



Kimley-Horn
and Associates, Inc.

February 20th, 2009

■
Suite 410
2000 Crow Canyon Place
San Ramon, California
94583

Technical Advisory Committee (TAC)
Public Transportation Infrastructure Study Phase 2

Subject: Initial Technical Advisory Committee Meeting for the Fresno Public Transportation Infrastructure Study (Phase 2) on February 25th, 2009

Dear TAC Members:

On behalf of the entire project team for the Fresno Public Transportation Infrastructure Study (PTIS) Phase 2, we would like to thank you all for volunteering your time and effort for this important project.

The Council of Fresno County Governments (Fresno COG) and the cities and County of Fresno, have recognized the need to make significant changes in both the way the region grows and how its residents will travel if the region is to improve its air quality, reduce traffic congestion, and improve its citizen's quality of life. Through efforts including the first phase of the PTIS, Blueprint, and the Bus Rapid Transit Master Plan, Fresno County has embraced the principles of Smart Growth and has identified public transportation technologies that could serve the region now and in the future.

Our first meeting is a simple introduction to the PTIS study and a discussion of the roles and responsibilities of the TAC members. The contents of the package (excluding this letter) are:

1. Agenda for the February 25th, 2009 TAC meeting
2. Copy of Powerpoint presentation (with placeholders for material that will be made available at the meeting)
3. Detailed scope of work for entire study
4. Draft schedule (preliminary until detailed work plans completed)
5. Team contact information

During the course of the project, we will be either emailing or meeting with you for your guidance/direction and for your review of key deliverables. We encourage written comments/feedback on the material you receive for review. Contents of the presentations for the upcoming meetings will be sent to you approximately one week in advance of the actual meeting. Key deliverables for your review and comment will be sent to you at least two weeks in advance.

■
TEL 925 543 0840
FAX 925 543 0839



We are looking forward to a collaborative effort on this project. If you have any questions, please do not hesitate to call me at (925) 543-0840.

Very truly yours,

KIMLEY-HORN AND ASSOCIATES, INC.

A handwritten signature in black ink, appearing to read 'JD', is written over the printed name.

James Daisa, P.E.
Project Manager
TR 1624



AGENDA

- **Purpose of Study**
- **Overview of Project**
- **Draft Purpose & Need, Goals & Objectives**
- **TAC Role**
- **Questions and Answers**
- **Wrap-Up**



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COPY OF POWER POINT

PRESENTATION

PRESENTATION

Regional Public Transportation Infrastructure Study (PTIS)



Presentation to:

Technical Advisory Committee

Presented by

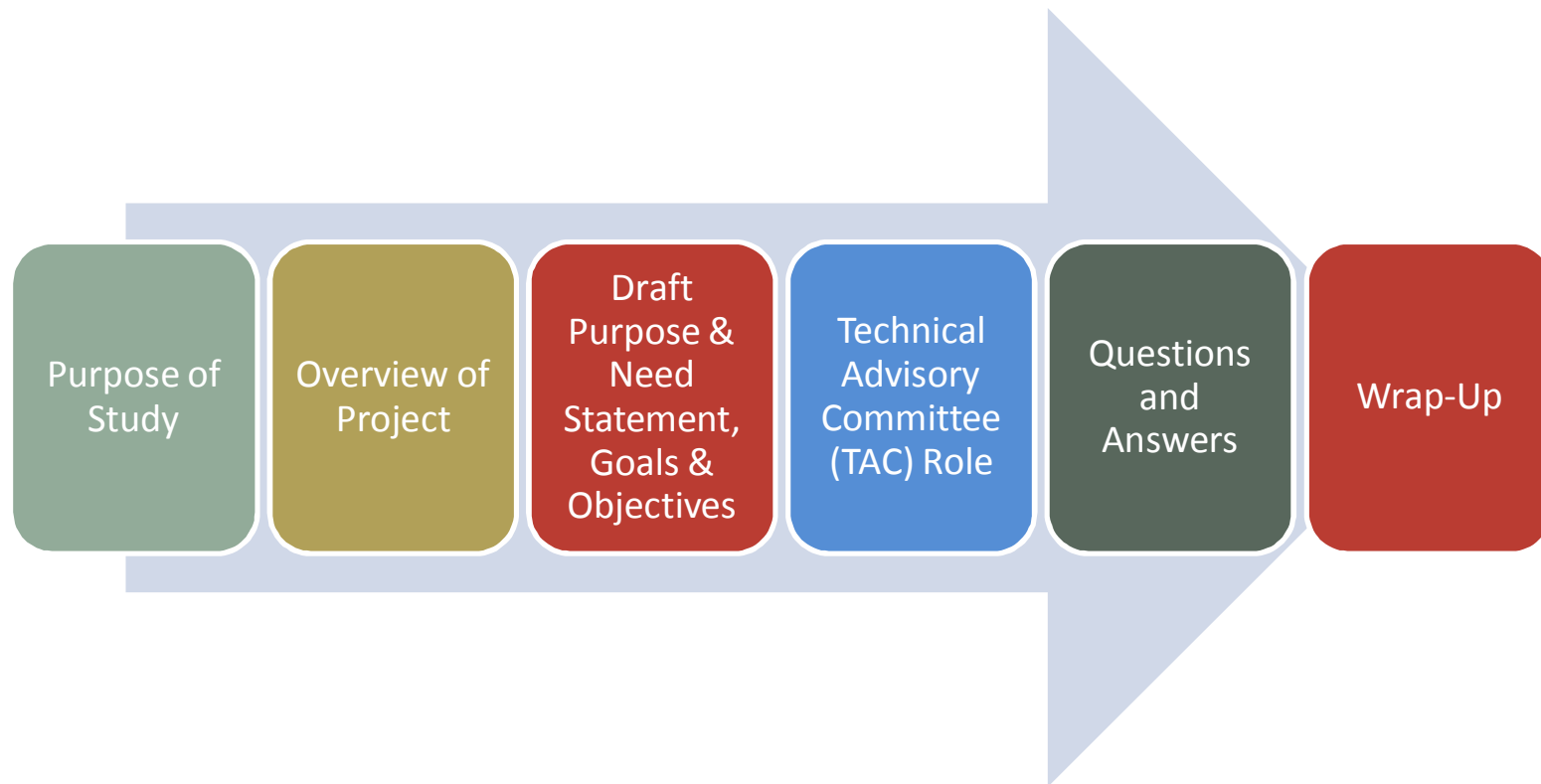


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February 25th, 2009

Regional Public Transportation Infrastructure Study (PTIS)

Agenda



Regional Public Transportation Infrastructure Study (PTIS)

Agenda

Purpose of Study

- Air Quality Conformance
- High Growth and Sprawl
- Auto Dependency
- Transit Supportive Land Use
- Optimal Use of Measure C Funds
- Implementation Plan
- Phasing of Public Transportation Needs

Overview of Project

- Study Area
- Purpose and Need
- Goals and Objectives
- Study Approach
- Study Outcomes
- Fresno Streetcar Study
- Project Schedule
- Project Team

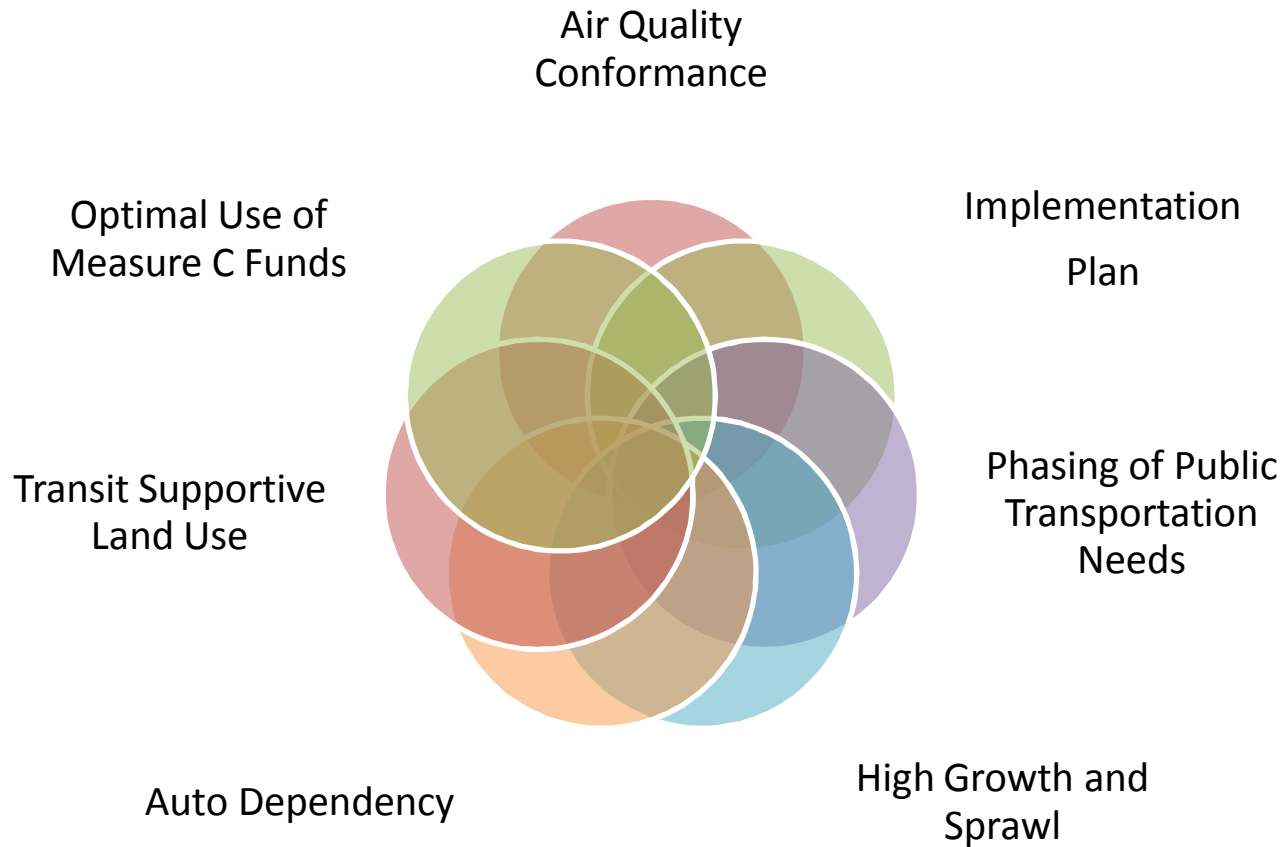
TAC Role

- Direction at Key Decision Points
- Feedback on Key Deliverables
- Identification of Key Stakeholders
- Logistics – Frequency of meetings, venue location, next meeting, video conferencing, net meeting, and other items.



Regional Public Transportation Infrastructure Study (PTIS)

Purpose of Study



Regional Public Transportation Infrastructure Study (PTIS)

Overview of Project

- Study Area
- Purpose and Need
- Goals and Objectives
- Study Approach
- Study Outcomes
- Fresno Streetcar Study
- Project Schedule
- Project Team



Regional Public Transportation Infrastructure Study (PTIS)

Overview of Project – Purpose and Need

Note: Materials will be distributed during the meeting



PRESENTATION

Regional Public Transportation Infrastructure Study (PTIS)

Discussion

Open Discussion



Regional Public Transportation Infrastructure Study (PTIS)

Overview of Project – Goals and Objectives

Note: Materials will be distributed during the meeting



PRESENTATION

Regional Public Transportation Infrastructure Study (PTIS)

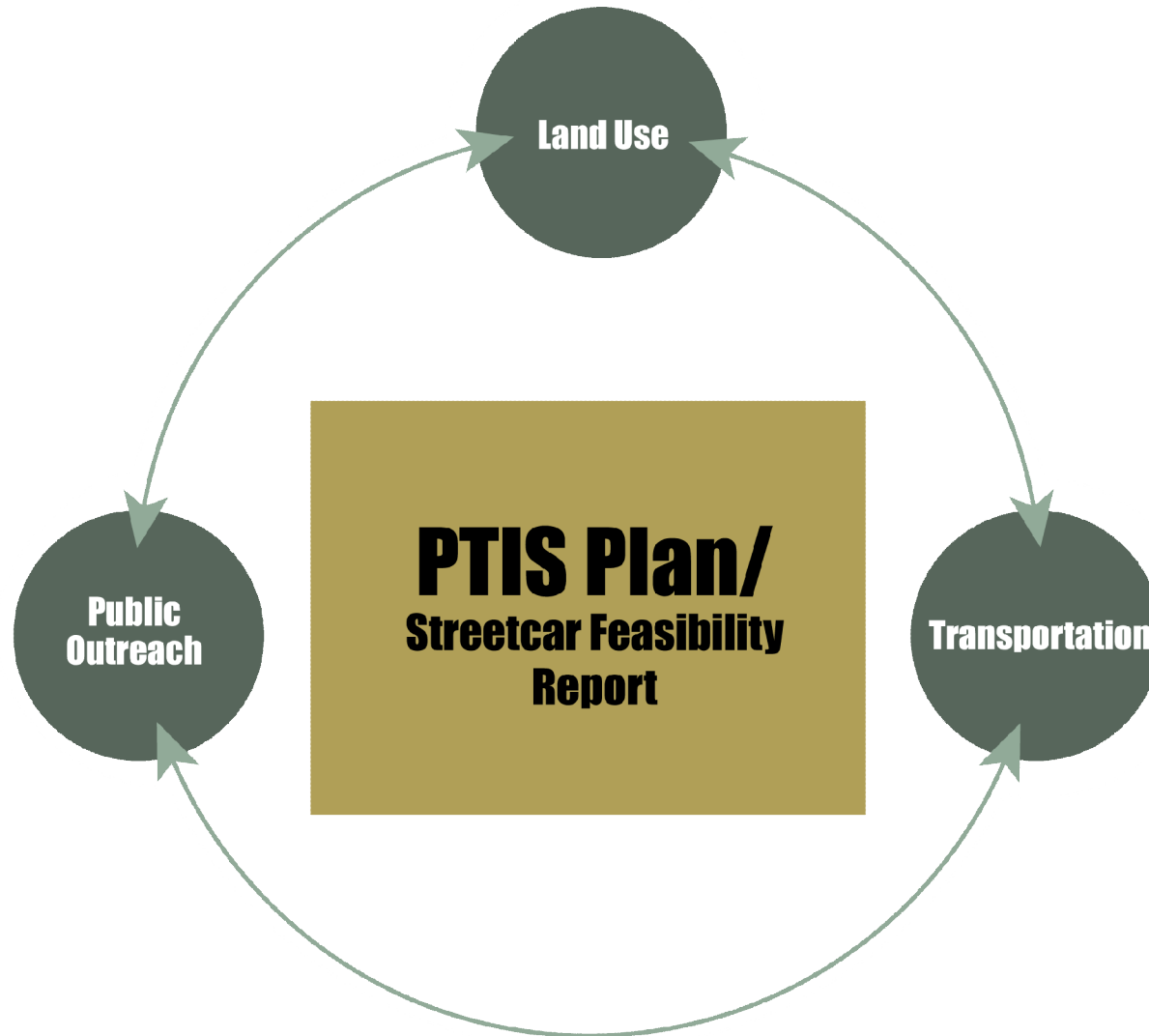
Discussion

Open Discussion



Regional Public Transportation Infrastructure Study (PTIS)

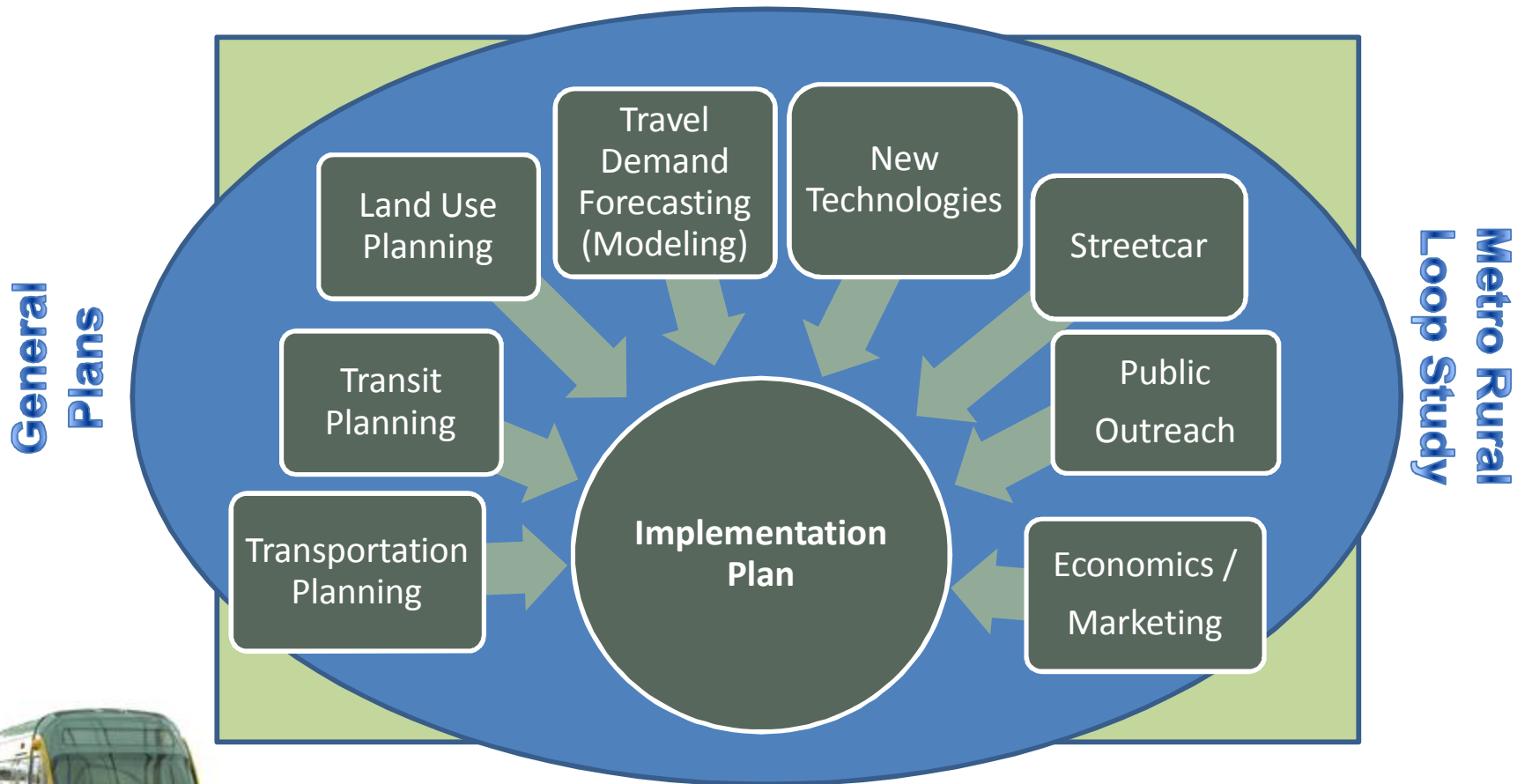
Overview of Project – Study Approach



Regional Public Transportation Infrastructure Study (PTIS)

Overview of Project - Study Approach

Blue Print



Regional Public Transportation Infrastructure Study (PTIS)

Overview of Project – Study Approach

Stage 1 Study Initiation	Stage 2 Alternatives Development	Stage 3 Analysis & Evaluation	Stage 4 Preferred Alternative	Stage 5 Implementation Plan	Streetcar Study
Transit Alternatives					
Land Use Planning					
Public Outreach					

Approach consistent with Federal Transit Administration
Alternatives Analysis Requirement



Regional Public Transportation Infrastructure Study (PTIS)

Overview of Project – Study Approach

Land Use Scenario	Transit Alternatives						
	Amended RTP Baseline	TSM	BRT Light	Advanced BRT	Core and Expanded LRT	Automated Fixed Guideway	Turbo (Combined)
Current Conditions (Trend)	✓	✓	✓	✓		Limited Applications	
Alternative Land Use			✓	✓	✓	Limited Applications	✓
Color Key	Initial six scenarios	Refined scenarios	The automated fixed guideway scenario includes PRT/GRT, people mover applications in limited applications within activity centers and in downtown Fresno. The Turbo Alternative combines the most feasible and effective technologies and service options from the other alternatives in a refined scenario.				



Regional Public Transportation Infrastructure Study (PTIS)

Advanced Technologies



Automated Guideway Transit (Monorail)



Automated People Mover



Automated Metro



Group Rapid Transit (GRT)



Personal Rapid Transit (PRT)



PRESENTATION

Regional Public Transportation Infrastructure Study (PTIS)

Advanced Technologies



PRT Simulation
Courtesy of BetterCampus.org



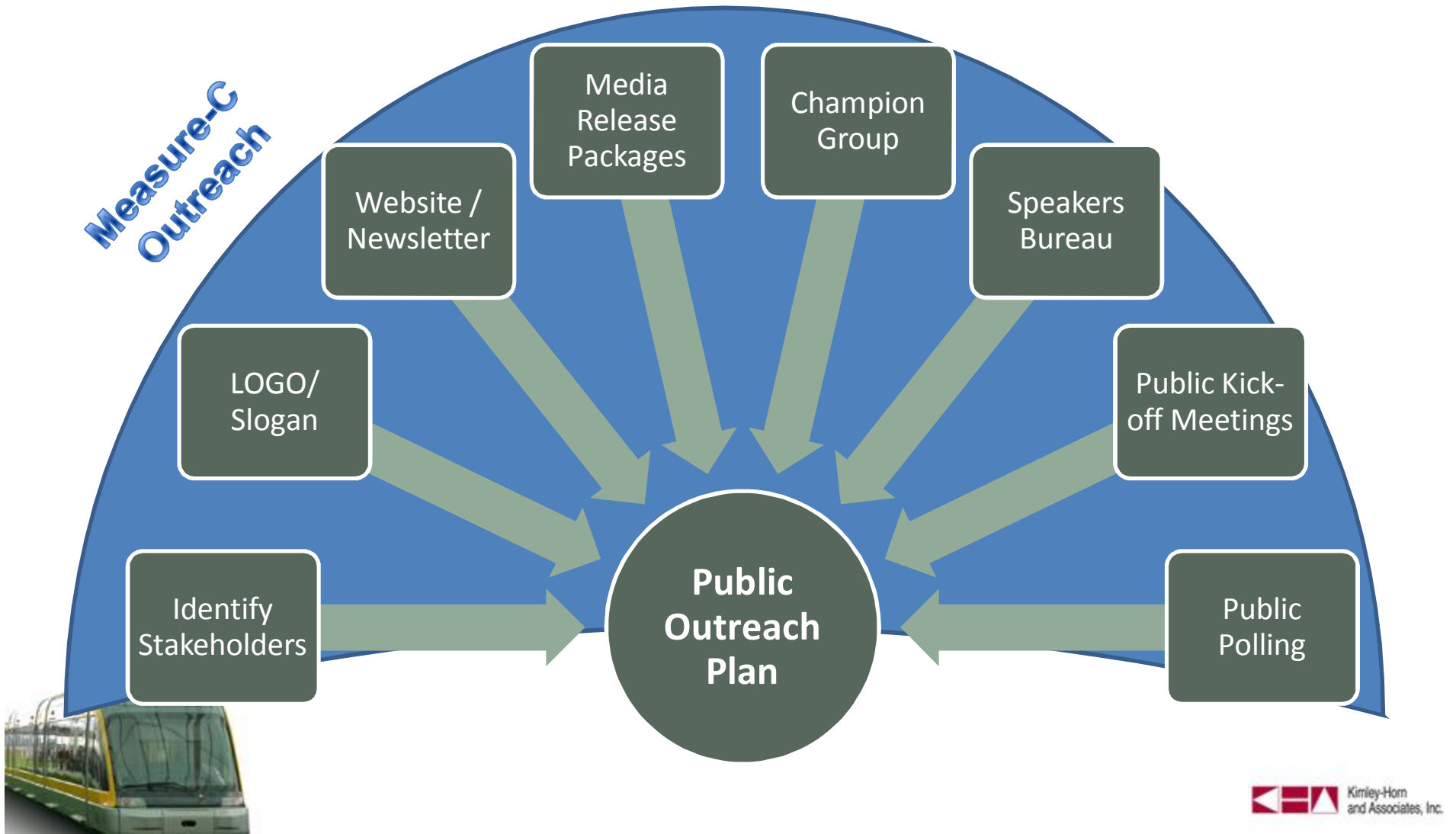
Regional Public Transportation Infrastructure Study (PTIS)

Overview of Project – Study Approach Blue Print



Regional Public Transportation Infrastructure Study (PTIS)

Overview of Project – Study Approach



Regional Public Transportation Infrastructure Study (PTIS)

Overview of Project – Study Approach



Fresno Transit Implementation
Courtesy of Newlands



PRESENTATION

Regional Public Transportation Infrastructure Study (PTIS)

Discussion

Open Discussion



Regional Public Transportation Infrastructure Study (PTIS)

Overview of Project – Study Outcomes

- Public Transportation Infrastructure Implementation Plan
 - Preferred system plan
 - Phasing and implementation schedule
 - Funding and financing plan
- Land Use Planning Concepts
 - Support and enhance Blueprint
 - Emphasis on corridors
- Toolbox of Transit-Supportive Policies, Regulations, and Plans
- Downtown Fresno Streetcar Study
 - Feasibility, technologies, preferred route, funding, implementation, economic strategies



Regional Public Transportation Infrastructure Study (PTIS)

Overview of Project – Study Outcomes

- FAX and FCRTA Optimization Plan
- Transit-Supportive Land Use and Economic Development Strategies
- Early and immediate phases of corridor implementation
 - Very Small Starts Application
 - Kings Canyon / Ventura Avenue and Blackstone Corridors
 - Feasibility of Transit Impact Fees



Regional Public Transportation Infrastructure Study (PTIS)

Downtown Fresno Streetcar Study

Goals and Objectives



- Public Outreach
- Stakeholder Outreach
- Surveys

Costs & Funding



- Economic Assessment
- Cost Estimates
- Funding & Financing Feasibility
- Financing Strategies

Technical Studies



- Forecasting, Route & Operating Studies
- Technology & Equipment Analysis
- Environmental Screening
- Alternatives Screening

Major Study Outcomes



- Recommended Alternative
- Proposed Programming & Financing Plan

Conceptual Engineering



- Alignments & Stations
- Operations & Management Scenarios



Regional Public Transportation Infrastructure Study (PTIS)

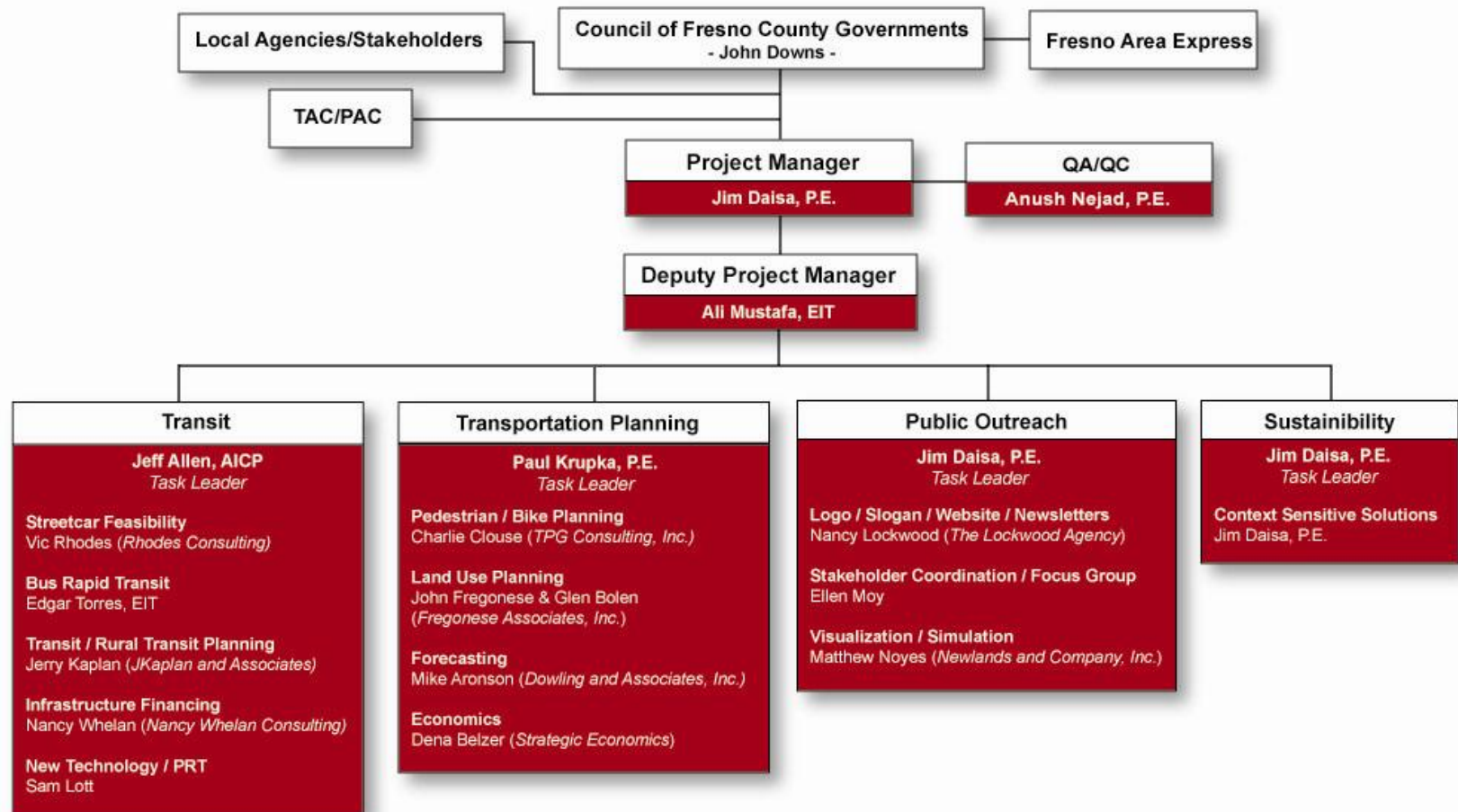
Overview of Project

SCHEDULE OF APPROACH BY TASK	YEAR 1												YEAR 2											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Project Management and Administration	[Red bar spanning all 24 months]																							
STAGE 1 - Study Initiation	[Red bar from month 1 to 6]																							
STAGE 2 - Alternative Development	[Red bar from month 7 to 12]																							
STAGE 3 - Analysis and Evaluation of Alternatives	[Red bar from month 13 to 18]																							
STAGE 4 - Develop Locally Preferred Alternative	[Red bar from month 19 to 22]																							
STAGE 5 - Documentation and Implementation Plan	[Red bar from month 23 to 24]																							
STAGE 6 - Streetcar Project	[Red bar spanning all 24 months]																							



Regional Public Transportation Infrastructure Study (PTIS)

Overview of Project – Project Team



Regional Public Transportation Infrastructure Study (PTIS)

TAC Role

- Direction to consultants at key decision points
- Make recommendations to COG's Technical Transportation Committee (TTC) and Policy Advisory Committee (PAC)
- Feedback on Key Deliverables
- Identification of Stakeholders
- Liaison to respective agency/constituency



Regional Public Transportation Infrastructure Study (PTIS)

TAC Role - Logistics

- Frequency of meetings
 - Bi-monthly or based on deliverable schedule
- Venue
 - Same location or rotating location
- Meeting Options
 - Video conferencing or net meeting?
- Materials
 - Material for review will be sent to TAC/PAC one week in advance of meetings
 - Key documents for review will be sent two weeks in advance of meetings
 - Written comments on the material/documents sent are expected by the meeting date. (Note: *Comments made on the materials/documents may be discussed during the meeting*)



Regional Public Transportation Infrastructure Study (PTIS)

TAC Role – Feedback on Key Deliverables

STAGE 1 Study Initiation

- Identify Stakeholders (G), input on LOGO/Slogan (R)
- Memorandum #3: Draft Purpose and Need, Goals and Objectives (R)
- Memorandum #4: Draft Evaluation Criteria and Measures (R)

STAGE 2 Alternative Development

- Input on TSM Improvements (Task 2.2.2 of the final scope) (R)

STAGE 3 Analysis and Evaluation of Alternatives

- Report #1: Draft Evaluation and Comparison of Countywide System Options (R)
- Memorandum #36: Draft Trade-Offs Analysis (R)

STAGE 4 Develop Locally Preferred Alternative

- Feedback on Locally Preferred Alternative (LPA). (R)
- Report #3: Revised and Final Evaluation and Comparison of Countywide System Options (R)

STAGE 5 Documentation and Implementation Plan

- Report #6: Draft Executive Summary of Public Transportation Infrastructure Study (R)

STAGE 6 Streetcar Project

- Identify Stakeholders (G)
- Memorandum #1: Draft Goals, Objectives, and Purpose and Need for Downtown Fresno Streetcar Study (R)



Review and Comment – (R)
Guidance/Direction – (G)

Regional Public Transportation Infrastructure Study (PTIS)

TAC Role – Upcoming Meetings

STAGE 1

Study Initiation

- Initial kick-off TAC Meeting
- Update meeting with TAC after Task 1.2 (Draft Goals, Objectives, and Evaluation Criteria)
- Update meeting with TAC after Task 1.4 (Land-Use Planning)

STAGE 2

Alternative Development

- Meeting with TAC after Task 2.3 to discuss transit definitions, alternate packages, & analysis of baseline scenarios
- Meeting with TAC after Task 2.5 to discuss multimodal planning, initial screening of alternatives, and plans for land use modeling/workshops
- Meeting with TAC after Task 2.6 to discuss outcome of scenario planning

STAGE 3

Analysis and Evaluation of Alternatives

- TAC meeting after Task 3.5 to discuss the draft evaluation of countywide systems options and trade-offs analysis



Regional Public Transportation Infrastructure Study (PTIS)

TAC Role – Upcoming Meetings

STAGE 4

Develop Locally Preferred Alternative

- TAC meeting for Task 4.1 to discuss and develop an LPA

STAGE 5

Documentation and Implementation Plan

- TAC meeting for the presentation of the Draft Public Transportation Infrastructure Study

STAGE 6

Streetcar Project

- TAC meeting for the presentation of Preliminary Conceptual Alignment Plan, Station Locations, Prototypical Station Designs and Urban Design Guidelines.
- Review of Draft Final Report.



Regional Public Transportation Infrastructure Study (PTIS)

Questions





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DETAILED SCOPE OF WORK
FOR THE
FRESNO PTIS STUDY

Final Work Plan

Stage 1 – Study Initiation

Transit planning activities in Stage 1 will establish the framework for the development of transit improvement scenarios for Fresno County. The Kimley-Horn team will document base conditions and public transportation needs. Drawing heavily on input from the public, stakeholders, and other interested parties, our team will refine study goals and objectives and identify appropriate transit technology alternatives and service options for addressing transit demand associated with alternative land use/development scenarios.

As identified throughout this scope of work, study direction and technical decisions will be made through both a “Policy Advisory Committee” (PAC) and a “Technical Advisory Committee” (TAC), as well as the FCOG Board. These bodies are assumed to be made up of existing FCOG committee structures. The PAC may be FCOG’s current Policy Advisory Committee and the TAC may be the current Transportation Technical Committee, or similar committees and organized by FCOG. Presentations and discussions with these committees will be made, to the extent feasible, at their regularly scheduled meetings. Generally, the TTC and the PAC meeting once per month and occasionally meet jointly. Where appropriate, we would prefer joint TTC/PAC meetings if the same information is being presented. FCOG has additional committees to which we may occasionally present information (i.e., Rail Committee, Transportation Policy Committee), and to the extent it can be scheduled, joint meetings with the PAC and/or TTC is preferred.

Task 1.1.1 – Understanding Travel Markets and Transit Needs

Task 1.1.1 focuses on understanding the travel markets that transit will serve. This includes determining existing and future transportation market segments within Fresno County and its broader travelshed.. This task builds on previous efforts, including the BRT Master Plan and the Fresno and San Joaquin Blueprints to document existing and likely future travel markets in the region. These studies will also help to establish transportation needs, and in particular those needs of commuters, discretionary travelers, the mobility dependent, and the various ethnic populations of the area. The market segment analysis will develop profiles of potential transit users and their existing and future travel patterns to the extent allowed by available data. Complementing the information obtained from previous studies will be public and stakeholder input on travel needs and desires (see Public Outreach tasks). Along with other information such as planned transportation infrastructure and possible future land use development, we can begin defining desired transit improvements, both in facilities and operations. This task is comprised of:

1. Meet with FCOG, FCRTA, and FAX staff to discuss current public transportation conditions, unmet needs, planned system and service improvements, and near-term projected travel markets. This meeting will also review the relevancy of the studies listed below and to identify planned public transportation improvements and programs that would be carried into the PTIS.
2. Review and summarize existing documents and plans related to public transportation, transportation demand, and socioeconomics/demographics in Fresno County including, but not limited to:



- 2009 Federal Transportation Improvement Program and Amendments (focus on transit projects)
 - Draft 2009 Interim Transportation Improvement Program (focus on transit projects)
 - 2009 Air Quality Conformity Determination (focus on planning assumptions, socioeconomic data and transportation modeling)
 - 2007 Regional Transportation Plan (RTP)
 - 2007 Regional Transportation Plan Amendment #1
 - Fresno County Coordinated Human Services Transportation Plan
 - Fresno County Transportation Guide (for current systems, operating schedules, etc.)
 - PTIS Phase 1 Reports and Technical Documentation
 - Bus Rapid Transit Master Plan
 - I-5 Business Development Corridor Transit Study (1998)
 - Public Transportation Regional Agency Formation Study/FCRTA Short-Term and Long-Term Transit Plans
 - FAX 2001 Transit Long Range Master Plan
 - Fresno Alternative Mass Transportation Pre-Major Investment Study
 - City of Fresno Activity Center Study
 - Farmland Conservation Studies
 - San Joaquin Valley Growth Response Study
 - Fresno Downtown Transportation and Infrastructure Study
 - Fresno Southeast Growth Area Study
 - California High Speed Rail Technical and Environmental Reports
 - Community Transit Project Report
 - San Joaquin Valley Blueprint Documentation (focus on Fresno Blueprint)
 - Metro Rural Loop Feasibility Study
 - 2006 Measure C Extension Expenditure Plan and Related Documentation
 - Other relevant documents as identified by FCOG, FAX and FCRTA
3. Conduct market assessment and develop characterization of Transit Corridors as they relate to economic development

This task is related to both the determination of travel markets and the development of planning scenarios for the land use component of the study, and will incorporate economic and market information into the preliminary land use scenarios. The goal of this task is to evaluate how future transit service can best link to the household types and jobs, with the dual intentions of boosting ridership and supporting future reinvestment and economic development. This analysis will include:

- a. *A profile of current and emerging employment centers.* Strategic Economics (SE) will build upon employment density maps created for the first phase of the PTIS, by mapping a closer characterization of major employment centers and corridors. These maps will include information that will demonstrate the propensity of these employment concentrations to be served by, and supported by, public transit. The maps will identify the sectoral mix of jobs, and provide an overview of market characteristics including current strong and weak performing areas (divided by office, retail, residential). SE will work with Fregonese Associates to create a series of summary maps that will identify future areas of potential change and areas of preservation, and identify major potential job centers and other destinations that



should be served by transit. The “transit-friendliness” of various job centers will be based on regional and national data on the mode share of workers by sector.

- b. *Characterization of current and envisioned linkages between major origins and destinations, and of the future role of each transit corridor.* Using data from the Census Transportation Policy Package or the Longitudinal Employer Household Dynamics datasets, SE will evaluate the linkages between workers and their jobs for 3 to 5 selected job centers. SE will then incorporate this information into a series of maps that characterize the role of Fresno’s major existing and proposed transit corridors in linking major origins and destinations and capturing market potential. This typology will be based on Strategic Economics’ recent work for the Center for Transit-Oriented Development. The purpose is to classify major transit corridors by their future roles (e.g. planned growth corridor expecting significant change), This corridor evaluation will be done for major transit corridors only (e.g. certain types of BRT and all passenger rail), with reference made to critical bus connections and the role of intermodal centers in reinforcing development potential and jobs-housing linkages.
- c. *A forecast of long-range household demand for transit-oriented development.* In this task, SE will provide a long-range forecast of the total demand for housing near transit in Fresno County, using its proprietary model that distinguishes “transit-friendly” households by household type, age group, and income distribution. This task assumes that the Fresno Council of Governments provides, at no cost to SE, population projections by age for the region.

Task 1.1 Deliverables:

1. Memorandum #1: Summary of Travel Markets, Transit Needs, and Planned Public Transportation Improvements (including summary of stakeholder and public comments from outreach and interviews – see Public Outreach tasks)
2. Memorandum #2: Summary Maps and brief description of Transit-Friendly Employment Centers, Market Conditions, and Characterization of Transit Corridors

Task 1.2 – Define Goals, Objectives, and Evaluation Criteria

Task 1.2.1 Define Goals and Objectives and Develop Purpose and Need

Task 1.2 works collaboratively with Fresno COG, Policy and Technical Advisory Committees (PAC, TAC) and key stakeholders to develop and evaluate various transit solutions based on the defined goals and objectives of the study. Goals and objectives will build on the System Design Goals and System Supportive Strategies identified in the RFP. Additionally, the purpose and need of the study will be identified. The purpose and need, goals and objectives will be presented during public and stakeholder outreach as we obtain input on the preferred solutions to public transportation needs. They provide a context for both the discussion of needs and the actual development of potential solutions. With the approval of Fresno COG, goals and objectives will be updated, refined, and/or clarified as necessary during the second course of the study based on public and stakeholder input.



Task 1.2.2 Evaluation Criteria

This task develops evaluation criteria intended to “operationalize” the goals and objectives, and quantitatively measure the improvement strategies or a specific alternative’s performance in meeting the goals and objectives. Task 1.2.1 includes preparation of draft criteria for screening transit solutions. We will submit the draft criteria for concurrence by Fresno COG, PAC, and TAC. The criteria will be presented to the public and stakeholders for comment when relevant and practicable. The criteria will fall into the following five categories:

- Effectiveness (ridership) and Efficiency (cost)
- Impacts (environmental, social, equity, fiscal)
- Cost-effectiveness (cost to benefit/ridership)
- Financial feasibility (ability to fund and finance)
- Equity

Within each category several specific measures will be established, including:

- Supported by land use density
- Consistent with land use objectives
- Ridership
- Cost (total, per rider) and cost-benefit
- Potential for air quality mitigation
- Potential for impacts (right-of-way, traffic, environmental, social justice, services, etc.)
- Multi-modal system integration
- User defined needs
- Economic development potential
- Funding availability
- Ability to implement/phasability
- Time to implement

Additional qualitative (or partly quantitative) measures will be developed. These might include:

- Connectivity with regional transportation system (regional and local benefit)
- Economic development potential (ability to catalyze urban infill development that can reinforce ridership, create a more transit and pedestrian pattern of development, and provide a potential funding source for transit)
- Phased investment value (does a particular phase of construction contribute to the incremental realization of a more robust regional transit system, and can each phase stand on its own if no further investments were made)
- Community acceptability and support (compatible with existing city policies and neighborhood plans, and would it have the support of the community?)

We will submit the draft evaluation criteria and measures to Fresno COG project management and then to the PAC and TAC. Agreement from these three entities is considered final approval of the evaluation criteria to be used throughout



the study. Should agreement not be reached between COG staff, PAC and TAC, we assume the COG Board will make the final determination for the goals and objectives, and criteria.

Task 1.2 Deliverables:

1. Memorandum #3: Draft Purpose and Need, Goals and Objectives (to be finalized after review by Fresno COG, PAC, and TAC)
2. Memorandum #4: Draft Evaluation Criteria and Measures (to be finalized after review by Fresno COG, PAC, and TAC)
3. Memorandum #5: Refined and Clarified Purpose and Need, Goals and Objectives, and Evaluation Criteria (to be finalized after review by Fresno COG, PAC, and TAC)

Task 1.3 – Identify Transit Technology and Service Alternatives

In Task 1.3 we will assess the basic transit technology alternatives and service scenarios that will form the basis of the transit “packages” of strategies for evaluation. These technology alternatives will be candidate options for inclusion in transit improvement strategies, but not every alternative would necessarily be carried forward. That will depend upon public input, recommendations of stakeholders, and direction from Fresno COG, PAC, and the TAC. This task is comprised of:

- A description of the technologies to be considered and the context in which they would be considered most appropriate, and discuss reasonable costs of implementation and operation, and other considerations. This task includes a general assessment of feasibility and under what conditions the technology would be effective, based on the evaluation criteria and measures developed in Task 1.2.
- Alternative technologies and service scenarios will be developed first within five categories: fixed-route, BRT, fixed guideway, flexible-route/demand responsive, and other. These categories will be further divided into appropriate subsets that represent the type of service provided to the patron.
- Service scenarios would assess various combinations of operational strategies for the different technologies being considered.
- The technology alternatives and operating scenarios will be discussed with the public and stakeholders for their comments on feasibility. Feasibility may simply mean that the public and stakeholders would like to see whether and where these alternatives have potential applications in Fresno County and what land use patterns would be necessary for specific alternatives to have merit.

Task 1.3 would also formulate a menu of options and strategies that would be considered for the Transportation Systems Management (TSM) scenario that would service as the baseline scenario for the transit alternatives analysis, and as service options for input use during optimization of existing FCTRA and FAX public transportation systems.



Task 1.3 Deliverables:

1. Memorandum #6: Transit Technology and Service Alternatives Feasibility Assessment
2. Memorandum #7: Menu of Service and Technology Options for Transportation Systems Management (TSM) Scenario

Task 1.4 – Land Use Planning

Task 1.4 establishes the data and tools to be used in the land use and scenario planning elements of the study. This includes meetings with key stakeholders (see Public Outreach tasks), current conditions analysis, GIS mapping, development of analysis tools, development of land use indicators used to evaluate scenarios, and initial assessment of transit supportive land use types and densities to support various transit technologies.

Task 1.4.1 GIS Development

We will review available information including applicable and available plans, existing development patterns, studies, codes, resolutions, and maps, so that questions and information gaps can be quickly identified. We will also collect relevant regional data from Fresno COG staff and the San Joaquin Blueprint effort. This effort will generate questions and information gaps that will be the subject of further data collection or generation and meetings with key stakeholders.

We will assemble existing GIS and forecasting data for subsequent technical work and mapping. This is comprised of working with available data, particularly from the Blueprint effort, and supplementing it with publicly available data from USGS, the U.S. Census, and other public domain sources to refine existing Countywide GIS mapping for the purposes of this study. The mapping will be used to evaluate the current capacity of the existing zoning for vacant land based on the GIS data. This database will be used throughout the process and any tools or composite data developed will be delivered to the County in a format compatible with existing data.

Task 1.4.2 Current Conditions, Trends Analysis and Identification of Issues

This task will summarize existing conditions and future conditions based on current trends. These conditions will utilize the analyses prepared for the PTIS Phase I and the Blueprint. We will supplement the available analyses with a review of a sampling of up to five (5) existing general plans (including the cities of Fresno and Clovis) and examine new development trends in Fresno County as well as ongoing planning efforts (i.e., Fresno's Southeast Growth Area planning). In this task we will review current and trends analysis and review its assumptions in detail. Using information from study of current and future conditions, information from previous studies and plans, and discussions with staff and key stakeholders, we will identify issues related to land use planning in Fresno County. These issues will inform the scenario planning effort.



Task 1.4.3 Integration of Land Use Models: U-Plan and Envision

This task reviews available land use planning models including the U-Plan land use allocation model used in the Blueprint and the Kimley-Horn team's Envision Tool developed to facilitate the creation of explicit future growth scenarios. The two models will be used at two different scales.

- The U-Plan model emphasizes broad development patterns and develops indicators based on the allocation of land use types throughout the region. This model will be used to measure refinements to the Blueprint scenarios or develop indicators for scenarios created in this study. As we develop countywide and corridor-specific land use scenarios we will prepare up to five (5) iterations of the U-Plan model.
- The Envision Tool examines multiple potential future growth patterns at a much finer scale needed for detailed transit planning (i.e., corridor, town center, station area). Envision Tool uses "building types" assembled to represent potential individual development conditions. Combinations of building types are assembled to create "development types" that represent groupings of properties or entire districts. Typical development types represent areas such as main streets, town and activity centers, station areas, office parks, etc. The Envision Tool produces indicators to measure the impacts and benefits from different land use and transportation patterns.

We will establish both a U-Plan and a framework Envision Tool model for subsequent use in Stage 2's scenario planning exercises. We will work with Fresno COG staff to develop Fresno County-specific development types that represent current conditions and future growth scenarios.

Task 1.4.4 Establish Indicators or Benchmarks

This task involves developing key benchmarks or indicators tied to both Fresno COG modeling outputs, typical land use indicators, and local values derived from the Blueprint effort, polls (both available poll results and the poll proposed in this work plan), and stakeholder interviews. We will start with the indicators used to compare scenarios in the Blueprint process which will allow consistency and comparative analysis with Blueprint scenarios. The starting indicators are:

- Population
- Employment
- Average density
- Average density of new development
- Growth of urban areas (acres)
- Strategic farmland consumed by new growth (acres)
- Critical natural resources land consumed by new growth (acres)
- Single and multi-family dwelling unit proportion
- Daily vehicles miles of travel (DVMT)
- Daily vehicle trips
- Vehicle miles of travel in congestion
- Minutes of delay per household per day
- Total daily transit trips



- Auto, transit and walk/bike trips as percentage of total trips (mode share)
- Tons per day from on-road mobile exhaust

These benchmarks will be used to evaluate alternative growth scenarios. Based on the abilities of the models used, community values gained from public opinion polling and stakeholder interviews (see Public Outreach tasks) we will identify additional potential indicators (up to a maximum of five). In addition we will develop indicators specific to corridors being studied. These indicators will include some of the countywide indicators above, but also the corridor-specific indicators below:

- Number of jobs and households within walking distance of transit
- Potential level of internal trip capture within corridor
- Amount of vacant and under-utilized parcels subject to potential redevelopment
- Ability to support types of land uses that generate transit ridership
- Economic feasibility of transit-supportive land use types and densities

Based on the indicators, this task develops evaluation criteria that provide objective measurements of the growth scenarios. Draft evaluation criteria will be selected on the basis that they can be derived quantitatively from the modeling programs available. Qualitative criteria will be selected based on the ability to consistently apply the criterion to various scenarios.

Task 1.4.5 Define Land Use Types to Support Transit Options

The efforts for Phase I of the PTIS will be expanded to review other up to four successful case studies, such as San Diego, San Francisco, Portland, Seattle, and Vancouver BC. The review will include available information from each case study (i.e., internet search, reports, etc.) and phone interviews of key stakeholders involved in each of the case studies. One objective of this task is to identify the key factors that influence successful communities, transit corridors, station areas, downtown, and urban cores. This information will inform the development of the Envision Tool (see Task 1.4.4), the scenario planning effort, as well as the public and stakeholder outreach. We will develop prototype developments and identify the appropriate mix and amount of retail, housing, office and other uses, emphasizing Fresno's potential transit corridors and core areas such as downtown Fresno. We will also determine regulatory and economic incentives for attracting these uses to the Fresno area. The key factors that will be examined for this project may include the following:

- Land uses
- Cultural aspects
- Public amenities
- Green buildings
- Workforce housing
- Safety
- Transportation options
- Climate
- Parking
- Demographics



- Streetscapes
- Urban open spaces
- Retail style and mix

Task 1.4.6 Develop Recommended Mix of Land Uses

Building off of the case studies (Task 1.4.5) and working with FCOG staff, and member agency planning staff, model land use designations will be developed for prototypical area types including transit corridors, community town centers, and downtown Fresno. The land use designations will address both existing and future development and transit needs and will be designed to arrange households and employment in the most efficient manner possible. These designations will provide the foundation from which new or amended zoning could be developed, and will be integrated into the “toolbox” of transit-supportive guidelines developed in Stage 4.

Task 1.4 Deliverables:

1. Baseline GIS mapping of Fresno County (includes layers reflecting Blueprint scenarios if available)
2. Memorandum #8: Evaluation of current vacant land capacity based on existing zoning
3. Memorandum #9: Summary of current conditions and future trends analysis
4. Memorandum #10: Identification of Land Use Planning Issues in Fresno County
5. Memorandum #11: Draft Land Use/Transportation Indicators and Evaluation Criteria
6. Memorandum #12: Transit Supportive Land Use Needs and Recommended Development Types for Envision Modeling

Task 1.5 - Public Outreach

The project team will establish a public outreach plan at the onset of the project. The purpose of this plan will be to increase awareness, provide an opportunity for input, educate the public and stakeholders on available technologies and their impact on land use planning, and to present findings of the study at key milestones.

Task 1.5.1 Develop and Refine Stakeholder and Public Outreach Plan

An outreach plan will be prepared at the onset of the project and submitted to the project manager for approval. During this task, the project team will identify the communities and interest groups to approach during the study. This identification will be based on common interests rather than geography. Special focus will be given to identifying logical events related to these communities or groups that might be appropriate venues for the public outreach efforts associated with this study. It is intended that this effort will build off of the outreach already completed by in the Blueprint effort for efficiency. Communities and groups identified during this task will be the focus of the public outreach activities identified in other tasks. This effort will be completed in consultation with FCOG staff and submitted to the PAC and TAC for review and comment.

During this task educational, informational, and project update materials that can be used in a variety of public outreach activities will be identified and prepared and distributed as needed throughout the project.



The outreach plan will include:

- A logo and a slogan will be created at the onset of the study for the purpose of image consistency and to facilitate recognition among the community. The logo and slogan will be presented at one of the first TAC and PAC meetings.
- A website will be developed in both Spanish and English. The website will contain general information about the project, goals and objectives, and educational material related to public transportation and land use planning. The website will be updated periodically with event scheduling information, key milestone reports/information, and summaries of key findings from major tasks and work stages. An e-mail link will be provided on the site to facilitate collecting input as well as requests for information. In coordination with FCOG staff, PAC and TAC, we will compile a list of organizations and agencies to request that they allow links to the project website on their websites.
- A newsletter will be produced and distributed up to eight times during the two-year study. The newsletter will be mailed to Fresno County department heads and elected officials, those who participated in the Blueprint process, interested participants in the Unmet Needs public hearing process, social service agencies, job development agencies, and school districts. The first newsletter will be developed into a special section inserted into the *Fresno Bee* and translated into Spanish for insertion in *Vida en el Valle*. The consultant will rely on FCOG staff to assemble a mailing list, but the consultant will provide newsletters at up to 25 strategic locations where they will be accessible to the general public. These locations will be coordinated with FCOG's Public Information Officer. An electronic version of the newsletter will be downloadable from the project website and will be emailed to individuals, organizations, and agencies. The consultant will rely on FCOG to provide a list of email addresses. The email database will be continuously updated with stakeholders and participants in various events.
- We will prepare a "media release package" for distribution to local radio and television, and printed media up to five (5) times during the study. We will contact local English, Spanish, and Hmong radio and television stations to provide periodic updates on the study's progress, and to announce upcoming events and key findings. In addition to the *Fresno Bee* and *Vida en el Valle*, up to three community newspapers will be contacted to determine their interest in a guest editorial article that is intended to generate awareness and participation in the study. The *Fresno Bee* will also be contacted to determine their interest in producing a section for children to distribute to schools through the Newspapers in Education program. We will meet with the Fresno Bee Editorial Board at three to four points during the study to introduce and present on the progress of the study.
- We will meet once with California State University Fresno and once with community college student-body representatives to identify the best ways to engage Fresno's student population, and integrate reasonable methods into the outreach plan (i.e., podcasts, blogs, college radio/newspapers, etc.).
- The consultant will coordinate with FCOG's Public Information officer to identify upcoming or regular countywide events and develop outreach material for these events. Questionnaires will be distributed at up to four occurrences at the Fresno County Fair, local swap meets, the Central California Women's Conference, or Vintage Days at CSUF. Up to three staff will attend selected events and will distribute questionnaires, project information, and be available to answer questions for up to four hours. Bilingual staff will be included among the project team representation at these events. The final determination of which community events to attend will be made after consultation with the TAC. The consulting team will work with [Creative Marketing Solutions](#)



(CMS), the firm contracted for Measure C public outreach. We will develop material for, coordinate with, and participate in CMS' Road Shows at up to eight Fresno County events over the two year study process, which may include those listed above.

- Trilingual study fliers/fact sheets, and/or single-sheet tri-fold color brochures will be prepared and provided to local community and recreation centers, health centers, transit centers, HeadStart programs, schools, churches, First 5, City halls and libraries. The fliers will provide general information on the goal and encourage feedback through a trilingual 800-number and website address. The project team will deliver 1,500 flier/fact sheet publications and up to 500 color brochures to up to 20 locations identified and/or approved by the TAC. Additional publications will be made available to stakeholders and members of the TAC for distribution. Kimley-Horn's graphic designers and marketing professionals will work with the Lockwood Agency to develop layout and imagery for the published material.
- Senior level consultant staff will attend up to 15 local public meetings (i.e., Planning Commission, City Council, Board of Supervisors, tribal councils, school boards, etc.) to introduce the study in its initial few months and report key findings near the conclusion of the study. In coordination with the TAC, two bodies will be selected for bi-annual updates at their regular public meetings. These bodies may include the City of Fresno City Council, the Fresno County Board of Supervisors, the San Joaquin Valley Air Quality Control District, the City Councils of 1 or 2 large rural communities, or the Fresno Chamber of Commerce. We will provide quarterly updates to most decision-making bodies via electronic newsletter.

Task 1.5.2 Identify Stakeholders

In consultation with the TAC, the project team will identify key stakeholders and stakeholder groups that will be consulted during the study. Stakeholders will include individuals, and organization, institutional, and community representatives who represent specific and general interests in the study.

Task 1.5.3 Stakeholder Interviews and Formation of a "Champion Group"

Based on input from the TAC, up to twenty public and private stakeholders will be selected for interviews. The purpose of these interviews will be to provide an opportunity for key stakeholder to provide insight on transit perspectives, mobility related issues, land use planning, and development and economic related issues. As part of these interviews, a brief survey will be administered. Stakeholder survey questions will be prepared in collaboration with FCRTA and FAX staff and the TAC. General areas of focus for these interviews include:

Public sector stakeholders

- Perspectives on transit needs and acceptability of transit types and services
- Unmet needs and demographics
- Growth allocation
- Financing mechanisms
- Development and economic issues
- Land use planning tools/assistance needed to implement TOD



Private sector stakeholders

- Perspectives on transit, TOD, and acceptability of transit types and services
- Needs assessment
- Economic factors of TOD
- Growth allocation

In addition interviews with up to five tribal community stakeholders or leaders will be completed. Up to two stakeholder interviews will also be completed with individuals affiliated with the downtown Fresno streetcar study.

Key stakeholders will be invited to participate in a “Champion Group”. These individuals would be tasked with promoting interest and participation in the study among their constituents. Up to four meetings will be held with these individuals as a group during the study in order to provide opportunities to solicit feedback and provide information related to the study for distribution to constituents. We will provide the champions with appropriate materials and information.

Task 1.5.4 Develop and Schedule Speakers Bureau Presentations

During this task expert speakers will be identified to discuss land use, land use/transportation integration, Bus Rapid Transit, Context Sensitive Solutions, TOD, high speed rail, streetcars, and new technologies, geared towards the Fresno area. The project team will schedule up to ten presentations with local organizations, key stakeholder groups, PAC, and the TAC. The final selection of speakers and venues will be made after consultation with the TAC. Speakers will be compensated with a small honorarium and limited reimbursement of expenses.

Task 1.5.5 Public Kick-Off Meetings

Up to six public kick-off meetings will be held within Stage 1 of the study. The purpose of the public kick-off meetings will be to inform the public about the study and solicit study input. The project team will work with the TAC to finalize locations and the meeting format and content. It is intended that the audience for these meetings will be determined by common interests, such as tribal councils, environmentalists, CSUF and TAC members, rather than geographic distribution of the population. In the kick-off meeting we will:

- Present the study’s objectives and overview of the process
- Present the trends analysis (what will Fresno County look like if it continues to grow under today’s policies)
- Solicit transit needs and promote participation in workshops

Meeting notifications will be provided through chamber newsletters, the *Business Journal*, the *Fresno Bee*, KMJ, network television, and the CSUF radio station. In addition, a flier will be distributed via e-mail to social service organizations and policy-makers countywide using an emailing list provided to us by FCOG. A handout will be developed for distribution at these meetings, providing a frame of reference for current issues and the goals of the study. Questionnaires will be distributed to garner written feedback.



Task 1.5.6 Public Opinion Polling

Public polling will be completed to help identify how to achieve success in this phase of the study. We will build off of PTIS and Blueprint surveys to gather relevant information and develop a public polling plan to identify optimal methods for a successful scientific poll. Polling will consist of two polls; the first will be an in-depth survey of Fresno County residents' opinions concerning public transportation issues at the onset of the two-year Study, and collect information on public transportation needs, housing and employment needs, personal values, and measures to help with the success of the study. The second survey, to be conducted near the end of the two-year project, will be shorter, to be used to evaluate the effectiveness of the program's events and activities, and solicit opinions on the key findings of the study. The data from both surveys, but especially the initial one, will be analyzed by geographic groups:

- Fresno-Clovis metropolitan area
- Other incorporated cities (all 13 combined)
- Unincorporated areas of the county

We will consider dividing the areas outside Fresno-Clovis by combining certain zip codes for a north-south or east-west split. To ensure that we have large enough numbers of interviews in each area, we will use a minimum sample size of 900 completed interviews. The chart below shows the approximate number of interviews in the three areas we can expect to complete for a 900 person sample (based on 2005 population statistics):

Estimated Number of Interviews by Geographic Group	
	900 Interviews
Fresno-Clovis area	400
Other cities	400
Unincorporated areas	100
AIS Market Research will procure the sampling lists and employ stratified random sampling (a scientific, probability sampling method) in soliciting survey participants. For the total sample of 900 residents, the margin of error will be under +/- 3.3% (at the 95% confidence level). This includes 100 adult residents in unincorporated areas within Fresno County (note: the lower sample size due to the lower population in these unincorporated areas and lower incidence of qualified/willing resident participants).	

After completion of polling, we will prepare an evaluation and analysis of the findings. This process will include the data (aggregated, and by the three geographical regions, income, ethnicity, and by a few other variables of interests). We will cross tabulate the data to identify significances in the data.



Task 1.5 Deliverables:

1. Memorandum #13: Stakeholder and Public Outreach Plan
2. Memorandum #14: Stakeholder Interview and Public Meetings Schedule
3. Memorandum #15: Summary of Public Kick-Off Meeting Results (participant database, questionnaires, summary of feedback)
4. Memorandum #16: Polling Options Plan and Recommendations
5. Memorandum #17: Summary of Opinion Polling
6. Draft outreach, media and educational material submittals for review

Summary of Stage 1 Meetings:

- a. Stage 1 staff meetings (up to two)
- b. Stage 1 PAC and/or TAC Meetings:
 - i. Initial kick-off combined PAC/TAC meeting
 - ii. Update meeting with TAC after Task 1.2
 - iii. Update meeting with TAC after Task 1.4
- c. Stage 1 Stakeholder Interviews (to be identified in Public Outreach Plan)
- d. Public Kick-Off Meetings: up to six (locations to be identified in Public Outreach Plan)
- e. Stage 1 Champions Group initiation meeting (one)



Stage 2 – Alternatives Development

This task focuses on developing integrated land use and transit scenarios for (1) evaluation in the Fresno COG model and performance relative to adopted evaluation criteria and (2) discussion with the public and stakeholders.

The transit technology alternatives and types of service/operations that will comprise a transit/land use scenario will be drawn from the range of technologies, informed by the findings of application feasibility, described in Task 1.3. Where combinations of technologies make sense (e.g., Technology A for corridor service, Technology B for rural service, and Technology C for major activity/circulator service), such combinations will be defined within the alternative. For purposes of estimating transit ridership and operating costs, the basic characteristics of the technologies and corresponding service types will be defined, such as headways, routes/stations served, hours of service, and associated directional differences by time of day. During Stage 2 we will:

- Develop a regional transit improvement plan, focusing on alternative corridor improvement strategies
- Screen and rank corridor improvement strategies, including their component transit technologies and service plans to identify the most viable options.

Stage 2 will further define the concepts and technologies identified and screened in Stage 1 and formulate the alternatives to be evaluated in detail. This stage develops the required baseline alternatives against which the candidate alternatives would be compared. The FTA alternative analysis process requires establishing a No Build (current conditions) alternative and a baseline Transportation Systems Management (TSM) alternative (current conditions plus low cost transit improvements), which will be combined into a single future baseline.

Stage 2 includes development of alternatives—“packages” of transit system improvements and new transit services/technologies to be evaluated and screened. The alternatives will be developed in concert with the information gathered in Stage 1, the public involvement process, stakeholder perspectives and desires, planning forums/working groups, and working with the PAC and TAC.

Task 2.1 – Definition of Transit Technology Alternatives and Service Scenarios

Task 2.1 establishes the framework for building and assessing the transit alternatives packages in subsequent tasks. The transit technology and service alternatives that comprise a transit/land use scenario will be drawn from the range of technologies described and informed by the findings of application feasibility described in Task 1.3. This task will define preliminary technology, alignment, station, and service options for individual corridors serving travel markets identified in Stage 1. Building upon Phase I of the PTIS and the BRT Master Plan, we will map the corridors and assess the types of transit technology that might serve the corridor independent of land use at this stage of planning (i.e., fixed route bus, rapid bus, BRT, light rail, etc.). For purposes of estimating transit ridership and operating costs in subsequent task, we will define the following basic characteristics of transit technology and service alternatives for each corridor option:

- alignment and stations
- headways by time period
- hours of service
- intermodal connections
- capital facilities



Directional characteristics of transit services will also be defined. For example, some intercity express transit connections (commuter rail, express bus) might be inbound only in the a.m. peak and outbound only in the p.m. peak hour.

For purposes of estimating transit capital costs of a transit/land use scenario, transit vehicle fleet requirements and the facilities and equipment supporting a transit technology alternative will be defined. The year(s) in which the capital investments are assumed to be made will be specified.

The outcome of this task will be combinations of corridor mapping showing alternative alignments and potential stations (station placement will initially be based on required spacing for a particular service type and technology) and matrices identifying service options and facility needs.

Task 2.1 Deliverables:

1. Memorandum #18: Preliminary Definitions of Transit Technologies and Service Scenarios

Task 2.2 - Develop Baseline Scenarios

This task develops the baseline scenarios against which the transit/land use alternatives will be measured. The two scenarios are:

Task 2.2.1 - No-Build Alternative

The No-Build Alternative is also the “trend” scenario defined in Stage 1. We will start with FCOG’s current adopted 2035 model as the “baseline”. The baseline for 2035 reflects current City and County General Plans and Fresno COG forecasts of population and employment. The baseline model will reflect Fresno COG’s forecasted transit system based on the current RTP¹. It will both represent the trend scenario and be used as the basis for future transit/land use alternatives. The baseline model will be tested and refined to include adjustments for household vehicle ownership, parking costs at activity centers, “4D” adjustments to reflect land use patterns at activity centers, and (in versions evaluating new technologies) ridership adjustments to reflect enhanced features of rail or BRT modes not represented in travel time inputs. The recommended adjustment methodologies will be documented in a memorandum.

The No-Build Alternative provides a comparison for discussing transit alternatives setting the context in which improvements would be made. Regional indicators and transit ridership statistics (as described in Stage 1 evaluation criteria) will be prepared for the No-Build Alternative.

¹ At the request of FCOG modeling staff, several additional modeling tasks have been requested. These will be performed prior to Task 2.2. The tasks are outlined in Task 3.



Task 2.2.2 Baseline/Transportation Systems Management (TSM) Alternative

The TSM Alternative will be comprised of low-cost improvements over the No-Build Alternative. We envision that the TSM Alternative would consider:

- Upgrades to current and planned services;
- Transit priority measures;
- Operational improvements on key transit corridors;
- Vehicle upgrades;
- HOV facilities; and
- Intermodal improvements.

We will develop the potential TSM improvements and discuss with the TAC and specifically with FAX and FCRTA. The TSM Alternative can be defined to include trend improvements, for an initial analysis year of 2035 and ultimate horizon of 2050/60. Analysis years will be confirmed with Fresno COG. Improvements in basic paratransit, fixed-route bus and express bus services would be incorporated to serve development allowed in the cities and county general plans. The TSM Alternative would provide the basis for comparing the costs and benefits of other improvement scenarios. Additionally, the TSM Alternative would form a basis for one the early implementation programs – to optimize the County’s current transit system.

Task 2.2 Deliverables:

1. Memorandum #19: Model Development and Model Adjustment Procedures
2. Memorandum #20: Proposed TSM Alternative Transportation improvements
3. Memorandum #21: No-Build and TSM Alternative Indicators

Task 2.3 – Transit Alternative Packages

In Task 2.3 we will develop five preliminary packages of transit improvements reflecting the various alternatives for analysis. We will utilize Phase 1 of the PTIS, the current amended RTP, and the BRT Master Plan to formulate initial elements. For each alternative package, we will build upon the previous package. In this manner, multiple alternatives may be deemed feasible and could serve as a phased program in the implementation plan. The alternatives will be evaluated under the land use scenarios being developed in the Scenario Planning element of the study—a current trend land use scenario and a higher density, transit-focused alternative land use scenario. The following five packages are the alternatives we will consider as we work with the public, stakeholders, and advisory groups:

Alternative 1 – BRT Light

Building from the TSM Alternative, the BRT Light alternative would focus on implementing enhanced services and Bus Rapid Transit in the highest priority corridors. This alternative will consider:

- Expanded fixed-route services
- Enhanced rural transit system
- Expanded express services linked to commuter park and ride
- Improved system interconnectivity



- Bus Rapid Transit in priority corridors

Alternative 2 – Advanced BRT

The Advanced BRT Alternative expands upon BRT Light with a more robust system of BRT and other supporting features. This alternative will consider:

- All elements of alternative 1
- Comprehensive system of Bus Rapid Transit
- Dedicated BRT lanes on priority corridors

Alternative 3 – Core and Expanded LRT

The Core and Expanded LRT Alternative will assess the feasibility of implementing light rail transit within the County's urban core and potentially expanded to serve key corridors and nearby emerging community cores. This alternative would examine both conventional LRT technology as well as other forms of commuter transit. This alternative will consider:

- Elements of alternatives 1 and 2
- Development of a core and/or trunk line Light Rail Transit (LRT) system
- Expansion of LRT along key corridors
- Expansion of LRT lines to employment/population centers
- Potential use of DMU or commuter rail technologies on existing rail lines to serve emerging employment/population centers and communities outside of the County's urban core
- The downtown Fresno streetcar would be included in this alternative, and in other alternatives, but is being evaluated separately

Alternative 4 – Automated Fixed Guideway Systems

This alternative builds upon the previous alternatives and examines the feasibility of existing and future technologies integrating automated fixed guideway systems. This alternative would include evaluation of automated people mover systems and personal and group rapid transit (PRT/GRT). We will assess this technology for applications as a "mini-metro" system, not a large-scale form of metropolitan public transportation. This alternative will consider:

- Elements of alternatives 1 through 3
- Urban district automated people mover systems, PRT, or GRT in the County's urban core serving as localized circulators within activity centers such as downtown Fresno, CSU Fresno, airport, or emerging major activity centers (i.e., mini-metro system)
- Urban district PRT/GRT complementing the pedestrian system in a limited area of the urban core, or discreetly serving a single major activity center (see Task 3 for details on development and evaluation of PRT/GRT alternatives)

Alternative 5 – Turbo System

This alternative would be comprised of a combination of the optimal services/technologies of the previous four alternatives, focusing on a phased approach of implementing advancing technologies in step with growth, high density corridors, and emerging activity centers.



Task 2.3 Deliverables:

1. Memorandum #22: Description of Transit Alternatives

Task 2.4 – Multi-modal Transportation Planning

This task focuses on a comprehensive network of interconnected walking, bicycle and recreational facilities, and other supporting amenities to serve both the transit system and the anticipated high density transit-oriented development. This task does not develop pedestrian and bicycle plans, but is intended to develop prototypical non-motorized elements that will be needed to support the transit alternatives. This task will result in model plans, policies, guidelines, and implementation strategies that local agencies can use to enhance or modify their plans to support the alternative public transportation and transit-supportive land uses.

Task 2.4.1 Prepare Model Non-Motorized Assessment

Using the mapping developed in Task 2.1 which identifies transit cores and corridors, we will select three corridors and three cores within metropolitan Fresno and within medium sized communities in the County and prepare a model assessment of existing conditions. Using existing plans, aerial photographs and GIS, and site visits, we will inventory existing motorized and non-motorized facilities serving potential transit corridors and station areas. The inventory will include existing pedestrian and bicycle, and transit facilities and amenities by type and location, physical obstacles and other deficiencies to potential connections and routes. Our assessment will identify and discuss general pedestrian needs such as barriers/walkability, ADA, signage and directional controls, lighting, safety, aesthetics, landscaping, liability, and maintenance. It will also include multi-modal facilities such as local and regional transfer centers, and park and ride facilities.

For the model assessments, data will be geographically disseminated to help illustrate discrepancies, inconsistencies, and overlaps within the current/planned systems. Key gaps will be identified with regard to viable non-motorized transportation options that will foster optimum connectivity between the proposed transit-focused cores and corridors and the neighborhoods and job and activity centers served by transit.

The outcome of this task will be:

- An assessment of existing conditions for the six model areas;
- A discussion of the prototypical conditions in Fresno County that affect accessibility to transit;
- Development of a methodology for conducting transit-supportive assessments of the transportation system; and
- Development of a “toolbox” of transit-supportive facilities, improvements, guidelines, and strategies based on the actual case studies.

Task 2.4.2 Model Toolbox Application

This task will utilize the toolbox developed in Task 2.4.1, apply the tools to one core and one corridor case study, and develop multi-modal improvement plans. The plans will focus on priority non-motorized connections between the public transportation routes/station areas and surrounding neighborhoods and job/activity centers. These model plans will identify how the tools are applied and integrated to create transit-supportive networks. This task will



further refine the toolbox of transit-supportive facilities, improvements, guidelines, and strategies that can be used as models in the implementation element of the study.

Task 2.4 Deliverables:

1. Proposed cores and corridors for model non-motorized assessment
2. Memorandum #23: Model Non-Motorized Assessment
3. Memorandum #24: Model Toolbox Application and Draft Toolbox Guidelines and Strategies

Task 2.5 - Definition of Alternatives and Initial Screening

This task further defines the alternatives building from the conceptual definitions identified in Stage 1 and bundles of elements and packages developed in Task 2.1 and 2.3. Definition includes developing the overall parameters for each system's performance, as well as the following characteristics for individual components:

- Type of technology
- Right-of-way separation (if any)
- Operating characteristics
- General and specific alignments
- Service standards
- Fare types
- Management/operating responsibilities
- Capital financing strategies
- Operating funding strategies

Once defined, the elements of each alternative will be initially screened using the screening/evaluation criteria established in Stage 1. This screening is intended to further narrow the components of the alternatives and assist in refining the alternatives for the next stage—detailed evaluation. Once screened, we will refine the alternative definitions and packages in preparation for evaluation with land use scenarios.

Task 2.5 Deliverables:

1. Memorandum #25: Refined Definition of Alternatives, Initial Screening, and Preliminary Recommendations for Evaluation

Task 2.6 – Land Use Scenario Modeling and Analysis

This task involves developing the transit and land use scenarios and determining the adjustments to the travel demand forecasting model. This process will enable the team to depict impacts on the transportation network due to varying degrees of development intensity, internal capture of vehicle trips, and shortened vehicle trip length, as well as develop indicators for each combined land/transportation alternative.



The comprehensive comparisons of the alternative land use scenarios will form the basis for developing a new street system hierarchy and design guidelines (to be included in the Implementation Plan.) The guidelines will integrate the land use vision, while developing a more robust circulation system. Our approach is to build from the Blueprint Preferred Alternative and build alternative scenarios that refine the Blueprint with a focus on transit cores and corridors.

Our public outreach tasks will recruit community members to Corridor and Countywide workshops, where participants will work in groups to generate future land use alternatives. Corridor workshops will focus entirely on individual or groupings of key corridors. Countywide visioning workshops will build upon Blueprint Preferred Alternative.

Task 2.6.2 The Public Workshop Process

In this task we will develop the approach to and materials needed for the hands-on public workshops. The workshops will be engineered utilizing the Fresno region's specific development types (developed in Stage 1), base map, and development opportunities. The team will resolve issues such as scale of the base map; develop concepts and transportation improvements for the number and type of development game pieces that will be used by the participants.

The team will develop instructions for the workshops – with an objective for the participant's to work collaboratively to decide where new growth should and should not occur within the county and corridors, and the general form that new growth should take. We will instruct the participants to address issues and trade-offs related to placing growth in different locations throughout the county and how that growth will interact with environmental, institutional, and infrastructural constraints and transportation choices that the team defines.

Through the work in Stage 1, the team will develop a range of development types (i.e. town style, suburban, TOD, mixed-use, strip commercial) for use in the workshop. The range can include both "walkable" types (e.g. town, main street) and more conventional "auto-oriented" types (e.g. suburban activity center, employment districts). Additionally, the development types will include prime agricultural land. Specific development types will represent intensities and densities of land use that will support varying transit technologies. The density/transit technology link will be defined by the team.

A description and definition of the development types will be formed, along with graphic "game pieces" to represent the types in the workshop process. The description will include mix of uses, densities and intensities, calculated using groupings of prototypical buildings. Using projected expenditures for transportation, a series of game pieces will be assembled that represent a range of optional investments.

Corridor Workshops

The team will organize and facilitate 4-5 key strategic Corridor Workshops. Emphasis will be on the corridors identified in the Blueprint process, Phase I of the PTIS and the BRT Master Plan. Questions and concerns will be recorded and discussed. Potential programs and improvements will be presented which might implement the urban form, transportation elements and policies that are anticipated.

Countywide Workshop

All previous data collection, community interviews, the Corridor Workshops, and the study objectives will feed into up to two countywide public workshops. Similar to the Corridor Workshops, the approach resembles a game, using a map to represent the 'board' and icons representing development options are used as game pieces. However, the



countywide workshop will employ a map that covers a much larger area—focusing on countywide issues such as land use and transportation, the distribution of projected jobs and housing, and the preservation of prime agricultural lands. It will consider urban and natural systems that cut across neighborhood boundaries, such as major roadways, transit and riparian corridors.

The results of the Corridor and Countywide Workshops will be a series of maps showing the allocation of land use that supports the public transportation alternatives.

Task 2.6.3 Scenario Planning Evaluation and Scenario Development

In this task, several alternative scenarios will be created from the results of the workshop process. The team will work with the alternative scenarios, identifying common themes and visions, and formulate a hybrid scenario that reflects, in a single land use scenario, the outcome of the scenario planning workshops, both at the corridor and countywide levels. The land use scenario represents a long-range (2050/60) vision for the study corridors and the county.

The scenario will be developed in detail and ‘fed’ into our U-Plan, Envision Tools, and travel demand forecasting models, along with various public transportation packages, where the resulting indicators will be compared to the No-Build (trend) and TSM scenarios. During this analysis, the “alternative” scenario will be examined to determine important information such as, areas of change and stability, rough costs of implementation, and overall land use patterns. This information will then be documented in a non-technical language report, an executive summary, and a brochure for distribution to the public.

Task 2.6.4 Prepare Corridor-Specific Illustrative Plans

To illustrate the potential for smart growth on a range of development conditions around the region, four to five sites in the Fresno County will be selected for detailed corridor planning using the outcome of the community workshop process. These will represent a range of conditions to provide examples applicable to other parts of the region, including city infill, redevelopment sites, suburban transit-oriented development, and new growth areas.

The team will use its visualization tools to provide a 3-D imaging of key ideas, for example how a street might look with two-, three- or four-story buildings, or if a view is blocked by development on a site.

Based on the workshop maps and input from landowners, developers, neighborhood representatives and other stakeholders, the team will develop an illustrative plan and visualizations for each site, showing one way it could be developed. The illustrative plans will show streets, parks, and other open spaces, as well as various types of commercial, residential and civic buildings and parking areas, as well as photo visualization and a 3-D model of the site before and after development. Accompanying each plan will be a set of strategies and model regulations outlining how to achieve circulation elements, building requirements, and the general land use development underlying the illustrative plan. The model regulations and urban design guidelines illustrate how local agencies can codify the key elements of the illustrative plan, while allowing flexibility for landowners and developers.



The illustrative plan, and strategies for achieving the plan will be presented and discussed with the stakeholders who would be responsible for zoning changes or other legislation needed to implement similar plans in their jurisdictions.

Task 2.6 Deliverables:

1. Memorandum #26: Scenario Planning Workshop Outreach Plan and materials
2. Memorandum #27: Summary of Scenario Planning Workshop Outcomes and Development of Alternative Scenario for Evaluation
3. Memorandum #28: Corridor-Specific Illustrative Plans and Model Development Strategies

Task 2.7 – Public Outreach Activities

The goal of Stage 2 is to encourage continued participation, building upon the education and broadened perspectives created in Stage 1. This task is comprised of:

- **Topic-Area Planning Forums.** Organize up to four (4) “planning forums” to address specific transit technology and land use planning issues as appropriate. Planning forums will be comprised of invited local experts and practitioners, qualified team members in the relevant field being addressed, and PAC/TAC and local staff who might be interested in the topic. The purpose of the forums is to use a roundtable format to discuss issues, relevant examples and case studies, and brainstorm possible solutions, alternatives, or concepts that the consultant will study. Forums will be conducted at FCOG’s offices for approximately two hours each.
- **Ongoing Outreach Efforts.** This will include website updates, newsletters, brochures summarizing transit and land use scenarios, media and community event outreach.
- **Pilot Scenario Planning for Elected Officials (Workshop #1).** This pilot will be conducted, in conjunction with the land use planning track of this study, to the COG board, as well as other invited city and community representatives. The purpose is to preview and critique the workshop format and material prior to conducting public workshops. The audience for the pilot could include tribal councils, environmentalists, policy-makers social service/job training advocates, transit advocates, and the disabled community and PAC/TAC members. The scenario planning workshops will be promoted through e-mail blasts, chamber newsletters, the Business Journal, KMJ and network television.
- **Scenario Planning Workshops.** Appropriate regional venues will be identified and scenario planning workshops will be scheduled consistent with the PTIS Outreach Plan. Two countywide workshops will be held for one evening each, and 4-5 corridor workshops will be conducted in areas with one or more of the identified corridors from the Phase 1 of the PTIS or BRT Master Plan. We will identify sites for the workshops using local agency facilities, schools, or community centers.



Task 2.7 Deliverables:

1. Memorandum #29: Stage 2 Public Outreach Activity Plan and Schedule
2. Presentations and meeting summaries from Planning Forums and Pilot Scenario Planning for Elected Officials
3. Outreach materials (presentations, planning forum agendas and participants list, multi-media material)

Summary of Stage 2 Meetings:

- a. Stage 2 staff meetings (two)
- b. Stage 2 PAC and/or TAC Meetings:
 - i. Meeting with TAC after Task 2.3 to discuss transit definitions, alternative packages, and analysis of baseline scenarios
 - ii. Meeting with TAC after Task 2.5 to discuss multimodal planning, initial screening of alternatives, and plans for land use modeling/workshops
 - iii. Meeting with TAC after Task 2.6 to discuss outcome of scenario planning
- c. Pilot Scenario Planning for Elected Officials (Workshop #1) with FCOG Board
- d. Up to two Topic Area Planning Forums (remaining two to be conducted in Stage 3)
- e. Stage 2 Champions Group initiation meeting (one)



Stage 3 - Analysis and Evaluation of Alternatives

Stage 3 tasks include screening, analyzing, and ranking transit improvement alternative packages, including the individual transit technologies and service plans to identify the most viable technology and service alternatives. Ultimately, the best performing transit technologies and service alternatives will be recommended for inclusion in a phased regional public transportation plan for Stage 4.

Task 3.1 – Refine and Finalize Evaluation Criteria

We will request that Fresno COG staff and the TAC perform a final review of the initial criteria (developed in Task 1.2.2) and, based on analysis and development of alternatives to date, recommend refinements so that the criteria accurately addresses the problem statement and project objectives. Once finalized, the evaluation criteria will be used to qualitatively and quantitatively measure the performance of transit improvements in subsequent tasks in Stage 3.

Task 3.1 Deliverables:

1. Memorandum #30: Refined Evaluation Criteria

Task 3.2 – Travel/Transit Demand Modeling

This task includes development, refinement, and application of the travel demand forecasting models. Tasks 3.2.1 and 3.2.2 are additional modeling tasks requested by FCOG modeling staff. These tasks will be conducted prior to any analysis of alternatives.

Task 3.2.1 Land Use Forecast Assistance

Dowling Associates will assist Fresno COG staff in compiling and adjusting updated land use forecasts to achieve regional control totals for each housing and employment type. The assistance will include translating specific development inputs from local jurisdictions into an Excel workbook which summarizes land use quantities by year, and identifying phasing adjustments required to match countywide and jurisdictional control totals. The process will first be verified for the 2035 "baseline" forecast year and interim years starting from the 2003 base year. Dowling Associates will also assist with summaries and adjustments for the 2050 land use forecasts from the Blueprint process.

Task 3.2.2 Baseline Travel Forecast Assistance

Dowling Associates will assist Fresno COG staff with setup and verification of the travel model results for the 2035 baseline case and interim years. The model inputs will be reviewed to ensure that zonal inputs such as vehicle ownership and incomes are accurately represented. The model outputs will be reviewed to ensure that the updated land use forecasts and model assumptions do not create inconsistencies with prior air quality conformity findings. Dowling will assist COG staff in making adjustments to model parameters and assumptions (which may include updating the 2003 base year validation) to maintain consistency with prior results used in conformity analysis.

Task 3.2.3 Adjustment of the Model

The 2035 and 2050 "baseline" model will be tested and refined to include adjustments for household vehicle ownership, parking costs at activity centers, "4D" adjustments (based on the procedures described in Task 2.2.1) to



reflect land use patterns at activity centers, and ridership adjustments to reflect enhanced features of rail or BRT modes not represented in travel time inputs.

Task 3.2 Deliverables:

1. Memorandum #31: Documentation of Model Refinements and Adjustment Procedures

Task 3.3 - Estimate Future Ridership and Transportation Indicators for Each Transit Improvement/Land Use Scenario

Estimates of 2030 and 2050 ridership for the baseline TSM Alternative and of each transit improvement alternative will be developed under two land use scenarios:

1. Current conditions (trend) scenario, and
2. Alternative land use scenario as developed through the workshops.

Each future transit/land use scenario will be evaluated for ridership (and other indicators and measures of performance as described in Stage 1) using the Fresno COG model. Ridership is perhaps the primary measure of performance of a transit improvement scenario, individual transit technology, and service alternatives. Ridership from the transit alternative packages will be compared to the baseline TSM Alternative under current conditions. When costs are included, we will be able to compare both the absolute cost per rider for a transit improvement scenario and each technology and service alternative and the incremental cost per rider relative to the baseline TSM Alternative, and establish the direct cost/benefit of an improvement.

Task 3.3.1 Trends Analysis Preparation

This task is the modeling task for Task 2.2 to develop the current conditions baseline scenario. The adjusted travel model (as described in Task 3.2.3) will be used to develop baseline transportation indicators for the 2035 and 2050 baseline (trend) land use and transportation network inputs. The “baseline” for 2035 reflects current City and County General Plans and Fresno COG forecasts of population and employment. The baseline model will also reflect Fresno COG’s forecasted transit system based on the current RTP. Regional indicators and transit ridership statistics will be prepared for the trends analysis.

Task 3.3.2 Forecasting for Scenario Planning

The baseline travel model will be modified to reflect the transit-supportive alternative land use scenarios developed in Task 2. The land use scenarios will be coordinated with transit package alternatives resulting in multiple transit scenarios under the two land use scenarios (trend and alternative growth). The matrix below illustrates the scenarios we will model.



Land Use Scenario	Transit Alternatives						
	Amended RTP Baseline	TSM	BRT Light	Advanced BRT	Core and Expanded LRT	Automated Fixed Guideway	Turbo (Combined)
Current Conditions (Trend)	✓	✓	✓	✓		Limited Applications	
Alternative Land Use			✓	✓	✓	Limited Applications	✓
Color Key	Initial six scenarios	Refined scenarios	The automated fixed guideway scenario includes PRT/GRT, people mover applications in limited applications within activity centers and in downtown Fresno. The Turbo Alternative combines the most feasible and effective technologies and service options from the other alternatives in a refined scenario.				

We will coordinate with Fresno COG staff to prepare model inputs and model runs for the land use and transit network scenarios. This will include review and adjustment of household vehicle ownership and parking cost inputs for each scenario. It is assumed that up to seven initial combinations of land use and transportation networks will be evaluated during this task (see matrix). For each scenario, we will provide transportation indicators and transit ridership information. Following review of the initial seven scenarios, the team will code, run and provide evaluation information for up to three refined concepts one of which would comprise the Turbo Alternative.

Task 3.3 Deliverables:

1. Memorandum #32: Refined and Finalized Evaluation Criteria
2. Memorandum #33: Fresno COG Model Refinements/Modifications (input) for Scenario Evaluation
3. Memorandum #34: Initial Model Runs and Transportation Indicators for Seven Transportation/Land Use Scenarios

Task 3.4 - Evaluation and Comparison of Countywide System Options

Task 3.4.1 Review and Understand Fixed Route Transit System Options

This task includes a review of current transit information including Fresno County local and intra-county service schedules, fleet size and make-up, fare structures, ridership, any recent data on ridership trends, and demographics. We will evaluate local and rural transit planning documents and operating and capital budgets to understand funding/financing of service and future purchase of capital equipment (replacement and expansion). We will analyze the history of funding for urban and rural transit programs before and after Measure C passage to understand how additional fund availability is being used.



We will identify intra-county transit services that provide service through Fresno County and/or to major destinations such as Fresno or to important destinations outside of Fresno County, such as the Children’s Hospital in neighboring Madera County.

Finally, we will review the unmet needs testimony in urban centers and rural communities to recognize any common threads among residents’ requests for types of services (e.g., local demand-response versus fixed-route versus express commute-type service, etc.), destinations served, service frequencies preferred, etc.

Task 3.4.2 Develop Fixed Route Improvement Options

Using information gathered and analyzed, we will develop short and long term scenarios for expanding and implementing new transit services (initially rubber-tired, later possible rail and other advanced technologies) for improved service to and from the urban center (Fresno-Clovis) as well as between some of the larger county communities.

We will assess both the need and the developing options for paratransit and on-demand services for urban and rural communities. The use of shuttles for key origin and destination pairs will be evaluated as well. We will develop “optimum connectivity scenarios between all county jurisdictions” that will result in a comprehensive yet cost-effective and attractive alternatives, which will identify key corridors and corridor priorities in the short- and long-term.

The fixed-route scenarios will be evaluated based off of the criteria established in Stage 1 and refined in Stage 3. Combined with other technologies being evaluated, we will use the forecasting model for the current conditions (trend) scenario to evaluate the system transportation indicators and will recommend the most viable fixed route system options.

Task 3.4.3 Assess Phase 1 of the PTIS and BRT Master Plan

We will review past planning documents as they relate to BRT and identify how past recommendations might change in combination with other system components, phasing, and under the two land use alternatives (current conditions (trend) and alternative growth scenarios). Evaluation of previously recommended BRT corridors will be coordinated with the evaluation of fixed route systems. This task will result in possible refinements to the recommendations of Phase 1 of the PTIS and the BRT Master Plan, and the identification of new or alternative corridors.

We will identify the range of development density and intensity to support varying levels of BRT and identify the most viable near term and long term corridors based on the corridor visioning process in Stage 2.

Task 3.4.4 Assess BRT Technologies Applicable to Fresno County

Building on the BRT Master Plan under the current conditions (trend) and alternative growth land use scenarios, we will assess the varying levels of BRT that would provide the optimal effectiveness for the region. This assessment will reflect near-term and long-term phasing of different supporting BRT facilities such as transit priority, exclusive HOV facilities, advanced fare collection systems, and advanced station types.

Task 3.4.5 Develop BRT Improvement Options

Based on the assessment above, and the alternative packages developed and defined in Stage 2, we will develop BRT options that would reflect an increasingly advanced system that could be supported by the land uses in both land use scenarios (i.e., BRT Light and Advanced BRT).



We will develop optimum connectivity scenarios that will result in comprehensive yet cost-effective alternatives, which will identify key corridors and corridor priorities that can be phased in over the short- and long-term. Optimum connectivity may be a combination of fixed-route and BRT systems.

Preliminary alignments, BRT station stops, and intermodal connections for key corridors will be identified. We will build upon the PTIS Phase 1 and BRT Master Plan design concepts to evaluate running way options including shared and dedicated lane options, as well as prototypical operational enhancements such as queue-jump lanes and other elements as identified in the BRT Master Plan. Overall alignments will be mapped in GIS at an appropriate scale to show the entire alignment (1"=500-1,000'). Within urbanized areas, alignments will be developed on aerial photographs of each transit corridor, similar to the method used in the Master Plan (1"=100' scale). Stations, street cross-sections, and special treatments at intersections will also be conceptually illustrated on the corridor aeriels. This task includes development and/or refinement of service plans.

Evaluation of dedicated lanes for the Advanced BRT Alternative will include establishing criteria for feasible implementation of median or side-running dedicated bus lanes, median or side stations, and application of the criteria to the selected corridors in the Advanced BRT Alternative. Qualitative criteria will include geometric feasibility, traffic impacts, land access impacts, political acceptability, acquisition costs, and other criteria.

Relative to each other and other alternatives, the BRT scenarios will be evaluated based on the criteria established in Stage 1 and refined in Stage 3. Combined with other technologies being evaluated, we will use the forecasting model to evaluate the system transportation indicators under both land use scenarios. We will recommend the most viable BRT system options, and define how the options might be phased over time to match corridor intensification and densification.

Task 3.4.6 Review Previous Studies and Assess Technologies for Fixed Guideways in Fresno County

We will review previous fixed guideway studies such as the Cross Valley Rail Corridor Study, and the California High Speed Rail Study. We will review the range of development densities and intensities in the land use scenario cores and corridors to identify those areas that will support varying levels of light rail transit, commuter rail, or other fixed guideway technologies initially identified as viable in Stages 1 and 2. Through this analysis, we will identify cores and corridors and specific types of fixed guideway systems that can be supported, or phased as development reaches supportable levels. We will review the status of existing railroad lines, spurs, and abandoned lines for potential use as fixed guideway corridors.

Task 3.4.7 Develop Fixed Guideway Improvement Options

Based on the assessment above, and the alternative packages developed and defined in Stage 2, we will develop fixed guideway options that will reflect an increasingly advanced system that could be supported initially by the current conditions land uses, and ultimately by the alternative land uses. This task assesses the feasibility of the fixed guideway technologies identified in earlier tasks including light rail transit and commuter rail, and identifies the level of land use needed to support the technology in its various implementation stages.

We will identify preliminary alignments, station stops, and intermodal connections for key corridors--corridors identified in the travel market assessment and the corridor land use workshops--that could support fixed guideway service. Preliminary alignments will assess separate rights-of-way, use of existing rail lines, and in-street options. In-



street options will include prototypical cross-sections and station designs. Overall alignments will be mapped in GIS at an appropriate scale to show the entire alignment (1"=500-1,000'). Within urbanized areas, alignments will be developed on aerial photographs of each transit corridor, similar to the method used in the BRT Master Plan (1"=100' scale). This task includes development and/or refinement of service plans. We will evaluate the fixed guideway scenarios based on the evaluation criteria developed in Stage 1.

Combined with other technologies being evaluated, we will use the forecasting model to derive the transportation indicators identified in Task 1.2.2 in Stage 1. We will recommend the most viable fixed guideway system options (if determined to be viable in either the short- or long-term), and define how viable options might be phased over time to match corridor intensification and densification.

Task 3.4.7.1 Develop PRT/GRT Alternatives

This task specifically focuses on the development and evaluation of Personal Rapid Transit (PRT) and/or Group Rapid Transit (GRT). Unlike the development and evaluation of other transit technologies such as BRT, LRT, and commuter rail, PRT/GRT is assessed for specific applications serving as a relatively short-range localized circulator system. The analysis process is comprised of:

- Development of a baseline generic application identifying the types of vehicles, guideway systems, station types, general length of system, and general operating schemes. This baseline will be used as a starting point for developing specific applications. We will review existing vehicle technology and review existing operational prototypes (where they can be identified) to use as models.
- Identify likely specific applications to assess for feasibility. Initial screening of the likely 6-10 activity centers will be qualitative and based on density of population and employment, need and propensity for internalization of trips, distances, and relative cost of required infrastructure. Activity centers we will initially screen include:
 - Downtown Fresno
 - CSU Fresno
 - Fancher Creek Development
 - Southeast Growth Area
 - Riverpark Business Park
 - Fresno Hospital District
 - High speed rail station connection to downtown Fresno
- Based on initial screening, develop a conceptual guideway system up to 1-3 potentially feasible applications for which we will apply the generic PRT/GRT application. This task will include defining an alignment, guideway infrastructure (i.e., elevated structure, at-grade guideway, etc.) and stations. We will develop conceptual operational and service frequencies schemes.
- For one of the potentially feasible applications, the conceptual design will be input into a ridership forecasting model. We will create a simulation model of the PRT system and the associated station pedestrian facilities, simulate the system and analyze the results. We will present the modeling results utilizing Powerpoint presentations and animated videos. We will develop preliminary cost estimates and assess the cost-effectiveness of the modeled system.



- Ridership forecasting for the PRT/GRT applications will use a combination of the Fresno COG travel demand model (to derive trip generation and trip distribution origins and destinations) for TAZ's representing the activity center, and "spreadsheet" models to project specific station-by-station origins and destinations within the activity center.
- Compare the conceptual PRT/GRT systems with other types of technologies that feasibly could serve the function of a localized circulator including rubber-wheeled vehicles and fixed-rail streetcars. The comparison would be a combination of qualitative and limited quantitative measures including the attractiveness of the option to generate ridership.

Task 3.4.8 Prepare Preliminary Cost Estimates

We will prepare preliminary cost estimates associated with each proposed alternative for each technology for capital and operating expenses, as well as maintenance and replacement costs for near-term improvements and for the long-term as densities and populations increase in the selected corridors. Costs will developed at a planning-level using operating cost information from FAX and FCTRA, and used by Kimley-Horn in other studies, and capital unit costs from FTA, other Kimley-Horn studies, and other agencies in California.

Task 3.4.9 Compare Alternatives

This task includes a comparative assessment of the most viable and effective package of public transportation improvements for each land use scenario. We will compare the improvement packages under their respective land use scenarios to the baseline TSM Alternative, based on the evaluation criteria and indicators developed in previous tasks. The intent of this task is to produce an objective comparison of the most viable options for selection of a preferred improvement package in Stage 4. We will review the operating plans for each transit technology and service alternative, making sure they are consistent with ridership estimates from the modeling. If the alternatives are revised in this task, capital and operating costs will be revised accordingly.

This task includes a quantitative and qualitative assessment of the performance of each transit technology and service alternative for each analysis year (2035 and 2050). Evaluation results will be summarized graphically and/or in tables that portray how individual transit improvements perform with respect to each evaluation criterion and also relative to other improvements under consideration. The summaries will include performance with respect to ridership and costs as well as all other adopted criteria.

We will prepare a draft report containing the evaluation and comparison, respond to one set of non-conflicting comments from FCOG staff and TAC, and prepare a final report. The findings of this report, and the findings of subsequent Stage 3 tasks, will be presented to a joint meeting of the PAC/TAC and to the FCOG Board.

Task 3.4 Deliverables:

4. Report #1: Draft Evaluation and Comparison of Countywide System Options
5. Report #2: Final Evaluation and Comparison of Countywide System Options



Task 3.5 – Conduct Trade-offs Analysis

This task generates a trade-offs analysis to assist in the selection of a preferred alternative. The trade-offs analysis will:

- Compare advantages and disadvantages of improvement alternatives
- Discuss key trade-offs, including the costs and benefits of different improvement alternatives and their associated implementation strategies
- Identify potential impacts
- Focus on indicators for local decision-making

We will solicit input on trade-off considerations from the stakeholders and the PAC/TAC in Task 1.2.2. This input will guide the development of the trade-offs analysis.

Task 3.5 Deliverables:

6. Memorandum #36: Draft Trade-Offs Analysis

Task 3.6 - Infrastructure Financing Plan

This task includes conducting a financial feasibility assessment and developing a financial plan, beginning with a thorough review and understanding of each alternative's costs and potential revenues. The first step is followed by the development of a cash flow model where costs and revenues are spread over time based on estimated project implementation schedules. Finally, surpluses and shortfalls are calculated, and shortfalls are resolved by addressing cost requirements or increasing revenue availability.

Task 3.6.1 Develop a Cash Flow Model

We will develop a cash flow model that allows us to test sensitivity on different variables, changes in assumptions and inputs such as escalation rates, and compare the financial performance of the alternatives. We will conduct an iterative modeling process to achieve a financially balanced program. The following outlines the model's process:

- Capital and operating cost estimates will be reviewed for each component of the packaged alternative.
- Potential project revenues will be identified and applied to the estimated costs, resulting in a preliminary assessment of financial feasibility of the capital program.
- Cost changes that might result from phasing, sequencing, or re-scoping will be considered as a means of achieving a financially feasible alternative.
- Operating and maintenance costs for the alternative will be matched with available revenue to determine if annual surpluses or shortfalls will occur.
- Potential new sources of funds will be applied to both the capital and operating components of the alternative.



Task 3.6.2 Capital and Operating Costs and Timing

This task will review and evaluate funding provisions for operating and maintenance costs and capital asset replacement costs for each year of the planning horizon (2035 or 2050). This task includes estimation of capital asset replacement costs. Capital asset replacement costs are ongoing, and moderate costs usually do not occur until several years after commencement of service, with more significant costs of major system components and transit vehicles occurring later. We will review and evaluate provisions for capital asset replacement, including developing the assumptions underlying the estimates. We will use historical and projected replacement data from FAX and FCRTA, estimated useful life of assets, and asset inventories. The capital asset replacement costs and the need for a sinking fund to pay for future asset replacement will be incorporated into the cost estimates.

Task 3.6.3 Identify Existing and New Revenue

We will identify existing and potential new federal, state, regional, and local revenues that could be available. The sources will be divided between those existing sources that might be used on the project packages and new sources that require legislative action or voter approval to become available to the projects. Each group of funding sources requires different descriptors and parameters for evaluation. The inventory will be developed as a matrix and will include:

- Description of the revenue source
- Eligible fund uses
- Estimated revenue generation
- Stability/reliability of the source over time
- Funding match requirements
- Timely use of funds provisions
- Funding cycles and timing (available, near-, mid-, or long-term)
- Guidelines for use of the funds
- Entity responsible for programming and allocation decisions

For potential new sources the following additional items will be included:

- Legislative action required
- Voter approval required
- Administrative ease of implementation
- Estimated time frame for implementation
- Implementation experience elsewhere in California

Examples of existing sources to be inventoried and evaluated include:

- Formula and discretionary Federal Transit Programs funding such as Section 5307, 5309, 5311
- Federal Surface Transportation Program funds
- Annual appropriations earmarks from SAFETEA-LU
- State Transit Assistance Funds and Proposition 42 increments
- Fresno County Measure C funds



- Proposition 1B Transportation Infrastructure Bond
- Proposition 1C Housing/Transit Oriented Development Bonds
- Regional/State Transportation Improvement Program
- PUC Grade Separation
- City and County General Fund

Examples of potential new sources of funds include:

- Local Gas Tax
- County Service Areas
- Impact Fees
- Mello Roos Districts
- Joint Development/Real Estate Based Revenues
- Federal Transportation bill reauthorization (new formula funds and earmarks)

Task 3.6.4 Financial Feasibility Assessment and Financial Plan

This task uses the cash flow model and bring all cost, revenue, and implementation schedule information together to iteratively analyze the financial feasibility of each alternative. The analysis will be sufficiently detailed for the team and Fresno COG to make a determination of financial feasibility. The analysis considers:

- Capital costs of the project packages
- Ongoing annual operating and maintenance cost
- Re-capitalization/replacement costs
- Escalation rates for each of the revenue sources and costs to analyze the cash flow in year of expenditure (escalated) dollars
- Timing of projects, project packaging, scope and phasing, and potential reconfiguration to make the project financially feasible
- Cash flow shortfalls and determination if shortfalls could be addressed by financing techniques or if additional new revenues are required to close the funding gap
- Comparison of debt financing using available revenue streams to pay-as-you go financing of capital projects
- Potential funding swaps to accelerate available funding to the projects

The financial feasibility determination for each alternative will be carried forward in the evaluation of alternatives and selection of a Locally Preferred Alternative in Stage 4. The feasibility analysis will form the basis for the financial plan for the Locally Preferred Alternative and will be incorporated into the Implementation Plan. Revisions to the draft financing plan will be incorporated into the Draft Public Transportation Infrastructure report in Task 5.

Task 3.6 Deliverables:

1. Memorandum #37: Draft Infrastructure Financing Plan



Task 3.7 – Public Outreach Activities

The community outreach goal in Stage 3 is to present the findings of a complex analysis to a diverse set of audiences ranging from the general public to technical staff. Task is comprised of:

- Elected Officials Workshop #2. We will present the analysis findings and the preliminary alternative scenario from the Scenario Planning to the FCOG Board, as well as other invited city and community representatives.
- Scenario presentations. Up to five open-house style meetings will be used to illustrate to the public the results of the study to date—the findings of the analysis—and solicits feedback as the study approaches selecting a preferred alternative.

Open houses will feature graphic displays and handouts showing the most viable options in the years 2035 and 2050. Questionnaires will be distributed to garner feedback as to a preferred alternative. Presentations will be open to the general public, but will also target specific interest groups. Advertising will be purchased on KMJ, the *Business Journal*, *Fresno Bee*, Hmong and Spanish radio; e-mail blasts will be sent to social service, governmental and transit agencies countywide; and we will work towards having the scenarios featured in a special section in the *Fresno Bee*.

Additional outreach conducted in Stage 3 includes:

- Interviews of up to eight Key Stakeholders or stakeholder groups will be conducted to present the analysis findings. This will include the “Champions Group” and Tribal Councils, among the stakeholders identified in Stage 1.
- Ongoing outreach efforts continue in Stage 3, including website updates, newsletters, quarterly electronic updates, media and community event outreach.

Task 3.7 Deliverables:

1. Memorandum #38: Summary of Public and Stakeholder Outreach Activities
2. Outreach materials (presentations, meeting agendas and participants list, multi-media material)

Summary of Stage 3 Meetings:

- a. Stage 3 staff meetings (two)
- b. Stage 3 PAC and/or TAC Meetings:
 - i. Joint meeting of the PAC/TAC after Task 3.5 to discuss the draft evaluation of countywide systems options and trade-offs analysis
- c. Elected Officials (Workshop #2) with FCOG Board (and other invitees) to present the draft evaluation of countywide systems options and trade-offs analysis



- d. Five open house public meetings to present the findings of the Stage 3 analysis
- e. Up to eight interviews/presentations to a group of stakeholders including the Champions Group, and up to three tribal councils



Stage 4 – Develop Locally Preferred Alternative

Stage 4 involves preparation of a draft and final public transportation plan, which would consist of multi-modal transportation systems and land use and economic development plans.

Task 4.1 – Develop Locally Preferred Alternative

This task involves working with the study's decision-making bodies to select a Locally Preferred Alternative (LPA) public transportation system. The consultant's role in this process is to present an objective assessment and comparison of the alternative packages studied in Stage 3. The selection process is comprised of the following:

- Present the Revised Evaluation and Comparison of Countywide System Options (from Stage 3) at a combined TAC/PAC meeting and develop a revised draft comparative analysis incorporating the committee's feedback, as well as feedback gained through Stage 3's outreach activities. This meeting is intended to solicit a preliminary LPA from the PAC and TAC.
- Conduct up to five public meetings in open house formats to present the land use vision, the outcome of scenario planning, and the revised comparison of transit alternatives. Distribute questionnaires to solicit preliminary LPA's from the public.
- Conduct a final series of combined stakeholder group (three), and Champion Group (one) presentations and solicit a preliminary LPA from these groups.
- Present the land use and public transportation alternatives in various layperson-focused documents, website, and in the media, and provide a feedback mechanism via website, mail, or email.
- Based on feedback received above, prepare limited refinements to the land use and transportation alternatives, and update the Evaluation and Comparison of Countywide System Options report.
- Present the revised report and preliminary recommendations from the above outreach, to the FCOG Board for selection of an LPA.

Task 4.1 Deliverables:

1. Report #3: Revised and Final Evaluation and Comparison of Countywide System Options and associated presentations

Task 4.2 – Countywide Strategic Vision Document

In this task we will consolidate the information generated in previous tasks of Stage 3 and 4 and summarize the land use planning effort and LPA into a vision for Fresno County. The vision builds upon the Blueprint vision and integrates the countywide and corridor-specific scenario planning. It focuses on identifying key growth and transit corridors, and



describes the comprehensive public transportation plan in stages from near-term to long-range. The vision will provide a summary and synopsis of the policies, strategies, and guidelines that support economic development, land use regulatory change, and multimodal systems consistent with the identified growth and transit alternative. The outcome of this task is an executive summary-style report that describes the land use and public transportation vision in a graphically-oriented format.

Task 4.2 Deliverables:

1. Report #4: Countywide Strategic Vision Executive Summary

Task 4.3 – Prepare Multimodal Transportation Systems Plan

The outcome of the modeling and analysis will be a set of conclusions, recommendations, and strategies for the future of the region. The final set of model multimodal transportation system policies, strategies, and guidelines will incorporate identified Countywide Non-Motorized Transportation Goals (as outlined in the 2007 Regional Transportation Plan), and will provide a framework for supplementing future County and City General Plans.

We will document the prototypical pedestrian and bicycle assessment and model multi-modal plans developed earlier for incorporation into the PTIS Implementation Plan. This section will summarize the strategies, guidelines and actions for the implementation of supporting facilities for public transportation, as well as recommend strategies and guidelines for their development.

Task 4.3 Deliverables:

1. Memorandum #39: Final Summary of Model Multimodal System Policies, Strategies, and Guidelines

Task 4.4 – Prepare Land Use and Economic Development Support

The Kimley-Horn team will identify two to three key challenges faced by local governments when working to promote transit-supportive land uses. Particular focus will be directed towards cores and corridors with significant areas of underutilized land. The team will provide a menu of strategies, financing tools, and other critical information to help address these challenges. Strategies may include zoning reform or regulatory tools that help expedite transit-supportive land use in transit corridors. We will identify model policies, regulations, ordinances and other regulatory tools used in other jurisdictions. In addition, we will identify existing guidelines and develop guidelines specific to Fresno's identified transit corridors for land use types, urban design, multimodal infrastructure, and mixed-use building types.

As applicable to the identified challenges above, our team will interview up to three developers with regional expertise in building uses such as multifamily residential, mixed-use, and office, as applicable, in order to gauge the challenges and opportunities involved in completing such development. We will then provide a brief profile of two to three case studies of desirable development projects, with a focus on the strategies that enabled these projects to be implementable. From this evaluation and other information from interviews with up to three local real estate brokers, we will provide a memorandum with recommendations for implementation strategies, and will provide a Powerpoint presentation that the Fresno COG can use to promote transit supportive regulations and strategies with the local governments.



Consistency with FTA's Transit-Supportive Existing Land Use and Future Patterns

In its evaluation of the land use for New Starts projects, FTA explicitly considers the following transit supportive land use factors:

- Growth management;
- Transit supportive corridor policies;
- Supportive zoning regulations near transit stations; and
- Tools to implement land use policies.

Task 4.4 will assess current and future land use policies (i.e., General Plans) in light of these FTA criteria, and develop land use strategies that strengthen the county's ability to meet FTA requirements.

Task 4.4 Deliverables:

1. Memorandum #40: Summary of Transit-Supportive Land Use and Economic Development Strategies, and Powerpoint Presentation

Summary of Stage 4 Meetings:

- a. Stage 4 staff meetings (two)
- b. Stage 4 PAC and/or TAC Meetings:
 - i. Joint meeting of the PAC/TAC in Task 4.1 to discuss and develop an LPA
- c. Three combined stakeholder group presentations, and one Champion Group presentations to solicit a preliminary LPA
- d. Five open house public meetings to present the land use vision
- e. Meeting with FCOG Board (and other invitees) to discuss and develop an LPA



Stage 5 – Documentation and Implementation Plan

Stage 5 is the culmination of the Phase II PTIS Project and would result in draft and final plans, including presentation to the FCOG Board and other governing bodies.

Task 5.1 – Prepare Draft and Final Public Transportation Infrastructure Reports, and Early Implementation Deliverables

Based on results of the alternatives evaluation and trade-off analysis, and direction from the public, key stakeholders, PAC/TAC, and Board, this task will recommend a locally preferred transit improvement program for Fresno County. This task will be comprised of the following:

- A report consolidating major elements of the recommended improvements program including a preliminary implementation schedule. The schedule will be based on several factors: including funding and financing opportunities and constraints; potential development trends, which would indicate when an improvement and/or level of transit investments would be viable; and other factors as agreed upon between the consultant, COG staff, and PAC/TAC. A draft report will be distributed to key stakeholders and agencies. FCOG will be responsible for consolidating comments from stakeholders and agencies and providing us with one set of non-conflicting comments. We will develop responses to the comments and prepare the Final Report.
- Report appendices, for the transit technologies and service alternatives included in the recommended plan, defining the specific technologies, right-of-way separation (if any), operating characteristics, general alignment, service standards, and other characteristics that differentiate a technology or service, such as fare collection methods. The appendices will include estimated capital and operating costs. Additionally, for each improvement scenario, we will define management/operating responsibilities, operating funding assumptions, and capital financing strategies.
- An Executive Summary version of the report, suitable for City Council and Board meetings, and the general public. A draft Executive Summary will be distributed to key stakeholders and agencies. FCOG will be responsible for consolidating comments from stakeholders and agencies and providing us with one set of non-conflicting comments. We will develop responses to the comments and prepare the Final Executive Summary.
- Early implementation items:
 1. Finalization of an FTA Initiation Package for the priority corridors identified in the BRT Master Plan (a draft has been prepared as part of the BRT Master Plan contract) and/or Initiation Packages for up to three additional corridors as identified in either the BRT Master Plan or Phase 2 of the PTIS.
 2. Develop a concept plan for implementing a near-term Rapid Bus system in one corridor. This would include preparation of the cost estimates for design of the system (PS&E, which could be implemented under a separate contract) and estimates for implementing the system. The concept would be prepared in conjunction with the City of Fresno traffic engineering division to maximize



utilization of ongoing signal equipment upgrades that could accommodate bus priority. We would assess this proposal to determine if it would affect or preclude COG obtaining Very Small Starts funding for Bus Rapid Transit.

3. A report identifying a phasing program for optimizing the present FAX and FCRTA systems including cost estimates for implementing improvements (TSM Package).
4. A “toolbox” for local agencies to assist in their implementation of transit-supportive land use policies, regulations, and plans.

Task 5.1 Deliverables:

1. Report #5: Draft Public Transportation Infrastructure Study (50 copies)
2. Report #6: Draft Executive Summary of Public Transportation Infrastructure Study (200 copies)
3. Report #7: Technical Appendices to the Draft Public Transportation Infrastructure Study
4. Report #8: Final Public Transportation Infrastructure Study (50 copies) plus PDF version for electronic delivery
5. Report #9: Final Executive Summary of Public Transportation Infrastructure Study (200 copies) plus PDF version for electronic delivery
6. Memorandum #41: FTA Initiation Package for up to three BRT corridors
7. Memorandum #22: Rapid Bus Deployment Concept Plan (one corridor)
8. Report #10: Phasing and implementation plan for FAX/FCRTA TSM Package.
9. Report #11: Local Agency Transit Supportive Land Use Toolbox

Task 5.2 - Presentation and Review of Findings

We will assist Fresno COG in presenting findings of the transit planning and evaluation of alternative development process to the public, stakeholders, combined PAC/TAC, and FCOG Board.

Task 5.2 Deliverables:

Presentation Material: Summary Powerpoint presentation and delivery of presentation at up to 5 venues.

Summary of Stage 5 Meetings:

- a. Stage 5 staff meetings (three)
- b. Presentation of the Draft Public Transportation Infrastructure Study at five venues including:
 - i. Joint meeting of the PAC/TAC
 - ii. Fresno COG Board
 - iii. Fresno City Council
 - iv. Fresno County Board of Supervisors
 - v. One public meeting



Streetcar Scope of Services

The scope of Service for the Streetcar project is presented separately herein. However, this task will be integrated into the Stage 1 to 5 development process.

Task 6.1 - Goals, Objectives, and Purpose and Need Statement

We will draft a project Purpose and Need for review by Fresno COG and the study PAC/TAC. The statement will reflect study goals and objectives that will be established by the team based on public and stakeholder input. Upon review, study goals and objectives and project Purpose and Need will be finalized and become guiding principles for this element of the PTIS. This task includes preparation of “public scoping materials” including maps of the study area, potential initial alignments, potential equipment types, and a draft list of potential evaluation criteria. In this task we will collect relevant information to establish baseline conditions.

Task 6.1 Deliverables:

1. Memorandum #1: Draft Goals, Objectives, and Purpose and Need for Downtown Fresno Streetcar Study
2. Public scoping material (study area maps, maps of potential alignments, draft list of evaluation criteria, equipment types)

Task 6.2 – Public and Stakeholder Outreach and Survey

We will prepare a draft Public and Stakeholders Outreach and Involvement Plan for review and approval by Fresno COG staff. The plan will include:

- Two open house meetings.
 - The first meeting will be conducted after basic information gathering has been completed and we have prepared materials for public “scoping” of the project. We will present the study goals and objectives and baseline information (baseline information is described in Stage 1 of the PTIS scope of work and in Task 6.1). We will solicit comments on both the streetcar concept and the overall PTIS study process.
 - The second public meeting will be conducted when a preliminary project recommendation can be presented to the public and stakeholders. Comments will be incorporated into the draft and final Streetcar Feasibility Study Report.
- Solicit public and stakeholder input including the opinion polling effort for the PTIS Phase 2 study we will include questions pertaining to the streetcar, with a target audience of residents and business owners/employees of the Fresno/Clovis metropolitan area.
- Attend up to three City of Fresno public events and present display and other information on the project.
- Attend up to five business association, downtown neighborhood, or other central Fresno community group meetings to provide updates on the project.
- Conduct interviews of up to 25 public and private stakeholders relevant to Downtown Fresno.



- Make up to three presentations/discussions with a downtown transportation working group, comprised of representatives of area businesses, community groups, and public/elected officials. We suggest that city and other government agency departments (covering transportation and traffic, community development, and construction, among others) be represented on the working group (maximum of 25 persons). The group would provide a sounding board on streetcar concepts, including technology options, alignments, station concepts, and operating scenarios.

Task 6.2 Deliverables:

1. Memorandum #2: Draft Public and Stakeholders Outreach and Involvement Plan
2. Memoranda (varies): Interview and meeting minutes and summaries
3. Public scoping material (study area maps, maps of potential alignments, draft list of evaluation criteria, equipment types)

Task 6.3 - Travel Demand Forecasting and Analysis

We will evaluate travel demand for a downtown streetcar service using the Fresno COG model, including model refinements made during the course of Blueprint vision planning for the region and scenario planning as part of the PTIS Phase 2. We will estimate likely demand for a baseline/current conditions alternative (i.e., If there were streetcar service today, how many users might there be?). For convenience, we will designate 2010 as the baseline year and evaluate two future horizons: 2035 and 2050/60.

The regional model estimation of transit demand for small geographic areas and at the transit station level will use a “post processor” adjustment process. We will develop a spreadsheet-based model which will incorporate parameters from the COG model (e.g., mode choice percentages that are applied to differing land uses) and elasticities reflecting potential user responses to service and access changes. A higher level of detail on land uses and development densities will be included in the spreadsheet model. We will evaluate and ultimately identify what kinds and levels of development will lead to the most ridership of a streetcar service.

The COG model and streetcar post processor model will be used to evaluate traffic impacts of streetcar implementation. After identifying route and service concepts in Task 6.5, we will analyze traffic at up to 20 major intersections for two potential alignments, applying the city’s and COG’s approved traffic analysis programs (i.e. SYNCHRO). It is assumed that the City of Fresno will provide traffic count data. The traffic analysis time horizon will be 2035 conditions.

Task 6.3 Deliverables:

1. Memorandum #3: Downtown Fresno Streetcar Ridership Projections
2. Memorandum #4: Traffic Analysis of Two Streetcar Alignments

Task 6.4 - Refine Objectives and Evaluation Criteria, Prepare Economic Assessment

In this task we will identify evaluation criteria, both qualitative and quantitative, for assessing how well streetcar alternatives perform relative to goals and objectives. Criteria will measure the following:



- Ridership
- Costs, both capital and operating (cost effectiveness and cost efficiency)
- Environmental and economic impacts
- Traffic impacts
- Local access impacts
- Streetcar convenience and accessibility (e.g., populations and employment centers served)
- Funding feasibility/potential
- Time to delivery

The economic assessment will evaluate the potential to leverage new development as well as existing businesses in the area to support the streetcar through ridership and value capture mechanisms. We will look at the potential for development by assessing the following economic factors/issues:

- Identify destinations and origin points that could be served with streetcar
- Identify destination features which could draw riders to the streetcar
- Identify existing development potential or markets that could be further leveraged by the streetcar
- Gauge property owners / businesses that would have an incentive to enter into an assessment district or other value capture mechanism to fund the streetcar
- Assess if value capture tools are appropriate to generate reinvestment in Downtown or detract from reinvestment

This analysis is not intended to implement an assessment district or other value capture mechanism, but to determine feasibility of pursuing further study.

Task 6.4 Deliverables:

1. Memorandum #5: Draft Downtown Fresno Streetcar Objectives and Evaluation Criteria
2. Memorandum #6: Traffic Analysis of Two Streetcar Alignments
3. Memorandum #7: Summary of Economic Assessment

Task 6.5 - Route Studies; Service Criteria; Concept Operating Plans

This task will develop alternative routings for a streetcar service based on the following design parameters:

- Traffic volumes
- Downtown circulation patterns
- Location of existing development, activity centers and redevelopment opportunities
- Safety and security for passengers
- Multimodal connections
- Transit travel times
- Roadway configuration and available right-of-way



- Ability to locate maintenance facility

For each potential route we will:

- Identify constraints, physical or operational, that could preclude implementation of the streetcar or increase costs prohibitively for certain alignments
- Inventory conditions along candidate streetcar routes
- Create station site inventories (including photographs, site features and surrounding land uses (commercial, retail, residential, government/institutional, etc.)
- Layout alignments for streetcar guideway on available aerial base maps
- Develop preliminary specifications of streetcar service levels (hours and frequency of service; direction of operation; average vehicle speeds; dwell times; operating procedures)

Streetcar alignments and associated service plans will be evaluated according to their ability to meet project Purpose and Need and objectives. This high-level screening will be conducted jointly with Fresno COG, the objective being to identify a short list of the most feasible and promising streetcar routes.

We will evaluate the type of streetcar operation including:

- Center and side running,
- One-way loops with side stations or two-way system with median stations
- Interaction with local traffic

Task 6.5 Deliverables:

1. Memorandum #8: Summary of Preliminary Routes, Service and Operating Plans
2. Memorandum #9: Evaluation and Screening of Alternative Streetcar Systems

Task 6.6 - Equipment Analysis

This task will identify and summarize vehicle options in a matrix that compares their physical features (dimensions, capacities) and the associated facilities and equipment required for their implementation and operation. The track and traction power (substations, overhead catenary if proposing conventional rail vehicles) characteristics will be indicated along with guidance technology options (e.g., signals and communications). Specifically the matrix will compare:

- Vehicle type
- Description of vehicle
- Dimensions
- Passenger capacity
- Amenities
- Power source
- Order of magnitude cost



We will provide examples of each type of streetcar system and identify where they are operating (if available).

We will review catenary-powered rail technology as well as emerging technologies that may offer the same benefits as conventional technologies (performance, ride quality, capacity, reliability, branding) including new technologies being introduced in Europe. These might include alternative-power vehicles (battery powered, hybrids) and rubber-tired trams, the latter combined with in-street guidance/steering technologies. The equipment evaluation will also identify staffing impacts and interoperability with existing and planned FAX systems.

Vehicle options will be presented and discussed with stakeholders and the downtown transportation working group. Vehicles affect many other decisions, including several key aspects of station design.

Task 6.6 Deliverables:

1. Memorandum #10: Summary and Comparison of Equipment Types
2. Presentation material on equipment types and comparisons

Task 6.7 - Opportunities and Constraints Analysis

The objective of this task is to identify physical and institutional constraints that could affect implementation of a streetcar service in Downtown Fresno. We will use the assessments in Tasks 6.2 through 6.6 to identify opportunities and constraints and include a risk assessment of the various technology and service options, both implementation risks and operating risks. We will identify measures to mitigate risks whenever practicable.

Constraints and risks will be compared against the opportunities that are associated with streetcar development. We will place opportunities and constraints in proper context. After discussing our preliminary analysis with Fresno COG staff we will revisit the streetcar route alternatives, concept service plans, and vehicle options.

Task 6.7 Deliverables:

1. Memorandum #11: Opportunities and Constraints Analysis

Task 6.8 - Environmental Screening

This task will include an environmental scan to identify:

1. Fatal environmental flaws with the technologies and route alignments under consideration, and
2. Other environmental issues that could influence the design, implementation and operation of a streetcar service.

Identification of fatal flaws would result in dropping an alternative or modifying an alternative substantially. Mitigations to address other impacts will be identified and incorporated into concept designs and/or operating plans. Environmental impacts or issues we will assess include:



- Traffic impacts
- Potential for noise and vibration impacts on adjacent land uses
- Pedestrian, bicycle and other non-motorized safety
- Stray current impacts on utilities and public safety hazard
- Permitting requirements

Task 6.8 Deliverables:

1. Memorandum #12: Environmental Assessment of Alternatives

Task 6.9 - Conceptual Engineering; Task L (Station) Design Criteria

As described in Task 6.5, we will prepare track, station and systems design criteria. The criteria will range from track and curve design speeds; switch/turnout layouts and design speeds; station dimensions (e.g., platform elevation above guideway, ADA compliance requirements, including slopes and clearances, etc.). Urban design guidelines will also be proposed. These will be objectives-based and indicate how streetcar facilities should be integrated into the downtown environment.

For each streetcar alternative carried forward to this phase of the study, concept alignment and station drawings will be prepared. Alignments will be shown in plan view with representative and specific cross-sections provided. We will prepare plans at 1:200 scale for up to four alignment alternatives. For the recommended alternative, we will prepare plans at 1:50 scale. Plans will show the track/guideway alignment, station locations, including footprints, and preliminary locations of other facilities (e.g., catenary poles, signal and traction power equipment facilities).

Up to three prototypical station designs will be prepared. These will show the station area and typical features for plaza, curb extension, and median stations. We will prepare two station photosimulations that place stations in the urban setting. The locations of these photosimulations will be established with Fresno COG staff.

Task 6.9 Deliverables:

1. Memorandum #13: Refined Track, Station, and Systems Design Criteria
2. Report #1: Concept Alignment Plan, and Station Locations for Four Alignment Alternatives, Prototypical Station Designs, and Urban Design Guidelines

Task 6.10 - Operations and Management Scenarios

We will develop further detail on the conceptual operation of the streetcar alternatives carried into Conceptual Engineering Task 6.9. Updated information will cover the overall service plan, span of service, service frequencies, and other operating parameters. Based on the service plan we will generate resource factors, such as annual vehicle miles and hours of service, to estimate annual operating costs. A representative unit cost, from national transit data adjusted to reflect the Fresno area and FAX, will be applied to generate O&M costs.



We will conduct a final screening and evaluation of the alternatives to identify the recommended alternative, and define the service plan for this recommended alternative in more detail to include:

- Narrative description of how the streetcar system will operate
- Who would be recommended to manage operations
- Hours and days of operation
- Basic staffing requirements to operate and maintain the system
- Failure and emergency operations considerations
- Regulatory issues to be addressed should the project go forward.

We will consult with FAX to identify special labor requirements for streetcar operation and the potential for private/contract operation of a service.

Task 6.10 Deliverables:

1. Memorandum #14: Final Screening and Evaluation of Alternatives, Recommended Alternative and Service Plan

Task 6.11 - Cost Estimates

In this task we will estimate capital and operating costs for the four streetcar alternatives carried into Task 6.9. O&M costs will be derived using a cost per vehicle mile and/or vehicle hour of service. Capital costs will be derived based on the quantities from concept drawings. Unit costs per mile of track, per station, per mile of catenary, and number of systems elements will be applied to the total line length, number of stations, length of catenary, number of signals replaced or modified, and number of tractor power stations. For new facilities, we will apply representative costs per square foot or similar, derived from industry experience.

For the recommended streetcar alternative, this information will be updated for any refinements to the alignment, stations, and other features of the alternative developed in Task 6.10. Capital costs will be all inclusive, covering preliminary design through construction and startup.

Estimate costs will be prepared in 2009 dollars, and can be escalated to year of expenditure. Operating cost estimates will be ranged and indicate costs for an assumed opening year and five and ten years out to reflect any possible changes in service design or service frequencies to meet changing demand. It is possible a phased streetcar system would be recommended in Task 6.10, with extensions added to serve new and/or expanding activity centers or new trip generator near downtown (e.g., high speed rail station).

Task 6.11 Deliverables:

1. Memorandum #15: Estimated Capital and Operating Costs



Task 6.12 - Financing Plan

This task prepares a financing plan for the recommended alternative. The plan will cover capital and operating cost requirements and evaluate funding opportunities for the project. The funding analysis will include a review of capital and operating funding resources, including but not limited to federal, state, and local funding resources, development fees, and operating assessments, recognizing that federal resources may not be available for start up of a service. We will consider the financial capacity of the City of Fresno and FAX in recommending a financing plan. Public-private implementation and funding opportunities will also be considered. The financing plan will identify equitable ways to assign streetcar implementation and operating costs to the private sector who will benefit.

Task 6.12 Deliverables:

1. Memorandum #16: Downtown Fresno Streetcar Financing Plan

Task 6.13 - Final Report

We will consolidate the information generated in Tasks 6.1 through 6.12 and prepare a draft report documenting the steps and findings of the Streetcar Feasibility Study. The report will include:

1. Alternatives development and evaluation
2. Environmental considerations
3. Conceptual engineering plans
4. Cost estimates
5. Comparison and screening of alternatives
6. Recommended alternative
7. Proposed programming and financing plan for the recommended alternative

We will respond to comments from FCOG, staff and the downtown streetcar working group and prepare a final report, technical appendices, and an executive summary.

Task 6.13 Deliverables:

1. Report #2: Draft Downtown Fresno Streetcar Feasibility Report (50 copies)
2. Report #3: Draft Downtown Fresno Streetcar Feasibility Report – Executive Summary (50 copies)
3. Report #4: Final Downtown Fresno Streetcar Feasibility Report (50 copies)
4. Report #5: Final Downtown Fresno Streetcar Feasibility Report – Executive Summary (100 copies)
5. Presentation material

Summary of Streetcar Study Meetings:

- a. Staff level meetings (four)
- b. Open house meetings (two)
- c. City of Fresno public events (three)



- d. Business association, downtown neighborhood, or other central Fresno community group meetings (five)
- e. Stakeholder interviews (up to 25)
- f. Downtown transportation working group (three)



Optional Tasks - First Stage Implementation

Early implementation tasks related to the first stage of implementation of Bus Rapid Transit corridors would include the following, assuming federal and/or state funding is likely to be involved:

1. Completion of an FTA-compliant alternatives analysis (AA). An accelerated AA ought to be possible given groundwork already laid. It would draw heavily on and incorporate the findings of prior studies.
2. Initiation of a New Starts/Small Starts Criteria report and a request for approval to enter Project Development if pursuing FTA funding. The project sponsor would submit the request to enter Project Development to FTA.

These two activities could probably be completed within a 12-month period and within the remaining overall budget identified for the PTIS. Thus, at the close of the Phase 2 study, the project would be well positioned for federal approval and future funding. The draft and final environmental documents could be completed along with the equivalent of preliminary engineering, perhaps in the following year.

The following two optional tasks could be conducted, but are likely outside the remaining budget for the PTIS:

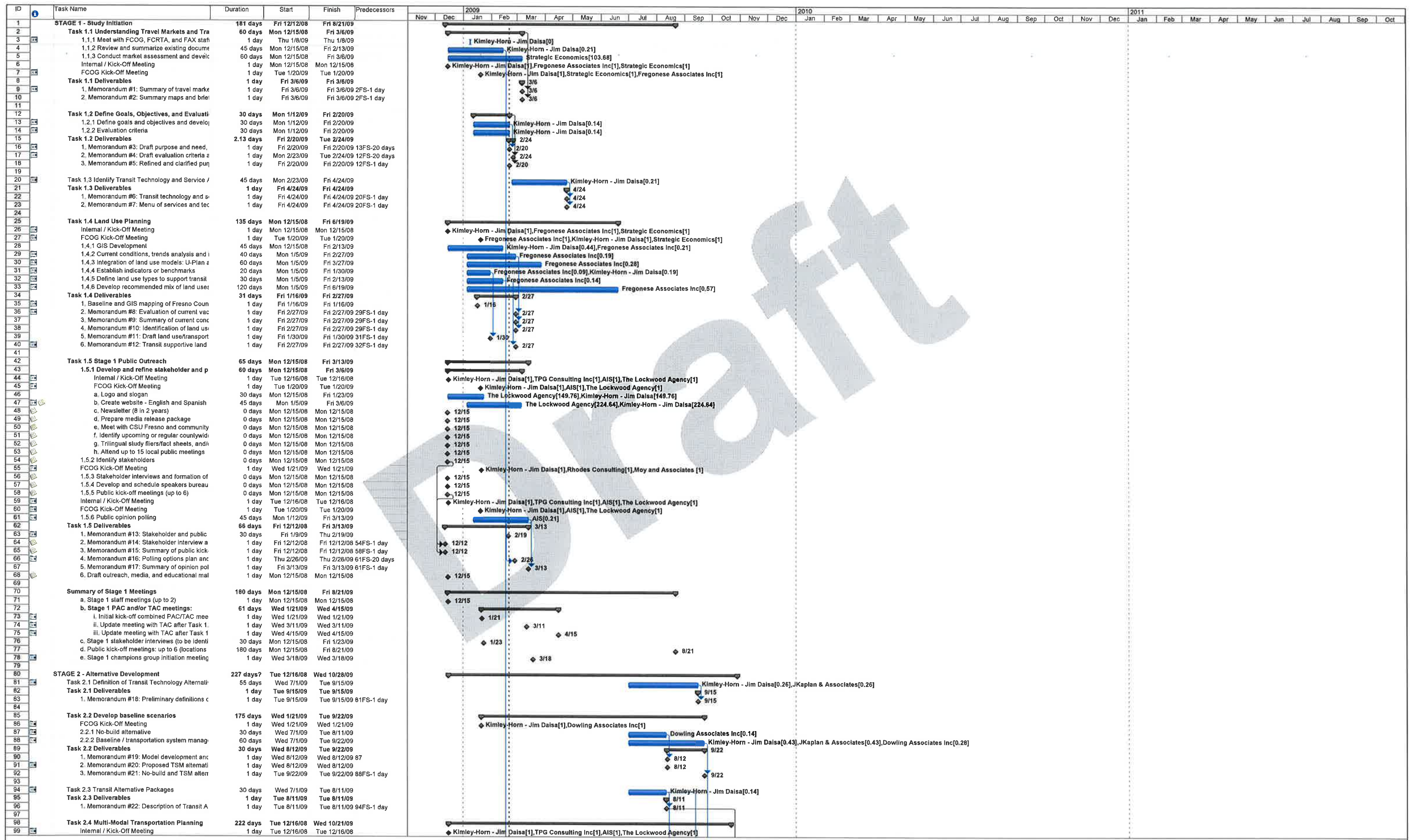
1. Scoping and technical studies supporting preparation of a draft environmental document (e.g., draft Environmental Impact Statement/Environmental Impact Report if there is potential for significant impacts); conceptual engineering of alignment options, including facilities.
2. Preparation of the Plans, Specifications & Estimates (PS&E) for any of the BRT corridors identified in the BRT Master Plan or in Phase 2 of the PTIS.

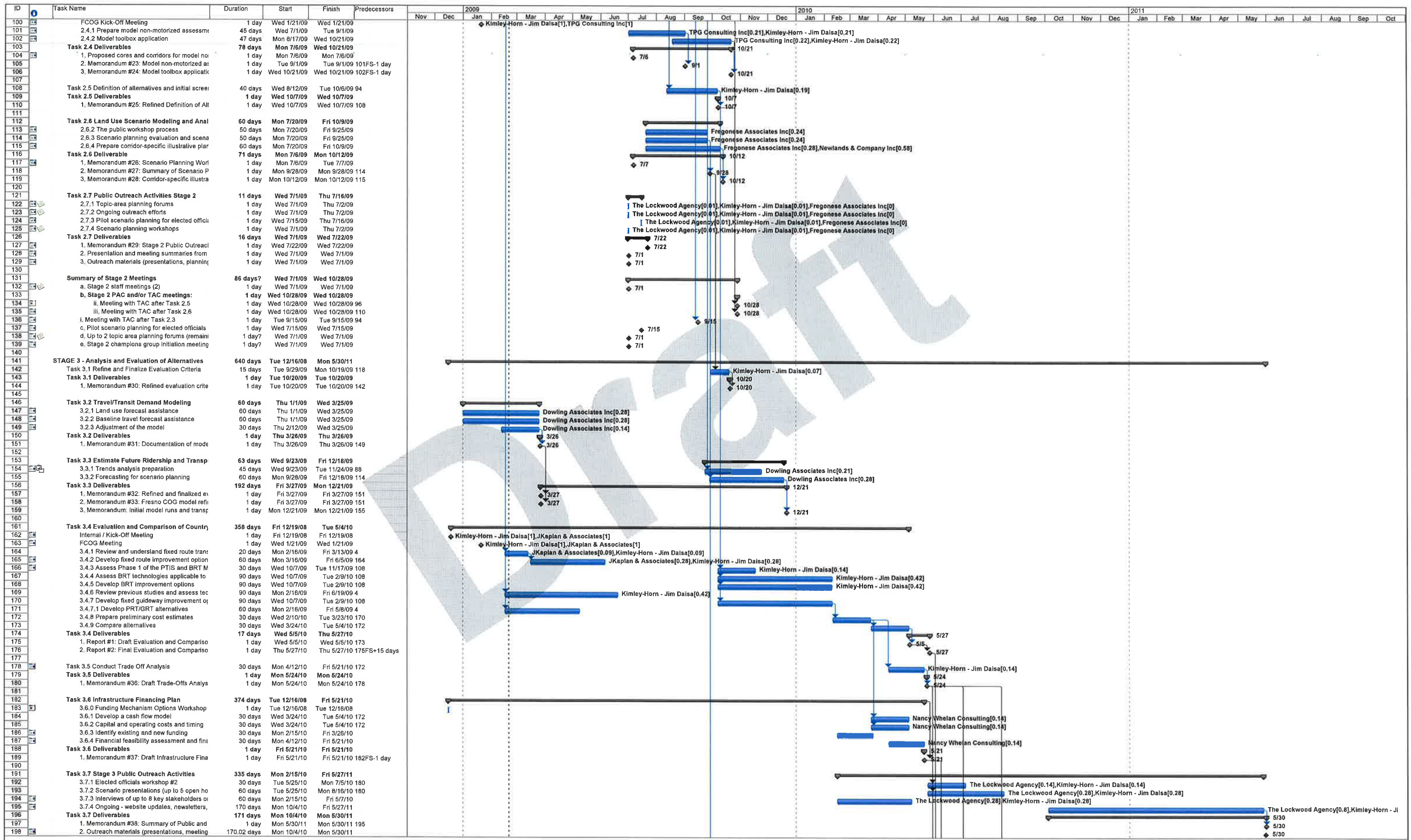


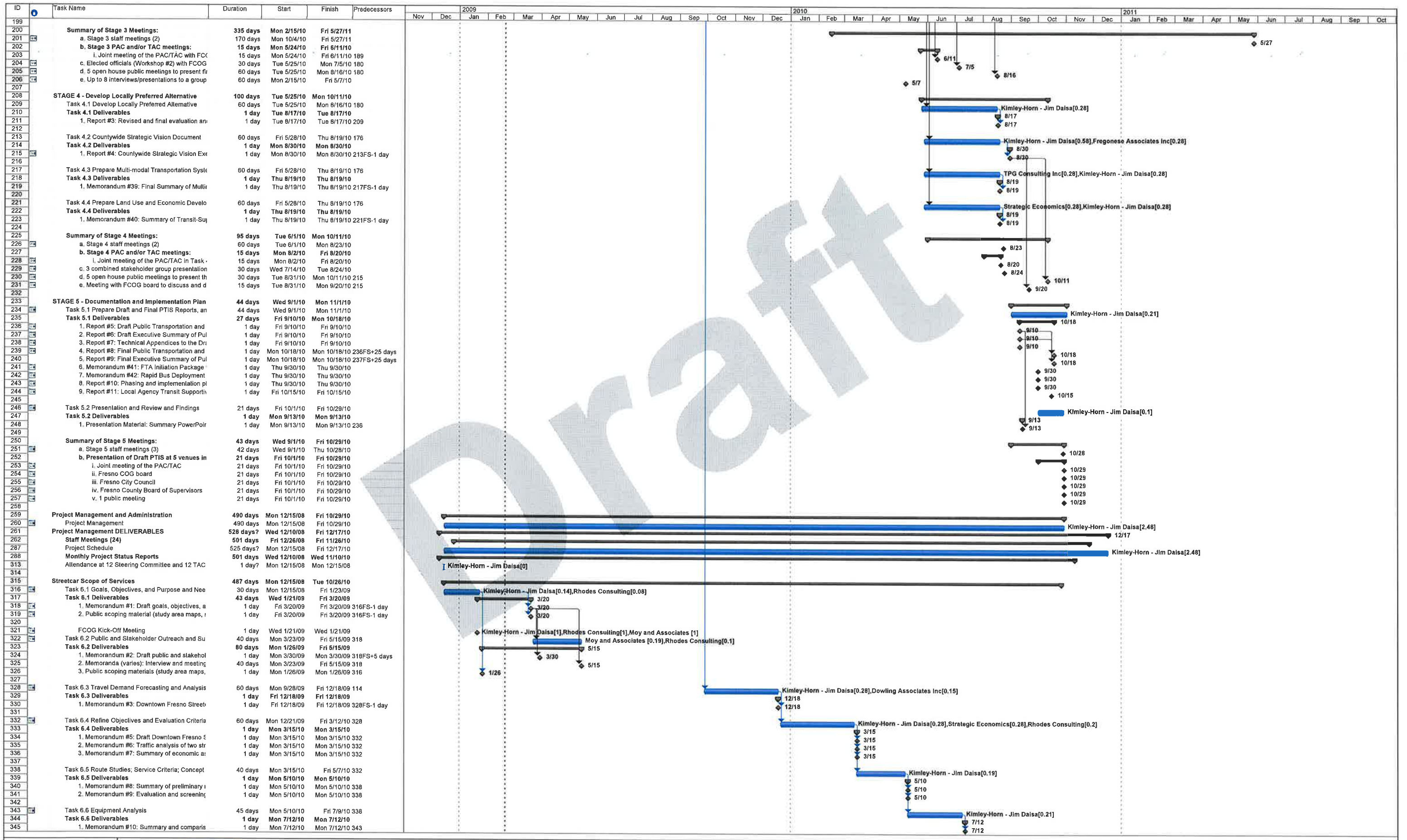


Kimley-Horn
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DRAFT SCHEDULE









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