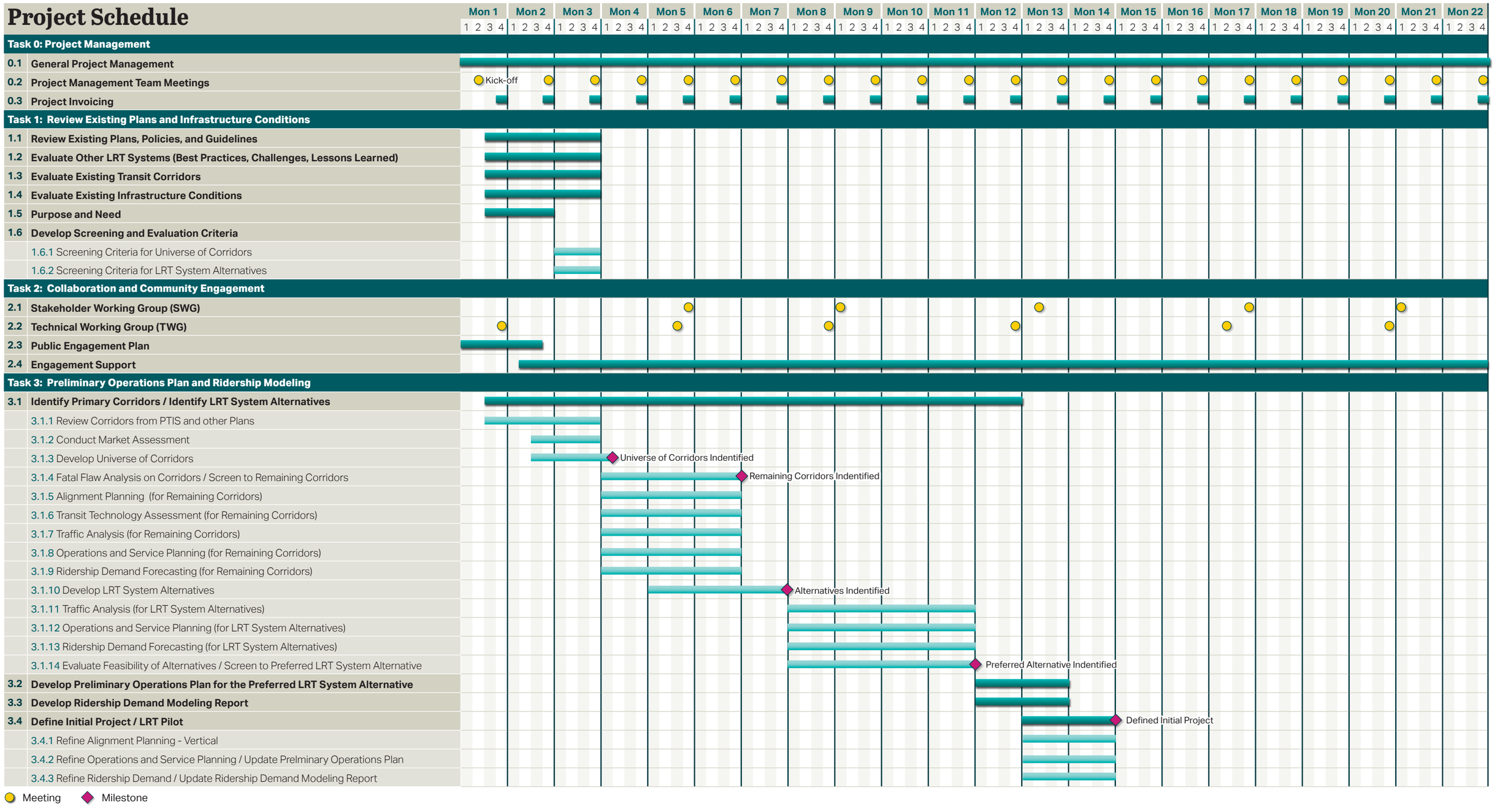
Task 4 (Station Siting Analysis and Environmental Screening) Deliverables		
Deliverable	*Format*	*Content/Level of Detail*
Station Siting Analysis Memo	Digital (Word/PDF) *One round of consolidated comments*	» Site selection evaluation criteria. » General station locations (neighborhood-level) and infrastructure needs. » Siting analysis results and key findings for the Remaining Corridors. » Siting analysis results and key findings for the Initial Project/LRT Pilot. » Level of Detail: Up to 20 pages, including tables and images. » Notes/Assumptions: Assumes client/stakeholder comments to be returned within 3 weeks.
Land Use Evaluation Memo	Digital (Word/PDF) *One round of consolidated comments*	» General approach and data sources. » Analysis and key findings from each stage of the planning process: ▪ Initial survey (for the fatal-flaw analysis). ▪ Comprehensive evaluation (for the LRT System Alternatives). » Level of Detail: Up to 20 pages, including tables and images » Notes/Assumptions: Assumes client/stakeholder comments to be returned within 3 weeks.
Environmental Screening Memo	Digital (Word/PDF) *One round of consolidated comments*	» General approach and data sources » Analysis and key findings from each stage of the planning process: ▪ Initial survey (for the fatal-flaw analysis) ▪ Comprehensive evaluation (for the LRT System Alternatives) » Level of Detail: » Notes/Assumptions:
Task 5 (Develop Preliminary Capital and Operational Cost Estimates) Deliverables		
Deliverable	*Format*	*Content/Level of Detail*
Preliminary Capital and Operational Cost Estimate Memo	Digital (Word/PDF) *One round of consolidated comments*	» General approach and data sources. » Selected cost models and key assumptions and refinements (e.g., unit costs, etc.). » Analysis and key findings from each stage of the planning process: ▪ Remaining Corridors. ▪ LRT System Alternatives. ▪ Initial Project/LRT Pilot. » Level of Detail: Up to 6 pages of narrative and summary tables with unit cost tables as back for the LRT System Alternatives and Initial Project/LRT Pilot. » Notes/Assumptions: Any opinions regarding capital and operations costs provided by AECOM represent AECOM's good faith professional judgment in light of its experience, knowledge and the information reasonably available to AECOM at the time of preparation of the opinion. However, since AECOM has no control over the cost of labor, materials, equipment, or services provided by third parties, construction contractor's means and methods of determining prices, competitive bidding, volatile market conditions, AECOM, its directors, officers and employees and subconsultants do not make any guarantees or warranties that proposals, bids, or actual capital cost will not vary from such opinions of probably capital costs. AECOM accepts no responsibility for any loss or damage arising therefrom or in any way related thereto. Any reliance upon such opinions, whether by Client or third parties, do so at the relying party's own sole risk.
Return on Investment Memo	Digital (Word/PDF) *One round of consolidated comments*	» General approach and data sources. » Selected impacts and metrics (e.g., property values, public tax revenues, job creation, environmental and public health outcomes). » Results and key findings. » Level of Detail: Up to 8 pages, including tables and graphics. » Notes/Assumptions: ▪ This will be qualitative in nature with some data utilized from the background research in Task 1. ▪ See general assumptions and limiting conditions below.

Task 6 (Implementation Strategy and Phasing Plan) Deliverables		
Deliverable	*Format*	*Content/Level of Detail*
Implementation and Phasing Plan	Digital (Word/PDF) *One round of consolidated comments*	» Funding assessment (potential public and private funding sources, recommended/ competitive grants, conceptual fare elasticity evaluation, etc.). Will also summarize high-level, conceptual revenue estimates from final operations plan and of capital and operations costs estimates from Task 5. » Implementation strategy (roadmap by project phase: planning, design, engineering, environmental review, right-of-way acquisition, vehicle selection, procurement, construction, service initiation) » Phasing analysis for Initial Project/LRT Pilot and for the Preferred LRT System Alternative » Level of Detail: Up to 20 pages, including tables and graphics » Notes/Assumptions: Revenue forecasts used in this deliverable will be conceptual and preliminary in nature and will need to go through several iterations and refinement in further phases before a formal decision is made to initiate operations. Revenue forecasts will not be investment grade.
Task 7 (Develop the Draft Plan and Publish the Draft for Public Review) Deliverables		
Deliverable	*Format*	*Content/Level of Detail*
Draft Plan	Digital (Word/PDF) *One round of consolidated comments*	» Summary of analysis and key findings from each stage of the planning process and stakeholder and public engagement activities » Level of Detail: Up to 125 pages plus technical appendices as appropriate. Note, the content will be built on the foundations of the previous memo and report deliverables. This Draft Plan will be synthesis of previous information with the addition of a set of recommendations. An Executive Summary will be provided to facilitate distribution to key stakeholders. » Notes/Assumptions: Assumes client/stakeholder comments to be returned within 3 weeks.
Community Comment Record and Response	Digital (Word/PDF)	» Comment and response matrix by commenter » Level of Detail: This will entail a matrix of comments, which identify the name of the commenter, along with comment. Up to 15 pages in comments, with and additional 2 pages to document themes. » Notes/Assumptions: Assumes client/stakeholder comments to be returned within 2 weeks.
Draft Final Plan	Digital (Word/PDF) *One round of consolidated comments*	» Same content plus any edits as Draft Plan » Level of Detail: See the Draft Plan deliverable in this Task 7. This will contain both minor edits and some significant revisions, so as up to 15 pages of new content. » Notes/Assumptions: Assumes client/stakeholder comments to be returned within 3 weeks
Task 8 (Presentation & Public Board Appearance) Deliverables		
Deliverable	*Format*	*Content/Level of Detail*
PowerPoint Presentation	Digital (Word/PDF) *One round of consolidated comments*	» Distilling the most important information, findings and recommendations from the Draft Final Plan » Level of Detail: The PowerPoint presentations will be sized appropriately for a presentation time of 10 to 15 minutes for each meeting with technical appendices as appropriate. » Notes/Assumptions: ▪ Assumes client/stakeholder comments to be returned within 3 weeks. ▪ Assumes only slight variations in slide content for the different meetings.
Final Plan	Digital (Word/PDF) *One round of consolidated comments*	» Same as Draft Plan » Level of Detail: See the Draft Final Plan deliverable in Task 7. This will be minor edits that document. » Notes/Assumptions: Assumes client/stakeholder comments to be returned within 2 weeks.

3. Schedule

The AECOM team has developed a schedule that reflects the iterative nature of conducing a planning and feasibility process that narrows down from the system level to the project definition. This requires utilizing the various planning tasks at each stage of the study.

Figure 10. Schedule



Project Schedule

		Mon 1	Mon 2	Mon 3	Mon 4	Mon 5	Mon 6	Mon 7	Mon 8	Mon 9	Mon 10	Mon 11	Mon 12	Mon 13	Mon 14	Mon 15	Mon 16	Mon 17	Mon 18	Mon 19	Mon 20	Mon 21	Mon 22
		1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
Task 4: Station Siting Analylsis and Environmental Screening																							
4.1	**Station Siting Analysis**																						
	4.1.1 Develop Station Siting Evaluation Criteria																						
	4.1.2 Conduct Initial Station Siting Analysis - General Location (for Remaining Corridors)																						
	4.1.3 Conduct Station Siting Analysis - Spatial (for Defined Project/LRT Pilot)																						
4.2	**Comprehensive Land Use Evaluation**																						
	4.2.1 Conduct Initial Land-Use Survey (for Fatal Flaw Analysis)																						
	4.2.2 Conduct Comprehensive Land Use Evaluation (for LRT System Alternatives)																						
4.3	**Environmental Screening Analysis**																						
	4.3.1 Conduct Initial Environmental Issues Survey (for Fatal Flaw Analysis)																						
	4.3.2 Conduct Initial Environmental Issues Survey (for LRT System Alternatives)																						
Task 5: Preliminary Capital and Operational Cost Estimates																							
5.1	**Capital Cost Estimation**																						
	5.1.1 Conduct ROM Capital Cost Estimating (for Remaining Corridors)																						
	5.1.2 Refine ROM Capital Cost Estimating (for LRT System Alternatives)																						
	5.1.3 Conduct Conceptual-Level Capital Cost Estimating (for Defined Project / LRT Pilot)																						
5.2	**Operations and Maintenance Cost Estimation**																						
	5.2.1 Conduct ROM Operating Cost Estimating (for Remaining Corridors)																						
	5.2.2 Refine ROM Operations Cost Estimating (for LRT System Alternatives)																						
	5.2.3 Conduct Conceptual-Level Operations Cost Estimating (for Defined Project / LRT Pilot)																						
5.3	**Return on Investment Analysis**																						
Task 6: Implementation Strategy and Phasing Plan																							
6.1	Funding Assessment																						
6.2	Implementation Strategy																						
6.3	Phasing Plan																						
Task 7: Draft Plan																							
7.1	Draft Plan																			Draft Plan			
7.2	Draft Final Plan																						
Task 8: Presentation and Public Board Appearance																							
8.1	**Meeting Material Preparation**																						
8.2	**Board Presentations**																						
8.3	**Final Plan**																						Final Plan

Meeting Milestone

E. Management Approach

E. Management Approach

AECOM recognizes that our success relies on delivering excellence in planning and engineering services. Our work must be well managed and respect the resources allocated for the LRT Study. Therefore, our Project Management Plan's (PMP) main goal will be to equip the project team with the necessary resources and tools to successfully complete each task within the technical scope, budget, and schedule.

Project Management Plan

A clearly defined and organized project-specific PMP will be developed, which will be a blueprint for a successful undertaking. The PMP will incorporate standard internal practices from AECOM and its subcontractors and meld them into a single plan.

The PMP will provide directions concerning the team's internal operations, policies, and procedures; an organizational plan outlining the team and its interface with Fresno COG staff; the roles and responsibilities of each team member; and a project communications matrix.

The PMP also will include a description of the scope of services by project task and a system for reporting work progress. In preparing the PMP, our team will be cognizant of any unforeseen changes to team organization, procedures, and protocols that may arise and will be sufficiently flexible to allow additions and revisions in later phases. Our PMP rests on the following four key assumptions:

- **One team:** Fresno COG, Fresno Area Express (FAX) and the consultant will be the team for this project. We will use our monthly meetings with Fresno COG's Project Manager to plan and review strategy, tactics, and results.
- **One project manager:** Although the AECOM team will include many seasoned managers and subject matter experts, the primary contact person and Project Manager will be **Daniel Krause**. He will guide and be responsible for project team performance. Like other management team members, Daniel is prepared to make this assignment his priority and will devote most of his time to managing this project.
- **Strong project controls**: A broad, powerful set of project controls will be instituted from the project's start to support managing the schedule and budget and assure timely, quality deliverables.
- **Continuous communication:** We understand communication is a central element in a successful project. Throughout the project's course, continued interaction with Fresno COG will be maintained through conferences, progress reports, and consultation to review the project's progress. The ultimate success of large projects depends on clear, decisive, and strong project management, coupled with leadership and a working environment that fosters teamwork and reflects client values.

Monthly Progress Reports

The AECOM team will track and report progress against the approved project baseline schedule at the task and subtask level. We will provide Fresno COG with a monthly report, containing a cost and schedule estimate to complete. The monthly report will include:

- A list of major accomplishments
- Issues requiring resolution
- Any proposed changes to the cost and/or schedule
- An estimated percentage completed for each task
- The estimated cost to complete each task
- The actual cost expenditure for each task

Project Schedule

AECOM proposes a 22-month schedule from NTP to complete the LRT Feasibility Study. A Gantt chart schedule will be submitted within 30 days from NTP as required by the RFP. The major Work Breakdown Structure (WBS) includes all major milestones and deliverables. The project schedule will be reviewed monthly and will be provided to Fresno COG's project manager as part of the monthly progress report. The proposed schedule, expressed in months from NTP, will be converted to a calendar schedule upon project start-up and presented as part of the PMP submission.

Five Key Project Management Principles

The management approach that we will employ is based on certain principles that have repeatedly been proven to be the keystones of success in achieving a fully integrated team effort; high technical excellence; adherence to budgets and schedules; and interagency coordination and public acceptance.

Overall Project Management and Quality Control

We define quality as meeting specified requirements and providing our client with high-quality advice and products that allow effectively moving the project forward to implementation. Therefore, quality is a function of project management, cost control, technical scope, document control, and quality assurance planning.

AECOM will assign a quality representative to organize, develop, and submit a project-specific quality management plan (PQMP), a quality assurance (QA)/quality control (QC) plan covering all project activities, including general tasks, work integration, and inter-discipline review.

The PQMP will describe the controls to be implemented to verify compliance, identify staff and discipline reviewers, and specify the deliverables subject to the QA procedures. We will establish and maintain procedures to control and verify that relevant regulatory agencies' requirements are met. The plan will include the team's process for verifying quality in proofing data, the method for creating data, standardization, and author identification.

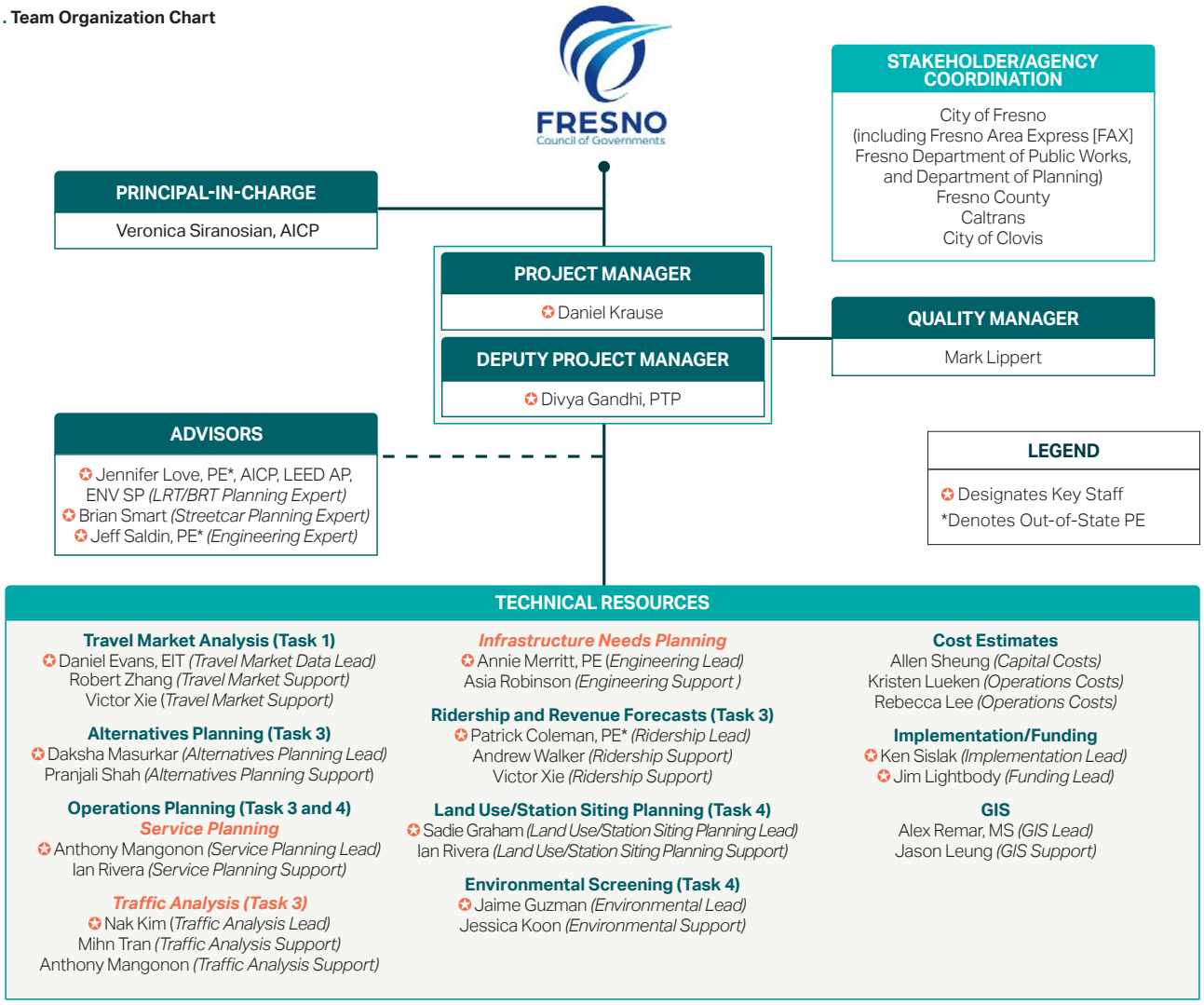
As part of the QA/QC program, our team will implement specific review procedures to analyze the work products for the entire consultant team, including subcontractors. Control procedures will be documented and will include provisions for at least the following:

- Reviewing, identifying, and documenting inputs.
- Verifying analysis inputs, applicable codes, and standards of cities, counties, states, and the Regional Transit Authority as well as other pertinent quality requirements, so that they are correctly translated into work products.
- Mandating review for planning documents by AECOM's QA/QC managers, to identify and document quality standards appropriately.
- Assuring that analyses are performed in a planned, controlled, and documented manner.
- Assuring that invoices are correct and current.

Roles and Responsibilities

The PQMP will be managed collaboratively by the Fresno COG, the City of Fresno Department of Transportation, and the consultant team, working in close coordination with local jurisdictions, regional partners, and community stakeholders. The consulting team will organize the work into several interrelated tasks. The key team members associated with those tasks are shown in the organization chart (Figure X) and introduced briefly in the following pages. **Resumes** for all staff are provided in **Section J. Summary of Qualifications**.

Figure 11. Team Organization Chart



Note: Anthony Mangonon will serve as the Overall Planning Lead, and will coordinate the planning effort with the Alternatives Planning, Traffic Analysis, Ridership,Land Use/Station Siting Lead, Environmental Lead, Funding, and Implementation Leads.

Key Staff

"I am excited to have the opportunity to develop a plan for Light-Rail and other high-quality transit in the Fresno region, and look forward to working with Fresno Council of Governments, FAX, project partners and the community on this exciting study!" **– Daniel Krause**

Daniel Krause | Project Manager

Daniel will be the primary point of contact, for clear communication, alignment on objectives, and timely updates throughout the Study. He will oversee the scope, schedule, and quality control while coordinating resources to deliver all project requirements efficiently, to the Fresno COG's satisfaction. He has a true understanding of the passenger rail system in Central California—its performance, challenges, and future plans—to inform decision-making for future rail implementation. He is a transportation planner with a focus on rail infrastructure planning and design for intercity, commuter, HSR, and transit systems.

Daniel has a strong background in urban planning, urban design, and transit-oriented development, enabling him to work effectively with cities and other jurisdictions to integrate rail/transit infrastructure and stations in ways that enhance the urban fabric and community life. Daniel's work with San Joaquin Regional Rail Commission/San Joaquin Joint Powers Authority has helped to advance the passenger rail network throughout the Central Valley.

Representative projects include:

- Butte County Association of Governments, North Valley Passenger Rail Strategic Plan | Project Manager
- San Joaquin Regional Rail Commission, ACE Ceres-Merced Extension Project | Project Manager
- Washington State Department of Transportation (WSDOT), Amtrak Cascades Service Development Plan (Planning/Feasibility) | Project Manager/Planning Lead

Divya Gandhi, PTP | Deputy Project Manager

Divya will support Daniel by helping maintain client communication and alignment on project objectives. They will manage day-to-day coordination of technical tasks, monitor progress, and assist in delivering high-quality outputs on schedule and within scope.

Divya is a transportation planner and project manager who helps cities, counties, and transit agencies plan and build equitable, affordable, accessible, and safe transportation systems. She has experience in managing and leading development of multimodal, high-capacity transit, active transportation, parking management, and systemic safety plans for cities, counties, and transit agencies. Furthermore, she has been involved in drafting and preparing winning grant applications as well as conducting and facilitating public and stakeholder outreach for various planning studies.

Recognized as a 2024 Emerging Leader in Transportation by the New York University Rudin Center for Transportation, Divya is passionate about advancing innovative and inclusive solutions in the transportation industry.

Representative Projects

- LA Metro, Vermont Transit Corridor | Key Planning Staff
- Alameda CTC, East Oakland and Central County Comprehensive Multimodal Corridor Plan (CMCP) | Key Planning Staff
- Tri-Valley – San Joaquin Valley Regional Rail Authority, Valley Link PA-ED Environmental Technical Studies NEPA – CEQA | Environmental Coordinator & Key Planning Staff

Subject Matter Experts

Daniel will be supported by Subject Matter Experts, selectively engaged to provide strategic guidance and share lessons learned from their extensive industry experience. Their involvement will be focused on critical decision points—such as validating key assumptions, advising on best practices, and ensuring alignment with proven approaches—while day-to-day delivery will remain the responsibility of the dedicated project team. These include:

Jeff Saldin, PE
Engineering Expert

Jeff is a Senior Transit Engineer with more than 17 years of experience in various engineering roles on transit planning, design, construction, and analysis projects for streetcar, light rail, commuter rail, automated people movers, and bus rapid transit.

Jeff has a background in light rail and streetcar track design and is experienced in leading the design of transit projects and multi-disciplinary coordination, from design-builds to preliminary design, conceptual layouts, alternatives development, and impact analysis. He also is experienced with cost estimation in the Federal Transit Administration's Standard Cost Category format.

Representative Projects

- Valley Metro, West Phoenix High-Capacity Transit Alternatives Analysis | Engineering Lead
- City of Phoenix, 35th Avenue / Van Buren Street Bus Rapid Transit Preliminary Engineering | Segment Lead
- MetroLink, Northside-Southside LRT 15% Engineering | Design Lead

Jennifer Love, PE, AICP, LEED AP, ENV SP
LRT/BRT Planning Expert

Jennifer has experience as a planner, engineer, and project manager for various transit, multimodal transportation, managed lanes and congestion pricing, urban design, and traffic engineering projects. Her skills encompass all levels of project development, from planning, policy, and public involvement, to design and construction.

Her versatility and skills enable her to integrate various disciplines and reconcile the needs of diverse stakeholders. She recognizes the link between transportation, sustainability, and urban design, as well as between health and community infrastructure design. She facilitates this by developing access and mobility solutions to enhance community connectivity while improving urban spaces.

Representative Projects

- Valley Metro West Phoenix, High Capacity Transit Alternatives Analysis (AA) | Project Manager
- City of Phoenix, 35th Ave BRT AA and Preliminary Engineering | Planner
- City of Las Vegas, Charleston Boulevard, Corridor Study | Transportation Manager

Brian Smart
Streetcar Planning Expert

Brian is a "Top 40 under 40" (Mass Transit Magazine, 2014) award-winning Transportation Planning Project Manager. He has more than 20 years of comprehensive planning experience and a demonstrated track record of providing solutions to complex transportation challenges.

He has extensive experience with Federal Transit Administration (FTA) and Federal Railroad Administration (FRA) projects, from planning through post-NEPA environmental monitoring, compliance, and project construction oversight. Before joining AECOM, he served as an Environmental Protection Specialist for FTA Region IV, where he primarily was responsible for environmental planning guidance and NEPA compliance for all transit projects and programs in the region.

Representative Projects

- Atlanta BeltLine, Inc., Alternatives Analysis and Environmental Assessments for Atlanta Streetcar System Plan | Project Manager.
- MARTA, Atlanta Streetcar Environmental Assessment | Environmental Reviewer
- Jacksonville Transit Authority, Bus Rapid Transit Corridor Planning and NEPA | Environmental Reviewer

Technical Team Leads

Project Manager, **Daniel Krause**, will organize and oversee the technical team, verifying they are engaged at the appropriate stages of the feasibility analysis to provide information critical to key decisions while managing the team's effort and maintaining the project timeline.

Daniel Evans
Travel Market Data Lead

Daniel leads AECOM's passenger rail ridership forecasting practice and supports various analytics projects. His professional experience includes travel demand modeling, transit and rail ridership forecasting, and travel market analysis.

He has supported rail studies for various state's Departments of Transportation, and he was the task lead for a market assessment of the Federal Railroad Administration's study of Amtrak's long-distance services. Daniel has increasingly supported analytics projects at AECOM.

Representative Projects

- Virginia Department of Rail and Public Transportation, Richmond Broad Street BRT Project | Analyst
- Federal Transit Administration (FTA) – Oversight of Project Forecasts, VTA El Camino Real BRT | Analyst
- Amtrak, Daily Cardinal Service Development Plan, New York City and Chicago via Washington, DC | Deputy Project Manager and Transportation & Financial Planning Lead

Daksha Masurkar
Alternatives Planning Lead

Daksha is a professional transportation planner with a focus on public transit. She is passionate about accessibility-based planning and better integration of land use and transit. She has led and supported numerous transit projects, including comprehensive transportation/transit plans, LRT design, BRT network corridor planning, on-demand/microtransit assessments, transit-oriented development, and transit feasibility studies.

Daksha currently supports transit projects, working with agencies to understand community needs, communicating with stakeholders, and applying the various technical and operational requirements unique to different communities.

Representative Projects

- Valley Metro, West Phoenix High-Capacity Transit Alternatives Analysis | Alternatives Analysis Lead
- Maricopa Association of Governments (MAG), Regional BRT Feasibility Study - Phoenix Metro | Deputy Project Manager
- Valley Metro, Phoenix South Central Light Rail Transit | Transit Planner

Anthony Mangonon
Overall Planning Lead

Anthony is a transportation planner with extensive experience in transit planning, transportation master planning, transportation-related environmental review, and related fields. His primary interests lie in transit planning/operations, including conceptual engineering/design (feasibility studies, technology/vehicle/right-of-way selection, capital cost estimation), service planning (route design, scheduling, fleet planning, and O&M/revenue analysis), ridership forecasting, and station area planning (transit-oriented developments). His portfolio in these fields includes projects for intercity rail (conventional and HSR), as well as urban and regional transit (LRT, BRT, and ferry), and he has a strong foundation in global best practices and precedents in these areas.

Representative Projects

- Butte County Association of Governments, ACE Extension to Butte County - North Valley Passenger Rail Study | Planning Lead
- Sacramento Regional Transit District, Green Line Light Rail Extension to Sacramento International Airport | Supporting Analyst and Planner
- Sacramento Regional Transit District, Regional Network Integration Planning | Lead Analyst and Planner

Nak Kim, PE
Traffic Analysis Lead

Nak is a senior engineering manager with 26 years of progressive experience in traffic and transportation engineering. His primary focuses are on traffic engineering design, studies, analysis, and modeling. Nak's project experience includes traffic operational analysis; traffic impact studies; corridor studies; transportation planning; forecasting; parking studies; pedestrian/bicycle studies; vehicle miles traveled analysis; traffic management plans; and traffic simulation modeling. Nak is a key member and technical lead of the AECOM Traffic Team for California. He has successfully completed a wide variety of traffic and transportation engineering projects for several local municipalities, county and state Departments of Transportation, and transit agencies.

Representative Projects

- Transbay Joint Powers Authority, Transbay Phase 2 Portal Tunnel PMPC 2024-2033 | Senior Traffic Manager
- Orange County CA Transportation Authority, Irvine Metrolink Station Improvements | Senior Traffic Manager
- City/County Association of Governments of San Mateo County (C/CAG), C/CAG-VTA Travel Demand Model in Support of Transportation Analysis and Planning in San Mateo County | Senior Traffic Manager

Technical Team Leads, cont.

Sadie Graham
Land Use Planning/Station Siting Lead

Sadie is a program manager with a broad range of experience in transportation and urban planning. She is dedicated to advancing infrastructure initiatives that drive meaningful improvements in quality of life and sustainability. With extensive experience leading large-scale rail and transit programs, she brings a strategic, solutions-oriented mindset to every project. Sadie excels in stakeholder engagement and in guiding multi-disciplinary teams through complex challenges, consistently delivering impactful and future-ready results. Her leadership reflects a deep commitment to creating resilient, equitable, and sustainable transportation systems.

Representative Projects

- San Francisco Bay Area Rapid Transit, Link21 Program | Managing Director
- City of Menlo Park, El Camino Real Corridor and Downtown Vision Plan | Lead Planner
- BART, El Cerrito del Norte Station Modernization | Project Manager

Patrick Coleman, PE
Ridership Lead

Patrick has more than 33 years of experience in travel forecasting, ridership, and revenue estimation; evaluation of transportation projects; and transportation alternatives development and analysis. He has developed project forecasts ranging from feasibility studies through the Federal Transit Administration's (FTA) Capital Investment Grant (CIG) process in Dallas, Los Angeles, Austin, Buffalo, Columbus, Miami, Madison, Milwaukee, Phoenix, Chapel Hill (NC), and Lansing (MI). He has good working relationships with FTA staff and is responsible for ridership forecasts, supporting Full-Funding Grant Agreements in the Capital Investment Grants program.

Representative Projects

- Los Angeles County Metropolitan Transportation Authority, Vermont Transit Corridor Study | Ridership Forecasting Lead
- Valley Metro, West Phoenix High Capacity Transit Alternatives Analysis | Ridership Forecasting Lead
- Santa Clara Valley Transportation Authority, On Call Advisory and Support Services for the Silicon Valley Rapid Transit Project (Phase 2) New Starts Submission | Ridership Task Manager

Annie Merritt, PE
Engineering Lead

Annie is a professional civil engineer with 22 years of experience in project management, planning, analysis, and design for transit and transportation agencies, as well as for federal, commercial, residential, and military installations worldwide. She has provided project management and civil engineering support for BRT, LRT, and freight rail projects. She has a background in transit infrastructure design and construction, with an emphasis on busway modifications to support both dedicated and mixed-use bus lanes, as well as supportive stormwater management, utility improvements, and water quality designs.

Annie is proficient in AutoCAD, MicroStation, ICPR, StormCAD, and other software tools used to create design construction documents that result in efficient and cost-effective installations.

Representative Projects

- City of Los Angeles, Vermont Transit Corridor Project | Engineering Design Manager
- City of Calgary, Green Line Light Rail Transit (LRT) Alternative Assessment | Alternative Assessment Task Lead
- Los Angeles County, West Santa Ana Branch Corridor Project | Advanced Conceptual Engineering Support

Jaime Guzman
Environmental Lead

Jaime is an urban and environmental planner with over 17 years of experience in Planning with experience in both public and private sectors. His experience includes managing the preparation of EIRs, MNDs, EAs, EISs, Initial Studies, and other CEQA and NEPA documents for various projects. Jaime has a strong background in transportation planning, environmental justice analysis, GIS mapping, demographic and socioeconomic analysis, mitigation monitoring, presentations to decision-makers & communities, and staff training.

Representative Projects

- Los Angeles County Metropolitan Transportation Authority, Project Manager, Eastside Extension Phase 2 EIR Project | Project Manager
- Sepulveda Transit Corridor Project, Los Angeles County Metropolitan Transportation Authority | Environmental Manager
- Los Angeles County Metropolitan Transportation Authority, Environmental Reviewer, Crenshaw North Corridor Project | Los Angeles, CA. Environmental Reviewer

Technical Team Leads, cont.

Jim Lightbody
Funding Lead

Jim specializes in transportation and land use planning, working closely with cities and transportation agencies. At AECOM, Jim is a Senior Consulting Manager, focused on the planning, design, and operation of multi-modal transit systems, and on funding strategies. Jim specializes in transportation corridor studies and bus and commuter rail planning. Before joining AECOM, he served for 33 years as a senior manager with the Santa Clara Valley Transportation Authority, most recently as Deputy Director for Planning and Development.

Representative Projects

- Butte County Association of Governments (BCAG), North Valley Passenger Rail Strategic Plan | Funding Lead
- Shasta County Association of Governments (SCAG), North State Intercity Bus to Rail Plan | Governance Task Lead.
- City of Mountain View, Shoreline Transportation Study | Project Manager

Ken Sislak
Implementation Lead

For the last 20 years, Ken has led many multi-disciplinary, Federal Transit Administration New Start transit projects, including streetcar projects in several cities. His background allows him to guide project managers through complex system challenges, including planning, transit operations and traffic impacts, financial planning, environmental documentation, and community involvement. Ken specializes in collaborative planning methods, with an emphasis on cost-effective design solutions. Before joining the consulting industry, Ken was Director of Rail Transportation for the Greater Cleveland Regional Transit Authority and successfully managed the transition from historic Presidents Conference Committee streetcars to modern light-rail transit operations on the Blue and Green Lines and acquired a new fleet of railcars for the Red Line metro operation.

Representative Projects

- Sacramento Regional Transit, Green Line Extension to the Airport | Project Director
- City of Grand Rapids, Streetcar Feasibility Study | Project Director and Officer-in-Charge
- Utah Transit Authority, Salt Lake City Draper Transit Corridor Project | Project Manager

F. Budget and Billing Format

F. Budget and Billing Format

AECOM's Accounting Procedures

Segregation of Costs

» Direct vs. Indirect Costs: AECOM utilizes a robust accounting system that distinctly segregates direct costs—expenses directly attributed to a specific project—from indirect costs such as overheads and general administrative expenses. This clear separation is essential for accurate reporting and cost tracking in compliance with relevant regulations.

» Regulatory Compliance: The methodology for segregating these costs aligns with industry standards and regulatory requirements, ensuring that financial records accurately reflect the true cost allocations for each project.

Record Keeping and Retention

» Comprehensive Documentation: AECOM's procedures mandate that all financial transactions are supported by detailed and accurate bookkeeping. This includes maintaining books, documents, papers, and complete accounting records that document each project's financial activities.

» Retention Period: In adherence to applicable laws, these records are preserved for a minimum period of three years from the date of the final payment. This retention period is crucial for audits, financial reviews, and regulatory examinations.

» Subcontractor Compliance: Not only does AECOM commit to these practices internally, but we also require our subcontractors to maintain similar rigorous accounting measures, ensuring consistency across all levels of financial management and accountability.

Best Practices and Internal Controls

» Internal Audits and Verification: Regular audits are conducted to ensure that the segregation of direct and indirect costs is properly maintained and that all records are accurate and accessible.

» Transparency and Accountability: By adhering to these best practices and maintaining strict internal controls, AECOM ensures a high level of transparency and accountability in its financial processes, minimizing risk and promoting efficiency.

1. Method of Payment

AECOM has chosen the following method of payment:

» Actual Cost plus Fixed Fee

The remainder of requirements for this section are addressed in our Cost Proposal, which is submitted under separate cover with this Technical Proposal.

G. Insurance Requirements

This insurance certificate illustrates the requested coverage required by the Agency.

ACORD®

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 04/29/2025

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

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

PRODUCER Marsh Risk & Insurance Services CA License #0437153 633 W. Fifth Street, Suite 1200 Los Angeles, CA 90071 Attn: LosAngeles.CertRequest@Marsh.Com CN101348564-STND-GAUE-25-26	**CONTACT NAME:** Marsh | U.S. Operations **PHONE (A/C, No. Ext):** 866-966-4664 **FAX (A/C, No):** 212-948-0533 **E-MAIL ADDRESS:** LosAngeles.CertRequest@marsh.com
INSURED AECOM AECOM Technologies, Inc. 1111 3rd Avenue, Suite 1600 Seattle, WA 98101	**INSURER(S) AFFORDING COVERAGE** — **NAIC #** **INSURER A :** ACE American Insurance Company — 22667 **INSURER B :** N/A — N/A **INSURER C :** Illinois Union Insurance Co — 27960 **INSURER D :** **INSURER E :** **INSURER F :**

COVERAGES **CERTIFICATE NUMBER:** LOS-002809999-00 **REVISION NUMBER:**

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

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X **COMMERCIAL GENERAL LIABILITY** CLAIMS-MADE [ ] OCCUR [X] GEN'L AGGREGATE LIMIT APPLIES PER: [X] POLICY [ ] PRO-JECT [ ] LOC [ ] OTHER:			HDO G48971714	04/01/2025	04/01/2026	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 1,000,000 $ 5,000 $ 1,000,000 $ 2,000,000 $ 2,000,000
A	**AUTOMOBILE LIABILITY** [X] ANY AUTO [ ] OWNED AUTOS ONLY [ ] SCHEDULED AUTOS [ ] HIRED AUTOS ONLY [ ] NON-OWNED AUTOS ONLY			ISA H11370494	04/01/2025	04/01/2026	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000 $ $ $
	[ ] **UMBRELLA LIAB** [ ] OCCUR [ ] **EXCESS LIAB** [ ] CLAIMS-MADE [ ] DED [ ] RETENTION $						EACH OCCURRENCE AGGREGATE	$ $
A A	**WORKERS COMPENSATION AND EMPLOYERS' LIABILITY** Y / N ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? [N] **(Mandatory in NH)** If yes, describe under DESCRIPTION OF OPERATIONS below	N / A		WLR C72792300 (AOS) SCF C72792312 (WI Retro)	04/01/2025 04/01/2025	04/01/2026 04/01/2026	[X] PER STATUTE [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 2,000,000 $ 2,000,000 $ 2,000,000
C	ARCHITECTS & ENG. PROFESSIONAL LIAB.			EON G21654693 005 "CLAIMS MADE"	04/01/2025	04/01/2026	Per Claim/Agg Defense Included	2,000,000

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

EVIDENCE OF COVERAGE

CERTIFICATE HOLDER

AECOM
AECOM Technical Services
1111 3rd Avenue, Suite 1600
Seattle, WA 98101-1616

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Marsh Risk & Insurance Services

AGENCY CUSTOMER ID: CN101348564
LOC #: Los Angeles

ADDITIONAL REMARKS SCHEDULE

AGENCY Marsh Risk & Insurance Services	**NAMED INSURED** AECOM AECOM Technologies, Inc. 1111 3rd Avenue, Suite 1600 Seattle, WA 98101
POLICY NUMBER	
CARRIER / **NAIC CODE**	**EFFECTIVE DATE:**

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,
FORM NUMBER: 25 **FORM TITLE:** Certificate of Liability Insurance

Contractors Pollution Liability
Carrier: AIG Specialty Insurance Company, NAIC #26883
Policy #: CPL 1814870
Policy Term: 04/01/2025 – 04/01/2026
"Claims Made," Defense Included, Limit: $2,000,000 Per Loss/Aggregate

Cyber Liability, Carrier: Steadfast Insurance Company, NAIC #: 26387, Policy #: SPR106530307, Policy Term: 10/01/2024 - 10/01/2025, SIR: $2,500,000; Limit: $10,000,000.

H. Disadvantaged Business Enterprise (DBE) Certification

Not required per Q&A

I. Conflict of Interest

Conflict of Interest

AECOM Technical Services, Inc. ("AECOM") covenants that it has no interest, and will not have any interest, direct or indirect, which would conflict in any manner with the performance of the services required under the Fresno COG Light Rail Feasibility Study ("Fresno COG Study"). However, for transparency purposes, and out of an abundance of caution, please note the following:

- AECOM is currently providing design engineering services to the City of Fresno for the Blackstone–McKinley Burlington Northern Santa Fe Railroad Grade Separation Project ("City of Fresno Project"). The proposed light rail alignment under the Fresno COG Study will intersect with the City of Fresno Project location. AECOM's proposed team for the Fresno COG Study is entirely separate and distinct, as well as the subsequent Fresno COG Study project team, from the team delivering the City of Fresno Project.
- AECOM is a Joint Venture partner with Fluor Corporation providing Program Delivery Support Services to the California High Speed Rail Authority for the California High Speed Rail Program ("CHSR Program")." AECOM's proposed team for the Fresno COG Study is entirely separate and distinct, as well as the subsequent Fresno COG Study project team, from the team involved with the CHSR Program."

J. Summary of Qualifications

Summary of Qualifications

AECOM is a fully integrated professional and technical services firm and a national leader in planning and design of mass transit. We plan, design, and build transit and highway infrastructure. Our global staff of architects, engineers, designers, planners, scientists, and management and construction services professionals—more than 48,000 employees worldwide and 2,300 professionals in California—are working with clients and communities to develop and implement innovative solutions to the world's most complex urban challenges.

National Transit Leader

AECOM is addressing the tough transportation issues facing communities nationwide today—from maintaining compliance with changing Federal Transit Administration (FTA) guidelines to navigating the complex Capital Investment Grant program. We have a significant track record in providing engineering services and delivering award-winning designs for transit operators across North America. In 2025, we achieved ENR magazine's annual industry ranking as #1 in Transportation.

AECOM's hands-on experience in high-capacity urban transit development is nationally recognized through our engagement as the FTA's technical support advisor for the national Bus Rapid Transit (BRT) Initiative Program. AECOM assisted in developing guidance for the transit industry regarding individual BRT elements and identifying the range of impacts these elements have on ridership, costs, operating capacity, environment, and economic development.

Nationally, AECOM has been a leader in BRT research and training. A team led by AECOM developed BRT planning resources through the TRB Transit Cooperative Research Program (TCRP)Project A-23.

2025 ENR RANKINGS

AECOM is an industry leader, consistently earning top rankings in the following categories.

#1 Top 500 Design Firm

#1 Transportation

Engineering News-Record

AECOM's Urban Transit Experience

AECOM has a long and successful history in developing LRT, BRT, and streetcar projects. Our light rail, streetcar and bus rapid transit nationwide projects are shown in the map in **Figure 12.** From feasibility studies to construction management, we have been deeply involved in helping cities realize their aspirations of improving their urban mobility. AECOM's work in this field has continued to not only enhance urban mobility, but also drive economic development and environmental sustainability. Whether it's revitalizing city centers with streetcars or connecting communities with LRT or BRT systems, AECOM's multidisciplinary approach helps each project meets the unique needs of the community.

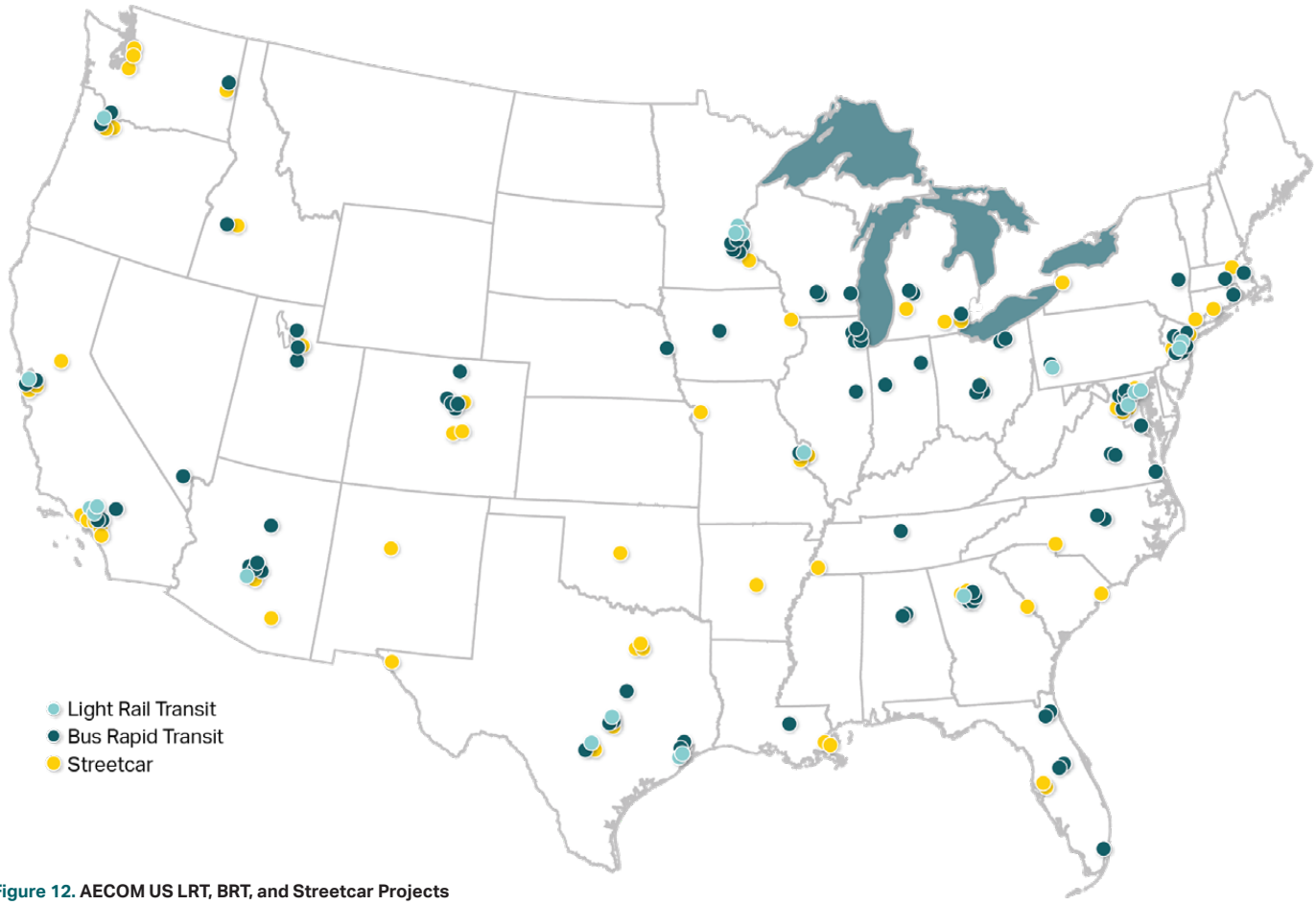


Figure 12. AECOM US LRT, BRT, and Streetcar Projects

Transforming Communities Through Innovative Transit Solutions

We are proud to be at the forefront of designing and delivering innovative transit solutions that connect communities, enhance mobility, and promote sustainable urban growth. Our extensive portfolio of LRT, BRT, and streetcar projects reflects our commitment to creating efficient, reliable, and future-ready transportation systems that meet the evolving needs of cities and their residents.

In our decades of experience, we have partnered with public agencies, transit authorities, and private stakeholders to deliver projects that have redefined how people move through urban landscapes. From the seamless integration of LRT systems into bustling city centers to the development of high-capacity BRT corridors and the revitalization of neighborhoods through modern streetcar networks, our work exemplifies innovation, technical excellence, and a deep understanding of the communities that we serve.

The following representative projects are examples of our experience with projects similar to the Fresno Metropolitan Light Rail Feasibility Study.

Valley Metro | West Phoenix High-Capacity Transit Alternatives Analysis | Phoenix, AZ

Key Staff Involved:

Jennifer Love
Patrick Coleman
Andrew Walker
Daksha Masurkar
Jeff Saldin, PE

Relevance to Project:

- ✓ LRT / BRT
- ✓ Corridor Planning
- ✓ Public Outreach
- ✓ Ridership Modeling
- ✓ Operations / Service Planning
- ✓ Alternatives Evaluation
- ✓ Land Use

This project is a comprehensive study that is aimed at identifying the best ways to improve transit in the West Phoenix area. This study was initiated by Valley Metro and the City of Phoenix in 2022, with a focus on high-capacity transit (HCT) investment in response to local needs for efficient transit access and connectivity to accommodate projected population and employment growth. To identify the most desired HCT improvements for the West Phoenix project study area, AECOM developed a two-tier evaluation process. Tier I used a multi-criteria analysis to identify the top two HCT corridor alternatives out of 14 possible options. Tier II included the in-depth evaluation process to identify the final, preferred combination of the alternative corridor and the HCT model, based on the screening criteria results of the two HCT corridor alternatives. The study involved a thorough examination of various transit alternatives, including LRT and BRT, to determine the most effective solutions. The work included updating the regional travel demand model to make it compatible with the Simplified Trips-on-Project Software (STOPS) model, in the evaluation of user benefits, in accordance with FTA guidance.

The project team was responsible for collecting, organizing, and summarizing key data to analyze factors influencing demand for transit within and outside the existing service areas, and to support the development of service recommendations. This included maps of demographics and land use relevant to transit demand, a review of transit performance measures, and an analysis of existing demographics, ridership, and transit system characteristics.

The project identified opportunities for improvement, which became the foundation for identifying potential service improvements. Furthermore, community input played a crucial role in the entire evaluation process. The final recommended alternative reflects community desires as the project advanced toward a locally preferred alternative (LPA). AECOM developed the LPA that was presented to the transportation commission, Valley Metro board, and City Council for approval.

Butte County Association of Governments (BCAG) | North Valley Passenger Rail Strategic Plan | Butte County, CA

Key Staff Involved:

Daniel Krause
Anthony Mangonon
Jim Lightbody

Relevance to Project:

- ✓ LRT / BRT
- ✓ Corridor Planning
- ✓ Public Outreach
- ✓ Ridership Modeling
- ✓ Operations / Service Planning
- ✓ Alternatives Evaluation
- ✓ Land Use

AECOM assisted BCAG to develop a strategic plan for implementing a new passenger rail service, to better serve the population centers of the North Valley region of California (Chico/Oroville, Marysville, and Yuba City) and connect these areas into the statewide rail system. The project would extend planned Altamont Corridor Express (ACE) and San Joaquin's intercity service along freight-owned corridors north of Sacramento (Natomas) with four new stations (Plumas Lake, Marysville, Gridley, and Chico) and timed bus connections at Gridley (for Oroville) and Natomas (for Sacramento International Airport). The project was built off the previously approved Valley Rail Sacramento Extension and the Lathrop to Ceres/Merced Extension by extending some of the service envisioned as part of those projects further north, beyond Natomas into the North Valley.

Tasks under the contract included a travel market assessment, a high-level alternatives analysis, ridership and revenue forecasting, conceptual timetable development and operations planning, and development of a funding and financing plan. Extensive outreach and coordination were conducted with the California Department of Transportation (Caltrans), local county and municipal agencies, Union Pacific Railroad (UPRR), and other stakeholders. In defining the proposed service, AECOM considered operations and implementation schemes holistically, in conjunction with concurrent system expansions by ACE and San Joaquin to provide the most attractive service to key markets, including commuter markets into the Sacramento area, megaregional business and leisure trips to/from the San Francisco Bay Area, and long-distance trips with timed connections to/from high-speed rail in Merced.

Other key tasks included the following:

- » Completing an alignment alternatives analysis to evaluate a potential alternative alignment north of Marysville, serving Oroville instead of Chico.
- » Expanding public outreach and community engagement, including creation of a two-page project fact sheet for stakeholders and the public and an eight-page project booklet for elected officials, as well as development of photorealistic simulations of the four future stations.
- » Conducting conceptual planning to provide future direct service to/from Sacramento Valley Station, including analysis of key track capacity constraints along UPRR's Martinez Subdivision and platform occupancy at the station, coordination with the Capitol Corridor Joint Powers Authority on future service expansion plans for the Capitol Corridor, and conceptual engineering for the required track improvements.
- » Making a detailed comparative analysis of station and layover facility alternatives for Chico, in terms of station access, engineering/cost implications, land use conflicts and transit-oriented development (TOD) potential, and key environmental risks and constraints.
- » Preparing an initial project description to be included as part of a future Request for Proposals for the next phase of the project (environmental clearance and preliminary engineering).
- » Preparing a Project Study Report Equivalent (PSR-E) to support future applications for State grant funding to support the project.

City of Phoenix | 35th Ave BRT | Valley Metro West | Phoenix, AZ

Key Staff Involved:

Jennifer Love
Daksha Masurkar
Jeff Saldin

Relevance to Project:

- ✓ BRT
- ✓ Corridor Planning
- ✓ Public Outreach
- ✓ Operations / Service Planning
- ✓ Alternatives Evaluation
- ✓ Land Use / Transit-Oriented Development
- ✓ Market Analysis
- ✓ Cost Estimation
- ✓ Preliminary Engineering
- ✓ Station Area Planning

AECOM conducted the preliminary engineering work for this BRT corridor in Phoenix.

In 2015, Phoenix voters approved Proposition 104, creating the 35-year T2050 program. BRT was identified as a key component of the program, to continue expanding the city's HCT network and introduce the city's first BRT system. On April 20, 2022, the Phoenix City Council approved the BRT program, to continue transit analysis and develop conceptual design alternatives for the initial BRT corridor of 35th Avenue and Van Buren Street. The corridor connects to Downtown Phoenix at Central Avenue, then runs west along Van Buren Street, turns north at 35th Avenue to Cheryl Drive, and then turns east and terminates at the recently completed Thelda Williams Transit Center. This enhanced transit center currently services the latest regional LRT extension and commuter bus service, park and ride, and it will enable intermodal HCT connectivity with BRT on corridor completion.

AECOM currently is conducting the corridor alternatives analysis and preliminary engineering for this first BRT corridor in Phoenix. Tasks include stakeholder coordination, public engagement support, corridor alternative analysis, ROW mapping, conceptual platform design and station area planning, traffic microsimulation analysis, multi-modal corridor safety analysis, design criteria development, cost estimation, and 15% design plans.

This BRT project involves numerous stakeholders as well as includes interdepartmental input and collaboration, with detailed technical analysis through a highly constrained corridor. The alternatives analysis includes an in-depth evaluation of both constraints and opportunities of multiple alternative layouts throughout the entire corridor—establishing corridor segmentation, conducting an existing conditions analysis, establishing design assumptions and standards, hosting an interactive goals workshop, establishing evaluation criteria, conducting a quantitative multi-phased alternatives evaluation process, and developing advanced planning-level alternatives cost estimates.

AECOM also is collaborating with the Phoenix BRT Program Management team and stakeholders to continue connecting with the community through education, input, and collaboration opportunities, to help build a system that best meets community needs. AECOM has supported community and stakeholder outreach through development of visualization renderings, presentation materials, and delivery of public and stakeholder presentations at open houses, village planning commission meetings, and organic community-based events

CLIENT QUOTE

"AECOM's extensive experience and understanding of BRT systems has played a pivotal role in advancing the alternatives analysis process for the Phoenix 35th Avenue and Van Buren Street BRT corridor. Their ability to develop and communicate this process to the community and business and agency stakeholders has garnered meaningful feedback and input to key decision milestones, which will ultimately support the selection of the preferred design option of Phoenix's first BRT corridor.

— Sara Kotecki, PE, Phoenix BRT Administrator

LA Metro | Vermont Transit Corridor Planning & Environmental Study | Los Angeles, CA

Key Staff Involved:

Divya Gandhi
Daksha Masurkar
Patrick Coleman
Andrew Walker
Victor Xie
Asia Robinson
Allan Leung.

Relevance to Project:

- ✓ LRT/BRT
- ✓ Corridor Planning
- ✓ Environmental Analysis
- ✓ Outreach and Engagement
- ✓ Preliminary Engineering
- ✓ Cost Estimation

The Vermont Corridor is one of the most important projects on Metro's horizon. It presents a short-term opportunity to improve transit service and catalyze community development ahead of the 2028 Olympics and a long-term opportunity to develop a rail link for the busiest north-south corridor in Los Angeles.

AECOM is the leading member of a three-party joint venture, delivering a planning and environmental study for the Vermont Transit Corridor project for Metro. AECOM and its joint venture partners are working with Metro to execute a two-part project, including a BRT Project and a Rail Project on the Vermont Corridor.

The Vermont Transit Corridor study area extends approximately 12.4 miles between 120th Street and Hollywood Boulevard. Vermont Avenue is the second busiest bus corridor in Metro's bus network and is the busiest north-south corridor in Los Angeles County, connecting to dozens of other local buses and four major Metro Rail lines and providing access to several major key activity centers.

The AECOM-led team currently is executing the Part 1 BRT Study, including corridor planning, advanced conceptual engineering, and environmental clearance services. This includes developing the first CEQA Exemption effort to be carried out by Metro under Senate Bill 922, which will streamline the project to advance it ahead of schedule. Thus, the BRT running way and station design are being developed strategically, using a limited public right-of-way so as not to take property, requiring custom treatments and design variations. The AECOM team is working integrally with local stakeholders, including the Los Angeles Department of Transportation and Los Angeles Bureau of Engineering, to navigate the constrained right-of-way while developing an attractive, inviting, and equitable project.

Equity is a core theme in the planning efforts because nearly the entire project study area is within an Equity Focus Community. The AECOM team is conducting a series of targeted outreach events, to engage with local residents and uplift public involvement in the planning process, including equity community conversation, cultural needs workshops, and design charrettes. This includes an exhaustive evaluation and equity data analysis and a cultural needs assessment for consideration as part of the planning and engineering efforts.

The BRT Study is expected to be completed in early 2025, with the identification of a locally preferred alternative and Board direction to advance the project to the Preliminary Engineering phase. Following this, the AECOM-led joint venture will initiate development of a Rail Corridor Study, to evaluate multiple alternatives and recommend a locally preferred rail alternative. The Rail portion of the project will include rail corridor planning, advanced conceptual engineering, and environmental clearance services, including development of a CEQA Environmental Impact Report.

SacRT | Sacramento Green Line Extension to Sacramento International Airport | Sacramento, CA

Key Staff Involved:

Ken Sislak

Relevance to Project:

- ✓ LRT
- ✓ Funding Application
- ✓ Preliminary Engineering
- ✓ Cost Estimation
- ✓ Environmental Analysis
- ✓ Land Use / Transit-Oriented Development
- ✓ Public Outreach / Engagement

The Sacramento Green Line Extension project is an example of AECOM's ability to actively design a rail extension, examine transit-oriented development joint opportunities, prepare environmental documentation and funding applications, and develop an outreach program for communities affected by the proposed 16 new stations.

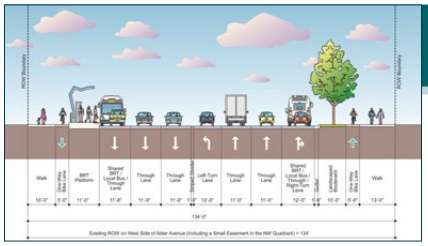
AECOM provided planning, environmental, and engineering services for the 12.8 mile extension of the Green Line light rail northward, from Downtown Sacramento to the River District, the Natomas communities, and Sacramento International Airport. The alignment and 16 stations were adopted as the locally preferred alternative in 2003. The Sacramento Regional Transit (RT) District subsequently constructed the initial phase of the alignment from downtown to Township 9 with local monies and under a CEQA environmentally cleared Program Environmental Impact Report for the entire project. In 2012, the FTA agreed that RT could initiate NEPA compliance, to assess the environmental effects of the full extension.

The extension was separated into three distinct segments or phases, each subject to its own independent environmental clearance. The first phase involved the area around the Sacramento Valley Station and the historic Amtrak depot, where the City of Sacramento is planning to develop an intermodal transportation facility, supporting RT bus and light rail services, local and inter-regional bus service, Capitol Corridor commuter rail service, a proposed streetcar system, and a future High-Speed Rail terminus. AECOM supported the planning effort by developing light rail station designs and potential joint development concepts for the area, in conjunction with improved light rail and bus service. These concepts were intended to demonstrate that the proposed RT improvements are sited to complement and support future TOD on the site. Funded with High-Speed Rail Authority monies, this first phase will be environmentally cleared under CEQA and will incorporate prior studies by the City, Caltrans, and the Federal Highway Administration for the Amtrak depot.

The second phase involves extending light rail service from Township 9 across the American River to a logical terminus in South Natomas. Critical issues in this segment that will require extensive collaboration with resource and regulatory agencies will involve a new bridge across the American River; an elevated guideway through Discovery Park that is prized for its recreational, biological, and cultural resource sensitivities; and the approaches to the bridge and the related land use and traffic impacts that will result from connecting existing communities and neighborhoods. This segment will involve a partnership among RT, the City, and Caltrans, and it is expected to be environmentally cleared with a joint CEQA/NEPA document and a corresponding Section 4(f) evaluation. The design of the bridge and its effects on hydraulics, scouring and sediment deposition, flood risks, and sensitive aquatic habitat will be especially critical to acceptance by the resource and flood management agencies.

The final phase will complete the extension from South Natomas, through the former Kings Sleep Train Arena site and North Natomas, Greenbriar, and Metro Air Park, to Sacramento International Airport. The recent lifting of the moratorium in this area related to concerns about flooding will result in a significant uptick in development around the stations previously identified. Local and federal funds will be sought to implement this phase, and AECOM will prepare the joint CEQA/NEPA document as well as the FTA New Starts funding application on behalf of SacRT.

Throughout each of these phases, the AECOM team provided strategic advice to RT about project planning, design, environmental compliance requirements, and FTA environmental and funding programs.



SANBAG, Integrated Transportation and Land Use Planning for the Foothill/5th Street BRT Corridor, San Bernardino County, CA

Key Staff Involved:

Veronica Siranosian

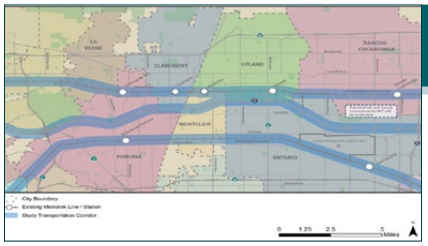
Relevance to Project:

- ✓ BRT
- ✓ Corridor Planning
- ✓ Conceptual Plans
- ✓ Land Use/Transit Oriented Development
- ✓ Multi-Modal Planning
- ✓ Phasing/Implementation

AECOM evaluated options for implementing BRT and developed station area plans for the San Bernardino Associated Governments' (SANBAG) Integrated Transit and Land Use Planning for the Foothill/5th Transit Corridor, including portions of the corridor in Rancho Cucamonga. The historic Route 66 corridor was a major focal point for development and revitalization efforts by local jurisdictions. AECOM developed plans for three separate BRT corridors in the 30-mile study area, each with their own phasing and implementation plans, to provide incremental transit improvements.

Using quantitative and qualitative evaluation criteria based on the project's goals, AECOM evaluated local service, rapid service (with and without underlying local service and full BRT implementation) to make recommendations for near and long-term transit improvements. For BRT implementation, AECOM developed schematic plans for median and curbside running BRT and identified ideal station locations along the 30-mile route, responding to the varying land use and right-of-way conditions in the corridor. AECOM focused on addressing the unique challenges of how to transform the automobile-oriented thoroughfare into a multimodal transit corridor that will serve as the backbone for the next generation of sustainable transit-oriented development in the Inland Empire. To catalyze this transformation, AECOM created land use and complete streets plans to enhance transit access and ridership. AECOM coordinated with seven cities on the corridor to assess changes in zoning and development codes that will promote transit-oriented development.

Bicycle and pedestrian safety improvements represented a key area for improvement: The corridor experienced a high rate of vehicle-bicycle and vehicle-pedestrian collisions. AECOM conducted collision and safety analyses and created conceptual streetscape designs to reduce collision risk. AECOM used national best practices in pedestrian and bicycle facilities. Most notably, AECOM recommended installation of protected bicycle lanes (cycle tracks) as well as a variety of pedestrian improvements. Inter-agency coordination and outreach played a key role throughout this project. AECOM conducted a regular outreach to representatives from Omnitrans, SANBAG, and the cities of Montclair, Upland, Rancho Cucamonga, Fontana, Rialto, San Bernardino, and Highland.



SCAG/SBCTA, Los Angeles and San Bernardino Inter-County Transit and Rail Connectivity Study

Key Staff Involved:

Veronica Siranosian
Patrick Coleman

Relevance to Project:

- ✓ LRT/BRT/Commuter Rail
- ✓ Corridor Planning
- ✓ Market Analysis
- ✓ Ridership Modeling
- ✓ Alternatives Evaluation
- ✓ Public Outreach/Engagement
- ✓ Phasing/Implementation

AECOM led the Los Angeles and San Bernardino Inter-County Transit and Rail Connectivity Study for the Southern California Association of Governments (SCAG) in collaboration with the San Bernardino County Transportation Authority (SBCTA) and the Los Angeles County Metropolitan Transportation Authority (LA Metro). The study aimed to develop a multimodal corridor improvement plan to enhance transit and rail connectivity between the eastern San Gabriel Valley in Los Angeles County and the western San Bernardino Valley in San Bernardino County, including connections to Ontario International Airport (ONT).

The Study objectives were to:

» **Assess the transit and rail market:** Analyze the geographic distribution of employee and passenger trips to ONT and identify service gaps in the transit network.

» **Estimate ridership and costs:** Forecast potential ridership, transportation benefits, and capital/operating costs for various transit and rail alternatives.

» **Recommend cost-effective solutions:** Propose transit and rail services that best serve communities along the corridor and improve access to ONT.

Following evaluation of the travel market, key origins and destinations, and traffic analysis, AECOM defined the mobility problem, purpose and need, objectives, and evaluation and screening criteria. Following this baseline conditions analysis, AECOM followed a two-step screening process to develop, evaluate, and rank alternatives:

1. Initial Screening:
   - Developed 38 initial build alternatives based on previous studies, stakeholder input, and community feedback.
   - Conducted a high-level evaluation of alternatives using criteria such as connectivity, cost-effectiveness, and transit-oriented development potential.
   - Narrowed down to six alternatives for further analysis.
2. Final Screening:
   - Conducted detailed technical analyses, including a facility and capacity analysis, ridership forecasting, cost estimating, a benefit-cost analysis, and economic impact analysis.
   - Refined the six alternatives based on technical findings and stakeholder input.
   - Evaluated the alternatives against the study goals: connectivity, cost-effectiveness, sustainability, transit-oriented development, and economic impacts.

Following the second screening, AECOM analyzed eight alternatives in further detail, including the No Build, Transportation System Management, LRT (two alignment options), Commuter Rail (two phases), Hybrid Rail, and BRT/Express Bus. The stakeholder and public outreach process involved extensive collaboration and engagement to gather input and refine the proposed alternatives. The process included the following key elements:

Stakeholder Engagement: A Technical Working Group (TWG) comprised of representatives from SCAG, SBCTA, LA Metro, San Gabriel Valley Council of Governments, Metrolink, Omnitrans, and Foothill Transit provided continuous input and feedback throughout the study. The Stakeholder Review Committee (SRC) included all TWG members, as well as representatives from Caltrans, cities within the study area (Pomona, Claremont, Montclair, Upland, Ontario, La Verne, Rancho Cucamonga), and the Foothill Gold Line Construction Authority; collaborated on refining alternatives and ensuring alignment with local priorities.

Public Outreach: Two rounds of public open houses were held. Open house materials, presentations, and feedback summaries were documented.

Online surveys were provided for individuals who were unable to attend the open houses. More than 1,000 responses were received to the first survey, and approximately 700 responses to the second survey. The feedback from stakeholders and the public was used to refine the alternatives, so that they addressed the mobility needs of the study area. The outreach process emphasized transparency and collaboration, with input from the TWG and SRC integrated into the study's findings and recommendations.

The final study findings, including implementation strategies, phasing, and funding options, were synthesized in a final report to SCAG, Metro, and SBCTA for further detailed consideration. These agencies will determine financially feasible options, assess community and environmental impacts, and develop funding strategies for implementation.

Niagara Frontier Transportation Authority | Amherst Extension Alternative Analysis/EIS | Buffalo, NY

Key Staff Involved:

Ken Sislak
Patrick Coleman

Relevance to Project:

- ✓ LRT / BRT
- ✓ Ridership Modeling
- ✓ Operations / Service Planning
- ✓ Market Analysis
- ✓ Corridor Planning
- ✓ Alternatives Evaluation
- ✓ Conceptual Engineering
- ✓ Cost Estimation
- ✓ Environmental Analysis
- ✓ Public Outreach / Engagement

The Niagara Frontier Transportation Authority selected AECOM to assist in evaluating public transportation options for a travel corridor connecting Buffalo to the State University of New York at Buffalo's 1,100-acre North Campus in Amherst. This may include an extension of the existing Metro Rail, improvements to current bus service, and other options.

AECOM provided project management, transportation planning, conceptual engineering, and environmental services. AECOM developed and compared a series of alternatives, including No Action and Transportation System Management alternatives to Build alternatives, and other options based on local comment and critique, which were developed during project scoping. The alternatives examined cost, cost effectiveness, capacity, safety, speed, right-of-way requirements, environmental considerations, neighborhood accessibility, potential economic development, and community support. Corridor considerations included population characteristics, consistency with local plans, development and redevelopment efforts, major activity centers, park-and-ride lot opportunities, and ridership potential.

Staffing

AECOM has a diverse team of professionals with extensive experience in streetcar and light rail transit (LRT) projects. The expertise includes project management coordinating staff across multiple disciplines. The disciplines include track design, systems design and integration, traffic engineering; utility coordination, NEPA documentation and expedited approvals and ADA-compliant infrastructure. The following are resumes for AECOM's proposed staff for this project.

The following table provides the hours that each staff member will be committed to the project and their respective tasks.

Resumes for all staff members follow the Staff Hours Table.

Name	Hours	Task(s)
Daniel Krause	302	Project Manager
Divya Gandhi	374	Deputy Project Manager
Veronica Siranosian, AICP	2	Principal-in-Charge
Jennifer Love, PE*, AICP, LEED AP, ENV SP	40	LRT/BRT Planning Expert
Brian Smart	13	Streetcar Planning Expert
Jeff Saldin, PE*	17	Engineering Expert
Mark Lippert	37	Quality Manager
Daniel Evans	20	Travel Market Data Lead (Task 1)
Robert Zhang	75	Travel Market Data Support (Task 1)
Victor Xie	33	Travel Market Data Support (Task 1)/Ridership Support (Task 3)
Daksha Masurkar	84	Alternatives Planning Lead (Task 3)
Pranjali Shah	211	Alternatives Planning Support (Task 3)
Anthony Mangonon	430	Operations and Service Planning Lead (Tasks 3 and 4)/Traffic Analysis Support
Ian Rivera	523	Land Use and Station Siting Planning Support (Tasks 3 and 4)
Nak Kim, PE	28	Traffic Analysis Lead (Tasks 3 and 4)
Minh Tran	110	Traffic Analysis Support (Tasks 3 and 4)
Annie Merritt, PE	91	Engineering Lead (Task 1)
Asia Robinson	195	Engineering Support (Task 1)
Sadie Graham	28	Land Use and Station Siting Planning Lead (Task 4)
Jaime Guzman	27	Environmental Lead (Task 4)
Jessica Koon	95	Environmental Support (Task 4)
Patrick Coleman, PE*	51	Ridership Lead (Task 3)
Andrew Walker	156	Ridership Support (Task 3)
Allan Sheung	54	Capital Costs (Task 3)
Kristen Lueken	22	Cost Estimates – Operations Costs (Task 3)
Rebecca Lee	55	Cost Estimates – Operations Costs (Task 3)
Ken Sislak	65	Implementation Lead
Jim Lightbody	42	Funding Lead (Task 6)
Alex Remar, MS	22	GIS Lead (Task 4)
Jason Leung	161	GIS Support (Task 4)

** Denotes out-of-state PE license*

Daniel Krause

Project Manager & Stations Planning Lead | AECOM

EDUCATION

MA, Urban Planning, San Jose State University

BA, Environmental Studies, University of California - Santa Cruz

YEARS OF EXPERIENCE

25

Daniel is a strategic and detail-oriented transportation planner focusing on transit and rail infrastructure planning and design for urban, intercity, regional, commuter, and high-speed rail systems. Daniel is a project manager and senior-level transportation planner focusing on rail infrastructure planning. Daniel has over 20 years of experience planning intercity, regional, commuter, and high-speed rail systems. This experience includes planning for large rail expansion programs in the Northern California Megaregion, technical rail/transit planning focusing on service and operations planning, alternatives/feasibility analysis efforts, and environmental clearance for numerous rail corridor projects throughout the Western United States. Daniel brings his transit planning and project management skills to effectively lead the team in completing the Light Rail Feasibility Study for the Fresno Council of Governments.

Relevant Projects

Butte County Association of Governments, North Valley Passenger Rail Strategic Plan (Planning/Feasibility) | Butte County, CA. ***Project Manager.*** Daniel served as Project Manager for this rail corridor planning and feasibility study. Analysis included market analysis, followed by service planning to determine the frequency trains, timetable development, establishing a fare structure, phasing of service implementation, fleet utilization and coordination with the state-run network rail modeling tool. Analysis also included ridership and revenue estimates, as well as development of implementation and funding strategies. Capital improvement planning included coordination with Union Pacific (the host railroad) to identify track improvements needed to accommodate the proposed passenger rail service, as well as the identification of sites for stations and a layover facility.

San Joaquin Regional Rail Commission, ACE Ceres-Merced Extension Project (Environmental Clearance) | San Joaquin, CA. ***Project Manager.*** Responsible for the environmental clearance (Project-Level Environmental Impact Report) for the extension of Altamont Corridor Express (ACE) commuter rail service from the City of Ceres to the City of Merced in California's San Joaquin Valley. The Project includes three new ACE stations, including a hub station in downtown Merced that will connect ACE service to future high-speed rail service. A new layover and maintenance facility is also included in the Project.

Washington State Department of Transportation (WSDOT), Amtrak Cascades Service Development Plan (Planning/Feasibility) | Statewide, WA. ***Project Manager/Planning Lead.*** Daniel served as both Project Manager and Planning Lead for this project, which identified service alternatives for the Amtrak Cascades, focusing on the 187-mile Portland, Oregon to Seattle, Washington segment of the Cascades route, which runs primarily along BNSF Railway corridors. These service alternatives were refined and screened using scenario planning tools to estimate ridership. Throughout the process, the AECOM team worked closely with WSDOT, BNSF Railway, and the Federal Railroad Administration (FRA). [04/2022-3/2024] Metropolitan Transportation Commission, Southern Alameda County Integrated Rail Analysis (Planning/Feasibility) | Alameda County, CA. Project Manager. Daniel served as the Project Manager for AECOM for this strategic planning effort to envision the Bay Area's future rail network with a focus on southern Alameda County. Analysis work included development of planning parameters, service and operations planning, network concept/scenario development, trade-offs analysis, phasing of implementation, identification of rail hub stations and layover facility sites, and fleet utilization, timetable development, ridership, development of implementation strategies, and funding/financing planning.

San Joaquin Regional Rail Commission, Network Integration Planning On-Call (Planning/ Feasibility) | San Joaquin, CA. ***Project Manager.*** Responsible for several task orders related to network integration planning for rail and connecting bus networks in the San Joaquin Valley and the Bay Area. His work includes rail network planning associated with SJRRC's Altamont Corridor Vision, implementation of high-speed rail in the San Joaquin Valley between Merced and Bakersfield, implementation planning for the proposed east-west running Cross Valley Rail Corridor rail service in central San Joaquin Valley, development of a new Thruway Bus Network that corresponds with the future rail network, and procurement and operations planning associated with existing Thruway Bus Network for the San Joaquins Rail Service. San Joaquin Regional Rail Commission, Elk Grove Double-Track Project (Environmental Clearance) | San Joaquin, CA. Project Manager. Daniel is currently serving as Project Manager for this environmental clearance project for a double-track section within the City of Elk Grove along the Union Pacific Sacramento Subdivision.

San Joaquin Regional Rail Commission (SJRRC)/San Joaquin Joint Powers Authority (SJJPA), Altamont Corridor Express (ACE) and Amtrak San Joaquins Rail Services | Stockton, CA. ***Senior Planner.*** Daniel conducted a variety of planning efforts for the Altamont Corridor Express (ACE) and Amtrak San Joaquins rail services, including work on a new passenger rail corridor between Stockton and Sacramento with six new stations, and development of new operating models for the Amtrak Thruway bus service. Other key activities included leading development of SJJPA's Annual Business Plan, management of capital improvements at 18 Amtrak San Joaquins stations, conducting multi-modal connectivity planning, and exploring TOD opportunities.

Washington State Department of Transportation (WSDOT), Amtrak Cascades Service Development Plan (Planning/Feasibility) | Statewide, WA. ***Project Manager/Planning Lead.*** Daniel served as both Project Manager and Planning Lead for this project, which identified service alternatives for the Amtrak Cascades, focusing on the 187-mile Portland, Oregon to Seattle, Washington segment of the Cascades route, which runs primarily along BNSF Railway corridors. These service alternatives were refined and screened using scenario planning tools to estimate ridership. Throughout the process, the AECOM team worked closely with WSDOT, BNSF Railway, and the Federal Railroad Administration (FRA).

San Joaquin Regional Rail Commission / San Joaquin Joint Powers Authority, Valley Rail Program (Final Design) | San Joaquin, CA. ***Project Manager.*** Daniel is currently serving as Project Manager for AECOM's portion of the SJRRC's/SJJPA's Valley Rail Program, which consists of final design projects for six new stations and two environmental clearance projects (one station and one double-track project). Daniel is working with a large number of engineering and environmental teams, while interfacing with SJRRC/SJJPA on the effort to push the Program towards completion.

San Joaquin Regional Rail Commission, Madera Station Project Phase 3 (Environmental Clearance) | San Joaquin, CA. ***Project Manager.*** Daniel is currently serving as Project Manager for this environmental clearance project, which will enable the full-build-out of the planned high-speed rail station in Madera County. The project expands previously environmentally cleared components to include a second platform, pedestrian overpass, and expanded parking facilities.

San Joaquin Regional Rail Commission, Midtown Sacramento Station (Final Design) | San Joaquin, CA. ***Project Manager.*** Daniel is currently serving as Project Manager for the final design phase of this urban rail station that will be shared by both the Altamont Corridor Express (ACE) and the Amtrak San Joaquins rail services. Daniel is focused on connectivity planning and developing a set of station enhancements for inclusion into the station design and engineering by engaging the surrounding community.

San Joaquin Joint Powers Authority, Madera Station Relocation Project (Environmental Clearance) | San Joaquin, CA. ***Project Manager.*** Responsible for the environmental clearance (Initial Study/ Mitigated Negative Declaration) for the relocation of the Madera Amtrak San Joaquins Station from northern Madera County to southern Madera County. The Project includes a new station siding track off the BNSF mainline, station facilities, parking lot, and a new access road from Avenue 12. The Project also includes additional station facilities that would accommodate high-speed rail trains at the station when the California High-Speed Rail Project comes online.

Caltrain/San Mateo County Transit District, Grade Separation | San Carlos, CA. ***Principal Planner.*** Daniel served as project manager on several grade separation (GS) projects along the Caltrain Rail Corridor. Key projects included: the Whipple Avenue GS Planning Study in Redwood City, which encompassed a new Caltrain transfer hub station in associated with a large transit-oriented development on an adjacent large private parcel; the South Linden Avenue and Scott Street GS Planning Study in South San Francisco and San Bruno; and the Mountain View Transit Center GS and Access Project, which included a large transit-oriented development component. Daniel also led an effort to coordinate station improvements at the Millbrae Caltrain station to accommodate future California High-Speed Rail platforms and the integration of a large transit-oriented development. Daniel also represented Caltrain in the development of program requirements for the Transbay Transit Center Program in San Francisco. [Prior to AECOM]

U.S. High Speed Rail Association, Various | Washington, DC. ***Policy Director/Operations Manager.*** Daniel led the Association's policy development and initiatives. In this role, Daniel conducted numerous meetings with members of Congress to discuss the future of passenger and high-speed rail systems, as well as transportation policy in general. Daniel, in partnership with the Federal Railroad Administration, led two policy forums on rail infrastructure finance strategies. Daniel also led a forum, in partnership with the Mineta Transportation Institute, on TOD at planned high-speed rail stations in California. Other roles included organizing national conferences and managing general operations of the organization.

Divya Gandhi, PTP

Deputy Project Manager | AECOM

EDUCATION

MS, Urban and Environmental Policy and Planning, Tufts University

BS, Urban and Regional Planning, Centre for Environmental Planning and Technology (CEPT) University, India

REGISTRATIONS

Professional Transportation Planner (PTP)

YEARS OF EXPERIENCE

7

Divya is a transportation planner and project manager who helps cities, counties, and transit agencies plan and build equitable, affordable, accessible, and safe transportation systems. She has experience in managing and leading the development of multimodal plans, feasibility studies, high-capacity transit plans, active transportation plans, parking management studies, and systemic safety studies for cities, counties, and transit agencies. Additionally, she has been involved in drafting and preparing winning grant applications, as well as conducting and facilitating public and stakeholder outreach engagement for various planning studies.

Relevant Projects

Tri-Valley – San Joaquin Valley Regional Rail Authority, Valley Link PA-ED Environmental Technical Studies NEPA – CEQA | San Joaquin, CA. ***Environmental Coordinator & Key Planning Staff.*** Assisted with the environmental and outreach tasks for the Valley link Project. Assisted and managed the technical team for the preparation of the NEPA Environmental Impact Statement (EIS)/ CEQA Subsequent Environmental Impact Report (SEIR) based on potential impacts identified through environmental process as well as substantial changes in the proposed project since completion of the 2021 CEQA Notice of Determination (NOD).

San Joaquin Joint Powers Authority/ San Joaquin Regional Rail Commission, Madera High Speed Rail (HSR) Station Full Build Project (Phase 3) | Madera, CA. ***Key Planning Staff.*** Supporting the preparation and review of all CEQA/ NEPA documentation and supporting planning and engineering work according to all applicable state, federal and local requirements, including notices, Initial Study (IS), Categorical Exemption, Negative Declaration (ND), Mitigated Negative Declaration (MND), Environmental Impact Report (EIR), Environmental Impact Statement (EIS), Environmental Assessment (EA). The Madera HSR Station Full-Build Project will enable additional improvements to be implemented so that the station will meet all the requirements needed for full-build HSR operations.

LA Metro, Vermont Transit Corridor | Los Angeles, CA. ***Key Planning Staff.*** Responsible for LA Metro's Vermont Transit Corridor Project helping provide a description of the project for the Alternative Analysis that also satisfies requirements under CEQA. Building upon previous studies and community engagement and partnership program, the task entails preparing and updating the Purpose and Need statement to clearly define BRT Alternatives and develop an updated mobility problem that is to be addressed to support development of the project goals and objectives.

Alameda CTC, East Oakland and Central County Comprehensive Multimodal Corridor Plan (CMCP) | Alameda County, CA. ***Key Planning Staff.*** Assisted with CMCP documentation to provide for a suite of multimodal improvements for areas in the expanded corridor, in the cities of Oakland, San Leandro, and Hayward, and unincorporated Alameda County (communities of Ashland and Cherryland). Supported the existing conditions analysis and led the effort to synthesize findings to define project needs and opportunities, and conducted additional data collection, analysis, and engagement as needed. The plan will be used to seek funding from the SB 1 Solutions for Congested Corridors Program (SCCP).

Madera County, SR 233/Robertson Boulevard Corridor Planning Study and Downtown Master Plan | Chowchilla, CA. ***Deputy Project Manager.*** Facilitated a multi-agency collaboration to enhance transportation safety and promote non-motorized travel options in Chowchilla. Spearheaded stakeholder and community engagement efforts to gather input and foster support, ensuring alignment with SB-1 Sustainable Communities Planning Grant objectives and regional transportation goals. The project identified six alternatives for improving pedestrian and bicyclist mobility throughout the corridor, contributing to a comprehensive and inclusive transportation strategy.

Caltrans, Road Safety Infrastructure Plans (RSIP) | Various, CA. ***Task Lead and Literature Review Task Manager.*** Responsible for Caltrans RSIPs to assess the applicability of safety plan development for preparing district-level traffic safety plans. Caltrans RSIPs are district-level safety plans being developed for all 12 districts in the State. Literature Review task entailed conducting a review of over 400 safety plans, including Local Road Safety Plans, Systemic Safety Analysis reports, Tribal Safety Plans, and Vision Zero Action Plans. Project leads from select agencies were contacted and interviews were conducted to identify lessons learned and how local plans can benefit from and improve a district's safety plan.

Various Agencies, Local Roadway Safety Plans/Systemic Safety Analysis Reports | Various, CA. ***Transportation Planner.*** Assisted cities and counties throughout California with the development of Local Roadway Safety Plans (LRSP) and/or Systemic Safety Analysis Reports (SSAR). These plans, funded through statewide grant programs, assist local agencies in performing collision analyses, identifying safety issues on their roadway networks, and developing systemic low-cost countermeasures for pedestrian and bicyclist safety to be used for the preparation of grant applications for Highway Safety Improvement Program (HSIP) funds. Divya's roles have variously included deputy project manager, transportation planner, and/or task lead for LRSPs for the following agencies: Antioch, Chowchilla, Culver City, Cupertino, Danville, Dinuba, Farmersville, Glendale, Hayward, Isleton, Kern Council of Governments, Mendocino County, Millbrae, Moraga, Napa, Orinda, Pinole, Pittsburg, San Bruno, Santa Clara Valley Transportation Authority, Williams, Yorba Linda, and Yuba County. She served as planner or assistant planner for SSARs for the following agencies: Del Norte County, Pittsburg, San Luis Obispo County, Yuba City, and Yuba County.

City of Dinuba, Pedestrian & Bicyclist Safety & Connectivity Study | Dinuba, CA. ***Transportation Planner.*** Assisted in the preparation of a Pedestrian and Bicyclist Safety and Connectivity Study for the City of Dinuba. The tasks performed ranged from development of various inventories with respect to existing infrastructure in the City, organizing and conducting public outreach events. The plan aims to enhance safety, operations and health of all modes of transportation. The plan also included preparation of a Complete Streets and Neighborhood Traffic Calming Program for the city.

City of Goleta, Hollister Avenue Complete Streets Study | Goleta, CA. ***Transportation Planner.*** Assisted the City of Goleta in the development of a Complete Streets Corridor Plan along Hollister Avenue to prioritize and enhance safety, access, and mobility for all modes of transportation. Key goals are quality of life enhancements along the corridor and development an economically sustainable corridor. The Corridor Plan will also identify improvements necessary for adjacent and connecting streets and interchanges as applicable. The City will engage and partner with local communities, residents, and stakeholders inclusive of neighboring jurisdictions and emergency response agencies in an intensive participatory planning process to develop and address a Complete Streets plan with context sensitive solutions for sustainability that responds to both local and regional needs.

Veronica Siranosian, AICP

Principal-in-Charge | AECOM

EDUCATION

MA, Urban Planning, New York University

BA, International Studies, University of California - Los Angeles

BA, Political Science, University of California - Los Angeles

REGISTRATIONS

Certified Planner, American Institute of Certified Planners/American Planning Association, (AICP) #203870

AWARDS AND RECOGNITIONS

2022 ENR California Top Young Professional

2019 AECOM CEO Award

2017 WTS Innovative Transportation Solutions Award

2015 Association of Environmental Professionals Public Education Award

2015 American Planning Association Los Angeles Neighborhood Planning Award

2013 URS STAR Award for Outstanding Performance and Excellence

2013 URS Future Leaders Program

2009 Los Angeles County Board of Supervisors Commendation Scroll

2008 American Planning Association Los Angeles Public Outreach Award

YEARS OF EXPERIENCE

19

Veronica is a Senior Vice President who brings two decades of experience delivering equitable and sustainable mobility solutions. Having begun her career with the County of Los Angeles Regional Planning Department, she has a background in public and private sector transportation and land use planning across modes. Veronica's expertise includes management and preparation of alternatives analyses; transit-oriented development plans; active transportation plans; community participation processes; community plans; zoning code amendments; and environmental reviews for land use, transit-oriented development, bus, bus rapid transit, light rail, streetcar, and high-speed rail projects. As AECOM's West Coast Transit & Rail Division Lead and Transportation Director of Growth, she will bring the qualified, committed, nimble, and effective personnel, leveraging the local team and AECOM's global network of AECOM subject matter experts to support Daniel and Fresno COG on this ambitious project.

Relevant Projects

Southern California Association of Governments (SCAG), Los Angeles and San Bernardino Inter-County Transit and Rail Coordination Study | Los Angeles and San Bernardino Counties, CA. ***Project Manager.*** Analyzed mobility needs between Los Angeles and San Bernardino Counties to define the mobility problem and identify transit solutions to best meet current and future needs, including BRT, light-rail, and commuter rail. Evaluated existing transit alternative studies and baseline conditions, developed project purpose and need, defined alternatives, and conducted two-phased alternatives analysis and screening, including cost-benefit analysis, ridership forecasting, feasibility, and environmental screening. Coordinated analysis approach and final recommendations with Technical Advisory Committee composed of corridor city representatives as well as Metro, Metrolink, Foothill Transit, and Gold Line Construction Authority.

SCAG, Integrated Transit and Land Use Planning Study for the Foothill Boulevard/5th Street Corridor | San Bernardino, CA. ***Project Manager.*** Evaluated integrated transportation and land-use enhancements to increase mobility on a 34-mile-long transit corridor. Assessed current and planned land uses to identify potential BRT routes and station areas. Coordinated with local county and city staff to ensure that transit solutions compliment local community goals for sustainable mobility. Wrote best practices for land-use, urban design, bicycle, and pedestrian facilities to create a transit-supportive corridor. Developed 10 station area land-use plans with specific recommendations for land-use and zoning changes. Researched and wrote implementation plan including development incentives, funding opportunities, and station area implementation strategies.

City of Rancho Cucamonga and San Bernardino County Transportation Authority (SBCTA), Metrolink Feasibility and Transit-Oriented Development Study | Rancho Cucamonga, CA. ***Project Manager.*** Evaluated feasibility of establishing a second Metrolink station in the City of Rancho Cucamonga. Determined transit need and linkages with existing rail and bus service, and first/last mile connectivity, including shared ride, vehicle, and bike services at rail stations. Studied potential for transit-oriented development at existing and potential future Metrolink stations. Developed market analysis and transit-oriented development scenarios in station areas.

California High-Speed Rail Authority, California High-Speed Train Palmdale to Los Angeles Union Station Segment Station Area and Land Use Analysis | Southern California. ***Land Use Task Lead.*** Prepared land use analysis for California High-Speed Train alignments, station options, and ancillary structures. Evaluated existing jurisdiction land use policies and zoning designations for proposed High-Speed Train alignment and station options. Determined potential impacts of the High-Speed Train on land use compatibility, community character, and the pattern and intensity of existing development. Recommended mitigation measures to

improve consistency and compatibility of proposed alignment and station options with adopted plans and existing development.

LA Metro, Integrated Mobility Hubs Needs Assessment and Operating Plan | Los Angeles, CA. ***Project Manager.*** As project manager, analyzed baseline land-use, demographic, and socio-economic data to recommend locations for potential Mobility Hub stations that combine bike share, car share, transit, and on-demand shuttle services to expand access to job training and educational opportunities for low-income individuals. Assessed operational characteristics, evaluated client needs, and assisted with needs assessment and operating plan to design system that is equitable, user-friendly, and accessible for low-income clients.

LA Metro, C/Green Line Extension to Torrance | Los Angeles, CA. ***Planning Task Lead.*** Led planning tasks for the extension of the Metro C/Green Line to Torrance. Led development of the project purpose and need and alternatives previously considered. Evaluated travel market analysis and existing and future study area conditions to define project purpose, need, goals, and objectives that informed the alternatives evaluation and screening process. Summarized and documented previously considered but eliminated alternatives to support refinement of the alternatives considered in the environmental document and engineering design tasks.

LA Metro, Crenshaw North Feasibility Study | Los Angeles, CA. ***Purpose and Need and Study Corridor Definition Task Lead.*** Served as task lead to develop the Crenshaw North Feasibility study purpose and need and corridor definition. Defined project evaluation and screening criteria and managed team of engineers and planners to conduct initial alternatives analysis and screening.

City of LA Department of Transportation and Bureau of Engineering, Restoration of Historic Streetcar Service in Downtown Los Angeles | Los Angeles, CA. ***Deputy Project Manager.*** Provided program management services to support restoration of historic streetcar service in Downtown Los Angeles. Participated in, presented at, and responded to questions at inter-agency coordination meetings with LADOT, LABOE, Metro, and elected official representatives to build consensus and move the project forward. Reviewed and wrote portions of Independent Cost Estimate. Participated in alignment analysis and definition.

Confidential Client, Grove-LACMA Streetcar Feasibility Study | Los Angeles, CA. ***Deputy Project Manager.*** Conducted technical feasibility study of streetcar service to connect major destinations including the Grove and Los Angeles County Museum of Art (LACMA) in west Los Angeles. Prepared stakeholder briefing packet, video simulation, and presentation for public agency outreach and coordination. Facilitated stakeholder meetings with private businesses, transit agencies, and cities along the alignment to introduce the project, build support, and solicit input.

Jennifer Love, PE, AICP, LEED AP, ENV SP

LRT/BRT Expert | AECOM

EDUCATION

Master of Urban and Environmental Planning (MUEP), Arizona State University

Intermodal Transportation Certificate, Arizona State University

BS, Civil Engineering, Arizona State University

REGISTRATIONS

PE, AZ #46128

American Institute of Certified Planners, #208089

LEED AP, 2009

ENV SP, 2014

YEARS OF EXPERIENCE

25

Jennifer has experience as a planner, engineer, and project manager for various transit, multimodal transportation, urban design, and traffic engineering projects. Her skills encompass all levels of project development from planning, policy, and public involvement to design and construction. Her versatility and skills enable her to integrate various disciplines and reconcile the needs of a diverse set of stakeholders.

Relevant Projects

Charleston Boulevard, Corridor Study | Las Vegas, NV. ***Transportation Manager.*** Jennifer supported the development of mid-term and long-term fixed-route transit improvements along Charleston Boulevard. Analysis included assessment of current on-street parking conditions as well as infrastructure recommendations along the corridor with a primary focus on meeting ADA requirements and the access and circulation needs of the heavily used transit corridor.

Columbia River Crossing, BRT Performance Analysis | Vancouver, WA. ***Project Engineer.*** Jennifer was responsible for analyzing various routes and types of high-capacity transit. Various BRT scenarios were modeled and analyzed, including shared ROW and exclusive guideway for several different routes throughout downtown Vancouver.

City of Phoenix, 35th Ave BRT AA and Preliminary Engineering | Phoenix, AZ. ***Planner.*** Jennifer supported the proposed BRT line along 35th Avenue and Van Buren Street. The project includes development of cross sections, evaluation of center running/side running/mixed traffic, traffic analysis, determination of stop locations, multimodal connectivity, and 30% design. Extensive public and stakeholder coordination was conducted.

FHWA, Complete Streets Scan | Phoenix, AZ. ***Planner.*** Jennifer supported the development of a national complete streets survey to assess current practices and standards across all state departments of transportation. She assisted in the development of the survey mechanism and provided coordination with state DOTs.

NAIPTA, Mountain Line Downtown Connection Center | Flagstaff, AZ. ***Project Manager.*** This project conducted environmental planning and design work to develop a new downtown transit connection center. The project included a site selection alternatives analysis for the new transit center, preliminary architectural and site civil, traffic analysis, transit operational analysis, NEPA clearance, railroad coordination and city permitting. Jennifer coordinated with stakeholders throughout the process including ADOT, Amtrak, the Army Corps of Engineers, City, County Sustainability Department, Union Pacific Railroad, arts commission and community groups. The project resulted in a building rendering and 30% site civil drawings, development application to the city, and traffic impact analysis to ADOT.

NAIPTA, Mountain Line Transit Signal Priority | Flagstaff, AZ. ***Project Manager.*** This project evaluated and developed a plan for network implementation of Transit Signal Priority (TSP). In the TSP Planning phase, the Kaspar/Route 66 intersection was evaluated, including an assessment of existing traffic control and transit vehicle technology and a review of the existing NAIPTA microsimulation model. AECOM also supported NAIPTA in defining the goals of TSP and assisted in the development of an IGA, in coordination with the City of Flagstaff and the Arizona Department of Transportation (ADOT), defining operations and maintenance of the improvements. The Implementation phase included development of an implementation plan, design of the TSP system, installation and fine tuning.

NAIPTA, Mountain Line Transit Guidelines | Flagstaff, AZ. ***Advisor.*** This project developing transit guidelines for the transit provider in Flagstaff, AZ. This project helped NAIPTA standardize their transit infrastructure and coordinate with developers and other agencies on implementing transit infrastructure. This project set warrants and specifications for transit infrastructure.

Valley Metro West Phoenix, High Capacity Transit Alternatives Analysis (AA) | Phoenix, AZ. ***Project Manager.*** Jennifer managed this study to improve transit in the under-served, but high-transit usage Maryvale area in West Phoenix. The study will assess several alignment alternatives along with multiple transit modes. The AA will determine how to best connect the study area with existing (or planned) high-capacity transit and will result in a Locally Preferred Alternative (LPA) adopted by the City of Phoenix Council and the Valley Metro Rail Board.

MAG, Travel Demand Management Best Practices Review | Maricopa County, AZ. ***Project Manager.*** Jennifer managed this study team to conduct a best practices review of Travel Demand Management for peer communities.

MCDOT, Grant Program Research | Maricopa County, AZ. ***Project Manager.*** Jennifer managed this project, which conducted an evaluation of the MCDOT transportation improvement program and an assessment of available grant programs. Recommendations were developed to pair MCDOT projects to grant programs and identify necessary steps to prepare for grant application.

MCDOT, Whispering Ranch Access Study | Maricopa County, AZ. ***Project Manager.*** Jennifer managed this study to identify and establish a route for all-weather access from the Vulture Mine Road/ Whispering Ranch Road intersection to the Patton Road/US 60 intersection.

MAG, 99th Avenue COMPASS | Maricopa County, AZ. ***Lead Planner.*** Jennifer worked with five cities along the 99th Avenue corridor to create an integrated regional transportation, land use, and economic development plan aimed to identify priority infrastructure improvements. Key recommendations incorporated the identification of regionally significant connections, including auto and pedestrian bridges, multimodal streets and trails, the creation of a sustaining infrastructure fund. Recommendations included creating regional and neighborhood activity nodes that would receive higher density than other locations, and the creation of design guidelines that can be established along the corridor and adopted by adjacent participating cities.

Sedona, SR 179 Tlaquepaque Pedestrian Crossing Assessment | Sedona, AZ. ***Project Manager.*** Alternative analysis of pedestrian crossing options and identification of a recommended alternative to improve mobility on SR 179 near Tlaquepaque. The analysis included a review of traffic operations, safety, environmental impacts, structures, utilities, and drainage. Sketch level design concepts and planning level cost estimates were also developed.

City of Gilbert, Bicycle and Pedestrian Plan | Gilbert, AZ. ***Transportation Planner.*** Responsible for conducting analysis and developing recommendations for a comprehensive plan for bicycle and pedestrian facilities to be incorporated into Gilbert's General Plan. As part of the town's mobility program, provided development guidelines to encourage bicycle and pedestrian activity. Jennifer also developed the bicycle and pedestrian improvement guidelines, and made recommendations for eight new bicycle/pedestrian canal crossings, based on public input and analysis.

Chicago Department of Transportation, Sustainability Standards | Chicago, IL. ***Sustainability Analyst.*** Jennifer provided detailed technical content for the waste management, waste reduction, and cool pavement design portions of the sustainability standards, as well as technical sustainability review and oversight.

Valencia County, Transit Principles for Master Plans and Subdivisions | Valencia County, NM. ***Planner.*** Responsible for developing urban design guidelines to facilitate transit-friendly design and transportation connectivity in new urban developments. This project created a transit-friendly vision for Valencia County, New Mexico, a rapidly growing area just south of Albuquerque, which is home to the two southernmost Railrunner commuter rail stations.

Brian Smart

Streetcar Expert | AECOM

EDUCATION

MCRP, Planning, Georgia Institute of Technology

BA, Political Science, University of Georgia

AWARDS/RECOGNITION

"Top 40 under 40" (*Mass Transit Magazine*, 2014)

YEARS OF EXPERIENCE

21

Brian is a "Top 40 under 40" (Mass Transit Magazine, 2014) award winning Transportation Planning Project Manager for AECOM and serves as the Planning Group Director for AECOM's Southeastern Region Transportation Business Line. Brian brings over 20 years of comprehensive planning experience and a demonstrated track record of providing solutions to complex challenges. He has managed on-call and general planning contracts and takes a "roll up your sleeves and get-to-work" approach to project management. Brian has extensive experience with Federal Transit Administration (FTA) and Federal Railroad Administration (FRA) projects from planning to post-NEPA environmental monitoring / compliance and project construction oversight.

Relevant Projects

Atlanta BeltLine, Inc., Alternatives Analysis and Environmental Assessments for Atlanta Streetcar System Plan | Atlanta, GA. ***Project Manager.*** Brian served as Project Manager for transit planning services, including alternatives analysis studies, Environmental Assessments (EA), and coordination with stakeholders, regional transportation agencies, state, and Federal agencies for Atlanta BeltLine East, Crosstown Midtown, and Crosstown Downtown streetcar corridors—priority streetcar expansion corridors within the Atlanta Streetcar System Plan. Responsible for coordinating work program and task order scopes and budgets with the client leadership team and consultant team, quality control, completion of scoped deliverables on time and within budget.

MARTA, Atlanta Streetcar Environmental Assessment | Atlanta, GA. ***Environmental Reviewer.*** Responsible for managing environmental review process, including approval and public distribution for environmental assessment (EA), including environmental justice analysis and Section 4(f) evaluation. Led streamlined review and approval process for EA and led development of mitigation plan with MARTA, the City of Atlanta, and other stakeholders.

Jacksonville Transportation Authority (JTA), Extension of Staff Services | Jacksonville, FL. ***Program Manager.*** AECOM is providing extension of staff services to assist the Automation and Innovation Department with executive management and program management support as Automation and Innovation and New and Emerging Technologies consultants to lead the team through solicitation and selection of technology providers and vendors for JTA's Florida Statewide Automated Transit Vehicle Request for Proposal (RFP). Brian is currently serving as Program Manager coordinating the work program and task order scopes and budgets with the client leadership team and consultant team, coordination with Federal agencies, quality control, and ensuring completion of scoped deliverables on time and within budget.

Nashville Metropolitan Transit Authority, East-West Connector Alternatives Analysis and Environmental Assessment | Nashville, TN. ***Environmental Reviewer.*** Responsible for managing environmental review process for EA. Managed scoping and public involvement plan development and implementation following conclusion of alternatives analysis (AA) and selection of LPA. Developed streamlined review and approval action plan and NEPA schedule.

Alabama Department of Economic and Community Affairs, Montgomery – Mobile Passenger Rail Feasibility Study | Montgomery, AL. ***Project Manager.*** Brian served as Project Manager for the preparation of a feasibility study and outreach program for a passenger rail corridor from Montgomery, AL to Mobile, AL. Brian led the development of the Federal Railroad Administration's (FRA) required alternatives analysis, public and stakeholder outreach, and supporting technical reports for the feasibility study. Brian was responsible for coordinating the work program and task order scopes and budgets with the client leadership team and consultant team, coordination with FRA and other Federal agencies, quality control, and completion of scoped deliverables on time and within budget.

Georgia Department of Transportation (GDOT), Statewide General Transit Consulting Services | Atlanta, GA. ***Program Manager.*** AECOM is managing professional services to assist GDOT in providing compliance oversight of Federal programs to nearly 200 sub-recipients of FTA program funds across the state, including development and management of grants and contracts, development and management of standard operating procedures, internal and external training programs, and technical guidance for statewide transit planning and project delivery. Brian is currently serving as Program Manager coordinating the work program and task order scopes and budgets with the client leadership team and consultant team, coordination with Federal agencies, and quality control.

Metropolitan Atlanta Rapid Transit Authority (MARTA), Planning and Technical Services On-call | Atlanta, GA. ***Program Manager.*** Responsible for AECOM's Planning and Technical Advisory Services. In this role, Brian planned, directed, supervised and controlled the execution of all technical, fiscal and administrative functions of the project and the project team. Brian developed and maintained a communications plan for all project stakeholders, presenting progress and mitigating issues that arise and manages all communications with MARTA's executive team. Led the production and reporting on the overall capital planning program and actions required and communicated critical path activities that influenced project milestones. Brian was also responsible for following up on instructions and commitments associated with task order delivery under each contract. Brian was also the ultimate executor of the Project Execution Plan, Health & Safety Plan, Quality Control Plan and project/task order schedules associated with the contracts.

GDOT, Atlanta to Chattanooga High Speed Ground Transportation (HSGT) Tier 1 EIS | Atlanta, GA. ***Project Manager.*** Brian served as Project Manager for the preparation of a Tier 1 EIS for a 110-mile passenger rail corridor from Hartsfield-Jackson Atlanta International Airport to Downtown Chattanooga, TN. Brian led the development of the Federal Railroad Administration's (FRA) first combined Tier 1 FEIS/ROD, which was signed by FRA in summer 2017. The Tier 1 FEIS/ROD closed out the Tier 1 EIS process for the project. Brian was responsible for coordinating the work program and task order scopes and budgets with the client leadership team and consultant team, coordination with FRA and other Federal agencies, quality control, and completion of scoped deliverables on time and within budget.

GDOT, Amtrak Station Relocation Feasibility Study and Environmental Screening Report | Atlanta, GA. ***Project Manager.*** Brian served as Project Manager for the preparation of a feasibility study and environmental site screening report for the proposed Atlanta-Peachtree Amtrak Station relocation. Brian led the development of a collaborative process that evaluated six sites considered for the relocation and prepared an environmental site screening report for the selected site. Brian was responsible for coordinating the work program and task order scopes and budgets with the client leadership team and consultant team, coordination with FRA, FTA, and other Federal agencies, quality control, and completion of scoped deliverables on time and within budget.

Florida Department of Transportation (FDOT) District 4, District-wide Project Development and Environmental (PD&E) Study for Countywide Mobility Hubs in Broward County | Fort Lauderdale, FL. ***Program Manager.*** Served as Program Manager for program management, planning, engineering, design, and environmental technical services for a countywide PD&E study and construction and implementation services for mobility hubs in various locations throughout Broward County, Florida including locations along key strategic mobility corridors. Various technical studies, included land use and transit feasibility studies, and completion of National Environmental Policy Act (NEPA) studies for each mobility hub site are part of this contract. Brian was responsible for coordinating the work program and task order scopes and budgets with the client leadership team and consultant team, responsible for quality control, completion of scoped deliverables on time and within budget. Currently serving as an advisor for Federal agency coordination and funding and implementation strategy.

MARTA, Atlanta BeltLine Tier 1 Environmental Impact Statement | Atlanta, GA. ***Environmental Reviewer.*** Responsible for managing environmental review process, including approval and public distribution for the DEIS, final environmental impact statement (FEIS) and record of decision (ROD). Led streamlined review and approval process for ROD.

Jacksonville Transit Authority, Bus Rapid Transit Corridor Planning and NEPA | Jacksonville, FL. ***Environmental Reviewer.*** Responsible for managing environmental review process, including approval and public distribution of environmental assessments (EA) for city's bus rapid transit (BRT) corridors. Supporting activities for AA process for Small Starts application process with the Federal Transit Administration (FTA). Developed streamlined review and approval for schedule for NEPA.

Jeff Saldin, PE

Engineering Expert | AECOM

EDUCATION

BS, Civil Engineering, University of Arizona

REGISTRATIONS

PE, AZ #54276

YEARS OF EXPERIENCE

17

Senior Transit engineer with over 17 years of experience in a variety of engineering roles on transit planning, design, construction, and analysis projects for streetcar, light rail, commuter rail, automated people movers and bus rapid transit. Jeffrey has a background in light rail and streetcar track design and is experienced in leading the design of transit projects and multi-disciplinary coordination from design-builds to preliminary design, conceptual layouts, alternatives development and impact analysis. Jeffrey is also experienced with cost estimation in the Federal Transit Administration's Standard Cost Category format.

Relevant Projects

Sacramento Regional Transit District, Downtown/Riverfront Streetcar Preliminary Engineering | Sacramento, CA. ***Track Lead/Project Engineer.*** The Sacramento Regional Transit District designed a modern streetcar to connect the cities of West Sacramento and Sacramento, while overlapping the system with existing light rail and providing service to Amtrak. Jeffrey's primary responsibilities included designing horizontal and vertical track alignments, evaluating environmental impacts, and leading project coordination for the civil and systems disciplines. Additionally, Jeffrey completed the design considering conflicts with the existing light rail system and Amtrak. Valley Metro, West Phoenix High-Capacity Transit Alternatives Analysis | Phoenix, AZ. Engineering Lead. Responsible for this Alternatives Analysis that studied how to best improve transit in the under-served, but high-transit usage Maryvale area in West Phoenix. The study assessed several alignment alternatives along with two transit modes, light rail (LRT) and bus rapid transit (BRT). The West Phoenix AA will determine how to best connect the study area with existing (or planned) high-capacity transit and will result in a Locally Preferred Alternative (LPA) adopted by the City of Phoenix Council and the Valley Metro Rail Board. This study included designing conceptual footprints for LRT and BRT to evaluate right-of-way impacts, cost comparisons, and technical and operational constraints including connecting to existing light rail and an end-of-line station to serve light rail and RAPID bus service.

City of Phoenix, 35th Avenue / Van Buren Street Bus Rapid Transit Preliminary Engineering | Phoenix, AZ. ***Segment Lead.*** AECOM is developing the preliminary engineering for the City of Phoenix's first Bus Rapid Transit (BRT) route within its system. The 35th Avenue/Van Buren Street corridor has been selected as the first BRT route to advance to preliminary engineering, as identified in 2021. The preliminary engineering for this project includes an accelerated alternatives analysis, traffic demand modeling, and safety analysis, in addition to the full preliminary engineering actions. Jeffrey's role includes leading the civil development for two project segments: the roadway and BRT guideway and stations, to identify a preliminary project footprint.

Texas Department of Transportation, Wheeler Station PS&E | Houston, TX. ***Track Lead.*** Wheeler Station is a Houston METRO project that involves relocating the facility to accommodate the IH-69 depressed section. The project is situated between IH-69 and SH 288, spanning from Spur 527 to the intersection of IH-69 and SH 288, in Harris County, and is part of Segment 3A of the North Houston Highway Improvement Project (NHHIP). The project involves LRT, platform, traction Power, OCS, site illumination, traffic signals, and drainage design. Jeffrey's role includes leading the track design to reconfigure a station from two tracks and two platforms to three tracks and three platforms. This includes designing horizontal and vertical alignments, track on structure over IH69, and special trackwork.

MetroLink, Northside-Southside LRT 15% Engineering | St Louis, MO. ***Design Lead.*** A 5.6-mile at-grade LRT system that will serve the City of St. Louis. This project developed two end-to-end design alternatives for the Jefferson Avenue Alignment, as well as operating plans, ridership demand forecasts, capital and O&M costs, and project impact

assessments. Jeffrey led the 15% design of the LRT system by coordinating the various technical disciplines on the project, including track, civil, structures, systems, utilities, and traffic. He also oversaw cost estimates in the FTA Standard Cost Category format.

City of Madison, East-West Bus Rapid Transit PS&E | Madison, WI. ***Cost Estimate Lead.*** The East-West Bus Rapid Transit is a 15-mile system that will serve the City of Madison. Jeffrey's role was leading the cost estimate. Jeffrey guided each discipline in their role, overseeing quantity take-offs, developing unit costs, evaluating cost risks, and assembling the overall estimate. The cost estimate was developed in the FTA Standard Cost Category format, as well as a format for the city to release the project for bid.

City of Dallas, Uptown McKinney/Cole Couplet 30% Design | Dallas, TX. ***Track Lead.*** The Uptown McKinney/Cole Couplet is a 4.5-mile conversion of one-way roads to two-way streets and a relocation of the trolley track. Jeffrey's primary responsibilities included leading the design of the trolley track relocation, designing horizontal track alignment, evaluating environmental impacts, and coordinating projects across the systems disciplines. Additionally, Jeffrey completed the design considering the existing trolley system and how the future project will tie in.

Los Angeles World Airports, Automated People Mover Design Build | Los Angeles, CA. ***Systems Project Engineer.*** Los Angeles World Airports (LAWA) has undertaken a project that includes 2.25 miles of elevated guideway, 3 terminal stations, 2 intermodal transportation facilities, a maintenance and storage facility, parking garages, and other items. Jeffrey's role included coordination for the power distribution and communication disciplines of the project. He assisted with the quality control process, led technical working groups to advance design. He also coordinated project requirements through the Requirement Traceability Matrix, and the system safety and security process including the Design Criteria Conformance Checklist, Preliminary Hazard Analysis, and Threat and Vulnerability Assessments.

Valley Metro, Valley Metro Planning Support Services | Phoenix, AZ. ***Transit Engineer.*** On-going general transit planning and associated engineering services for Valley Metro. Services include the completion and documentation of transit planning analyses and studies. Jeffrey's role includes track design including feasibility studies for various routes, special track work configurations, utility analysis, Traction Power Substation preliminary location analysis, and environmental and streetscape impacts. He has also developed numerous cost estimates in the FTA's Standard Cost Category (SCC) format.

Valley Metro, 50th Street Light Rail Station Preliminary Engineering | Phoenix, AZ. ***Technical Project Manager.*** Development of preliminary engineering plans and technical memoranda for the construction of a new light rail transit station, consisting of two side platforms along the existing light rail transit alignment. Jeffrey's primary responsibilities included coordinating the various technical disciplines on the project, including track, civil, systems, utilities, and traffic. He also developed a cost estimate in the FTA SCC format.

VIA Metropolitan Transit, VIA Streetcar Alternative Analysis | San Antonio, TX. ***Conceptual Engineering Lead.*** VIA is in the Alternatives Analysis phase of developing a streetcar system in downtown San Antonio. During this phase, Jeffrey serves as the lead engineer in evaluating the feasibility of alignment and system concepts. This includes assessing potential utility, environmental and streetscape impacts, as well as streetcar vehicle options and special track work needs. He has also developed a detailed capital cost estimate for future federal funding grants. Jeffrey's efforts have helped the agency advance an alignment with a locally preferred alternative in September 2013.

Mark Lippert, AICP

Quality Manager | AECOM

EDUCATION

MS, Urban Planning, Florida State University

BS, Geography, Florida State University,

CERTIFICATIONS

Certified Planner, American Institute of Certified Planners/American Planning Association, (AICP) #108767

YEARS OF EXPERIENCE

26

Mark has over 25 years of broad experience in transportation planning, land use planning, and geographic information systems. He has assisted leading multi-disciplinary teams on a variety of transportation corridor studies seeking funding through the Federal Transit Administration's New Starts/Small Starts program. Mark has also provided management support and lead tasks for a variety of large-scale transit projects requiring NEPA documentation, as part of multi-year General Planning and Engineering Consultant on-call programs in Atlanta and Chicago for MARTA and CTA, respectively.

Relevant Projects

Atlanta BeltLine and Streetcar Environmental Assessment, Atlanta BeltLine, Inc. | Atlanta, GA. ***GIS Lead and Transportation Planner.*** Project connects Atlanta Streetcar with the original Atlanta BeltLine study, providing cross-town transit connections. Development of NEPA documents, including evaluation consistent with FTA 4(f) criteria, presentations to public and technical stakeholders, and quality control for all final products to client. FONSI issued June 2011.

Metropolitan Atlanta Rapid Transit Authority (MARTA), GA 400 Connector Alternatives Analysis (AA) | Atlanta, GA. ***Deputy Project Manager and Transportation Task Leader.*** Coordinated AECOM project team and sub-consultants to complete all tasks associated with the development of the AA, leading to a Tier 1 Draft EIS. Quality control for all final products; met weekly with client; presentations to the client, technical committees, and the public.

Metropolitan Atlanta Rapid Transit Authority (MARTA), Clifton Corridor Transit Initiative | Atlanta, GA. ***Deputy Project Manager and Transportation Task Leader.*** Coordinated AECOM project team and sub-consultants to complete all tasks associated with the development of the AA and, subsequently, the Tier 1 Draft EIS for a proposed high capacity transit (BRT or LRT) program connecting existing MARTA heavy rail stations. Lead development of transportation chapter, overall schedule, and QA/QC of all chapters in the DEIS.

Tri-Valley San Joaquin Regional Rail Authority, Valley Link | Oakland, CA. ***Deputy Project Manager.*** Developed and maintained schedule, budget, and staff resources to manage and deliver the Project through the Federal and California environmental processes via a combined Environmental Assessment (EA) and Subsequent Administrative Environmental Impact Report (EIR) for a new commuter rail service connecting the eastern Tri-Valley area to the Bay Area Rapid Transit District system.

Washington Department of Transportation (WSDOT), Amtrak Cascades Service Development Plan | Seattle WA. ***Deputy Project Manager.*** Developed project management plan, lead staff resources, and QA/QC to deliver the Project, which studies possible alternatives for enhancing the Amtrak Cascades service between Portland and Vancouver, BC, over the next 20 years.

Community Transit, Planning and Architecture/Engineering On-Call Programs | Snohomish County, WA. ***Contract Manager.*** Lead successful pursuits to place AECOM on both On-Call programs for the 3rd largest transit agency, by passenger trips, in Washington. Coordinate task order development, staffing, and client management.

United States Department of the Navy, Naval Base Kitsap EIS | Bremerton, WA. ***Transportation Lead.*** Develop Draft EIS chapter framework, existing conditions, environmental consequences, and potential impacts for the Transportation and Traffic section of the Bremerton Waterfront Improvement Project at the Puget Sound Naval Shipyard and Intermediate Maintenance Facility.

Washington Department of Transportation (WSDOT), CRISI Grant Application Support, Washington State Rural Rail Rehabilitation Project | Seattle WA. ***Deputy Project Manager.***

Responsible for two grant application cycles for the WSDOT Palouse River and Coulee City (PCC) Rail System, which connects Eastern Washington agriculture to Class I railroads, in 2021 and 2022. Developed schedule, budget, and narrative for grants to upgrade track and bridges across the network to increase speed and reliability. Grant awarded in 2022.

San Joaquin Regional Rail Commission, Merced Extension EIS | Oakland, CA. ***Deputy Project Manager.*** Provide QA/QC, manage subconsultants, and AECOM staff resources to deliver the Project, including Draft an EIS and Final 15% engineering plans for an extension of the Altamont Corridor Express commuter service.

Sound Transit, Interstate 405 (I-405) Bus Rapid Transit (BRT) | Seattle, WA.***Transportation and Land Use Planner.*** 37-mile BRT/HOT lane program from Burien to Lynwood via Bellevue. Created draft circulation plan and due diligence land use report for the proposed Renton station, which is off-line from I-405.

Chicago Transit Authority (CTA), Core Team - Chicago Transit Partners | Chicago, IL. ***Planning/Design Oversight Manager as part of Joint Venture at CTA Headquarters.*** Developed and received approval for NEPA Categorical Exclusion documents for five-phases of $500M Blue Line capital improvement program; prepared Project Master Plans for the bus and rail vehicle facility expansions, including scope, schedule, and budget; created scope for Kimball Yard transit-oriented development project.

Georgia Department of Transportation (GDOT), Georgia High Speed Ground Transportation Study, EIS update | Atlanta, GA. ***Transportation Task Leader.*** Evaluate and identify a corridor for proposed, new high-speed intercity passenger rail service connecting Atlanta, Georgia and Chattanooga, Tennessee. Updated previously completed Draft EIS, focused on technology assessment and new environmental data. Coordinated comment review with FHWA and FRA.

Atlanta BeltLine Corridor Environmental Study, Metropolitan Atlanta Rapid Transit Authority (MARTA) | Atlanta, GA. ***GIS Lead and Transportation Planner.*** Responsible for spatial analysis; data collection and quality control; graphics and figures. Prepared Transportation and Land Use sections of the Draft Tier 1 EIS through the FEIS, ultimately leading to the ROD in August 2012. Part of the general planning consultant team for MARTA, studying the BeltLine transit and multi-use trail project, a 22-mile transit and trail corridor.

Metropolitan Atlanta Rapid Transit Authority, I-20 East Corridor Alternatives Analysis | Atlanta, GA. ***Transportation Planner.*** Identified a locally preferred alternative (LPA) by evaluating all potential transit improvements for the study area against a set of established goals and performance measures. Specific tasks included GIS analysis of demographics within the study area, evaluation of proposed alternatives, and presentation of findings at public and stakeholder meetings.

Daniel Evans, EIT

Travel Market Lead | AECOM

EDUCATION

MS, Analytics, Georgia Institute of Technology

MS, Engineering - Transportation, University of Texas,

BS, Civil Engineering, Auburn University

REGISTRATIONS

EIT, AL #16494

YEARS OF EXPERIENCE

13

Daniel Evans leads AECOM's passenger rail ridership forecasting practice and supports various analytics projects. His professional experience includes travel demand modeling, transit and rail ridership forecasting, and travel market analysis. He has supported rail studies for state departments of transportation and was the task lead for a market assessment of the Federal Railroad Administration's study of Amtrak's long-distance services. Daniel has increasingly supported analytics projects at AECOM, including an ongoing analysis of travel trends during the COVID-19 pandemic.

Relevant Projects

Virginia Department of Rail and Public Transportation, Richmond Broad Street BRT Project | Richmond, VA. ***Analyst.*** The project involved development of forecasts of project boardings for a proposed BRT line along Broad Street in Richmond, VA. The forecasts were to be used in FTA Small Starts project justification evaluation metrics (e.g., mobility benefits, cost-effectiveness). Daniel processed the Richmond transit survey and created survey-based trip tables. He also coded and ran several no-build and build scenarios using the Richmond/Tri-Cities travel model.

Federal Transit Administration (FTA) – Oversight of Project Forecasts, VTA El Camino Real BRT | Washington, DC. ***Analyst.*** This project involved development of transit ridership forecasts for a proposed Bus Rapid Transit (BRT) line along the El Camino Real Highway between Palo Alto, CA and San Jose. Daniel developed transit ridership forecasts using the Simplified Trips on Project (STOPS) software program. He setup the STOPS model for the project including gathering and modifying model files and data for alternative model runs.

Niagara Frontier Transportation Authority (NFTA), Buffalo-Amherst LRT Extension Project | Buffalo, NY. ***Analyst.*** This project evaluated the travel impacts of a possible Light Rail Transit (LRT) extension or BRT implementation in Buffalo, NY from the south campus of The University at Buffalo to Crosspoint Business Park. Daniel processed the Buffalo transit survey and developed survey-based trip tables. He created thematic maps showing productions and attractions, as well as maps showing the volume-to-capacity ratios on highway links for base and future-year conditions. Daniel also developed a data-driven procedure that used survey-based trip tables and STOPS skims to generate model forecasts of transit trips.

Amtrak, Daily Cardinal Service Development Plan | New York City and Chicago via Washington, DC. ***Deputy Project Manager and Transportation & Financial Planning Lead.*** AECOM is supporting Amtrak in developing a service development plan (SDP) for daily Cardinal service as part of Step 2 of FRA's Corridor Identification and Development Program. Amtrak's Cardinal is a long-distance route between New York City and Chicago via Washington, DC that currently operates only 3 days per week in each direction. Daniel has two roles on the project. As Deputy PM, he will support project administration and management to ensure that deliverables are completed on time, within budget, and to Amtrak's satisfaction. As lead for transportation and financial planning, he will oversee and coordinate with subdiscipline leads on various technical analyses, including transportation planning (rail operations analysis, ridership forecasting, revenue analysis, conceptual engineering, and capital and O&M cost estimation), environmental planning, and financial planning.

Utah Department of Transportation (UDOT), Statewide Passenger Rail Study | Statewide, UT. ***Ridership Forecasting Lead.*** UDOT is evaluating the potential for intercity passenger rail to serve multiple corridors throughout Utah and into neighboring states. Daniel led market analysis to identify the top travel markets that could be served by potential intercity passenger rail routes, based on total annual travel demand. The approach used a similar methodology to that used in the FRA's Amtrak Long-Distance Service Study: create catchments around potential stations and estimate the number of annual

trips between catchments using FHWA's NextGen National Passenger Origin-Destination trip dataset. Based on the results of the market analysis, the study team identified route options for further analysis. Daniel led ridership forecasting, which assessed the ridership potential of each of the route options based on assumed characteristics of each route option, including station locations, service frequency, and train speed.

Federal Railroad Administration (FRA), Amtrak Long-Distance Service Study | Washington, DC. ***Market Assessment Task Lead.*** This project examined restoring and enhancing daily service on existing, discontinued, and potential new long-distance Amtrak routes. Daniel served as task lead for market assessment, which involved analyzing travel flows and demographic/socioeconomic characteristics within the travel markets of 15 current and 21 discontinued long-distance Amtrak routes. His team compiled trip tables for vehicle, air, and rail trips from sources including the FHWA Next-Generation NHTS National Passenger Origin-Destination dataset, BTS DB1B Market data, and Amtrak. The study team analyzed Amtrak's current long-distance routes, summarizing route characteristics about service and performance. Daniel organized efforts to automate geospatial analysis and data processing to make data analysis more efficient. He created a Power BI web-based tool that shows trip flows across the U.S. and was used to develop a conceptual enhanced rail network based on travel demand and other key considerations in the study. The results of the market assessment were documented in a detailed report that highlights current long-distance route performance and market opportunities for long-distance passenger rail. Daniel also coordinated GIS and data analyses to support other tasks, including route options analysis and public benefits analysis.

California Department of Transportation (Caltrans), Road Charge Collection Pilot Research Study | Sacramento, CA. ***Analyst.*** A pilot will be conducted to assess how travel behavior is different in study groups subjected to a fixed fee per mile traveled versus a fee per mile that is based on vehicle fuel economy. Daniel helped develop the research plan that defines relevant research questions and the methodology to study travel behavior differences. He has supported development of Pre-Pilot and Post-Pilot surveys that Pilot participants will answer, and he will analyze, and model collected data to explore if and how different road charge schemes affect travel behavior, including impacts such as decreases in driving and increased likelihood of purchasing more fuel-efficient or zero-emission vehicles.

US Army Corps of Engineers (USACE), Dredging Information System (DIS) Data Corrections | Washington, DC. ***Technical Lead.*** Daniel served as the technical lead and managed the efforts of analysts to clean, and update DIS data. The team used Jupyter Notebooks to document its code and Python to automate the data-cleaning process. With support from team members, Daniel wrote the guidance documentation that explains the methods and external data sources used to clean the DIS data, details the project outcomes, and recommends ways to improve the DIS database.

Washington Metropolitan Area Transit Authority (WMATA), MetroAccess Ridership Forecast | Washington, DC. ***Analyst.*** AECOM previously developed a regression model to forecast ridership on WMATA's paratransit service named MetroAccess. The ridership forecast is used to plan the MetroAccess operating budget. Daniel wrote Python scripts to process and summarize MetroAccess ridership data, and he updated and respecified the previous model based on the ridership analysis and in coordination with MetroAccess staff. Daniel wrote the ridership memorandum that highlighted key points of the ridership analysis, explained the forecasting methodology and assumptions, and detailed the MetroAccess ridership forecasts. He often presented analysis during regular project status meetings, highlighting interesting findings and obtaining feedback from the MetroAccess team that was then incorporated into the ridership forecast. Daniel also wrote a brief user's guide for AECOM staff to document how to run the Python scripts that generate data summaries and the ridership forecast.

Connecticut Department of Transportation, Connecticut State Rail Plan | Newington, CT. ***Analyst.*** Daniel analyzed Waybill Sample data to determine rail freight demand in Connecticut in 2019. He wrote Python scripts to process, analyze, and visualize the Waybill data, which was originally in a text file format. Daniel assessed inbound, outbound, intrastate, and "through" freight movements in terms of freight tonnage and value, and he used Python to create custom visuals to display the top commodities for each type of movement. Daniel also forecasted future freight demand using growth factors developed from Freight Analysis Framework data, and he documented his analysis of current and future rail freight demand in Connecticut in the draft state rail plan.

Massachusetts DOT, East-West Passenger Rail Study | Boston to Pittsfield, MA. ***Analyst.*** The project includes ridership forecasts for six transportation alternatives with train service extending across Massachusetts from Boston to Pittsfield, MA. The six alternatives vary in the amount of train service traversing the state. Daniel assisted with collecting and processing model inputs including demographic data and train schedule information. He also implemented the intercity travel model and reviewed and analyzed model results. The results for the various alternatives indicate the impact of additional train service in various markets, including established markets already served by the Massachusetts Bay Transportation Authority and essentially new markets that could benefit from increased train service.

Washington State Department of Transportation (WSDOT), Pacific Northwest Rail Corridor (PNWRC) Alternatives Development | Olympia, WA. ***Ridership Forecasting Lead.*** This study developed and assessed alternatives for improvement of intercity passenger rail service in the PNWRC, with a focus on the corridor between Portland, OR and Vancouver, BC. Daniel has edited text and analyzed data as part of a literature review about travel trends in the rail corridor before and during the COVID-19 pandemic. He was responsible for developing and applying AECOM's national intercity model to assess the ridership impacts across different service options and future scenarios. Daniel supported the integration of Mobilitics with the national intercity model to forecast ridership for many combinations of service options and future scenarios.

Robert Zhang

Travel Market Support | AECOM

EDUCATION

MS, Civil Engineering, University of Illinois at Urbana-Champaign

BS, Transportation Engineering, Southeast University

YEARS OF EXPERIENCE

5

Robert is a transportation modeler, focusing on rail and transit demand forecasting and urban travel and transit demand modeling. He had five years of academic experience and four years of work experience as a technician staff in traffic planning, travel demand forecasting and scenario analysis. Robert participated in various projects, including traffic corridor analysis, traffic data statistical analysis, and activity-based model applications. He boasts proficiency in transportation modeling tools like TransCAD and Cube. He is also adept at coding with Python and C++, using geospatial platforms like ArcGIS Pro, and data visualization software Tableau.

Relevant Projects

Metropolitan Transportation Commission (MTC), Southern Alameda County Integrated Rail Analysis | Alameda County, CA. ***Ridership Forecasting.*** Robert contributed to the ridership forecasting work for MTC's evaluation of passenger rail needs in Southern Alameda County and the Northern California. The project's objective was to explore opportunities for seamless rail and bus service connectivity, and to identify potential markets for an East Bay rail-to-rail hub in the mid-term future. His responsibilities included a detailed review and analysis of relevant data, enhancing the demographic data collection process in ArcMap, and configuring the ACE model to forecast ridership.

Federal Railroad Administration (FRA), Amtrak Long-Distance Service Study | Washington, DC. ***Transportation Data Analyst.*** Robert takes on the vital tasks of scrutinizing demographic and socioeconomic factors within the travel markets of 15 existing and 21 discontinued long-distance Amtrak routes. He skillfully utilizes Python to extract insights from comprehensive datasets such as the U.S. Census ACS 5-year estimates, the FHWA Next Gen National Origin-Destination dataset, and the BTS DB1B Market data. Additionally, Robert helped with the detailed assessment of Amtrak's future market. His work involves documenting crucial service and performance indicators, implementing geospatial analysis and data processing.

Washington State Department of Transportation, Amtrak Cascades Service Development Plan | Various, WA. ***Transportation Data Analysis.*** This project will enhance intercity passenger rail service for travelers along the Washington State segment of the Pacific Northwest Rail Corridor (PNWRC) by improving the reliability and convenience of Amtrak Cascades between Portland and Vancouver. Robert conducted traffic flow, trip table, and market analysis using Replica and Streetlight data, prepared and processed data for AECOM national model and supported Mobilitics integration for scenario analysis. He also helped the team write the methodology memo and literature review and created a sensitivity test tool by calculating the elasticity of various attributes.

Wisconsin Department of Transportation, Demand Analysis for Wisconsin Intercity Passenger Rail in Wisconsin State Short-term & Long-term Rail Plan | Various, WI. ***AECOM provided a market demand analysis for intercity passenger rail in Wisconsin for inclusion in the Wisconsin State Rail Plan.*** Based on travel time information developed by AECOM and proposed scenarios from WisDOT, Robert prepared ridership forecasts for near-term and long-term service plan improvements as a transportation modeler. He customized the AECOM National Intercity Model to cover Wisconsin and connected markets. Also, he prepared documentation for demographics of the corridor, and the forecast results in a technical memo.

Victor Xie

Travel Market Support/Ridership Support | AECOM

EDUCATION

Master of Planning, Transportation Planning, University of Southern California

Bachelor of Science, Economics, Wuhan University

YEARS OF EXPERIENCE

10

Victor is a transportation planner with public sector knowledge and extensive consulting experience. He is experienced in transit service planning, financial planning, comprehensive industry research, ArcGIS spatial analysis, data-driven analysis, and data visualization of transportation projects. Victor has served as technical task lead and deputy project manager for various transit planning studies, performing subconsultant oversight, contract management, project coordination, and client interaction. He applies emerging mobility technologies to traditional transit planning processes and trailblaze innovative solutions to address the everchanging transit needs.

Relevant Projects

LA Metro, Vermont Transit Corridor, Los Angeles County Metropolitan Transportation Authority | Los Angeles, CA. ***Task Lead.*** Led the Transportation Impact and Cost Estimate tasks during the project's planning phase, assessing impacts on parking, VMT, traffic, active transportation, and neighborhood circulation. Leading the modeling of transit impacts, traffic analysis, and cost estimation during the preliminary engineering phase. The Vermont Transit Corridor Project aims to enhance transit service along the 12.4-mile Vermont Avenue. The project is a Bus Rapid Transit (BRT) system with dedicated lanes and enhanced stations is targeted for implementation by 2028. Sacramento Regional Transit District, Comprehensive Operational Analysis/Long Range Transportation Plan | Sacramento, CA. Financial Plan Development Lead. Led the development of the agency's financial plan within the reimagined system, accounting for the challenges posed by the "Fiscal Cliff" affecting many California transit agencies. Ensured compliance with the stringent requirements of the Federal Transit Administration (FTA) Capital Investment Grant program and meticulously documented the plan.

LA Metro, Grants Management & Oversight Department Manual Update | Los Angeles, CA. ***Deputy Project Manager.*** As the deputy project manager, coordinated with various LA Metro departments that interface with GMO and reviewed the department's existing grant manual. Developed new workflows to meet the agency's daily communication and reporting needs while also ensuring compliance with evolving state and federal grant policies.

Northern Indiana Commuter Transportation District (NICTD), 20 Years Strategic Business Plan | Chesterton, IN. ***Task Lead.*** Leading the Capital and Financial Planning Modeling task for the 20-Year Strategic Business Plan. The task involves building a financial model to assess the NICTD's financial outlook, bring the assets to the state of good repair, and identify the level of services to be achieved with existing assets. This task will also help identify the agency's approaching operational fiscal deficit and come up with strategies and implementation plan for NICTD to address the deficit.

Transbay Joint Powers Authority, The Portal (Downtown Rail Extension DTX) | Bay Area, CA. ***Financial Plan Lead.*** Led the production of the 2023 financial plan for FTA Capital Investment Grants (CIG) New Starts program. The Project was awarded a CIG funding commitment of up to $3.4 billion, representing approximately 41 percent of the total project cost, subject to execution of a Full Funding Grant Agreement. The most recent task was to update the O&M plans to enable the Portal project to satisfy MTC's conditions for advancement to MAP Level 1. Achieving MAP Level 1 will allow MTC to endorse the project for discretionary funding and strengthen its advocacy on the project's behalf.

Trifiletti Consulting, Inglewood Transit Connector Bus Alternative Analysis | Inglewood, CA. ***Financial Planner.*** This fast-paced project supported the client in evaluating three event-based dedicated bus lane alternatives to connect SoFi Stadium with Metro's light rail system. Victor led the development of rough order-of-magnitude (ROM) operating cost estimates for each alternative, based on

operational assumptions provided by the client. Victor also coordinated closely with AECOM's bus operations analysis team to feed key operational unit costs—such as revenue miles and revenue hours—into the cost model. The final analysis presented alternative BRT lane configurations, operational assumptions, associated capital and operating costs, and potential parking impacts.

LA Metro, Long Beach-East LA Corridor Mobility Investment Plan | Los Angeles, CA. ***Technical Lead.*** As one of the most in-depth outreach planning process to date, LA Metro has identified a billion dollars of investment based on the plan's recommendations and leveraging. LA Metro anticipates the plan will leverage over $4 billion of investment in new multimodal transportation infrastructure in the currently under-served Long Beach - East Los Angeles communities. Supported the plan production process and the creation of the online project dashboard; served as a technical lead for the project evaluation process and phasing development.

Victor Valley Transit Authority, Comprehensive Operational Analysis | Victorville CA. ***Project Manager.*** As the Project Manager for AECOM, overseeing the project execution which includes but not limited to coordinating with the client and managing task leads to ensure timely completion of individual tasks.

Sadie Graham, LEED AP

Land Use and Station Siting Planning Lead | AECOM

EDUCATION

MLA, Landscape Architecture, University of California - Berkeley

MCRP, Regional Planning, University of California - Berkeley

REGISTRATIONS

LEED Accredited Professional, US Green Building Council

YEARS OF EXPERIENCE

19

Sadie is a program manager with a broad range of experience in transportation and urban planning. She is dedicated to advancing infrastructure initiatives that drive meaningful improvements in quality of life and sustainability. With extensive experience leading large-scale rail and transit programs, she brings a strategic, solutions-oriented mindset to every project. Sadie excels in stakeholder engagement and in guiding multi-disciplinary teams through complex challenges, consistently delivering impactful and future-ready results. Her leadership reflects a deep commitment to creating resilient, equitable, and sustainable transportation systems.

Relevant Projects

San Francisco Bay Area Rapid Transit (BART), 19th Street/Oakland Station Modernization | Oakland, CA. ***Project Manager.*** Led the conceptual design for the project, which included improvements to expand station capacity, reduce crowding, improve access, save energy, reduce fare evasion, and enhance the customer experience. Key responsibilities also involved managing an interdisciplinary team of planners and engineers, coordinating with local jurisdictions and agencies, and planning and hosting extensive community outreach. The project was completed in January 2023.

BART, Balboa Park Station Modernization Design Plan | San Francisco Bay Area, CA. ***Program Manager.*** Led a multi-disciplinary team of planners and architects developing a comprehensive plan for the redesign of the BART station. The project includes a comprehensive analysis of the station's existing conditions and functionality, developing a vision for the new station design, including coordination with an adjacent transit-oriented development, outreach to stakeholder agencies and the public, and preparing a conceptual plan. The final plan will include architectural design, proposed phasing, and implementation.

BART, El Cerrito del Norte Station Modernization | Oakland, CA. ***Project Manager.*** Led the conceptual design for the project, which included improvements to expand station capacity, reduce crowding, improve access, save energy, reduce fare evasion, and enhance the customer experience. Key responsibilities also involved managing an interdisciplinary team of planners and engineers, coordinating with local jurisdictions and agencies, and planning and hosting extensive community outreach. The project was completed in Spring 2021.

San Francisco Bay Area Rapid Transit, Link21 Program | Oakland, CA. ***Managing Director.*** Responsible for overseeing the complex, multi-billion-dollar Link21 transportation megaprogram during its Program Development Phase. Responsibilities included direct management of scope, schedule, budget, funding, and stakeholder engagement, along with strategic oversight of technical work. Led a team of four direct reports and five consultant teams under contract. Provided strategic and policy leadership by addressing challenges to megaproject advancement and identifying necessary policy and legislative changes to support successful program delivery. The Link21 Program is advancing a new rail crossing of the San Francisco Bay to connect the 21-county megaregion and integrate BART, Regional Rail, and future High-Speed Rail systems.

BART, Bay Fair BART Station Area Improvement Plan | Alameda County, CA. ***Deputy Project Manager.*** Led a multi-disciplinary team to develop a Station Area Plan to create a station that is safe, vibrant, and inviting, and provides attractive and safe connections for pedestrians and bicyclists. Through extensive partnership with the local community, the plan recommends short- and longer-term capital projects prioritized by the stakeholders to address safety and accessibility needs necessary to enable future Transit-Oriented Development.

Various Clients, Streetscape Planning & Design | Various Locations, CA. ***Lead Staff.*** Collaborated with communities to develop conceptual streetscape designs that balance the needs of pedestrians, bicyclists, and automobiles while enhancing the livability and quality of the public realm. Demonstrated a strong focus on Complete Streets principles and consistently integrates sustainability into project work. Skilled in coordinating with city staff and subconsultants to produce cost-effective, traffic-compliant, and shovel-ready streetscape plans. Responsibilities have included preparing streetscape construction documents and cost estimates for streets currently under construction.

BART, Platform Screen Door Pilot Program | Oakland, CA. ***Project Manager.*** Oversaw and managed the Platform Screen Door (PSD) Pilot Program. As part of BART's Measure RR Program, BART researched and developed a pilot program to test Platform Screen Doors at the Downtown Oakland/12th Street Station. Platform screen doors were a capital investment that helped BART deal with overcrowding in its stations, which at the time was limiting service and safety in downtown San Francisco. The Pilot program tested the viability of integrating PSDs within an existing system, which had not been done before. The program developed bid documents for the procurement of a pilot, but it was put on hold by BART until after implementing its new train control system and Fleet of the Future.

BART, Sustainability Action Plan | Oakland, CA. ***Project Manager.*** Responsible for the program and supported the implementation of BART's board-adopted sustainability policy. This effort involved extensive coordination with internal stakeholders, technical studies, and the development of policy recommendations. As part of this work, BART prepared a 10-year Sustainability Action Plan outlining key targets, current progress, and future actions to embed sustainability across all aspects of BART's operations.

City of Menlo Park, El Camino Real Corridor and Downtown Vision Plan | Menlo Park, CA. ***Lead Planner.*** Led the development of the Vision Plan for Menlo Park's Downtown and the El Camino Real Corridor. Through intensive community outreach and stakeholder discussions, the Plan identified the community's Vision of the study area, including providing greater connectivity, improving the circulation and streetscape conditions on El Camino Real, enhancing the vibrancy of the downtown, and activating the Menlo Park Caltrain Station. The Plan was the basis for the Specific Plan adopted by the Menlo Park City Council in 2013.

Various Clients, Various Urban Design Projects | Various Locations, CA. ***Lead Staff.*** Responsible for providing expertise across a variety of landscape architecture and urban design projects, including master plans, design guidelines, streetscape designs, construction documents, and pedestrian and bicycle plans. Contributed to numerous projects involving extensive community participation, facilitation, and outreach, with significant experience working with communities to develop site-specific design solutions. Focused on developing design solutions that balance the needs and desires of a community with the requirement for cost-effective and feasible interventions. Project experience includes the SANDAG Smart Growth Design Guidelines for the San Diego Association of Governments, the Point Arena Community Action Plan for the Mendocino Council of Governments, the Bay Fair BART Station Area Improvement Plan for the City of San Leandro and BART, the Capital Southeast Connector Sheldon Vision Plan for the City of Elk Grove, and the California Avenue Master Plan for the City of Fresno. Multiple Jurisdictions, Streetscape Planning & Design | Multiple Locations, CA. Lead Staff. Led community collaboration efforts to develop conceptual streetscape designs that balance the needs of pedestrians, bicyclists, and motorists, while enhancing the livability and appeal of the public realm. Demonstrated a strong commitment to Complete Streets principles and consistently integrated sustainability into project development. Collaborated extensively with municipal staff and subconsultants to ensure streetscape plans are cost-effective, compliant with current traffic standards, and shovel-ready. Experience includes the preparation of detailed construction documents and cost estimates for streets currently under construction. Served as the lead on the South Coliseum Way/Edes Avenue Streetscape Plan, the 66th Avenue Streetscape Improvement Project, and the Oakland Avenue/Harrison Street Corridor Community Transportation Plan for the City of Oakland, as well as the Santa Rosa Avenue Corridor Plan for the City of Santa Rosa.

Anthony Mangonon, EIT

Service Planning Lead/Traffic Analysis Support | AECOM

EDUCATION

BS, Civil Engineering, University of California - Berkeley

REGISTRATIONS

EIT, CA #123252

YEARS OF EXPERIENCE

17

Anthony is a transportation planner with extensive experience that includes transit planning, transportation master planning, transportation-related environmental review, and related fields. His primary interests lie in transit planning/operations, including conceptual engineering/design (feasibility studies, technology/vehicle/right of way selection, capital cost estimation), service planning (route design, scheduling, fleet planning, and O&M/revenue analysis), ridership forecasting, and station area planning (transit-oriented developments). His portfolio in these fields includes projects for intercity rail (conventional and HSR), as well as urban and regional transit (light rail transit and bus rapid transit bus, and ferry), and he has a strong foundation in global best practices and precedents in these areas, particularly with intimate knowledge of transit planning/operations and land use integration in Japan.

Relevant Projects

Butte County Association of Governments, ACE Extension to Butte County - North Valley Passenger Rail Study | Chico, CA. ***Lead Technical Analyst.*** Supported BCAG in the development of a strategic plan for implementing extensions to future ACE and San Joaquins passenger rail service into the Northern Central Valley (Chico/Oroville, Marysville, and Yuba City). Key tasks included project scoping and definition; travel market assessment; high-level alternatives analysis of potential route and station options; ridership and revenue forecasting; conceptual timetable development and operations planning; service planning for supplemental and connecting buses; development of fare structure/pricing and funding/financing plans; development of comprehensive outreach materials, including project fact sheets and booklets; and grant application assistance. Includes extensive outreach and coordination with Caltrans, local county and municipal agencies, Union Pacific Railroad (UPRR), and other stakeholders.

Sacramento Regional Transit District, Green Line Light Rail Extension to Sacramento International Airport | Sacramento, CA. ***Supporting Analyst and Planner.*** Responsible for a multi-disciplinary contract for the Green Line light rail extension to Sacramento International Airport, including preparation of an EIR/EIS and associated alternatives analyses and resource-specific technical studies. Provided focused technical assistance for outreach materials targeting local elected officials, including a comprehensive project history to support the selection of the LPA over other technology and alignment options. Provided supplementary analysis of key performance metrics such as ridership, travel time, and construction cost to support the LPA selection process and identify the critical constraints affecting the overall project definition.

Sacramento Regional Transit District, California State Rail Plan - Regional Network Integration Planning | Sacramento, CA. ***Lead Analyst and Planner.*** Assisted SacRT with the development of a network integration plan to improve connections between SacRT local rail/bus services and regional/intercity passenger rail services at Sacramento Valley Station (for the Capitol Corridor) and the future Midtown Sacramento Station (for ACE and the San Joaquins). Conducted a comprehensive and detailed planning and operations analysis to support the development of a series of recommended improvements to SacRT light rail and bus service, accounting for a complex series of interrelated plans and projects affecting future SacRT service, including double-tracking, fleet replacement, service expansion, station redevelopment, and other projects. Key analysis tasks included detailed light rail operations analysis using string line diagrams, timetables, and train load charts; transfer time and walking speed analyses at Sacramento Valley Station; alternatives analysis and scoping of replacement light rail storage options; and frequency improvements and route/stop changes for buses.

Los Angeles County Metropolitan Transportation Authority, Eastside Transit Corridor Phase 2 - Draft Environmental Impact Statement/ Report | Los Angeles, CA. ***Technical Advisor and Joint Task Lead.*** Assisted Metro with a traffic and transportation analysis in support of an EIR/EIS for Phase 2 of the Eastside Transit Corridor (Gold Line). As technical advisor, provided technical guidance to junior staff and conducted quality assurance/quality control (QA/QC) reviews for the intersection level of service (LOS) analysis, including components related to lane/intersection configuration, signal timing/phasing, and traffic forecasts. Reviewed the traffic analysis approach, including recommended study area and analysis locations (intersections), traffic forecasting methodology, significance thresholds/criteria, and vehicle miles traveled (VMT) analysis methodology. As joint technical lead, assisted in various tasks related to conceptual design and planning, including quantity takeoffs (route-miles, station counts, and water crossings) to support early alternatives analysis and refinement and research to support focused outreach efforts with local cities and decision-makers regarding at-grade versus aerial configurations. Assisted in preparation of the transportation and traffic impacts report, including discussions and analysis related to the regulatory framework, the traffic forecasting methodology, traffic circulation (e.g., truck circulation along East Washington Boulevard, construction-related traffic closures, permanent street closure/ abandonment at proposed MSF sites, etc.), and VMT impacts. Conducted additional screening analysis of grade crossings in accordance with Metro's Grade Crossing Policy for Light Rail Transit and prepared additional discussion to support the discussion of potential safety impacts at grade crossings.

Los Angeles County Metropolitan Transportation Authority, Exposition Line (Phase 2) Extension | Los Angeles, CA. ***Support Analyst.*** Assisted Metro with early planning and project definition for the 6.6-mile extension of the Metro Exposition (E) Line light rail service west from Culver City to a new terminus in Downtown Santa Monica along a former interurban streetcar alignment (the Pacific Electric Railway's Exposition Corridor). The project includes seven stations at Palms (at-grade), Westwood/Rancho Park (at-grade), Expo/Sepulveda (elevated), Expo/ Bundy (elevated), 26th Street/Bergamot (at-grade), 17th Street/Santa Monica College (at-grade), and Downtown Santa Monica (at-grade). Assisted in an early alternatives analysis of different route alignment and design options for the line, including comparisons of the degree of grade separation and high-level capital cost estimates.

City and County of San Francisco, Parkmerced Investors LLC, Parkmerced Transportation Plan and 19th Avenue Corridor Study | San Francisco, CA. ***Lead Analyst.*** Responsible for preparation of the environmental review documents covering transportation topics for redevelopment of Parkmerced, a post-war suburban "country estate" development in southwestern San Francisco into a dense, mixed-use community integrated with the surrounding community and the rest of the city. The development program includes 8,900 residential units (5,700 new units, 1,700 units to be retained, and 1,500 units to replaced), 230,000 sq. ft. of retail space, 80,000 sq. ft. of office space. Assisted in general transportation planning, including recommendations regarding roadway access from the congested 19th Avenue (State Route 1) corridor, transit service (including extension of Muni light rail service into the site), and pedestrian and bike improvements. Assisted in roadway planning and parking garage placement within the site. Prepared the 19th Avenue Corridor Study to analyze the effects of the development on overall future transportation conditions in this area, including traffic (intersection level of service) and transit (capacity, travel time) analyses.

San Francisco Bay Area Rapid Transit District, On-call Environmental & Planning 2012-2017 – 19th Street / Oakland Station Capacity and Needs Assessment | Oakland, CA. ***Lead Analyst.*** Responsible for a capacity and needs assessment for one of the most important stations in San Francisco's regional rail system. Efforts included land use and ridership forecasting (detailed assessment of station area land use forecasts against planned and foreseeable future development, combined with system-wide ridership growth as a result of future service expansions and extensions), station user behavioral modeling (including station access mode choice, circulation routes through the station and to / from the surrounding neighborhood, passenger distribution inside trains and on platforms), and comprehensive ridership forecasting at the train level (boardings, alightings, and average load estimates for each scheduled peak hour train serving the station derived based on systemwide origin-destination data and station-specific faregate transaction data). Train-level ridership estimates were incorporated into a passenger flow simulation to develop heat maps and other visual media to identify high-congestion areas of the station and potential areas of improvement for the station's vertical circulation system. Compiled a list of low-cost improvements that could be easily implemented to improve station user experience and developed conceptual plans for major upgrades such as new and expanded station entrances and new escalators.

San Francisco Bay Area Rapid Transit District, On-call Environmental & Planning 2012-2017 – Downtown Berkeley Station Modernization Plan | Berkeley, CA. ***Lead Analysts.*** Estimated automated fare collection (AFC) equipment needs—including faregates (both standard and accessible) , ticket vending machines (TVMs), and "add fare" machines (AFMs)—based on future ridership projections, according to BART's accepted AFC equipment calculation methodology. Characterized service planning context for the station, including calculating existing ridership at the station based on faregate data, estimating future ridership with planned system expansions using BART's internal ridership model, and quantifying event-related ridership demand associated with Cal football home games at Memorial Stadium. Identified existing and planned train frequencies by line, time of day, and day, considering planned capacity upgrades under the BART Metro program and future extensions to Warm Springs, Berryessa, Downtown San Jose, and Santa Clara. Estimated station capacity according to several different capacity metrics, based on BART Facilities Standards (BFS) capacity thresholds for passenger crowding on platforms and passenger input.

Ian Rivera

Service Planning/Land Use and Station Siting Planning Support | AECOM

EDUCATION

MS, Society, Sustainability, and City Planning, Rijksuniversiteit Groningen

BA, Environmental Studies, UC Santa Cruz

YEARS OF EXPERIENCE

2

Ian plans, builds, and provides design assistance for major transportation projects in California. He currently focuses on analyzing rail corridors. Prior to his work as a transportation planner, he worked as a planning policy intern for the County of Santa Cruz where he aided in updating their Regional Housing Needs Assessment.

Relevant Projects

Los Angeles County Metropolitan Transit Authority (LA Metro), Sepulveda Transit Corridor Project Draft EIR | Los Angeles, CA. ***General Planning Support.*** Drafted and was involved in the QAQC process of the Unresolved Environmental Issues Technical Memorandum. Read, organized, and bracketed comments received from individuals and agencies. Reviewed, identified inaccuracies, and performed rewrites in the MMRP.

LA Metro, Eastside Transit Corridor Phase II Recirculated Draft EIR | Los Angeles, CA. ***General Planning Support.*** Ian is a generalist and contributor in the compiling of the Draft and Final EIR and the NEPA EA. He has drafted and been involved in the QAQC process of the Public Outreach chapter of the Environmental Assessment. He has compiled resources and created Appendices as well as assisting with the TQRR process.

San Joaquin Joint Powers Authority, Madera HSR Station Full-Build Project Phase 3 | Madera, CA. ***General Planning Support.*** Ian's work for the SJJPA was focused on writing where he drafted the Notice of Availability and Executive Summary of the Final EIR. He also created the Notice of Preparation and Scoping Memorandum Appendix and aided in the creation of the MMRP.

Long Beach Transit Facility, Categorical Exclusion | Long Beach, CA. ***General Planning Support.*** Researched and drafted sections of the Categorical Exclusion including Impacts on Wetlands, Impacts on Floodplains, Land Use and Zoning and Prime and Unique Farmlands. This work required him to research and learn about local and national guidelines such as those set out by the EPA and the SWRQCB.

San Joaquin Regional Rail Commission, Elk Grove Double Track Subsequent DEIR | Elk Grove, CA. ***General Planning Support.*** Ian prepared the Notice of Availability of the Subsequent DEIR as well as contributing to the Hydrology and Utility sections. This work required him to analyze both the City and County plans of Elk Grove and Sacramento to ensure the project's adherence. Minor calculations were needed to obtain correct figures regarding the area's water and energy uses.

County of Santa Cruz, Various Projects | Santa Cruz, CA. ***Planning Policy Intern.*** As a Planning Policy Intern, Ian aided in the updating of the County's Regional Housing Needs Assessment. This included the use of U.S. Census Data Sets, online databases, and GIS to create comprehensive Reports. He familiarized himself with local zoning laws and ordinances.

Nak Kim, PE

Traffic Analysis Lead | AECOM

EDUCATION

Bachelor of Science (BSE), Civil Engineering, Arizona State University

REGISTRATIONS

PE, CA #76476

YEARS OF EXPERIENCE

26

Nak is a senior engineering manager with 26 years of progressive experience in traffic and transportation engineering. His primary focus of expertise is on traffic engineering design, studies, analysis, and modeling. Nak's project experience includes traffic operational analysis; traffic impact studies; corridor studies; transportation planning; forecasting; parking studies; pedestrian/bicycle studies; VMT analysis; TMP; and traffic simulation modeling. Nak is a key member and technical lead of the AECOM Traffic Team for California. He has successfully completed a wide variety of traffic and transportation engineering projects for several Local Municipalities, County and State DOTs, and transit agencies.

Relevant Projects

Transbay Joint Powers Authority, Transbay Phase 2 Portal Tunnel PMPC 2024-2033 - Project Support FY24-25 | San Francisco, CA. ***Senior Traffic Manager.*** Nak was responsible for supporting traffic studies for the Transbay Transit Center program in San Francisco, California. AECOM provided program management and construction management staff during Fiscal Year 2024-2025 for pre-construction and construction services for the Transbay Transit Center program in San Francisco, California. Services included program and project management; construction management and construction support; project delivery and contract development/compliance; configuration management; project controls; estimating; and community outreach and construction relations.

City/County Association of Governments of San Mateo County (C/CAG), C/CAG-VTA Travel Demand Model in Support of Transportation Analysis and Planning in San Mateo County | San Mateo County, CA. ***Senior Traffic Manager.*** Travel Demand Model on-call services to operate and enhance the countywide travel demand model for the City/County Association of Governments of San Mateo County (C/CAG), a Joint Powers Agency comprised of each of the 20 cities and the County in San Mateo County. C/CAG travel demand model is used by C/CAG, its member agencies, and planning partners in San Mateo County for transportation analysis and planning. C/CAG may also select AECOM to provide travel demand modeling services on upcoming projects on an as-needed basis. [02/2022-Ongoing]

Los Angeles County Metropolitan Transportation Authority, Sepulveda Transit Corridor Environmental Review and Conceptual Engineering | Los Angeles, CA. ***Senior Traffic Manager.*** Nak provided a traffic analysis to support the preparation of the Project's Environmental Impact Report (EIR) and Environmental Impact Statement (EIS) for the Sepulveda Transit Corridor Project. The project involved the planning and construction of a fixed-guideway, high-capacity transit line between the San Fernando Valley to the Westside with an option for Los Angeles International Airport (LAX), generally within the I-405 corridor. The project provides a high-quality transit service that effectively serves a large and growing travel market between the San Fernando Valley and the Westside, including the LAX area. The environmental process for the Sepulveda Transit Corridor evaluated the environmental impacts and benefits of the project alternatives, building upon the recently completed feasibility study and the expected predevelopment agreement proposals. The project is identified as one of Metro's "Twenty-Eight by 2028 Initiative" projects.

Orange County CA Transportation Authority, Irvine Metrolink Station Improvements | Irvine, CA. ***Senior Traffic Manager.*** Nak provided a Traffic and Transportation Study to address the Traffic and Transportation section of the project environmental document for the Irvine Station Improvements Project. The project involved the cooperation of Orange County Transportation Authority and Southern California Regional Rail Authority (SCRRA) to construct improvements at the Irvine Metrolink Station, including trackwork between west of CP Tinkham at Milepost 184.0 and east of CP Bake at

MP 186.9. Preliminary Engineering and Environmental Services included work elements necessary for the various tasks related to the conceptual design, value engineering, project phasing determination, preliminary engineering (30% design), and environmental phase of the Irvine Station Improvements Project as part of the SCRRA's Southern California Optimized Rail Expansion Program.

Los Angeles County Chief Executive Office, Old Road over Santa Clara River & SPT Bridge Roadway Improvements CEQA/NEPA | Los Angeles, CA. ***Senior Traffic Manager.*** Nak provided a traffic study to support Los Angeles County Public Works' proposed implementation of The Old Road over Santa Clara River and Southern Pacific Transportation Company (SPT Co.) Bridge Project, which would increase regional roadway capacity, reduce congestion, and enhance safety in the project area through the implementation of various roadway improvements along The Old Road between Henry Mayo Drive and Magic Mountain Parkway. The improvements primarily consisted of reconstruction and widening of The Old Road, replacement of two bridges along The Old Road alignment (one that crosses over Santa Clara River and another that crosses over abandoned Union Pacific Railroad tracks), and reconstruction and widening at Skyview Lane, including reconfiguration of its intersection with The Old Road. [12/2021-Ongoing] [60636570]

Burbank Planning & Transportation Division, High Speed Rail Station Area Plan - Golden State Specific Plan | Burbank, CA. ***Senior Traffic Manager.*** Nak was responsible for providing a traffic study. The Golden State District Specific Plan (GSSP) encompasses approximately 640 acres located immediately east and south of Hollywood-Burbank Airport in Burbank, California. The GSSP area has long benefited from robust transportation infrastructure, including Hollywood-Burbank Airport and commuter rail stations on the Metrolink Ventura and Antelope Valley lines. In the coming years, the area is expected to undergo significant transportation transformations, such as the relocation of the existing terminal at Hollywood-Burbank Airport and the development of Burbank's proposed High-Speed Rail station.

Port of Los Angeles, POLA Engineering On-Call 2023 | Los Angeles, CA. ***Senior Traffic Manager.*** Nak was responsible for delivering transportation studies and analyses. The project scope involved conducting these studies and analyses to support the Harbor Department in the planning and development of transportation systems and terminal projects.

US Naval Facilities Engineering Command Northwest, NEPA Document Preparation 2018-2023 - Bremerton Shipyard Wharf Environmental Impact Statement | Bremerton, WA. ***Senior Traffic Manager.*** Nak was responsible for conducting a traffic study. The Navy proposed the construction of a dry dock and associated waterfront infrastructure improvements to support future military projects at Puget Sound Naval Shipyard and Intermediate Maintenance Facility, located on Naval Base Kitsap Bremerton. The Environmental Impact Statement (EIS) for the Proposed Action aimed to enhance dry dock capacity and capability, address seismic deficiencies, and replace aging infrastructure that has exceeded its design lifespan. As part of the Proposed Action, the Navy planned to implement several component actions to achieve these objectives.

California Department of Transportation, I-80/Gilman Street I/C | Berkeley, CA. ***Principal Traffic Engineer.*** The I-80/Gilman Street Interchange Project was to simplify and improve navigation, mobility, and traffic operations; reduce congestion, vehicle queues, and conflicts; improve local and regional bicycle connections and pedestrian facilities; and improve safety at the I-80/Gilman Street interchange. The Project's Preferred Alternative proposed the reconfiguration of the I-80 ramps and intersections at Gilman Street. The I-80 ramps and frontage road intersections at each ramp intersection were combined to form a single roundabout intersection on each side of I-80. Work also included reconstruction of West Frontage Road and Eastshore Highway within the Project limits. The Project also involved a new pedestrian and bicycle overcrossing located south of Gilman Street with two staircases incorporated into the overcrossing, one on each side of I-80.

Los Angeles County Metropolitan Transportation Authority, Imperial Highway | Lynwood, CA. ***Principal Traffic Engineer.*** The Los Angeles County Metropolitan Transportation Authority, in cooperation with the City of Lynwood, proposes to improve Imperial Highway, an I-105 alternate route between Long Beach Boulevard and Atlantic Avenue, for a total of approximately 1.6 miles. These improvements are part of the I-710 Corridor Improvement Project Early Action Program. The Imperial Highway Corridor Enhancements Project facilitated improvements in highway operations, safety, and mobility through a widening of the highway and mitigations of traffic congestion.

California Department of General Services, CALFIRE Humboldt Del Norte Unit Headquarters Facility Relocation | Rio Dell, CA. ***Senior Traffic Manager.*** Nak provided a Vehicle Miles Traveled (VMT) analysis to evaluate transportation impacts in compliance with the California Environmental Quality Act (CEQA). AECOM provided environmental services, including the preparation of environmental documents and studies, related to the proposed relocation of the California Department of Forestry & Fire Protection's (CalFire) Humboldt Del Norte Unit Headquarters at 410 4th Avenue in Rio Dell, Humboldt County, California. The proposed project includes the demolition of the existing two structures and construction of a new Region Unit Headquarters.

Minh Tran

Traffic Analysis Support | AECOM

EDUCATION

BS, Computer Science, Cal State Fullerton

YEARS OF EXPERIENCE

19

Minh brings 19 years of experience in transportation planning and traffic engineering in urban areas and airports. His technical experience covers traffic operation analysis/ simulation, traffic impact analysis, traffic forecasting, transportation simulation, travel demand modeling, light rail and transit, congestion pricing & toll and revenue, and managed lane operations.

Relevant Projects

LA Metro, VISSIM Traffic Modeler, East San Fernando Valley (ESFV) Light Rail Transit | Los Angeles, CA. ***VISSIM Traffice Modeler and Peer Reviewer/Landside Traffic Modeler.*** As part of the Los Angeles County Metropolitan Transportation Authority's (Metro) urban rail system, the Initial Operating Segment (IOS) of the East San Fernando Valley (ESFV) Transit Corridor project will develop a new Light Rail Transit (LRT) service that will connect the existing Van Nuys Metro Orange Line (MOL, now known as the G Line) Bus Rapid Transit (BRT) station and terminate at the Van Nuys Boulevard/San Fernando Road intersection. The IOS consists of a 6.7-mile street-running at-grade LRT in the median of Van Nuys Boulevard with eleven center platform station. Mr. Tran performed peer review of VISSIM models for both existing condition and opening year condition when LRT in operation.

For the second task, Mr. Tran was tasked with reviewing two VISSIM models for the opening year, with the LRT operating at a 5-minute headway. He conducted a thorough review of the models using traffic microsimulation to identify any locations or intersections with traffic circulation issues. He proposed treatments that could be implemented without altering lane geometry or signal operations. Subsequently, he revised the models with the proposed treatments and reran the traffic microsimulation to determine if the issues were resolved. He documented the changes in a memo, including screenshots of the traffic simulations to compare conditions before and after the implementation of the proposed treatments.

BART, BART Dublin/Pleasanton Tail Tracks Extension 580 Freeway Lane Closure Study | Alameda County, CA. ***Transportation Planner.*** The study is intended to evaluate potential closures of up to two lanes on Interstate 508 (I-580) in the eastbound and westbound direction adjacent to the BART Dublin/Pleasanton Station to facilitate work at this locations which consists of the extension of the existing tail tracks 200 feet within the median of Interstate I-580, including site work, ballasted trackwork, traction power, train control, structural work and electrical modifications; lighting, electrical, and systems work; as well as work on the I-580 Express Lane gantry for highway toll. There will need to be at least one or two lanes closed for the initial placement of the Type K Temporary Rail (K-Rail) along the edge of the traveled way in both the Eastbound and Westbound directions, and again for removal. Mr. Tran led data collection effort in traffic volumes/speeds and conducted spreadsheet calculations to evaluate the impact of closures of up to two lanes on I-580 within the close vicinity of BART Dublin/Pleasanton Station for estimating travel time, delay, and queue lengths (between weekday and weekend) during its construction phases.

LA Metro, I-405 Sepulveda Pass Widening Design-Build, LA Metro | Los Angeles, CA. ***VISSIM Traffic Modeler.*** Minh developed VISSIM models for traffic simulation which helped to examine design alternatives closely for the new hook ramps to replace the existing Skirball SB ramps/I-405. The traffic simulation final product was also used for a public information campaign

City and County of San Francisco, Curbside Congestion Study - San Francisco International Airport (SFO) | San Francisco, CA. ***Landside Traffic Modeler.*** Minh analyzed SFO-provided 2016 curbside survey data and landside operations data in SPSS to generate statistics and parameters to be used as inputs to the VISSIM traffic simulation models. He updated the VISSIM models developed by HNTB on previous projects with SFO (2008 and 2012) and calibrated the models to reflect existing conditions and operations. He worked on separate models for the Domestic Terminals' Arrivals and Departures Levels, and the International Terminal's Arrivals and Departures Levels. The project evaluated the operational performance of various curbside mode allocation alternatives under consideration by SFO for the Domestic and International Terminals roadways to come up with a preferred alternative.

Washington DOT, I-5/Marine View Drive to SR-528 Traffic Analysis, Washington DOT | Snohomish County, WA. ***Traffic Modeler.*** I-5 experiences recurring weekday traffic congestion between Everett and Marysville in Snohomish County. The northbound (NB) segment of I-5 between Marine View Drive and State Route (SR) 528 was identified by the Washington State Department of Transportation (WSDOT) as a candidate segment that could benefit from implementing a peak period use shoulder lane to improve mobility and reduce recurring congestion on this corridor. A new NB off-ramp to SR 529 from I-5 as well as a complimentary new southbound (SB) on-ramp from SR 529 to I-5 will be constructed. Mr. Tran developed OD matrix tables, then used it to route traffic along the NB of the freeway in a VISSIM model to be used as Existing Conditions. He also calibrated the VISSIM model against the existing condition so it could be used as a starting point of building future condition models for this project as needed.

LA Metro, Traffic Engineer, Gold Line Eastside Transit Corridor Phase 2 | Los Angeles, CA. ***Traffic Engineer.*** This study evaluates the potential environmental impacts of the Build condition with the Project. The Project would extend the Metro E Line approximately 4.6 miles east from the current terminus at Atlantic Boulevard to an at-grade terminal station at the Greenwood station in the City of Montebello; would include a relocated open-air shallow underground Atlantic station and three new stations: Atlantic/Whittier (underground), Commerce/Citadel (underground), and Greenwood (at-grade); and would have approximately 3.0 miles of underground, 0.5 miles of aerial, and 1.1 miles of at-grade alignment. There are 40 intersections have been identified for this traffic study under three scenarios (Existing, No Build, Build). Mr. Tran led traffic modeling effort in Synchro and report preparation for this study. His efforts included developing Synchro models, extracting link volumes from Travel Demand Model outputs, calculating the growth rate per subareas, and developing the future turn movement volumes by applying appropriate subarea growth rate to grow each study intersection from 2025 to 2050 using Excel.

Santa Cruz County Regional Transportation Commission (SCCRTC), SR 1 (between State Park and Freedom Interchanges) Auxiliary Lanes and BOS Project Traffic Study | Santa Cruz County, CA. ***Transportation Planner.*** The study is evaluating the traffic impacts (operations and safety) due to SR 1 with implementation of auxiliary lanes and bus-on-shoulder Project between State Park to Freedom interchanges. Minh conducted data collection of traffic speeds along SR 1 for the Existing (2019) model calibration effort; estimated/projected traffic data for existing and future traffic conditions; conducted Existing (2019) models' calibration; and developed future models under each scenario and performed model runs for Existing and future years using FREQ.

Pranjali Shah, AICP

Alternatives Planning Support | AECOM

EDUCATION

Master of Urban Planning, Transportation Planning, University of Illinois Urbana-Champaign

Master of Technology, Infrastructure Engineering, CEPT University, India

BS. Civil Engineering, Gujarat University, India

REGISTRATIONS

AICP #36360

YEARS OF EXPERIENCE

5.5

Pranjali is a Transportation Planner and Civil Engineer who has worked on various transportation planning and engineering-related projects. She has developed extensive grant-writing skills for the competitive federal grant program for various transportation-related projects. Over the past 2.5 years at AECOM, she has led, managed, and supported over 15 federal grant applications, securing more than $17 million in competitive federal funding for clients across the U.S. Additionally, she has planning and engineering experience on transportation corridor studies, feasibility study, road safety assessments, alternative analyses, long range transportation plans, traffic impact studies, crash analyses, active-transportation analyses, activity-based transportation modeling, and engineering construction site project management. She has been involved in various tasks, i.e., data evaluation and analysis, report writing, grant writing, spatial analysis, road safety, active transportation planning, and data screening tasks for various transportation projects.

Relevant Projects

City of Phoenix, 35th Avenue / Van Buren Street Bus Rapid Transit Preliminary Engineering | Phoenix, AZ. ***Alternative Analysis.*** AECOM is conducting the preliminary engineering for the City of Phoenix's first Bus Rapid Transit (BRT) route within the Phoenix metropolitan region. The 35th Avenue / Van Buren Street corridor has been selected as the first BRT route to be advanced to preliminary engineering, identified in 2021. Pranjali is supporting the alternative analysis, including data analysis, developing alternative analysis scoring methodologies, and supporting documentation and visualization development. On the engineering side, she has worked on preliminary cost estimation for different alternation including quantity estimation, itemize cost research and cost comparison.

Valley Metro LRT, South Central Extension Phase III | Phoenix, AZ. ***Planning Support.*** The South Central Light Rail Transit Extension is a major 5.5-mile light rail expansion designed to improve connectivity between South Phoenix and the regional transit network. As part of this effort, AECOM provided multidisciplinary design services, including station architecture, civil and track design, streetscape enhancements, utility coordination, traffic operations, and construction-phase design services. Pranjali contributed to the project by assisting with signage and wayfinding assessment and updates, supporting design coordination, and preparing related technical documentation and reports. City of Phoenix, Transportation T2050 Grant Assistance Program | Phoenix, AZ. Grant Support. Within the City of Phoenix Transportation 2050 program, AECOM provides extensive grant development and assistance services for both Street Transportation and Public Transit departments. This assistance includes developing successful regional, state, and federal grant funding pursuits, and provided technical expertise throughout numerous public and stakeholder events. Pranjali has extensively researched the wide spectrum of federal grant opportunities, particularly related to the Bipartisan Infrastructure Law (BIL), and documented opportunities into project scope focal areas to support future competitive grant funding opportunity preparedness to identify the best match between project and funding opportunities. Pranjali has been working on the preparation of the grant application, including the economics analysis, demographic analysis, safety analysis, equity studies, graphics support, and narrative preparation for all the applications. Furthermore, Pranjali directly engaged with the client, stakeholder agencies and the internal team throughout project development by coordinating and conducting PM coordination meetings and working group meetings.

City of Louisville, Bradway All Way BRT | Louisville, KY. ***General Planning Support.*** AECOM is working as sub consultant for Phase IA of Planning and Design of the Broadway All the Way project. The AECOM team scope of work includes transit planning visioning, initial screening and detailed alternative evaluation for 10

miles long project corridor in Louisville, Kentucky. Pranjali has worked on the initial purpose and need study for project visioning process as well as initial screening and analysis. She conducted detailed analysis for identifying mode and verifying alignment for detailed evaluation phase. Her tasks included data collection, analysis, report writing, mapping, developing matrix for evaluation etc.

CYMPO, Sundog Connector | Prescott, AZ. ***Outreach.*** AECOM is conducting a Design Concept Report (DCR) and Environmental Overview (EO) analysis of the proposed Sundog Connector corridor between the City of Prescott and Town of Prescott Valley. The project includes identification of the project needs, conducting a comprehensive EO, developing corridor design alternatives, conducting alternative analysis screening process, and conducting public and stakeholder outreach. Pranjali worked on preparing outreach material, creating maps and visualization and analysis public feedback. She is involved in the alternative analysis and her main tasks includes data evaluation, preparing rating methodology, alternative prioritization matrix development and representation. She worked on EO report writing, research, analysis and map making for Environmental Analysis.

ADOT, North-South Corridor Tier 2 EIS | Pinal County, AZ. ***General Planning Support.*** ADOT is preparing Design Concept Report for North-South Corridor Study from Arizona Farms Road to US 60 along with Environmental Impact Statement (EIS) within Pinal County. Pranjali has worked various tasks within this project including research, memorandum writing, preliminary analysis, internal task coordination for EIS.

ADOT, I-10 Country Club Road & Kino Parkway TIs | Pima County, AZ. ***Traffic Support.*** AECOM has been awarded contract with ADOT for General Engineering Services for I-10 Country Club Road & Kino Parkway Tis for Phase I and Phase II within Pima County, AZ Pranjali worked on the traffic impact study for Phase I of the project. She supported Traffic team to conduct preliminary and final design of Interchange, traffic impact studies, report writing, graphical support etc.

MassDOT/MBTA, 2024 Charging and Fueling Infrastructure Grant | Various, MA. ***Grant Support Narrative Development.*** AECOM prepared Massachusetts Department of Transportation (MassDOT) Charging and Fueling Infrastructure (CFI) grant application narrative for community program and help them secure funding of $14.4 million in FY 2024. Pranjali led the narrative development under a tight deadline. She worked on data collection, document review, analysis and research followed by grant writing tasks.

NACOG, Road Safety Action Planning | Verde Valley, AZ. ***General Planning Support.*** AECOM is working with NACOG to update Verde Valley Master Transportation Plan along with Comprehensive Safety Action Plan under Safe Streets for All grant program. Pranjali conducted a detailed regional-level crash data analysis to understand the characteristics of various crash types, frequency, injury severities, violation, vehicle associated, and underlying causes. She performed detailed geographical analysis to identify contributing factors and key safety concern for major towns within Verde Valley, including Cottonwood, Sedona, Camp Verde. Verde Village, and Lake Montezuma find Safety Emphasis Areas.

Annie Merritt, PE

Engineering Lead | AECOM

EDUCATION

MS, Interdisciplinary Engineering, Purdue University

BS, Civil Engineering, Purdue University

REGISTRATIONS

PE, CA #C86027

PE, TX #PE148991

PE, IN #PE10810187

YEARS OF EXPERIENCE

22

Annie Merritt is a professional civil engineer with 22 years of experience in project management, planning, analysis, and design for transit and transportation agencies, as well as federal, commercial, residential, and military installations worldwide. She has provided project management and civil engineering support for bus rapid transit (BRT), light rail transit (LRT), and freight rail (FRT) projects. She has a background in transit infrastructure design and construction, with an emphasis on busway modifications to support both dedicated and mixed-use bus lanes, as well as supportive stormwater management, utility improvements, and water quality designs. Annie is proficient in AutoCAD, MicroStation, ICPR, StormCAD, and other software tools used to create design construction documents that result in efficient and cost-effective installations.

Relevant Projects

City of Los Angeles, Vermont Transit Corridor Project | Los Angeles, CA. ***Engineering Design Manager.*** The project consists of approximately 12.4 miles from its southern terminus at 120th Street (south of the Vermont/Athens Metro C Line Station) to its northern terminus at Hollywood Boulevard (near the Sunset/ Vermont Metro B Line Station in Hollywood). Annie is the Engineering Design Manager providing oversight on the Preliminary Engineering designs and coordination with the City of Los Angeles departments, Los Angeles Counties, Third Parties and other authorities having jurisdiction such as Caltrans.

City of Calgary, Green Line Light Rail Transit (LRT) Alternative Assessment | Calgary, Canada. ***Alternative Assessment Task Lead.*** The Green Line is a planned expansion of the light rail (LRT) network in Calgary Alberta, which extends from Calgary's north-central and southeastern boundaries, totaling approximately 46 kilometers. Annie is the task lead in providing an alternative assessment for the downtown portion, from the original concept of tunneling through the entirety of downtown Calgary.

METRORapid, Bus Rapid Transit (BRT) University Line Project | Houston, TX. ***Utilities Manager.*** The University Line BRT project is a 25-mile proposed line which extends through Westpark, Richmond and Lockwood corridors. It begins at Westchase Park and Ride and ends at the Tidwell Transit Center. The University Line BRT will connect to the Wheeler Transit Center, running east to the University of Houston/Texas Southern University (UH/TSU) area. East of the UH/TSH, the line runs in the north-south Lockwood corridor, terminating at the Tidwell Transit Center. Annie is the Utilities Manager overseeing the utility relocation designs from both in-house engineers and sub consultants. The daily tasks also include coordinating with other design disciplines and provide directions in conflict mitigation. Annie is responsible for delivering the 30% utility relocation designs as well as coordinating with METRO, HCTRA, the municipalities and third-party utility owners. Under the Final Designs oversight phase, Annie is in charge of reviewing the Interface Management plan, coordinating with the City of Houston in addressing design review comments, and reviewing design changes with METRO and the third-party utility owners to provide directions to the final designers across disciplines.

Central Ohio Transit Authority (COTA), West Broad Bus Rapid Transit Project | Columbus, OH. ***Engineer.*** Annie is supporting the utility review and coordination on the final designs delivery. The West Broad Street Bus Rapid Transit (BRT) locally preferred alternative is a 9.3-mile High-Capacity Rapid Transit corridor that will serve 17 stations along West Broad Street from a new Park and Ride facility at Rockbrook Crossing to Washington Avenue and Long Street in Downtown Columbus.

Central Ohio Transit Authority, East Main Street Bus Rapid Transit Project | OH. ***Segment Lead.*** The East Main Street Bus Rapid Transit (BRT) locally preferred alternative is a 13-mile High-Capacity Rapid Transit corridor that will serve 18 stations from Downtown Columbus at the Spring

Street Terminal, south on High Street, east on Main Street and Rich Street in downtown, continuing east to Taylor Road. The BRT will operate in dedicated guideway for 11 miles, switching to mixed traffic in Bexley. Annie is the Segment Lead responsible for delivering the 30% civil designs which includes roadway and removal packages.

BART, District B.28-01 A-Line, S-Line and W-Line Tunnel Water Mitigation Design Services | San Francisco, CA. ***Project Manager.*** Provide tunnel water intrusion inspections at the A- and S- Lines tunnels. Perform inspection planning, onsite visual inspections of the areas of the tunnels, observation of water intrusion, and prepare a written report that documents the inspection findings. Preparation of preliminary cost estimates on repairs as well as provide Engineering Support During Construction (ESDC). Annie was the Project Manager that oversaw the sub-consultants in finalizing the Geotechnical Report as well as coordination with clients on comment close out.

BART, District B.22 Fracture Critical Bridge Inspections | San Francisco, CA. ***Project Manager.*** Provide on-site inspection of 29 BART-owned fracture-critical bridges in the San Francisco areas. Prepare updated Bridge Inspection Reports. Annie is the Project Manager scheduling the Bridge Inspections to meet BART's schedule by coordinating with Traffic Engineers to prepare Traffic Control plans to obtain municipality permits for inspection. Annie also coordinated with Caltrans to secure required Lane Closure permits for the bridge inspection. Annie provided oversight in finalizing the Bridge Inspection Report as well as coordination with clients on comment close out.

Northern Indiana Commuter Transportation District (NICTD), WestLake Corridor | Northern IN. ***Utility Manager.*** The West Lake Corridor (WLC) Project is an approximate 8-mile southern extension of the existing South Shore Line ("SSL") between Hammond and Dyer, Indiana. The existing line will be extended to the south to provide new passenger rail service to three municipalities in Lake County, Indiana, across Hammond, Munster and Dyer. The proposed new branch line would connect with the existing SSL and ultimately with the Metra line to the north to Millennium Station in Downtown Chicago, for a total distance of approximately 30 miles. Annie is the Utility Manager in both the proposal phase and the design phase. She provided support in creating a conceptual utility mitigation plan and utility conflict matrix to identify potential conflicts and mitigation measures for each utilities. During the design phase, Annie is in charge of overseeing the utility design team, subcontractors and Jacob's Global Integrated Delivery team in developing proposed utility relocation plans to mitigate utility conflicts. As part of the conflict mitigation, Annie worked closely with NICTD, the third party utility owners and municipalities in providing final directions across multiple disciplines. Utilized Bentley Power InRoads design software for 2-D design and planset production. Annie also provided Design Support During Construction (DSDC) services by reviewing design shop drawings, responding to RFI's and providing directions to the contractors in any design changes in the field.

Caltrans, Arroyo Seco Parkway (SR-110) Project | Los Angeles, CA. ***Utility Coordinator.*** The Arroyo Seco Parkway (SR-110) project is a Project Study Report which proposes 4 alternatives to enhance traffic safety along a 4.81 mile segment on Arroyo Seco Parkway, between Figueroa Street Off-Ramp and Orange Grove Avenue. Annie provided support in creating an existing utilities map and utility conflict matrix to identify potential conflicts for each alternative. Annie also developed utility plans to provide mitigation measures for the utility conflicts with the proposed alternatives. Utilized Bentley Power InRoads design software for profile, cross-sections and planset production.

Los Angeles County, West Santa Ana Branch Corridor Project | Los Angeles, CA. ***Advanced Conceptual Engineering Support.*** West Santa Ana Branch (WSAB) Transit Corridor (Project) is a proposed light rail transit (LRT) line that would extend up to 19.3 miles through southeast Los Angeles (LA) County, traversing densely populated, low-income, and heavily transit-dependent communities. Annie provided support in the Advanced Conceptual Engineering plans design support, the Conceptual Engineering Report and Environmental Impact Report. Utilized Bentley Power InRoads design software for profile, cross sections and planset production.

California High-Speed Rail, Madera to Fresno - Engineering | Madera to Fresno, CA, United States. ***Utility Manager.*** The $1 billion design-build project includes the first section of an ultimate 800-mile-long new high-speed rail system that will accommodate trains running between San Diego and Sacramento at speeds of more than 200 mph. Parsons is serving as the lead designer for the initial 29-mile alignment in the Central Valley that begins in Madera and ends just south of Fresno. It is predominately a civil infrastructure project that includes 27 grade separations, a 250-foot-long jacked box tunnel, 3.4 miles of aerial structures, a major river crossing over the San Joaquin River, and 2.7 miles of trench. Annie was the utility manager that oversees subcontractors in sanitary and water designs as well as in-house engineers and designers for the dry utilities designs. The dry utilities include gas, oil, electric and communications. Annie also manages submittal schedules and budgeting. She coordinates with the Authority, UPRR, contractors, city officials, subcontractors, as well as disciplines leads for utility conflicts.

Asia Robinson

Engineering Support | AECOM

EDUCATION

BS, Civil Engineering,Temple University

YEARS OF EXPERIENCE

10

Asia has gained experience in the engineering design and production of signage and striping for dedicated bus rapid transit (BRT) lanes, conceptual design of BRT stations and subsequent curb and sidewalk improvements, conventional bike lanes, and the development and review of plans regarding Light Rail Transit (LRT) and Heavy Rail Transit (HRT) systems. Asia has additional experience in overseeing technical coordination amongst joint venture partners, engineering disciplines, and authorities having jurisdiction (AHJ); construction monitoring (CM) and inspection of major railway and grade crossing reconstruction; the inspection and survey of railroad property regarding overhead and undergrade utility encroachments, impact and cost analysis and plan development regarding ROW acquisitions; producing Preliminary Engineering (PE) design and construction cost estimates, and PE, CM and ROW entry agreements. Asia's experience is from both the Los Angeles West Transit group and Philadelphia Freight and Rail Transit group.

Relevant Projects

Los Angeles Metropolitan Transportation Authority (LA Metro), Vermont Transit Corridor Project PE Design | Los Angeles, CA. ***Civil Engineer.*** The project scope consisted of developing the 30% PE design of a high-capacity BRT alternative along Vermont Avenue, between 120th Street and Hollywood Boulevard, in Los Angeles, CA. Responsibilities consisted of the engineering design of striping and signage for dedicated BRT lanes, conventional bike lanes, protected cycle tracks with buffers and/or bollards, general traffic lanes and continental pedestrian crosswalks at BRT stations for the South Subarea of the corridor (approximately 5 miles) per Los Angeles Department of Transportation (LADOT) standards; responsibilities also included overseeing technical coordination of the stations-architecture and landscape-architecture joint venture partners with LA Metro, project subconsultants and engineering disciplines.

LA Metro, Vermont Transit Corridor Project ACE Design | Los Angeles, CA. ***Civil Engineer.*** The project scope consisted of developing the Advanced Conceptual Engineering (ACE) design of a high-capacity BRT alternative along Vermont Avenue, between 120th Street and Hollywood Boulevard, in Los Angeles, CA. Responsibilities consisted of producing the conceptual design of multiple BRT stations within the corridor; roadway striping design prioritizing bus-only lanes and existing parking along the corridor; subsequent civil (curb, striping, crosswalk) modifications per LA-Metro and City of Los Angeles (COLA) standards; producing 2D renderings/typicals of intersections along the corridor detailing both existing and proposed roadway conditions; producing and resolving project comments via resolution matrices with COLA, LA Metro and engineering disciplines.

LA Metro, Doran Street Grade Separation Active Transportation Access | Los Angeles and Glendale, CA. ***Civil Engineer.*** The project scope consisted of designing the River Access Bridge – a grade separation via a new MUP overpass spanning Doran Street, and crossing above San Fernando Road and existing Metrolink tracks, in both the City of Los Angeles and Glendale, CA. Responsibilities included producing the 35% civil engineering design, including the MUP overpass and switchback ramps east and west of the crossing per ADA, LA Metro and Caltrans standards; subsequent sidewalk and commercial driveway modifications relative to on-ramp placement; profile analysis of the proposed MUP bridge ensuring the necessary clearances from the top of Metrolink rails and roadway.

Southern California Regional Rail Authority (SCRRA), Perris Valley Line Drainage Improvements | Riverside, CA. ***Civil Engineer.*** The project scope consisted of improvements to two (2) existing retaining walls and multiple culverts between Mount Vernon Avenue and River Crest Drive along the SCRRA Perris Valley Subdivision. Responsibilities included producing the civil drainage plans detailing

concrete improvements to the existing east and west retaining wall panels and piles; producing the design and construction cost estimate; culvert concrete headwall calculations per SCRRA standards; producing cross-sections and typicals detailing culvert installation cut/cover limits, riprap installation limits, and debris post bollards relative to SCRRA ROW.

LA Metro, K-Line (Green/ Former C) Extension to Torrance | Torrance, CA. ***Track Engineer.*** The project scope consisted of developing ACE drawings and specifications for three alternative guideways -at-grade, aerial and trench – detailing the extension of the existing LA Metro K-Line (Green/ former C-Line) railway in Torrance, California. Responsibilities included producing typical/cross-sections at critical points along the alignment; producing ROW plans detailing all proposed acquisition areas, permanent and temporary construction easements, and material staging areas; the horizontal design of LRT segments and a rail storage yard; producing the design and construction cost estimate quantities reflecting required utility relocations, ROW acquisition areas, track infrastructure, grading and excavation, and prefabricated super and substructures needed for each respective alternative.

SCRRA, Burbank Corridor Safety Improvements | Burbank, CA. ***Track Engineer.*** The project scope consisted of developing pedestrian-crossing safety improvements to the existing Burbank Downtown and Burbank Airport South railway stations in Burbank, CA. Responsibilities included producing construction phasing plans detailing rail station platform extensions and/or resizing, track shifts, installation of intertrack fencing, pedestrian crossing reconstruction and/or closures, and demolition work for each station (where applicable); producing the design and construction cost estimate for each station; producing a matrix detailing all exceptions needed for project implementation against applicable SCRRA specifications and design criteria for coordination and approval.

San Diego Association of Governments (SANDAG), South Bay to Sorrento Multimodal Plan | San Diego, CA. ***Track Engineer.*** The project scope consisted of developing a comprehensive multimodal transit alignment that spans between the regions of South Bay and Sorrento Valley in San Diego, California. Responsibilities included the production of a GIS-based railway alignment consisting of combined aerial and tunnel guideways relative to existing terrain, existing rail alignments, stations and bus routes, and present and future population and housing statistics (12/2022).

LA-Metro, K-Line (Crenshaw) North Extension | Los Angeles, CA. ***Track Engineer.*** The project scope consisted of developing ACE drawings and specifications detailing the extension of the existing Metro K-Line railway in Los Angeles, California. Responsibilities included the review of traffic handling and construction staging plans; the production of ROW plans detailing all proposed acquisitions, permanent and temporary easements, and material staging areas; the review of existing utility conflicts relative to proposed track or station infrastructure; the review of multiple maintenance and storage-facility designs against LA Metro Rail Design Criteria confirming minimum tangent lengths, minimum track centers, point-of- intersection minimum distances relative to special track-work, etc.

City of Inglewood, Inglewood Transit Connector Project | Inglewood, CA. ***Civil Engineer.*** The project scope consisted of developing the scope, budget, technical requirements, and overall design of an elevated automatic transit system (ATS) to accommodate transportation through Inglewood, California. Responsibilities included the site survey of existing LA-Metro stations to compare existing station layouts and amenities against proposed station concepts; developed a scope comparison analysis amongst all consultants to eliminate deliverable gaps and/or overlaps; facilitating the RFP comment resolution between AECOM and LA Metro.

Patrick Coleman, PE

Ridership Lead | AECOM

EDUCATION

MS, Engineering, the University of Texas at Austin

BS, Civil Engineering, Cum Laude, Auburn University

REGISTRATIONS

PE, MD #35431); VA #0403046887; DE #11938; TX #115140; FL #60422

YEARS OF EXPERIENCE

33

Patrick has over 33 years of experience in travel forecasting, ridership, and revenue estimation; evaluation of transportation projects; and transportation alternatives development and analysis. Patrick has developed and project forecasts ranging from feasibility studies through the FTA Capital Investment Grant (CIG) process in Dallas, Los Angeles, Austin, Buffalo, Columbus, Miami, Madison, Milwaukee, Phoenix, Chapel Hill NC, Lansing MI, and elsewhere. Patrick has good working relationships with FTA staff and is responsible for ridership forecasts which support Full Funding Grant Agreements (FFGA) in the CIG program.

Relevant Projects

Los Angeles County Metropolitan Transportation Authority, Vermont Transit Corridor Study | Los Angeles, CA. ***Ridership Forecasting Lead.*** AECOM is developing patronage forecasts. The study is examining upgrading local and "Rapid" service on Vermont Avenue to Bus Rapid Transit (BRT) standards and operations. AECOM will produce forecasts using LACMTA's travel demand model (CBM18C) as well as a STOPS-based model developed for the project.

Transbay Joint Powers Authority, Downtown Rail Extension | San Francisco, CA. ***Ridership Task Manager.*** For the Caltrain extension from the existing 4th and King terminal to the new Transbay Terminal (Salesforce Center) AECOM assisted the San Francisco County Transportation Authority (SFCTA) in developing a STOPS model to support the project's CIG application.

Santa Clara Valley Transportation Authority, On Call Advisory and Support Services for the Silicon Valley Rapid Transit Project (Phase 2) New Starts Submission | Santa Clara Valley, CA. ***Ridership Task Manager.*** Providing advisory and on-call travel demand forecasting services for the Santa Clara Valley Transportation Authority's (VTA) proposed Phase 2 extension of the Bay Area Rapid Transit (BART) system which includes a proposed federally-funded segment. Developed STOPS model and forecasts to support the Expedited Project Delivery (EPD) application.

Valley Metro, West Phoenix High Capacity Transit Alternatives Analysis | Phoenix, AZ. ***Ridership Forecasting Lead.*** Examining expanding transit services as part of the future regional HCT system and improve regional and local connectivity to activity, employment centers in West Phoenix. Forecasts are being prepared using Valley Metro's pre- and post-pandemic STOPS models.

Federal Transit Administration, Oversight of Travel Forecasts for Capital Investment Grant Projects | Various, USA. ***Project Manager and Technical Lead.*** AECOM assisted the Federal Transit Administration in reviewing STOPS-based model and forecasts to evaluate the reliability and accuracy of the predictions for anticipated project ridership and related impacts made by project sponsors. AECOM is also assisting in researching predicted versus actual travel times on newly opened Bus Rapid Transit (BRT) projects.

Town of Chapel Hill, North-South BRT | Chapel Hill, NC. ***Ridership Forecasting Lead.*** AECOM is assisting Chapel Hill to analyze ridership on potential BRT service for a FTA CIG submission. AECOM is developing a new focused STOPS-based model application based on GoTriangle's regional STOPS model. Refinements include calibration to specific travel markets including University of North Carolina trips.

City of Madison, East-West BRT Feasibility Study | Madison, WI. ***Ridership Task Manager.*** Reviewed and refined STOPS-based model in latest FTA version (2.5). The 15-mile corridor stretches from West Towne Mall to East Towne Mall through the Isthmus and UW-Madison campus in downtown Madison. Project included service planning and various guideway designs; analysis outputs included ridership forecasting, capital and

operating and maintenance costing, active transportation recommendations, traffic analyses, environmental analyses, and station area analyses.

Central Ohio Transit Authority, East–West Corridor High Capacity Transit | Columbus, OH. ***Ridership Forecasting Lead.*** AECOM is assisting COTA to analyze ridership on potential BRT service in Columbus for FTA CIG submission. AECOM is using STOPS in order to forecast potential ridership of BRT alternatives along the East – West Corridor in Columbus.

Capital Metropolitan Transportation Authority, Project Connect | Austin, TX. ***Ridership Task Manager.*** Provided ridership forecasts and associated forecast impacts due service improvements in various corridors. Implemented FTA's STOPS forecasting model in incremental mode with stop level calibration which fully incorporated University of Texas student trips using the dedicated "UT Shuttle" routes

Southeastern Pennsylvania Transportation Authority (SEPTA), King of Prussia Norristown High Speed Rail Extension | King of Prussia and Norristown, PA. ***Ridership Task Manager.*** AECOM prepared forecasts for a proposed extension of the Norristown High Speed Line (NHSL) to King of Prussia/Valley Forge area. Initially an FTA STOPS-based application to compare to DVRPC TIM model forecasts was created in 2014. In 2020 the STOPS-based application was updated to current standards using version 2.5 and both Incremental and Synthetic implementations and used to prepare forecasts for the King of Prussia (KOP) Norristown High Speed Line (NHSL) extension project Final Environmental Impact Statement (FEIS). AECOM is currently preparing an updated model and forecasts for the project's CIG submission.

Brightline, Northeast Corridor Project | Miami, FL. ***Ridership Task Manager.*** Developed ridership estimates for proposed commuter service on the Northeast Corridor. Using a version of FTA's STOPS forecasting model implemented by the Miami-Dade TPO, ridership forecasts were developed for a series of alternatives involving different stations and runtimes to estimate the feasibility of the proposed commuter service.

Miami-Dade Department of Transportation and Public Works, South Corridor Rapid Transit Project | Miami, FL. ***Ridership Task Manager.*** Provided ridership forecasts and associated forecast impacts including CIG (Small Starts) submission for improvements to the 20-mile long South Busway. Implemented FTA's STOPS forecasting model with stop level calibration and a unique methodology to account for transit service schedule delay as well as beta version of the STOPS model which allows for differing partial Fixed Guideway factors between No Build and Build scenarios. .

Dallas Area Rapid Transit (DART), GPC8 Contract C-2073218-01, Task Order 8 – Data and Modeling Support | Dallas, TX. ***Ridership Forecasting Lead.*** AECOM is developing a post-pandemic STOPS-based model for DART. Refinements over DART's pre-pandemic model include trip tables based on DART's 2023 On Board survey, a calibration of park and rides, and updates to connecting rail services (TRE, Tex-Rail, Denton A-train).

Andrew Walker

Ridership Support | AECOM

EDUCATION

MS, /Engineering – Transportation, University of Texas at Austin, Austin, TX

BS, Civil Engineering, University of Texas Arlington

YEARS OF EXPERIENCE

13

Andrew specializes in developing STOPS-based models and ridership forecasts which comply with the Federal Transit Administration's (FTA) Section 5309 regulations concerning Capital Investment Grant (CIG, New Starts and Small Starts) applications. Before joining AECOM, Andrew worked as a research assistant at the Center for Transportation Research in Austin, TX on projects supported by the Texas Department of Transportation.

Relevant Projects

Tri-Valley – San Joaquin Valley Regional Rail Authority, Valley Link | San Joaquin, CA. ***Ridership Modeler.*** Examining Valley Link rail service from BART Dublin/ Pleasanton station to connect with riders from San Joaquin County. Forecasts are being prepared using post- pandemic STOPS models developed using inputs from BART, ACE, MTC, and regional operators in the bay area by AECOM. Andrew is the primary modeler in forecasting scenarios using STOPS and summarizing results for the client to be used for NEPA and CIG submissions.

Capital Metro (CMTA), Orange Line FEIS | Austin, TX. ***Ridership Modeler.*** AECOM is assisting CMTA to analyze ridership on potential circulators, commuter rail, and corridor routes. AECOM is using STOPS in order to forecast potential ridership for the Orange Line in Austin as part of Project Connect. Andrew is the primary modeler in forecasting scenarios using STOPS and summarizing results for the client to be used for NEPA and CIG submissions.

Dallas Area Rapid Transit, GPC Modeling Support | Dallas, TX. ***Ridership Modeler.*** Tasked with updating existing STOPS model to Post-Pandemic conditions including processing on-board travel survey, processing updated APC and route count data, and collecting relevant GTFS files. Provided test 2045 scenario with regional transit projects. Provided support to agency modelers in setting up and running various project scenarios.

Los Angeles County Metropolitan Transportation Authority, Vermont Transit Corridor | Los Angeles, CA. ***Ridership Modeler.*** Tasked with updating existing STOPS model for Pre and Post-Pandemic conditions for project ridership. Updated calibration settings for the project corridor and generated scenario GTFS files to run build BRT scenarios.

Southeastern Pennsylvania Transportation Authority (SEPTA), King of Prussia Rail | Philadelphia, PA. ***Ridership Modeler.*** AECOM is assisting SEPTA to analyze ridership on potential Norristown High Speed Line Extension service in Philadelphia to King of Prussia. AECOM is using STOPS in order to forecast potential ridership of extension. Andrew was the primary modeler in validating the model and forecasting scenarios using STOPS and summarizing results for the client.

City of Madison, North-South Bus Rapid Transit | Madison, WI. ***Ridership Modeler.*** Responsible for developing ridership forecasts for the feasibility study to evaluate transit investment on the North-South Corridor in Madison, WI. A new Bus Rapid Transit option was evaluated using Federal Transit Administration (FTA)'s tool – Simplified Trips-on-Project Software (STOPS). Assisted the agency in applying for Federal grants.

Central Ohio Transit Authority, East–West Corridor High Capacity Transit | Columbus, OH. ***Ridership Modeler.*** AECOM is assisting COTA to analyze ridership on potential BRT service in Columbus for FTA CIG submission. AECOM is using STOPS in order to forecast potential ridership of BRT alternatives along the East – West Corridor in Columbus. Andrew was the primary modeler in validating the model and forecasting scenarios using STOPS and summarizing results.

South Corridor Bus Rapid Transit, Miami-Dade Transit | Miami, FL. ***Ridership Modeler.*** AECOM assisted Miami-Dade Transportation Planning Organization (TPO) to evaluate a Bus Rapid Transit (BRT) service along the South Corridor. Developed ridership forecasts for the BRT service. The forecasts were developed using the Federal Transit Administration (FTA)'s STOPS forecasting tool. The STOPS model base year (2015) and future year (2040) scenarios were updated using the latest inputs and service plans. The model was used to develop ridership forecasts for the proposed BRT services along the South Corridor.

Valley Metro, West Phoenix High Capacity Transit Alternatives Analysis | Phoenix, AZ. ***Ridership Modeler.*** Examined expanding transit services as part of the future regional HCT system and improve regional and local connectivity to activity, employment centers in West Phoenix. Forecasts are being prepared using Valley Metro's pre- and post- pandemic STOPS models.

Jaime Guzman

Environmental Lead | AECOM

EDUCATION

Master of Arts in Urban Planning, University of California, Los Angeles, School of Public Affairs

Master of Science in Integrative Biology, University of California, Berkeley

Bachelor of Science in Biological Sciences, Cornell University, School of Agriculture

YEARS OF EXPERIENCE

17

Jaime is an urban and environmental planner with over 17 years of experience in Planning with experience in both public and private sectors. His experience includes managing the preparation of EIRs, MNDs, EAs, EISs, Initial Studies, and other CEQA and NEPA documents for various projects. Jaime has a strong background in transportation planning, environmental justice analysis, GIS mapping, demographic and socioeconomic analysis, mitigation monitoring, presentations to decision-makers & communities, and staff training.

Relevant Projects

Los Angeles County Metropolitan Transportation Authority, Project Manager, Eastside Extension Phase 2 Project | Los Angeles, CA. ***Project Manager.*** Leading preparation of an EIR and related technical studies for a joint venture for the Metro Eastside Extension Phase 2 project that will extend the existing Metro Gold Line from East Los Angeles east towards the City of Whittier (9 miles). The project is a high-priority project for Metro is under a very fast paced schedule. The project includes three alternatives, include two initial operating segments of the total 9-mile alignment.

Sepulveda Transit Corridor Project, Los Angeles County Metropolitan Transportation Authority | Los Angeles, CA. ***Environmental Manager.*** Leading preparation of an EIR and related technical studies for a joint venture for the Metro Sepulveda Transit Corridor Project. This project will provide a transit line paralleling Interstate 405 on the west side of Los Angeles from the San Fernando Valley to south of UCLA and Westwood. The project is a high-priority project for Metro is under a very fast paced schedule. The project includes six alternatives, include monorail and tunneling beneath the Santa Monica Mountains.

Los Angeles County Metropolitan Transportation Authority, Environmental Reviewer, Crenshaw North Corridor Project | Los Angeles, CA. ***Environmental Reviewer.*** Reviewer for technical studies in support of the Draft EIR for the Metro Crenshaw North Corridor Project. This project will provide a transit line extending from the northern terminus of the existing K Line at the E Line north to the San Fernando Valley via several alignments that include stops in Beverly Hills, West Hollywood, and Hollywood.

Madera Station Replacement Project, San Joaquin Regional Rail Commission | Madera, CA. ***Environmental Project Manager.*** Led preparation of an IS/MND and related technical studies for a project that includes the relocation of an existing Amtrak San Joaquins train station to one that would provide more access to more population. In addition, the project included elements of a high-speed rail station at this site. The IS/MND was adopted in 2021.

San Bernardino County Transportation Authority, Tunnel to Ontario International Airport Project | San Bernardino County, CA. ***Deputy Project Manager.*** Leading preparation of an EIR and an EA and related technical studies for a proposed transit line between the Rancho Cucamonga Metrolink Station and Ontario International Airport that will be underground and utilize electric vehicles.

Orange County Transportation Authority, Orange County Maintenance Facility Project | Irvine, CA. ***Deputy Project Manager.*** Leading preparation of an IS/MND and related technical studies for a proposed Southern California Regional Railroad Authority (Metrolink) maintenance facility adjacent to the Great Park in the City of Irvine. AECOM is also preparing the preliminary architectural plans.

Victor Valley Transportation Authority, Bus Transfer Station and Hydrogen Fueling Facility Environmental Documents | Hesperia, CA. ***Environmental Project Manager.*** Led preparation of Categorical Exclusions (NEPA) and Categorical Exemptions (CEQA), along with several Biological and Cultural Resources studies related to a proposed bus transfer facility and hydrogen fueling facility adjacent to the VVTA headquarters in Hesperia. The Federal Transit Administration accepted the Categorical Exclusions in 2022.

Jessica Koon

Environmental Support | AECOM

EDUCATION

Master of Urban Planning (MUP), Arizona State University

BS, Housing, Arizona State University

YEARS OF EXPERIENCE

11

Jessica is a transportation planner with 11 years of experience in both the public and private sectors. Her project experience consists of CEQA/NEPA analysis and management for transportation projects including light rail, commuter rail and transit facilities. Jessica has authored work in environmental topics including, land use, transportation, population and housing, Title VI and environmental justice. Her work experience also includes clients such as Los Angeles Metropolitan Transportation Authority, Southern California Regional Rail Association, Southern California Association of Governments, San Joaquin Joint Powers Authority, and San Joaquin Regional Rail Commission.

Relevant Projects

San Joaquin Joint Powers Authority, Madera Station Relocation Project, CEQA Documentation and Preliminary Engineering | Madera County, CA. ***Transportation Planner.*** Served as technical lead for environmental analysis. Performed the analysis of environmental impacts following 2020 CEQA Guidelines for the relocation of the Madera Station and new California High-Speed Rail (CHSR) station in Madera County. This included the analysis of project impacts on existing conditions related to minerals, geology and soils, utilities and services, as well as wildfire. The IS/MND was adopted in 2021.

San Joaquin Joint Powers Authority, Madera Phase 3 Project | Madera County, CA. ***Environmental Manager.*** Led preparation of an EIR and related technical studies for a project that includes the addition of a high-speed rail track and station to the proposed Madera HSR Station. This is an ongoing project.

Los Angeles County Metropolitan Transportation Authority (Metro), L (Gold) Line Eastside Transit Corridor, Phase 2 Project EIR/EA | Los Angeles County, CA. ***Technical Lead.*** Jessica Serves as technical lead for environmental analysis and document production. Perform a quantitative analysis for populations that are considered low-income and minority within the project footprint. Analysis involved collecting census data, analyzing existing conditions and project impacts on Environmental Justice populations. Develop technical memorandum of analysis and findings to include in the Draft Environmental Impact Report (EIR). Management duties involve tracking and updating the project schedule and deliverables, coordinating with technical leads, and manage document production for CEQA analysis.

San Bernardino County Transportation Authority, Tunnel to Ontario International Airport Project | Rancho Cucamonga and Ontario, CA. ***Technical Lead.*** Serving as technical lead for environmental analysis and document production. Performing the analysis of environmental impacts following 2023 CEQA Guidelines for a new underground tunnel connecting the Metrolink Cucamonga Station and Ontario International Airport. This includes the analysis of project impacts on existing conditions related to environmental justice communities. Management duties involve tracking and updating the project schedule and deliverables, coordinating with technical leads, and manage document production for CEQA analysis.

Los Angeles County Metropolitan Transportation Authority, Sepulveda Pass Transit Corridor | Los Angeles, CA. ***Technical Lead.*** Serving as technical lead for the analysis of environmental justice and land use. Perform a quantitative and qualitative analysis involving collecting census data, analyzing existing conditions and project impacts on environmental justice populations and existing and future land uses. Oversee and manage the development of a technical memorandum of analysis and findings to include in the Draft Environmental Impact Report (EIR).

Orange County Transportation Authority (OCTA), Orange County Maintenance Facility Project | Irvine, CA. ***Technical Lead.*** Served as technical lead for environmental analysis and document production of an IS/MND. Performed the analysis of environmental impacts following 2020 CEQA Guidelines for a new maintenance and storage facility for SCRRA in Orange County. This includes the analysis of project impacts on existing conditions related to minerals, geology and soils, and utilities and services. (2020-Present).

Los Angeles County Metropolitan Transportation Authority, Crenshaw North Light Rail Extension | Los Angeles, California. ***Technical Lead.*** Serving as technical lead for land use and planning, and communities, population and housing analysis and document production. Perform a quantitative analysis for existing and future populations within the project footprint. Analysis involves collecting census data, analyzing existing and future conditions and project impacts. Oversee and manage the development of a technical memorandum of analysis and findings to include in the Draft Environmental Impact Report (EIR).

Sacramento Regional Transit District (SacRT), On-Call Environmental Services | Sacramento County, CA. ***Technical Lead.*** Prepared a Public Participation Plan with updates on SacRT's public engagement efforts that have occurred since 2017. This included analyzing current language needs of users for the SacRT transit system to identify agency resources that are available to meet those needs. Performed a qualitative analysis using census data to identify Title VI populations within a half-mile of bus and light rail lines. This information helped identify transit routes that serve low-income and minority populations and to evaluate service performance and standards within those communities.

Allan Shueng

Capital Costs | AECOM

EDUCATION

BS, Architectural Science, Ryerson University

YEARS OF EXPERIENCE

24

Allan is a senior estimator with 24 years of dedicated experience in light-rail transit (LRT), specializing in feasibility-level and conceptual AACE Class 5 to 3 capital, operating, and maintenance cost estimating for major North American LRT programs. His expertise spans guideway, tunnels, stations, signaling, train control, traction power, overhead catenary systems (OCS), communications, maintenance and storage facilities, and fleet integration. Allan has supported early planning, business cases, environmental assessments, and procurement strategies by developing robust cost models, risk registers, and lifecycle cost analyses. He works closely with planners, designers, program managers, and government stakeholders to prepare accurate, defensible estimates that support funding, governance, and long-term implementation decisions for complex, multi-billion-dollar LRT systems.

Relevant Projects

Los Angeles County Metropolitan Transportation Authority (LA Metro), Crenshaw Line Extension | Los Angeles, CA. ***Lead Advisor and Cost Estimating SME.*** This $15-billion project aims to extend the Metro Crenshaw/LAX Light Rail Transit (LRT) Line northward, connecting the Metro E Line (Expo) with the Metro D (Purple) and B (Red) heavy rail lines. The scope includes constructing twin tunnels and 5 to 6 underground stations. Allan developed AACE Class 5 conceptual to Class 3 budgetary estimates to support over 15 different routes scenarios, business cases and design scenarios. He developed comprehensive cost models for various project phases, including design, construction, and implementation. Allan analyzed preliminary project documentation to prepare tunneling, mining, stations, rolling stocks, and transit system estimates and worked closely with sponsors, program leads, engineers, and other stakeholders to ensure accurate and feasible cost estimations.

BART, Link21 Transit Expansion Program | Northern California. ***Cost Estimating Lead.*** This $20-billion program aims to transform Northern California's passenger rail network into a faster, more integrated system, benefiting the 21-county Megaregion. A key program component is a new Transbay underwater rail crossing between Oakland and San Francisco to enhance regional commuter rail connectivity. Allan developed AACE Class 5 estimate to support the Program's 30+ different routes, business cases and design scenarios ranging from $10 billion to $25 billion. He developed comprehensive cost models and supporting risk registers for various phases of the project, including design, construction, and implementation. Allan also analyzed preliminary project documentation to prepare tunneling, superstructures, stations, rolling stocks, and transit system estimates.

LA Metro, California High-Speed Rail High Desert Corridor | Los Angeles and San Bernardino Counties, CA. ***Cost Estimating Lead.*** This proposed $4-billion 54-mile high-speed rail corridor is designed to link the California High-Speed Rail system at Palmdale with the Brightline West project in Victor Valley, facilitating efficient travel between Southern California and Las Vegas. Key infrastructure includes new stations, bridges, over 25 grade separations, subway tunnels, retaining structures, and overhead catenary systems. Allan reviewed and evaluated the contractor's change order submission and accessed the validity and necessity of proposed changes in terms of scope cost, material, labor and escalation implications. Allan analyzed project documentation to rationalize relocation estimates for superstructures, stations, and utilities and worked with program leads and engineers to ensure accurate and feasible estimates.

LA Metro, G-Line (former Orange Line) Bus Rapid Transit | Los Angeles County, CA. ***Cost Estimating Lead.*** This $500-million project aims to enhance the 17.7-mile BRT corridor in the San Fernando Valley. The project includes constructing two grade separations at major intersections, upgrading signal priority technology, future LRT enabling work, and installing a four-quadrant gating system to reduce travel times and improve safety. Allan developed comprehensive cost models for various phases of the

project, including design, construction, and implementation. He analyzed preliminary project documentation to prepare tunneling, mining, stations and transit system estimates and worked closely with sponsors, program leads, engineers, and other stakeholders to ensure accurate and feasible cost estimations. He prepared cost estimate reports to support Metro's budget and potential auditing requirements and presented estimates and analyses to Metro and other partners.

Georgia State Department of Transportation (GDOT), Major Mobility Investment Program | Atlanta, GA. ***Senior Estimator.*** Acted as lead advisor, program reviewer and estimating and risk subject matter expert in the total $30 billion GDOT Highway and MARTA (Metropolitan Atlanta Rapid Transit Authority) Subway & Bus Rapid Way program next 20 years. Responsible for reviewing all project cost-estimating processes and practices, including methodology and continuous improvement across all departments. Reviewed and advised on over 30 capital highway project estimates, from pre-conceptual to construction stages, submitted by six major General Engineering Consultant teams. Oversaw the independent cost consultant estimate submissions from different design stages per project progress cost forecast updates. Developed reports and reporting tools for Cost Analysis. Provided Request for Proposal Bid Evaluation based on proponents' submissions. Analyzed financial program performance; identified budget variances and significant risks and recommended corrective actions.

LA Metro, Rosecrans/Marquardt Grade Separation Independent Cost Estimate | Santa Fe Springs, CA. ***Cost Estimating Lead.*** This $50M project involves the construction of a grade-separated crossing at the intersection of Rosecrans Ave and Marquardt Ave. This project aims to eliminate the at-grade crossing between the roadway and the BNSF Railway tracks to improve safety, reduce traffic congestion, and enhance freight and passenger rail efficiency. Allan developed estimates per construction information and objective evidence. He analyzed project documentation to prepare superstructures, utilities relocation and road construction estimates and worked with engineers and stakeholders to ensure accurate and feasible estimates. He prepared narrative cost estimate reports to support transit agencies' budget setup and potential auditing requirements and presented cost estimates and analyses to LA Metro.

LA Metro, Soundwall 10 Independent Cost Estimate | Los Angeles, CA. ***Cost Estimating Lead.*** This $50M project involves constructing approximately 16,000 feet of soundwalls across 18 segments at three locations. The primary objective is to mitigate traffic noise for residents living near these high-traffic corridors. Caltrans designed the project, and LA Metro is responsible for construction. Allan was responsible for developing AACE Class 2 estimates per construction information and objective evidence. Analyzed project documentation to prepare utilities relocation, superstructures, and road construction estimates and worked closely with project engineers and other stakeholders to ensure accurate and feasible cost estimations. He prepared cost estimate reports to support the agencies' budget setup and potential auditing requirements.

Metrolinx, Ontario Line | Toronto, Canada. ***Cost Estimating Director.*** This CAD$32-billion proposed 15.6-kilometre rapid transit is designed to link downtown Toronto from Exhibition Station to midtown Eglinton Crosstown, formerly the Ontario Science Center. Key infrastructure includes new 15 underground, at-grade and elevators stations, bridges, traction power, CBTC, rolling stocks, and overhead catenary systems. Allan developed 7 different transit routes rough of magnitude estimates, to budgetary capital cost, 30-year maintenance and operation estimates as Provincial Government oversight SME. Allan analyzed project documentation to rationalize superstructures, station, and utilities relocation estimates and worked with program leads and engineers to ensure accurate and feasible estimates for funding approval.

Kristen Lueken

Operations Costs | AECOM

EDUCATION

MS, Urban and Regional Planning, University of Iowa

BS, Physics, University of Iowa

BA, Science Education, University of Iowa

YEARS OF EXPERIENCE

18

Kristen is a Project Manager with 18 years of experience in transportation planning, including extensive capability in transit operations, fare analyses, and financial planning. Her experience includes a wide range of projects from alternatives analysis and feasibility studies to environmental documents and BUILD grant applications. She has provided operations planning and O&M cost following projects throughout the planning process, from alternatives analysis, feasibility studies, FTA project development, environmental documentation and grant support.

Relevant Projects

Central Ohio Transit Authority (COTA), East Main and West Broad BRT Projects | Columbus, OH. ***Operation Costs.*** AECOM is assisting COTA with a study of multiple high-capacity transit investment corridors through the heart of downtown Columbus. Kristen has been involved in operations planning for COTA's high capacity network, including the development for three BRT Locally Preferred Alternatives, cost modeling and refinement for the LinkUS high capacity transit network, and additional 30% operational refinement for the Est Main and West Broad BRT corridors in preparation for Small Starts Project Development. Through this process, Kristen built custom models that could easily compare guideway configuration and alignment alternatives. Kristen is currently part of the 60% design team for the West Broad BRT corridor responsible for operational modeling, bus system refinement and local stop placement design coordination. NICTD, Strategic Plan | Various, IN. Project Manager. Responsible for developing a running time model based on geographic analysis, signal locations, and engineering constraints. This model was then used to develop fleet requirements and operating costs.

Capital Metro Transportation Authority (CMTA), Project Connect, Orange Line | Austin, TX. ***Operation Costs.*** The Orange Line PE/NEPA project is a high-profile, high-capacity transit corridor consisting of conceptual engineering to support the identification of the preferred alignment, transitway type, and mode. Phase One of the project is focused on a detailed Alternatives Analysis to reach a Locally Preferred Alternative. Kristen developed service plans and O&M costs for alternatives combining various modal, grade separation and signaling assumptions. Service plans and costs include a detailed capacity assessment to determine appropriate headways and vehicle requirements across all service spans for a range of ridership forecasts.

City of St. Louis, Northside-Southside 15% Light Rail Design | St. Louis, MO. **Project Manager.** AECOM is developing 15% design alternatives for the Northside-Southside light rail transit corridor along the Jefferson Avenue. As project manager, Kristen is overseeing a multi-firm team of planners, engineers, and outreach specialists. Her team has advanced two end-to-end design alternatives that capture a range of potential outcomes in advance of project-specific design criteria and decision making in key areas. Kristen has actively attended dozens of stakeholders and community outreach events in support of the project, and has developed trusted relationships with technical staff at a variety local, regional and state agencies.

St. Louis County, 2050 Comprehensive Plan (STLCO 2050) | St. Louis, MO. **Transportation and Infrastructure Task Lead.** AECOM was selected to lead St. Louis County's first comprehensive plan update in over three decades, with a focus on detailed equity analysis and financial sustainability. Kristen is the task lead for transportation and infrastructure. Her team documented existing conditions and needs, developed scenario modeling in partnership with regional stakeholders, and developed policy and project recommendations. Recommendations synthesize needs across safety and active transportation improvements, multimodal capacity, fiscally sustainable road maintenance, parking management, utilities, and transit – compatible development strategies.

CMTA, Project Connect, High Capacity Transit System Plan | Austin, TX. ***Operation Costs.*** AECOM was selected by CMTA to develop a system plan for high-capacity transit in the Austin, TX area. This plan includes ten light rail or bus rapid transit corridors plus multiple spurs and a downtown circulator. Kristen documented existing and future signalized crossings and prepared ravel time estimates for aerial, at-grade and optimized engineering designs for both BRT and LRT scenarios for each corridor and potential extension. In addition, Kristen prepared system-level operating and maintenance costs for the recommended plan.

COTA, Downtown Convergence Study | Columbus, OH. ***Service Planning Task Lead.*** As result of the rapid expected growth in Downtown Columbus as well s the convergence of multiple planned high-capacity lines, COTA requested planning support focused on the Downtown part of its service area. AECOM is leading a team of service planners and real estate specialist to develop a plan for Downtown that brings together transit supportive development, local bus circulation, BRT guideway design and new driver relief facilities, Kristen is the service planning task lead. She and her team have developed and refined six local service concepts for Downtown Columbus responding to a variety of facility and infrastructure possibilities. She has organized several workshops and collaborated with the site development team to help optimize potential facility layouts for bus efficiency.

CapMetro, Project Connect Bus System Service Planning | Austin, TX. ***Task Order Manager.*** Through its general planning services contract, CapMetro selected AECOM to analyze its system service plan in support of ongoing high-capacity transit development including multiple BRT and LRT corridors. Kristen was the Task Order Manager for this work, leading to a comprehensive dashboard for route profiles and market analysis, local service recommendations for half a dozen high-capacity transit development milestones, and a phased financial and implementation planning strategy.

Dallas Area Rapid Transit (DART), 2040 Transit System Plan | Dallas, TX. ***Deputy Project Manager.*** As part of the General Planning Consultant (GPC), Kristen served as a Deputy Project Manager supporting the development of the 2040 Transit System Plan (TSP) for DART. She developed the Public and Stakeholder Involvement Report as well as the Existing and Future Conditions Report, documenting DART's network of over 100 routes. Kristen developed the analysis of over 43,000 on-board surveys and participated in many customer and driver interviews to determine ridership characteristics and preferences. She used survey data to produce Origin & Destination hotspots and route-level transfer analyses. In a separate task, Kristen collaborated in the development of a Comprehensive Operational Analysis. She has done field work to evaluate ridership potential and operational safety and has reviewed ridership trends and on-time performance of existing routes. Kristen helped to develop recommendations and cost estimates for three separate funding scenario alternatives, including a cost-neutral option. The recommended service plan increased population and employment with access to high-frequency (15-minute or better) transit service by 68%.

Rebecca Lee

Operations Costs | AECOM

EDUCATION

B.S., Urban and Regional Studies, Cornell University

YEARS OF EXPERIENCE

4

Rebecca is a Transportation Planner and a recent graduate of Cornell University with a B.S. in Urban and Regional Studies and a minor in Public Policy. She has contributed to a range of transit planning projects at AECOM, focusing on policy research, data analysis, and GIS. Her academic background includes coursework in infrastructure finance and policy, housing and urban policy, quantitative methods, and urban design.

Relevant Projects

Louisville Metro, Preston Corridor Plan Transit Study | Louisville, KY. ***Planning Support.*** AECOM was selected by Louisville Metro to perform a study investigating the feasibility of Bus Rapid Transit (BRT) transit service within the Preston Corridor in Louisville, Kentucky. Rebecca assisted with the existing evaluations of alternatives report, performing station area analysis using American Community Survey (ACS), land use, Traffic Analysis Zones (TAZ), National Housing Preservation Database (NHPD), and Commercial Real Estate (CRE) data. She also contributed to travel time measurements, evaluating distances between stations and counting intersections, and capital cost assessments, recording parking and driveway impacts along the route alternatives.

Great Rivers Greenway (GRG), North Saint Louis County Community Connector | Saint Louis County, MO. ***Planning Support.*** AECOM was selected to identify a preferred alternative for high-capacity transit investment in northern Saint Louis County to encourage sustainable development, expand access to opportunities, and improve connectivity. Rebecca assisted in developing a ridership memorandum and assessing the system's qualifications for the Federal Transit Administration's (FTA) Capital Investments Grants Program. She also contributed to writing the executive summary and formulating engagement questions for the project.

North Indiana Commuter Transportation District (NICTD), 20-Year Strategic Plan | Statewide, IN. ***Cost Planning Support.*** AECOM was selected to prepare a long-range strategic plan for NICTD. Rebecca contributed to the market analysis portion of the existing conditions report by gathering and analyzing socio-economic and demographic data to evaluate demand and identify future service needs. She created maps and visualizations to communicate findings and synthesized insights to inform long-term planning recommendations. In the next phase, Rebecca helped prepare operational cost impacts to potential maintenance facility improvements to the system.

Detroit Transportation Corporation (DTC), Detroit People Mover (DPM) Transit Study | Detroit, MI. ***Planning Support.*** AECOM was selected to assess the Detroit People Mover system and evaluate strategies for future service. Rebecca analyzed National Transit Database (NTD) funding data to assess financial performance and examined DPM's key performance indicators (KPIs) over time, with particular attention to the impacts of the pandemic, service closures, and fare structure. She also compared DPM's ridership trends with those of other Detroit-area transit agencies to contextualize performance and inform planning recommendations. During the project's public engagement phase, Rebecca led the synthesis of public survey results.

The Interurban Transit Partnership (ITP), The Rapid Transit Master Plan (TMP) | Grand Rapids, MI. ***Planning Support.*** AECOM was selected by the Rapid to update its Transit Master Plan for the first time in 20 years, incorporating service planning, organizational upgrades, staffing and financial strategies to achieve the agency's goals. Rebecca researched peer examples of funding sources using NTD data, investigated Michigan state and local laws related to funding for transit development/improvement, and evaluated legislative actions needed using statutory authority for funding sources.

Metro Transit, Zero-Emission Bus Transition Plan (ZEBTP) | Minneapolis, MN. ***Planning Support.*** AECOM was selected by the Metropolitan Council to develop an updated Zero-Emission Bus Transition Plan, mandated by the Minnesota State Statue. Rebecca contributed to the revision by updating case studies based on peer agencies' experience implementing zero-emission bus technology, incorporating relevant recent data, and summarizing existing studies and initiatives by the Metropolitan Council and Metro Transit.

Ken Sislak

Implementation Lead | AECOM

EDUCATION

MBA, Finance, Case Western Reserve University

BA, Economics cum laude, John Carroll University

YEARS OF EXPERIENCE

53

Ken is a seasoned transportation professional with extensive experience in public transit operations, planning, and consulting. His expertise includes managing major capital investment studies, developing comprehensive operating and maintenance plans, and conducting in-depth financial reviews, including benefit-cost analyses. Prior to joining AECOM, Ken held leadership roles in both the public and private sectors, bringing a well-rounded perspective to transit planning and management. As the former director of rail transportation for a public transit agency serving Cleveland and Cuyahoga County, he oversaw rail rapid transit operations and maintenance, ensuring efficiency and service excellence. Ken's strategic leadership and deep industry knowledge make him a valuable asset in advancing innovative and sustainable transit solutions.

Relevant Projects

Sacramento Regional Transit, Green Line Extension to the Airport | Sacramento, CA. ***Project Director.*** The Sacramento Regional Transit authority examined the feasibility of extending the Green Line LRT line from its current terminus at 7th and Roberts to North Natomas and the Sacramento International Airport. The analysis examined a range of feasible alternatives for crossing the American River and reevaluated the alignment alternatives at the airport. A locally preferred alternative will be advanced to the "Project Development" phase of the FTA New Starts process if warranted. An Environmental Impact Statement was prepared supported by conceptual engineering and regional transit ridership forecasting. Public outreach was critical to this effort because of the vocal opposition of the extension through a residential neighborhood. A New Starts report was prepared in coordination with FTA. Project received a Record of Decision (ROD) and Full Funding Grant Agreement.

City of Rochester, Light Rail Transit Economic Feasibility Impact Study | Rochester, NY. ***Project Manager.*** The City of Rochester examined the feasibility of restoring urban rail transit service to city and the potential economic impacts of light rail transit on the community. The study reviewed peer cities and investigated direct and indirect economic benefits of a major investment in light rail transit. The REMI econometric model was used to determine the net impacts of the major investment. Ridership forecasts, capital and operating costs were analyzed based on assumed alignments. Recommendations on the abandoned downtown subway tunnel were made.

Utah Transit Authority, Salt Lake City Draper Transit Corridor Project | Salt Lake City, UT. ***Project Manager.*** The Utah Transit Authority in Salt Lake City examined the feasibility of extending the North-South TRAX light rail line from its current terminus in Sandy to Draper. Several alignment alternatives were examined in addition to a No Action and FTA baseline alternative.

City of Grand Rapids, Streetcar Feasibility Study | Grand Rapids, MI. ***Project Director and Officer-in-Charge.*** Responsible for this modern streetcar feasibility study. The study involved determining a preferred alignment, station locations, transit-oriented development impacts, and economic development potential. Operating plans, operating cost projections, and a capital cost estimate were developed.

Greater Cleveland Regional Transit Authority, Cleveland Red Line/Healthline Extension | Cleveland, OH. ***Project Manager.*** The Greater Cleveland Regional Transit Authority evaluated the feasibility of extending the Red Line heavy rail and Healthline bus rapid transit lines from its current terminus at Louis Stokes Station at Windermere to Euclid and adjacent communities in Lake County. The major transportation improvement analysis examined a range of feasible alternatives and evaluate the alternatives based on ridership potential, cost-effectiveness and environmental "Red Flags." The recommendation was made to covert the Red Line to LRT and purchase a new fleet of railcars to operate over all RTA rail lines. The RTA is currently acquiring the new fleet of railcars.

Grand Rapids, Great Transit Grand Tomorrows (GT2) Alternatives Analysis | Grand Rapids, MI. ***Project Manager.*** The Rapid in Grand Rapids, Michigan investigated the feasibility of high quality transit in several corridors. The project examined alignment and technologies including LRT, streetcar, BRT and enhanced bus services as part of the alternatives analysis phase of project development. The project included the updating of the regional travel demand model to make it compatible with SUMMIT software used in the evaluation of user benefits in accordance with FTA New Starts guidance. The preferred alternative was a Small Start BRT project. Coordinated with FTA and received a Project Development Funding Agreement.

Ministry of Transport, Hangzhou Metro Subway Network Planning Study | Hangzhou, China. ***Team Leader.*** Responsible for the examination of network sizing and operations planning. Examination included review of international peer group population and subway network route kilometer correlation. Developed a new network scheme and presented the revised network design to the Minister of Transport.

Dubai Municipality, Dubai Transit Options Study | Dubai, United Arab Emirates. ***Project Manager.*** Project manager that examined the feasibility of designing, building, and operating a $7 billion rail rapid transit system serving the approximately 1 million people of Dubai Municipality. The study included an examination of appropriate alignments and technologies, complete analysis of capital and operating costs, and a forecast of revenue and ridership utilizing the EMME/2 regional travel demand model. Managed the development of a new mode choice model utilizing stated preference surveys. Station area planning included an analysis of transit-oriented development potential at each one of 39 stations on the proposed Dubai Metro.

Florida DOT, I-Drive Circulator Alternatives Analysis and Technology Assessment | Orlando, FL. ***Project Manager.*** Florida DOT examined alternative alignment and technology options for a local transit circulator service in the International Drive area of Orlando. The study included developing a specialized travel demand forecast for local travel by tourists residing in area hotels, an environmental scoping study and complete technology assessment. A Locally Preferred Alternative (LPA) was selected in accordance with New Starts guidance published by the Federal Transit Administration. Assisted FDOT with FTA coordination.

City of Knoxville, Downtown Knoxville Linkages Study | Knoxville, TN. ***Team Leader.*** Responsible for the examination of streetcar and trolleybus technologies for this multimodal transportation plan to link new tourist related developments and businesses in Downtown Knoxville. The feasibility of downtown transportation linkages—trolleys, rail, parking, pedestrian walkways and bikeways—involved a multidisciplinary approach including transit, traffic engineering, urban planning and design.

City of Nashville, Nashville Urban Core Transit Analysis | Nashville, TN. ***Project Manager.*** Responsible for a study to expand transit services in the urban core to accommodate increased volumes of passengers generated by new entertainment venues in Downtown Nashville. The study examined alignments, light rail and streetcar technologies and funding requirements.

Abu Dhabi Department of Transport, Abu Dhabi Metro | Abu Dhabi, United Arab Emirates. ***Transport Planning Manager.*** Responsible for a multi-phase project development program for a proposed 100-kilometer Metro system. Responsible for developing and evaluating alignment alternatives, technology assessment, and determining ridership and revenue forecasts as part of the feasibility phase of project development. Also responsible for conducting financial and economic analysis to prepare the Business Case for moving forward with the construction of the proposed Metro system in Abu Dhabi. Made presentations to the chairman of the DoT and to the Executive Council of the Emirate. The project was approved to enter preliminary engineering in 2012.

Jim Lightbody, PE

Funding Lead | AECOM

EDUCATION

MS, Civil Engineering, Stanford University, Palo Alto

BS, Civil Engineering, Santa Clara University

Engineers Degree, Stanford University

REGISTRATIONS

PE, CA #1972

YEARS OF EXPERIENCE

53

Jim specializes in transportation and land use planning, working closely with cities and transportation agencies. At AECOM, Jim serves as a Senior Consulting Manager, focusing on the planning, design, and operation of multi-modal transit systems, as well as funding strategies. Jim specializes in transportation corridor studies and planning for bus and commuter rail services. Prior to joining AECOM, he served for 33 years as a senior manager with the Santa Clara Valley Transportation Authority (VTA), most recently as Deputy Director for Planning and Development.

Relevant Projects

Butte County Association of Governments (BCAG), North Valley Passenger Rail Strategic Plan | Butte County, CA. ***Funding Lead.*** Prepared Funding Memo for project that updated plan for new intercity bus service between Chico and Sacramento.

Shasta County Association of Governments (SCAG), North State Intercity Bus to Rail Plan | Shasta County, CA. ***Governance Task Lead.*** Lead for governance task and provided general planning assistance. Project developed a plan for intercity bus service in the Shasta County region and strategy for future rail service.

Caltrain, Grade Separation Strategy | Various, CA. ***Policy Assistance.*** Provided policy assistance to Caltrain staff for grade separation projects and other strategies; assisted Caltrain staff on planning projects.

Santa Clara Valley Transportation Authority (VTA), Diridon Station Facility Master Plan | Santa Clara, CA. ***Task Manager.*** Responsible for study to develop conceptual plans for future transit facilities at Diridon Station in San Jose, including access plans.

California High Speed Rail Authority (CHSRA), Preparation of EIS/EIR | Various, CA. ***Traffic Task Lead.*** Task leader for traffic and transportation elements of the project (including the EIS/EIR) in the Merced to Fresno and San Francisco to San Jose segments. AECOM prepared the traffic and transportation technical analysis for incorporation into the draft EIR/EIS for the specific segments, addressing multiple alignment and station alternatives.

City of Mountain View, Shoreline Transportation Study | Mt View, CA. ***Project Manager.*** Responsible for a multi-modal transportation plan in support of new General Plan intensification of North Bayshore office center.

Regional Public Transit Authority (RTPA), Scottsdale Road Alternatives Analysis | Scottsdale, AZ. ***Task Leader.*** Responsible for BRT corridor serving Scottsdale, Tempe and Arizona State University.

Utah Transit Authority (UTA), West Salt Lake County Transit Study | Salt Lake County, UT. ***Transit Planning Lead.*** Responsible for study developing new long range transit service plan for West Salt Lake County, linked to development & land use plans for the area.

Mountainland Association of Governments (MAG) and Utah Transit Authority (UTA), Provo/Orem Bus Rapid Transit AA/DEIS | Provo and Orem, UT. ***Deputy Project Manager.*** Served as Deputy Project Manager for panning and environmental clearance for a 9-mile BRT corridor serving Brigham Young University (BYU), the cities of Provo and Orem and the planned commuter rail stations. AECOM provided specialized Bus Rapid Transit expertise, including the development of the BRT operating plan and costs. Additionally, the firm handled the noise and vibration element of the EIS.

Westfield LLC, University Towne Centre Transit Center | San Diego, CA. ***Project Manager.*** Responsible for planning conceptual Transit Center alternatives to be integrated into a major expansion of the Westfield operated retail center.

Center City Development Corporation (CCDC), Centre City Loop Analysis | San Diego, CA. ***Project Manager.*** Responsible for evaluation of San Diego Trolley operating scenarios in downtown San Diego.

San Diego Association of Governments (SANDAG), C Street Master Plan | San Diego, CA. ***Task Manager.*** Responsible for planning study evaluating alternative designs for the San Diego Trolley operation and stations along C Street in downtown San Diego.

Santa Clara County Valley Transportation Authority (VTA), Various Projects | Santa Clara County, CA. ***Deputy Director for Planning and Development.*** Directed transportation planning projects in Santa Clara County, including long-range master plans, major investment studies and corridor plans (rail and BRT), Caltrain and Light Rail station plans and joint development activities. These planning activities included extensive consensus-building and community outreach components. He also managed other transportation studies, including bus plans and public opinion research. As Deputy Director, he managed the environmental and real estate departments and his responsibilities also included management of federal and state grant programs and the programming of capital projects. Earlier, as Manager of Transit Service Development, he designed and implemented bus services, overseeing a major expansion of service.

Alex Remar

GIS Lead | AECOM

EDUCATION

MS, Geography, University of Delaware

BS, Earth Sciences, California Polytechnic State University – San Luis Obispo

Minor, Anthropology and Geography, California Polytechnic State University – San Luis Obispo

REGISTRATIONS

Graduate Certificate, GIS Analyst

YEARS OF EXPERIENCE

16

Alex is a GIS supervisor and Northern California group manager in the Oakland office holding a Master of Science degree in geography and a graduate certificate in GIS analysis with numerous years of working experience using technical and analytical GIS methodologies for spatial analysis, relational database management and development, and cartographic production. He is the GIS lead/manager on multiple large-scale infrastructure and environmental projects and is proficient in an array of geospatial software platforms, database management practices, web map development, and python/SQL scripting techniques for automation. His passion centers on developing streamlined workflows designed to compile and process geospatial and tabular datasets and develop cartographic products that provide clear and meaningful insights to real-world problems. His most coveted skill is the ability to conceptualize and communicate needs to project management to develop workflows and data management protocols.

Relevant Projects

San Joaquin Valley Regional Rail Authority, Valley Link Project, Tri-Valley | San Joaquin, CA. ***GIS Task Lead.*** Managed data and performed GIS tasks, including GIS spatial analysis for commuter marketing assessment, data preparation, and cartographic design of presentation figures for transportation planners and engineers. Alex helped design and develop Geodatabase standards to help organize and maintain the large datasets for two sections of this project. He has also created and documented data migration, validation, and testing workflows. Alex developed automated models to efficiently and quickly provide biologists and lanners with the data required for the various reports. He also helped develop and maintain the map services in ArcGIS Server that were used to share the data through intranet web maps so that the data was accessible to staff in multiple offices.

Peninsula Corridor Joint Powers Board, Caltrain On-Call GEC 2019-2024 - Underground Utility Mapping | San Francisco Peninsula, CA. ***GIS Lead.*** Alex developed records-based GIS data models of multiple as-built utility systems along the Caltrain rail right-of-way. Mr. Remar's responsibilities included creating project boundaries for relevant projects, implementing interoperability between client-provided CAD files and GIS, and georeferencing non-CAD drawings and images in order to create seamless utility networks with electronic files. Mr. Remar provided further GIS support through the creation of map books depicting natural gas, storm drain, sanitary sewer, electrical and telecommunications utilities throughout Port properties. Though if we were to continue these efforts today I image we'd collaborate through a shared web map hosted on the ArcGIS Online platform

San Joaquin Regional Rail Commission and San Joaquin Joint Powers Authority, Valley Rail Sacramento Extension Project | San Joaquin, CA. ***GIS Task Lead.*** Managed data and performed GIS tasks, including data preparation, and cartographic design of presentation figures for transportation planners and engineers. Managed a team of GIS specialists in coordinating GIS data development and database management. Alex Served as task lead for the GIS portion of the project and is responsible for the preparation of separate EIRs. His responsibilities include facilitating field survey data collection and is also tasked with integrating engineering, biological, cultural, and historical resource data into a standardized and centralized GIS database, managing the extensive GIS database and providing temporally accurate cartographic products depicting the project elements.

Midpeninsula Regional Open Space District (Midpen), Highway 17 Wildlife and Regional Trail Crossings and Trail Connections | Santa Clara County, CA. ***GIS Task Lead.*** The Midpeninsula Regional Open Space District (Midpen), in cooperation with the California Department of Transportation (Caltrans), proposes to construct a wildlife crossing and a separate regional multi-use trail crossing of Highway 17 near Lexington Reservoir, south of the Town of Los Gatos in Santa Clara County.

The Highway 17 Wildlife Passage and Regional Trail Crossings Project (project) will include wildlife directional fencing and supplementary trail connections. Alex serves as task lead for the GIS portion of the project and is responsible for the preparation of separate EIRs. His responsibilities include facilitating field survey data collection and is also tasked with integrating engineering, biological, cultural, and historical resource data into a standardized and centralized GIS database, managing the extensive GIS database and providing temporally accurate cartographic products depicting the project elements.

California Department of Transportation (Caltrans) District 4, US 101 (South and North) Managed Lanes (Express Lanes) | San Mateo and Santa Clara Counties, CA. ***GIS Task Lead.*** Alex serves as task lead for the GIS portion of the project and was responsible for the preparation of separate EIRs, as well as environmental permitting applications. Coordinated closely with Caltrans District 4 staff in a joint partnership on data development and coordination. His additional responsibilities included integrating engineering, biological, cultural, and historical resource data into a standardized and centralized GIS database, managing the extensive GIS database and providing temporally accurate cartographic products depicting the project elements. Alex's advanced ability to work with both GIS and CAD data formats enabled him to efficiently evaluate potential conflicts between engineering project design line work and environmental constraints during the permitting process, saving time and money.

Metropolitan Transportation Commission, SR 37 Design Alternative Assessment | North San Francisco Baylands, CA. ***GIS Task Lead.*** The Metropolitan Transportation Commission (MTC) and its partners are conducting a design alternatives assessment for State Route 37 to evaluate a range of improvement strategies to address transportation/traffic congestion and prepare the corridor for sea level rise. Alex serves as the GIS task lead to collect, assess, and maintain geospatial data to help identify constraints and opportunities for environmental benefits associated with future improvements to the SR 37 corridor. Alex is also tasked with developing high-level cartographic products to be presented at stakeholder outreach meetings and workshops. Alex's high-quality cartographic products during stakeholder outreach meetings enhanced collaboration amongst teams and promoted effective communication of environmental constraints throughout the SR37 corridor.

Jason Leung

GIS Support | AECOM

EDUCATION

Master, Transportation Planning, University of Southern California (USC)

Bachelor, Environmental Studies and Geographic Information Science (GIS), UC Santa Barbara (UCSB)

YEARS OF EXPERIENCE

4

Jason is a transportation planner who provides transit solutions to address mobility challenges for governments and transit agencies across the United States, with projects spanning Los Angeles, domestically throughout the United States, and internationally. Jason has worked on transit projects in various stages of completion, ranging from early conceptual planning, environmental review, to the design and engineering phases.

Relevant Projects

Transbay Joint Powers Authority (TJPA), The Portal (formerly the Downtown Rail Extension) | San Francisco, CA. ***Task Lead/Principal GIS Technician.*** Led the preparation and updating of all geospatial data for the project. Assisted in hosting the geospatial data on web applications and establishing digital delivery standards on GIS and graphics for geospatial data, maps, and figures.

LA Metro, Zero Emission Bus Program | Los Angeles, CA. ***Transportation Planner/Principal GIS Technician.*** Led the preparation of all geospatial data and visual materials for the project. Developed a strategic plan for the transition to a zero-emission fleet, including bus fleets, non-revenue vehicles, employee parking, and park-and-ride facilities.

San Bernardino County Transportation Authority (SBCTA), Tunnel to Ontario International Airport Project | Ontario, CA, 2022-2024. ***Task Lead/Principal GIS Technician/Transportation Planner.*** Led the preparation of the "List of Preparers." Responsible for creating and updating figures for all Technical Report (TR), Administrative Draft Environmental Impact Report (ADEIR), and Administrative Draft Environmental Assessment (ADEA) section reports. Experienced in preparing Section 508-compliant deliverables. Assisted report preparers in updating section reports, such as "Utilities and Service Systems" and "Transportation," through multiple rounds of review.

LA Metro, Vermont Transit Corridor | Los Angeles, CA. ***Task Lead/Transportation Planner.*** Proposed solutions that integrate sustainability and green infrastructure elements into a bus rapid transit system, using best practices (LEED, Envision, and CALGreen). Responsible for drafting section write-ups based on collected equity data to accurately reflect community characteristics, issues, and opportunities related to the project, providing key data factors describing the area of influence, and addressing equity challenges and opportunities. Responsible for drafting section write-ups to assess and document the quality of physical conditions around proposed stations based on visual surveys that inform subsequent tasks on urban design and transit-oriented communities (TOC). Responsible for drafting section write-ups on roadway operating conditions, covering traffic congestion and person throughput, and creating relevant figures to address the mobility problem. Conducted policy research on local transit-supportive land use policies and TOCs.

LA Metro, Sepulveda Transit Corridor | Los Angeles, CA. ***Transportation Planner.*** Responsible for updating ridership results in the "Ridership Forecast Technical Memorandum" through various rounds of review. Assisted TR preparers in updating sections such as "Environmental Justice," "Geotechnical," "Land Use," and "Transportation," through multiple rounds of review.

Southern California Regional Rail Authority (SCRRA) - Metrolink, Federal Communications Commission (FCC) and Federal Aviation Administration (FAA) Clearance for Wireless Crossing Nearside Station Stop (WCNSS) Towers | Los Angeles County, CA. ***Transportation Planner.*** Documented the findings of a biological resources survey and assess potential environmental impacts on sensitive resources within the disturbance area of multiple proposed 40-foot radio antenna tilt towers across Southern California, supporting the National Environmental Policy Act (NEPA) Categorical Exclusion (CE) for the project's environmental clearance.

United States Trade and Development Agency (USTDA), Definitional Mission for Association of Southeast Asian Nations (ASEAN) Electric Vehicle Charging Infrastructure Market Analysis | VA. ***Transportation Planner.*** Responsible for reviewing the status of electric vehicle infrastructure in ten ASEAN Member States and drafting country-specific write-ups. Assisted with analyzing the gap between current conditions and future plans for electric vehicle infrastructure, while also providing policy recommendations and identifying cooperation opportunities.

LA Metro, Long Beach – East Los Angeles Corridor Mobility Investment Plan (CMIP) | Los Angeles County, CA. ***Transportation Planner.*** Responsible for drafting two-chapter write-ups of the CMIP. Screened, evaluated, and categorized projects by location to streamline funding and implementation. Conducted research on relevant transportation case studies for the project.

Victor Valley Transit Authority (VVTA), Comprehensive Operations Analysis for Victor Valley Transit Authority | Hesperia, CA. ***Transportation Planner.*** Responsible for drafting section write-ups analyzing the potential retroactive disparate impact or disproportionate burden on the Title VI population defined by race and income, as well as creating accompanying figures.

San Joaquin Joint Powers Authority (SJJPA), Merced Intermodal Track Connection | Merced, CA. ***Transportation Planner.*** Assisted the drafting of the "Utilities and Service Systems" section of the ADEIR by determining the project's impacts evaluation and identifying relevant mitigation measures.

Laketran, On-Demand Service / Microtransit Modernization Study | Lake County, OH. ***Task Lead.*** Led a needs-based analysis to assist the lead agency in identifying necessary improvements to existing services, proposing selected performance measures for monitoring future pilot operations, and exploring potential funding opportunities to launch the pilots.

Tri-Valley–San Joaquin Valley Regional Rail Authority, Valley Link | Central CA. ***Task Lead/Transportation Planner.*** Led the preparation of the "List of Preparers." Responsible for managing and updating the "References" section of the Community Impacts Assessment (CIA). Conducted policy research on active transportation at the city and county levels.

K. Signing of Proposal/ Authorization to Negotiate

K. Signing of Proposal/Authorization to Negotiate

The cost proposal accompanying this technical proposal contains an offer good for 90 days from submittal of the proposal on May 15, 2026.

AECOM Designated Signatory:

Veronica Siranosian, AICP
Senior Vice President
AECOM
300 Lakeside Drive, Suite 400
Oakland, CA 94612
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L. Attachments (Forms)

Attachment A

TITLE VI ASSURANCE

The Council of Fresno County Governments, in accordance with Title VI of the Civil Rights Act of 1964, 78 Stat. 252, 42 U.S.C. 2000d-4 and Title 49, Code of Federal Regulations, department of Transportation, Subtitle A, Office of the Secretary, Part 21 Nondiscrimination in Federally Assisted Programs of the Department of Transportation issued pursuant to such Act, hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement, minority businesses enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or nation origin in consideration of an award.

Not required per Q&A

Attachment B

DBE/WBE BIDDERS LISTING

Name of Firm	NAICS Code	Address	Phone Number	Project Budget $$	DBE Status Yes/No	Age of Firm	Annual Gross Receipts

1. All contractors/subcontractors bidding on the project must provide the requested information.
2. Bidders claiming DBE status must attach a copy of a current Certification issued pursuant to 49 CFR Part 26.
3. Bidders claiming DBE status must attach written affirmation that they will participate in the project.
4. Each bidder must designate if Gross Annual Receipts are greater than or equal to $750,000.

About AECOM

AECOM is the global infrastructure leader, committed to delivering a better world. As a trusted professional services firm powered by deep technical abilities, we solve our clients' complex challenges in water, environment, energy, transportation and buildings. Our teams partner with public- and private-sector clients to create innovative, sustainable and resilient solutions throughout the project lifecycle – from advisory, planning, design and engineering to program and construction management. AECOM is a Fortune 500 firm that had revenue of $16.1 billion in fiscal year 2024. Learn more at **aecom.com**.

AECOM