TAMC Monterey Bay Area Rail Network Integration Study

Exhibit A
Draft Scope of Work and Schedule

Task 1 Project Management

Task 1.1: Kick-Off Meeting

The AECOM team's key staff will participate in a Network Integration Study kick-off meeting with TAMC staff at TAMC. The purpose of the meeting will be to confirm methodologies and deliverables per task and the project schedule, along with AECOM's Quality Assurance/Quality Control (QA/QC) program. The schedule and QA/QC program will be included in the Project Work Plan.

Task 1.2: Work Plan

AECOM will prepare a Project Work Plan, which will include the contact information for the key project team staff (TAMC and AECOM), the scope of work, the schedule, the budget, invoicing and progress reporting details, along with document control and QA/QC procedures. The Project Work Plan will also include procedures for identifying and resolving issues as they develop to keep the project on schedule. AECOM will deliver the draft plan prior to the kick-off meeting. Beyond scope, schedule and budget, the Work Plan provides further detail on project procedures, can be updated as the work develops and more detailed deliverable and review schedules take shape, and can be a project communication resource for staff.

Task 1.3: Schedule

AECOM will further develop a detailed work schedule based on the attached, showing all tasks, subtasks, key milestones, deliverables, and meetings with TAMC staff during the Network Integration Study. The schedule will be laid out in a Gantt chart format, whereby the interrelatedness of tasks and can be clearly shown and understood.

Task 1.4: Project Management Meetings

The AECOM team will conduct monthly project management meetings to discuss subjects relevant to the efficient execution of the project and issues potentially affecting the schedule, along with potential remedies. AECOM will circulate agendas before the meetings and will circulate meeting notes with action items after the meetings. The meetings will continue through the delivery of the final study.

Task 1.5: Project Budget Tracking System and Invoicing

Part of the monthly project meetings will be a review of the budget and confirmation that the project is on track from a financial perspective. Cumulative billed-to-date calculations will appear in invoicing.

Task 1.6: Progress Reporting

AECOM will provide progress reports with the monthly invoices. These progress reports will note team activities that occurred during the month, any issues that developed, and the resolutions that were instituted.

Task 1.7: Project File Sharing, Document Control, and Quality Assurance

AECOM will use its online SharePoint file sharing system. AECOM will post meeting agendas, meeting notes, project schedule, Project Work Plan, and drafts of deliverables onto SharePoint so all project team members can have access. AECOM will manage the site, ensuring that only the most relevant materials are uploaded and outdated documents are removed.

AECOM will also implement its QA/QC procedures, which ensure documents have been checked and verified before reaching TAMC staff. AECOM's production system consists of original writers, checkers who ensure the content is correct, and verifiers who ensure that the document conforms with the required deliverable.

Task 1 Deliverables:

- Kick-off meeting agenda and notes
- Project Work Plan
  - QA/QC plan
- Progress calls agendas and notes
- Financial performance updates
- Progress reports with invoicing

Task 2 Stakeholder Coordination and Public Outreach

Task 2.1: Stakeholder Engagement Plan

The AECOM team will develop a Stakeholder Engagement Plan that will describe stakeholders are identified and describe the specific procedures for capturing their input on project goals and findings. The procedures will be robust to accommodate diverse and conflicting priorities.

Outreach will take various forms, including formation of a Network Advisory Committee; meetings with key stakeholders, such as city councils or planning commissions; meetings with the general public; and other highly targeted outreach. To organize outreach efforts for approval by TAMC, AECOM will develop the Stakeholder Engagement Plan upon receipt of the Notice to Proceed. The plan will specify the formats for public meetings, including venues and times, and will include a social media strategy.

Task 2.2: Network Advisory Committee

In coordination with TAMC, AECOM will establish a Network Advisory Committee (NAC) consisting of the key stakeholder entities for this project. TAMC will invite the relevant entities and host the meetings. AECOM will be responsible for conducting up to eight quarterly NAC meetings. AECOM will prepare

the meeting agendas, presentation materials, sign-in sheets, and minutes, and will seek NAC input on project goals and findings throughout the Network Integration Study. Planning related to the NAC will be included in the Stakeholder Engagement Plan.

Task 2.3: Briefings and Outreach Meetings

Apart from NAC meetings, AECOM will hold up to four briefings and presentations to share study goals and key findings with interested parties identified by TAMC. TAMC will arrange for the briefings and AECOM will make the presentations and gather input for the study. AECOM will also produce a recorded version of a briefing presentation for distribution at TAMC's discretion.

Task 2 Deliverables:

- Stakeholder Engagement Plan
- NAC meeting materials, including agendas and notes, and briefing materials

Task 3 Existing and Future Conditions

Task 3.1: Existing Conditions Analysis

The AECOM team will develop an existing conditions memo that includes:

- Summary of Recent Studies

  AECOM will review relevant studies and service delivery plans for rail improvements in the study area. Summaries will be included in an Existing Conditions Memo as a foundation for future planning work.

- Rail Operations and Capacity Analysis

  AECOM will update the regional rail capacity analysis performed for the 2018 California State Rail Plan. This analysis, which is vital to planning future service and capital investments, will catalog existing rail infrastructure, condition, and capacity.

- Highway Capacity and Travel Demand Analysis

  As part of travel demand analysis and identification of travel markets in the study area, AECOM will catalog current highway capacity and congestion on major regional corridors currently or potentially served by a regional rail network. This analysis will use the Association of Monterey Bay Area Governments' (AMBAG's) regional travel demand model and Caltrans data for vehicle volumes and congestion. Highways serving the study area will be included in the existing conditions analysis to catalog travel demand, congestion, future growth projections, and future opportunities to shift travel demand from the highway system to a future rail network.

- Existing Transit Operations and Analysis

  AECOM will identify and catalog existing transit operations, frequency, and ridership to understand current demand and as a basis for scaling toward future network integration.

- Environmental Resiliency and Climate Change Risk Analysis

  AECOM will identify key infrastructure or rights-of-way that are at risk of sea level rise or other climate-related vulnerabilities. AECOM will also frame the future regional rail network as a tool and part of a holistic strategy to address Monterey Bay and Central Coast climate resiliency.

- Socioeconomic Data

  AECOM will develop an understanding of the socioeconomic data around rail corridors and current and potential stations. AECOM will summarize relevant Geographic Information Systems (GIS) data, the latest available socioeconomic data; land-use data including locations of sensitive populations, expected growth, property values, and facilities such as hospitals and schools; and business location data. The Federal Railroad Administration's (FRA's) Train Horn Rule will be cited as the basis for establishing quiet zones. The memo will assess the noise and vibration, emissions, and safety impacts of rail operations on different land uses, including sensitive facilities, businesses, and residential areas.

- Roles of government agencies and rail operators

  The governmental jurisdictions involved with or impacted by freight and passenger train operations in the study area will be identified, along with their roles and responsibilities pertaining to railroad operations. In addition to the railroads themselves, there are the agencies with statutory authority pertaining to rail operations: FRA, the California Public Utilities Commission, and Air Quality Management Districts. TAMC and the Santa Cruz County Regional Transportation Commission (SCCRTC) own local branch lines. Lastly, there are the local jurisdictions directly impacted by rail operations, including main line, branch line, maintenance facility, and yard operations.

  Private and public rail operators will also be identified and their operations in the study area will be described. AECOM will inventory the railroads by line segment, track configuration, track ownership, siding locations and lengths, passenger platforms, yards, stations, support facilities, and other items. Locomotive and car fleets will also be described. Existing diesel electric locomotives will be identified by United States Environmental Protection Agency (EPA) tier classifications. Railroads will provide all such detail to AECOM for incorporation into the existing conditions memo. Where such information is not provided, AECOM will make estimates based on professional expertise.

- Shared-Use Agreements

  The existing conditions of shared-use agreements, both for freight-to-freight and passenger rail running on freight railroad-owned right-of-way, will be documented. For each agreement, AECOM will detail in a matrix format the components, dates, timelines, levels of usage, restrictions, and other data. The documentation of shared-use agreements will be complemented by documentation of other

capacity and operational constraints, such as one-track operation, insufficient siding facilities, and speed restrictions due to track alignments. Source documents will be obtained from the operators.

- Bicycle Facilities Network

  The study area hosts a robust network of bicycle facilities, most notably the Monterey Bay Coastal Trail parallel to the Monterey County Branch Line right of way. Bicycle facilities will be documented for future consideration and strategic opportunities for connecting bicycle improvements to rail improvements. Bicycle and rail corridor networks have successfully shown that broad coalitions can be built for transportation investments and returning value to communities along rail routes.

Task 3.2: Future Conditions and Planned Improvements

AECOM will prepare a future conditions memo describing projected socioeconomic data, train volumes, and planned physical improvements to the rail network in the study area, inclusive of track improvements, new facilities, and grade separations. The memo will summarize ongoing and planned rail studies within the study area and those studies that may influence possible service within the study area, including the 2018 California State Rail Plan and strategic plans for Caltrain, Capitol Corridor, San Joaquin, the Altamont Corridor Express (ACE), the California High-Speed Rail Authority, and the Los Angeles – San Diego – San Luis Obispo Rail Corridor (LOSSAN) corridor. Using data gathered for existing and future conditions, the memo will include relevant elements of the California Sustainable Freight Action Plan.

Task 3 Deliverables:

- Existing and Future Conditions Memo

The Task 3 memo will be designed and written to form the Existing and Future Conditions section in the final Network Integration Study.

Task 4 Future Service Vision

Task 4.1 Strategic Corridor Identification

In order to understand travel markets for future service, AECOM, TAMC, and the NAC will confirm the strategic corridors to be modeled and analyzed. These markets will be based on existing travel demand, the existing rail network, previous studies, and professional judgement.

Anticipated strategic corridors:

- Monterey County to Santa Clara County
- Monterey to Santa Cruz via Watsonville/Pajaro and Castroville
- Salinas to San Luis Obispo

Task 4.2 Strategic Service Planning and Network Integration

Having established the strategic corridors, AECOM, TAMC, and the NAC will identify and iterate future service goals for frequency and travel times on each strategic corridor. These service goals form the basis

for future network modeling in Viriato software and identification of projects and capital investments to deliver service.

Task 4 Deliverables:

- Future Monterey Bay Area Network Service Vision memo

The Task 4 memo will be designed and written to form the Vision section in the final Network Integration Study document.

Task 5 Network Modeling

Viriato software will be used to model track capacity needs given anticipated future freight volumes and new intercity and regional service on the Union Pacific Railroad Coast Route and publicly owned branch lines. Viriato will also be used to design integrated service connections at hub stations and guide capital planning exercises.

Task 5.1: Scenario Development

AECOM will design three integrated network service scenarios across three future implementation planning time horizons (nine total) using Viriato software and based directly on previous analysis and modeling completed as part of the Rail Plan. The individual scenarios will each reflect a specific set of conditions: a hypothetical service, implementation timeline, and investment level, reflected in a mix of trains; a plant configuration designed to support that traffic pattern; and a performance standard that measures the reliability of the match between demand and physical plant. The input values for the scenarios to be modeled will be developed through discussions with the NAC.

Task 5.2: Analysis of Modeling Results

Once the scenarios are designed, their respective capacity needs will be compared to the previously performed capacity analysis (Task 3.1) to identify where future capital investments are needed to support the frequencies and service speeds identified through Viriato modeling to support fully integrated service.

Task 5 Deliverables:

- Future Monterey Bay Area Network Service Vision memo
- 9 future scenarios descriptions
- Modeling assumptions and preliminary list of improvements
- Identification of capacity needs for future service levels

Task 5 Deliverables will be presented to TAMC staff and the NAC to build and establish consensus for the proceeding analysis activities.

Task 6 Governance Models

Task 6.1 Current Jurisdictional and Funding Arrangements

As part of the existing conditions analysis, AECOM will document existing funding and operational jurisdictions and how they pertain to ownership of physical infrastructure, future funding arrangements, and service operation. AECOM will investigate how other lines in public ownership are managed and funded, including Caltrain, Sonoma Marin Area Rail Transit (SMART), Santa Cruz branch line, and the Ventura County Line. AECOM will conduct up to six interviews to gather information on existing governance models.

Task 6.2 Potential Future Governance Models

In consultation with TAMC and the NAC, AECOM will lay out up to four future potential governance models as case studies that could achieve future service goals identified in the vision, along with pros and cons for funding, risk mitigation, safety, financial sustainability, and other issues. These can include Joint Powers Authorities, transit districts, sponsorship by a county, or sponsorship by the State.

Task 6.3 Potential Future Operator Models

In consultation with TAMC and the NAC, AECOM will lay out up to three future potential operator models as case studies that could achieve the future service goals identified in the vision along with pros and cons for funding, risk mitigation, safety, financial sustainability, and other issues. Operators could include contract operators (public or private), concessionaires, or a new public operating agency.

Task 6 Deliverables:

- Governance and Operations Models Memo

The Task 6 memo will be designed and written to form the governance section in the final Network Integration Study document.

Task 7 Implementation Planning

Task 7.1: Cost Estimate

AECOM will provide conceptual cost estimates for the capital improvements identified through the Viriato modeling. The improvements will be identified by line segment and categorized by project type (e.g., grade separation, double tracking, passing siding, signalization, etc.) and by time period (i.e., short-term, medium-term, and long-term). The team will use unit costs based on recent projects, estimates, and allowances based on the project intent, along with appropriate contingencies, to build up and estimate total costs for each improvement. Cost estimates will be developed in a spreadsheet database format, so that the costs can be easily understood by NAC members and rail agencies.

Typical costs and anticipated scope that will be encountered in this estimate are as follows:

- Guideway and track work will be quantified and priced, and itemized by at-grade, retained fill, or aerial bridge structure. No underground segments are anticipated. Special track work will be quantified separately, if possible, based on information from Task 5.
- Station improvements are anticipated in the proposed projects and will be priced by size and complexity in the context of their surrounding environment.
- Maintenance facility improvements are anticipated in the proposed projects and will be priced by size and complexity in the context of their surrounding environment.
- Site work elements will be quantified, priced, and itemized by at-grade, retained fill, or aerial bridge structure. Site work costs include utility relocation, drainage, roadway demolition and reconstruction, pedestrian and bicycle infrastructure, urban design elements, and temporary construction items.
- Systems elements will be quantified and priced, and will be the same for all track work configurations. Site work costs include rail line signaling and signaling at intersections.
- Right-of-way acquisition will be quantified and priced. The right-of-way acquisition area will be based on an allowance width based on the type of project.
- Professional Services: The estimate will include a percentage mark-up to engineering, environmental, management, insurance, legal review, third-party review, and start-up costs.

Project cost estimates will be displayed by FRA Standard Cost Categories (e.g., track and structures; stations, terminals, and intermodal; support facilities; site work; right-of-way; and communications and signaling).

Pricing sources will include AECOM estimates prepared for the Rail Plan, the National Transit Database, industry standard publications, and historical cost data from other projects. All estimates will be prepared with a non-biased, independent approach with the intention of capturing the fair market value. Estimates will include a 30%+ contingency according to Federal Transit Administration (FTA) standards at the 0-5% design level. Costs will be presented in current year and estimated year of expenditure, including appropriate labor and commodity escalation calculated from economic publications. The estimate will be accompanied by a cost methodology summary that clearly communicates the basis of the estimate, assumptions, and references.

Task 7.2: Ridership Analysis

Based on experience developing similar service assumptions for the Rail Plan, AECOM will develop the assumptions needed to run a future scenario that will incorporate the future Monterey Bay Area Integrated Network into the integrated Northern California and Statewide system in the Caltrans model. AECOM will also develop the necessary assumptions needed to establish service. This will include frequencies, travel times, station locations, fares, and potential connections to other services. AECOM will coordinate with TAMC to ensure the assumptions are complete and will incorporate any needed changes.

In order to calculate travel time versus existing travel times, AECOM will use Viriato software and General Transit Feed Specification (GTFS) analysis. The time savings for passenger trains through the Network Integration Study area will be a key input to the travel demand modeling.

In additional analysis integrating the Network Integration Study projects into the statewide and megaregional rail networks, AECOM will examine the addition of rail transit connections at identified hubs to allow direct service and connections to new destinations. This task will involve developing a set of additional destinations, developing the assumptions needed to model these new destinations, and running the Caltrans models to produce ridership results.

AECOM will draw upon Rail Plan experience and discussions with the NAC to propose strategic connections between the services that can take advantage of other planned improvements. Once the scenario is defined with input from TAMC, AECOM will develop the necessary inputs and produce the same set of ridership results showing the additional potential of the new connections.

Task 7.3: Fleet Strategy

AECOM will evaluate options for future rolling stock and procurement strategy as these options relate to service impacts, environmental impacts, maintenance requirements, capital costs, state of good repair, and governance and operations models. In consultation with TAMC and the NAC, AECOM will make recommendations on future rolling stock needs and procurement and fleet management strategy. Such recommendations will be considered in related costs and benefits analyses. AECOM anticipates equipment type options will include conventional diesel-haul trainsets and self-propelled railcars known as Diesel Multiple Units (DMUs).

Task 7.4: Funding and Finance Strategy

Financial Analysis

AECOM will conduct a financial analysis that integrates projections of expenses and revenues, both capital and operating, for the program passenger rail services. The financial analysis will support both near-term decision-making for the implementation of funding sources as well as long-term decisions addressing both project refinement and capital programming.

The team will examine a range of existing and potential new grant and dedicated funding sources and financing structures, including pay-as-you-go, short-term debt, and long-term debt. The team will consider both conventional (design-bid-build) and public private-partnership (P3) forms of project delivery (e.g., design-build-operate-maintain). The analysis will be undertaken in recognition of the uncertainties associated with inflation, interest rates, project costs, ridership and fare revenue, dedicated state and local funding, and grant funding. Alternative methods of project delivery provide an opportunity to shift risk to the party most capable of managing risk. Innovative financing approaches include application of tax-exempt commercial paper, grant anticipation revenues, Transportation Infrastructure Finance and Innovation Act (TIFIA) loans, and other structures. These approaches also have the potential to speed implementation and reduce project cost.

Financial Planning Assessment

AECOM will develop a funding strategy by combining the application of specialized financing analysis software, which permits rapid examination of alternative financing, funding, and institutional

arrangements, with interactive engagement of the NAC to obtain critical stakeholder input at major decision points in the analysis.

The objective of the model is to examine alternative sources to support the capital program for the implementation of an integrated rail system. The model applies user-defined shares of total cost from a range of sources, including federal and state grants, local government funding, and private equity. It enables an examination of user-defined shares of total remaining support from a range of potential new dedicated sources. It next determines the rates of taxation required for new dedicated sources to fund the operating shortfall, to service debt on bonds, to provide sufficient internal rate of return on private equity, and to examine the impact of uncertainty in factors beyond the immediate control of an agency. These risk factors include project construction cost, ridership, grants, and level of dedicated revenue. The model has a simple user interface for examination of alternative funding sources and conveys findings in a meaningful way to stakeholders and decision makers through intuitive graphics.

The analysis will explore alternative funding sources applied to debt and private equity financing, including: 1) increases to the existing sales tax and 2) value capture based on parcel-level analysis of existing and projected assessed value for residential and commercial properties within the walkshed of proposed stations. A sketch planning approach is preferable at this point in the planning process, as it would be premature to examine funding and financing from an annual cash flow perspective.

Task 7 Deliverables:

- Cost estimate memo
- Draft and final ridership results memo
- Fleet strategies memo
- Funding and finance strategies memo

Task 7 memos will be designed and written to form the bulk of the technical analysis sections in the final Network Integration Study document.

Task 8 Benefits Assessment

Task 8.1: Transportations Benefits

Using GTFS analysis and Viriato modeling, AECOM will quantify benefits to travel time, network accessibility, and regional mobility resulting from new passenger rail service in the Network Integration Study area. Benefits will be quantified in terms of improvements to origin/destination pair travel times, increases in regional access, and population served.

Task 8.2: Environmental Benefits: Passenger and Freight Rail Forecasts and Emissions Analysis

Environmental analysis is based on needs for competitive grant applications and the public's interest in environmental benefits and environmental justice. Environmental justice and benefits to disadvantaged communities will be central to the overall benefits analysis and feasibility of the Network Integration Study.

This task consists of two elements:

- Forecasts

Based on the foregoing simulation analysis, AECOM will develop the necessary model inputs to facilitate incorporation of the integrated freight and passenger rail forecast into long-range environmental benefits analysis. The forecast modeling will include: calculations for the baseline year and 2040, up to three scenarios for freight and passenger train movements, fuel consumption by train type, for each scenario.

- Emissions Analysis

Based on the simulation scenarios described in the previous tasks and the forecasting described above, AECOM will perform an air emissions analysis by incorporating the number of trains, engine type, and train miles traveled, to derive estimates of the diesel fuel consumed in each scenario for the baseline year as well as 2040. For each scenario, AECOM will calculate greenhouse gas (GHG) and criteria pollutant emissions through a reputable methodology by applying: GHG emissions factors from reputable entities, such as EPA and the California Air Resources Board (CARB), standard conversion factors, and global warming potentials from the International Panel on Climate Change.

The calculations and output will be contained in Microsoft Excel, or a different file format most conducive to TAMC's regional model application and analysis needs, as requested by TAMC. Analysis will be conducted such that work product can be readily applied to future grant applications.

Task 8.3: Economic Benefits

Economic benefits will be framed by increased jobs access, new jobs, reduced household transportation costs, and increased economic activity. Benefits will be described with respect to low-income communities for future grant application purposes. Analysis will be conducted such that work products can be readily applied to future grant applications.

Task 8 Deliverables:

- Benefits Assessment Memo
- Technical Analysis Documentation

The Task 8 memo will be designed and written to form the Benefits section in the final Integration Study document. Technical Analysis Documentation will be prepared for the final document appendices and subsequent use in grant applications.

Task 9 Grants Support

Task 9.1 Grants Strategy Report

The AECOM team will identify a strategy for TAMC to pursue for project delivery, including the identification of relevant grants, analysis needs, funding levels, and grant cycles.

Possible grants programs include:

- State Grants Transit and Intercity Rail Capital Program (TIRCP)
- Low Carbon Transit Operations Program (LCTOP)
- State Rail Assistance Program
- Solutions for Congested Corridors Program
- Sustainable Communities Planning
- Trade Corridor Enhancement Program
- Federal Grants Infrastructure for Rebuilding America (INFRA)
- Better Utilizing Investments to Leverage Development (BUILD)
- Federal Transit Capital Investment Grants
- Consolidated Rail Infrastructure and Safety Improvements (CRISI)
- Federal Railroad State of Good Repair
- Private Funding options

Task 9.2 Technical Materials

State and federal grant applications require similar, though slightly different (depending on specific grant program and specific grant cycle), technical data related to project description, project cost, funding and financial planning, implementation planning, ridership and economic benefits, environmental impacts, and related data. AECOM will format such data products from the Network Integration Study into technical appendices for the final report in such a way that they can be easily repurposed for TAMC's future grant applications.

Task 9 Deliverables:

- Grants strategy memo
- Supporting technical materials

The Task 9 memo will be designed and written to form part of the Funding Strategy section in the final Network Integration Study document. Technical Analysis Documentation will be prepared for the final document appendices and subsequent use in grant applications.

Task 10 Draft and Final Monterey Bay Area Network Integration Study

Task 10.1 Network Integration Study Outline

AECOM will work with TAMC and the NAC to identify a document outline early in the process that will form the basis for determining technical analysis needs and guide the development of analysis and interim reports such that deliverables and work products can fit into the final report with minimal reconfiguration of materials. The outline will be iterative and can be adjusted as the Network Integration Study develops.

Task 10.2 Draft Network Integration Study Document

AECOM will assemble materials and deliverables according to the outline. AECOM will draft Network Integration Study materials into a compelling narrative and graphically rich document that both communicates the vision and strategy for the future of integrated rail service in the Monterey Bay Area

and provides the technical background needed to guide future planning efforts, environmental processes, and project delivery exercises. The Draft Integration Study will be reviewed by TAMC and the NAC, and AECOM will collect and incorporate feedback into iterative revisions of the final document.

Task 10.3 Final Network Integration Study Document

The Final Integration Study will incorporate feedback from TAMC and the NAC on the draft document.

Task 10.4 Appendices

Accompanying appendices will be produced that document the technical analysis underpinning the Network Integration Study and provide a data and resource base for future grants applications.

Task 10 Deliverables:

- Network Integration Study Outline
- Network Integration Study Initial Draft
- Network Integration Study Final Draft
- Network Implementation Study Final
- Supporting technical appendix materials