Attachment 1: Project Approach and Work Plan

PROJECT UNDERSTANDING

The purpose of the Comprehensive Modal Plan is to consolidate and integrate City's existing and current transportation plans, studies and services into a single, cohesive, coordinated and comprehensive plan. The Comprehensive Modal Plan will identify the City's primary transportation network serving all modes with a focus on priority corridors and first-mile/last-mile connections and establish a priority list of improvements with associated costs and anticipated funding sources.

Preparation of this plan will involve all the major stakeholders including VTA, Caltrans, the County of Santa Clara, and Caltrain. The Comprehensive Modal Plan will also provide a path forward for developing and implementing transportation networks, facilities, and services that are connected, coordinated, and comprehensive, and that are safe, accessible, and attractive to all transportation modes and people of all incomes, ages, and abilities within the City of Mountain View.

The Comprehensive Modal Plan will link with several other efforts currently being undertaken in the City including the Shuttle Study, which is currently being pursued under a separate contract. It will also draw upon information, analysis, and action planning associated with Vision Zero, as outlined at the City Council Study Session on January 15, 2019.

PROPOSED APPROACH

The goal of this planning effort is to provide a single, concise transportation planning document that synthesizes the City's planned mobility infrastructure into a single multimodal mobility framework.

As illustrated in Figure 1, the TJKM team will undertake the following tasks:

⇒ **TASK 1: Project Management and Kickoff**
   a. Project Management
   b. Project Kickoff

⇒ **TASK 2: Review of Background Materials**
   a. Existing and Approved Infrastructure by Mode
   b. Planned Infrastructure by Mode
   c. Shuttle Study Inputs & Integration

⇒ **TASK 3: Mapping by Mode**

⇒ **TASK 4: Supplementary Data Collection and Analysis**
   a. Bicycle Level of Traffic Stress (LTS)
   b. Pedestrian Quality of Service

c. Origin-Destination (O-D) Study

⇒ **TASK 5: System/Network Analysis**

a. Identification of Overlaps and Inconsistencies
b. Identification of Gaps
c. Prioritization Criteria
d. Priority Corridors
e. Interactive Mapping

⇒ **Task 6: Community Engagement**

a. Stakeholder and Community Engagement
b. Interagency Engagement and Coordination

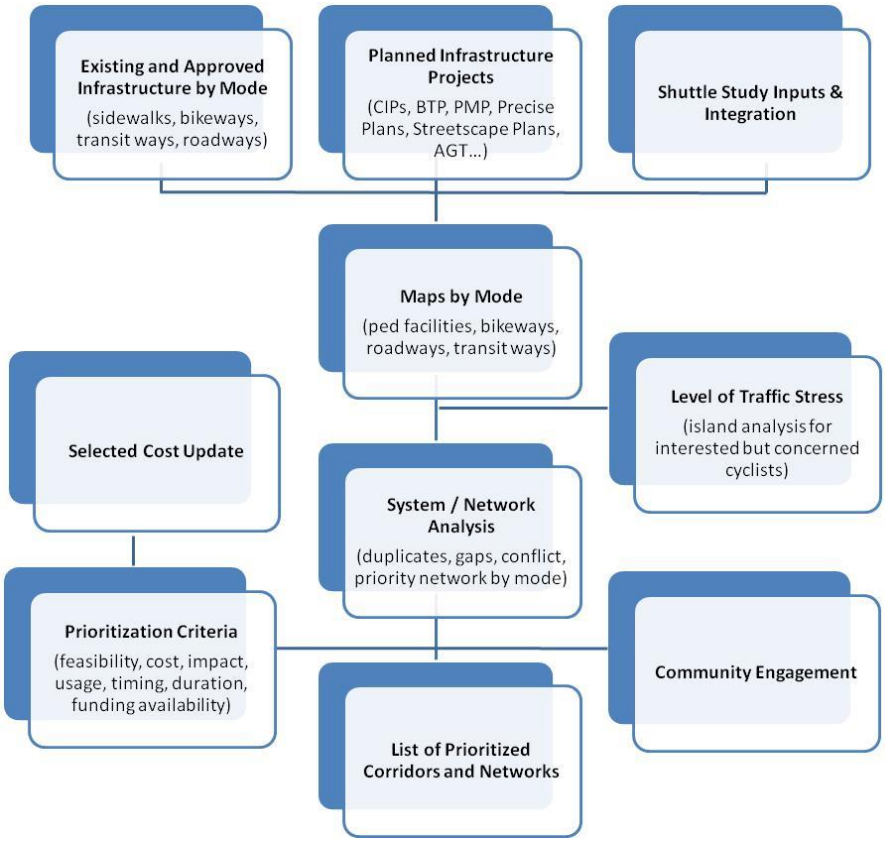
⇒ **Task 7: Project Analysis and Prioritization**

a. Selected Cost Update
b. Prioritization of Corridors
c. Prioritization of Projects

⇒ **TASK 8: Preparation and Presentation of Draft and Final Report**

a. Draft Plan
b. Final Plan
c. Presentations

Figure 1: Project Approach



WORK PLAN

Task 1 Project Management and Kickoff

1a. Project Management (Lead: TJKM)

The TJKM team will lead a collaborative, multidisciplinary team including staff from both TJKM and Alta. Throughout the project, the TJKM team will provide monthly updates with information on work accomplishments completed in the previous month, issues, and next steps. The TJKM team will also conduct thorough quality assurance on all documents and deliverables that are produced in conjunction with this project. The TJKM team will submit timely invoices including accompanying documentation that outlines hours spent on each task by staff member and firm.

Deliverables:	*Due:*
• Project updates	Monthly
• Quality reviewed deliverables	With deliverables
• Invoices and accompanying documentation	Timely
• Multi-firm project management	Ongoing

1b. Project Kickoff (Lead: TJKM)

Key staff from both TJKM and Alta will attend a project kickoff meeting. The main purpose of the meeting will be to clearly set respective roles and responsibilities of project participants including the proposed timeline for the technical tasks. At this meeting, the TJKM team will also establish communication channels and protocols, discuss goals of the project, scope of work and schedule. The TJKM team will provide a list of data to be collected from the City along with a meeting agenda a week in advance of the meeting. The TJKM team will then collect available existing data, reports and plan sets from the City staff at the meeting. The TJKM Team will prepare the meeting minutes summarizing the action items within a week of the meeting.

Deliverables:	*Due:*
• Meeting agenda, list of requested items	1 week prior to kickoff meeting
• Meeting minutes	Within 1 week of kickoff meeting

Task 2 Review of Background Materials

2a. Existing and Approved Infrastructure by Mode

(Lead for Auto & Transit: TJKM, Lead for Ped & Bicycle: Alta)

Before compiling and organizing background information, the TJKM team will develop a proposed map and database format and structure for the resulting deliverables (maps

and databases). This format and structure will be reviewed by City staff before the TJKM team commits any substantial resources to compiling background information.

Once the map and database structure has been reviewed by City staff, the TJKM team will then compile and review information on existing and approved infrastructure by mode. Approved infrastructure includes projects planned under the Capital Improvement Program (CIP), and mitigations, improvements and community benefits approved with development. The background review will distill existing and approved infrastructure into maps and geocoded databases of infrastructure by mode, category, type, and status (e.g. existing, approved). Maps will be coded (e.g. color coded) to be visually accessible and intuitive. The draft maps and databases generated through the background review process will present information on existing and approved infrastructure in the categories outlined in Table 1.

Table 1: Infrastructure Categories

Mode	Infrastructure category	Types
Pedestrian	Sidewalks and trails	
Bicycle	Bike network facilities	Class I, Class IV, Buffered Class II, Class II, Class III bike boulevard
Car	Road facilities	Roadway classification, no. lanes, traffic calming
Transit	Transit facilities	Heavy rail, light rail, dedicated lanes, HOV lanes
Multiple	Crossings and intersection	Marked, enhanced, signalized, protected
Multiple	Priority treatments	Transit priority, leading pedestrian intervals, bike signals
-	Key origins and destinations	

Deliverables:

- Preliminary format and structure for maps and databases
- Draft maps of existing and approved infrastructure by mode
- Draft geocoded databases of existing and approved infrastructure by mode
- Draft list of approved infrastructure

Due:

Before other review work

2b. Planned Infrastructure by Mode

(Lead for Auto & Transit: TJKM, Lead for Ped & Bicycle: Alta)

In this task the TJKM team will review background materials including all studies and plans listed in Table 2. The TJKM team will identify and compile goals and policies identified in each plan or study as related to the Comprehensive Modal Plan.

The TJKM team will glean information on planned transportation infrastructure projects associated with each of the plans or studies. Each infrastructure project will be identified by source (plan or study), mode, category and type as listed in Table 1. This information on planned infrastructure will be distilled into draft maps and geocoded databases consistent with those developed under Subtask 2a.

Table 2: Existing Transportation Plans and Studies

General, Specific, and Transportation Plans	Transit and Corridor Plans and Studies	Bicycle and Pedestrian Plans and Studies
2030 General Plan, 2012	Caltrain Business Plan, underway	VTA Pedestrian Access to Transit Plan, 2017
Climate Protection Roadmap, 2015	Santa Clara County Expressway Plan 2040, 2017	Pedestrian Master Plan (Update), 2014
Draft Environmental Sustainability Action Plan 4, under way	El Camino Real Streetscape Plan CIP 16-67, underway	Vision Zero Staff Report, 2019
Draft East Whisman Precise Plan, under way	Grand Boulevard Initiative Guiding Principles, 2006	Mountain View Suggested Routes to School
North Bayshore Precise Plan Update, 2018	Automated Guideway Transit Feasibility Study CIP 17-36, 2018	Los Altos Suggested Routes to School
San Antonio Precise Plan, 2014	Draft SR 85 Corridor Transit Study, under way	Caltrans District 4 Bike Plan, 2018
El Camino Real Precise Plan, 2014Downtown Precise Plan	VTA Transit Service Plan, 2019	VTA Countywide Bicycle Plan, 2018
Valley Transportation Plan 2040, 2014	Shoreline Boulevard Corridor Study CIP 14-44, 2017	VTA Countywide Bikeway Map, 2017
Mountain View Multi-Modal Improvement Plan, 2018	Transit Center Master Plan CIP 16-41, 2017	Mountain View Bicycle Transportation Plan, 2015
	California/Escuela/Shoreline Complete Streets Feasibility Study CIP 14-41, 2015	Caltrain Bicycle Access and Parking Plan, 2008
		Bay Trail Plan, 1989

Deliverables:

- Draft summary of plan goals and policies
- Draft maps of planned infrastructure by mode
- Draft geocoded database of planned infrastructure by mode
- Draft list of planned infrastructure with reference to the source plan

2c. Shuttle Study Inputs and Integration (Lead: TJKM)

The TJKM Team will incorporate findings of the Shuttle Study including information on existing, approved and planned services that include Caltrain, VTA light rail, VTA buses, MV Community Shuttle, and MVGo Shuttle. This information will include transit and shuttle service quality metrics generated in the Shuttle Study to be identified in a manner consistent with that other modes. Potential transit service categories are shown in Table 3.

Table 3: Transit Service Categories

Mode	Infrastructure category	Types
Transit	Dedicated Right-of-Way (Caltrain, Light Rail, Bus Rapid Transit) Mixed Flow	Peak hour headway, off-peak headway, span (hours of service per day), average speed (travel time and directness)

Throughout the project, the TJKM Team will coordinate on a regular basis with the Shuttle Study team to ensure that the findings and recommendations from the Shuttle Study are integrated into the Comprehensive Modal Plan, and that relevant information from the Comprehensive Modal Plan is provided to the Transit and Shuttle Study team.

Deliverables:

- Draft maps and geocoded database of existing, approved and planned transit services derived from Shuttle Study inputs
- Coordination with Shuttle Study team

Task 3. Mapping by Mode (Lead: TJKM)

The synthesis of citywide corridors and services involves mapping by mode and system/network analysis (under Task 5). Based on the findings and work completed in Task 2, the TJKM Team will synthesize and map citywide existing, approved and planned infrastructure and service corridors. The resulting database will draw together the categories and types of infrastructure and service listed in Tables 1 and 3, with planned infrastructure and services identified by their respective plan or study. During this task, the TJKM team will also incorporate feedback from City staff to revise the

draft maps and geocoded databases developed during the review of background materials in Task 2.

Deliverables:

- Updated maps and geocoded database of existing, approved and planned transportation infrastructure and services

Task 4. Supplementary Data Collection and Analysis

The TJKM Team will conduct a level of traffic stress (LTS) and origin destination analysis of the City's street and trail network for bicyclists and pedestrians. This effort will also generate maps that will be integrated with the maps developed in Task 3 to facilitate the overarching concerns.

4a. Bicycle Level of Traffic Stress (LTS) (Lead: Alta)

Under this task, the TJKM team will conduct a bike level of traffic stress (LTS) analysis for the entire network of streets, trails and publicly accessible bicycle facilities. In addition to City-owned streets and public rights-of-way, the analysis will include El Camino Real, the County Expressway, and other facilities with public access (e.g. Hetch Hetchy Trail, private streets).

Prior to conducting the analysis, the TJKM team will provide information on the proposed metrics, formulae, and decisions that will be used to analyze Bicycle LTS. Decisions may include LTS level that prevails at the intersection between two facilities with different LTS ratings. Information will also be provided on the basis for the proposed choice of metrics, formulae and decisions (e.g. research or industry publications). The City suggests that LTS ratings be based on the following definitions:

- LTS 1: bike facility is comfortable for children
- LTS 2: bike facility is comfortable for interested but concerned cyclists
- LTS 3: bike facility is comfortable for enthused and confident cyclists
- LTS 4: bicycle facility is comfortable for strong and fearless cyclists

After the proposed metrics have been reviewed by City staff, the TJKM team will carry out the analysis of the network and present findings in the form of geocoded databases and maps displaying the entire City bicycle network by LTS.

LTS findings will then be combined with data on bicycle facility type to generate maps that simultaneously display LTS and facility type. For example, facility type may be represented by color (Class I in dark green, Class IV in green, Class II in blue, and Class III in purple) while LTS is displayed in line thickness (from LTS 1 very thick to LTS 4 very thin).

The TJKM team will also analyze the low stress network islands that are created when everything except LTS 1 and 2 are removed from the network. The map of islands of connected, comfortable, low-stress facilities should be comparable to Figure 4-4 of the VTA's 2018 Countywide Bike Plan.

Deliverables:

- Proposed methodology
- Map and database of bike network by bike LTS
- Map and database of bike network by bike LTS and facility type
- Map and database of low stress islands

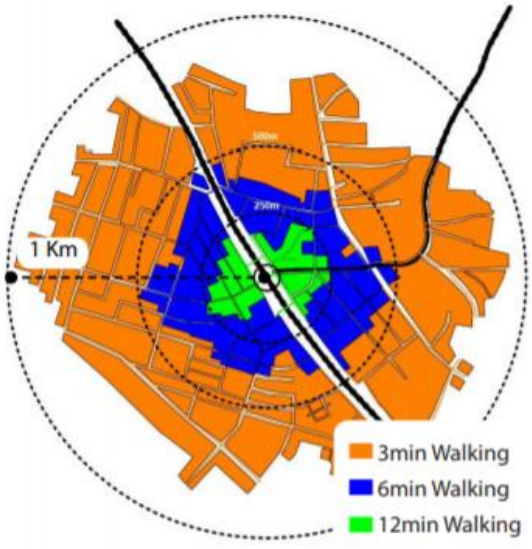
4b. Pedestrian Quality of Service (Lead: Alta)

Under this task, the TJKM team will conduct a pedestrian quality of service (QOS) analysis around existing and planned schools and high-quality transit (as defined in California).

In order to undertake the pedestrian quality of service analysis, supplementary data collection will be conducted with authorization from the City Project Manager.

Prior to conducting the analysis, the TJKM team will provide information on the proposed study areas, metrics, formulae, and decisions that will be used to analyze pedestrian QOS, as well as the source or basis for each of these recommendations. Study areas may include a specific distance and walking distance catchment of school and transit hubs as illustrated in Figure 2.

Figure 2: Project Approach



Variables used should reflect the most important factors that affected pedestrian decisions to walk. Potential variables will be recommended by the TJKM team, but could potentially include the following types of factors:

- Proximity or distance to key pedestrian destinations;
- Traffic speed, turning radii, and presence of slip lanes;
- Crossing widths, and number of motor vehicle travel lanes;
- Block length, density of 4-way intersections, distance between crossings;
- Permeability or directness of path to key destinations;
- Presence, width and continuity of sidewalks;
- Retail and active users at ground level;
- Building orientation, transparency, permeability and pedestrian-oriented design; and
- Presence of shade trees and buffers between sidewalks and traffic.

After the proposed metrics have been reviewed by City staff, the TJKM team will develop maps and geocoded databases to display pedestrian QOS in the vicinity of schools and high-quality transit. These maps will highlight areas where improvements are most needed.

Deliverables:

- Proposed methodology
- Map and database of pedestrian QOS around transit and schools

4c. Origin-Destination (OD) Analysis (Lead: TJKM)

The TJKM team will conduct an origin/destination (O/D) survey using commercial resources available (Streetlight data, which is a big data source for transportation planning) and analyze the survey to provide a fine-grained understanding of origin and destination patterns at key gateways, transit nodes and mobility connection points near the key activity centers in Mountain View. This analysis will identify major travel corridors within the city for both commuter and other trips broken down by mode.

O-D analysis will facilitate geospatial data points to measure how pedestrians, bikes and vehicles interact in day-to-day life and how can we transform transportation and urban planning to design public spaces and transportation networks that are more efficient, sustainable, and safe for all modes. The intent of the O-D survey is to provide current data relevant to the network system and gaps analysis, and to the prioritization of infrastructure and service options including "first-mile/last-mile" components.

Under this task, TJKM Team will also work with the Shuttle Study team to collect ridership data from VTA, MV Community Shuttle and MVGo to determine the usage of transit facilities within the City of Mountain View.

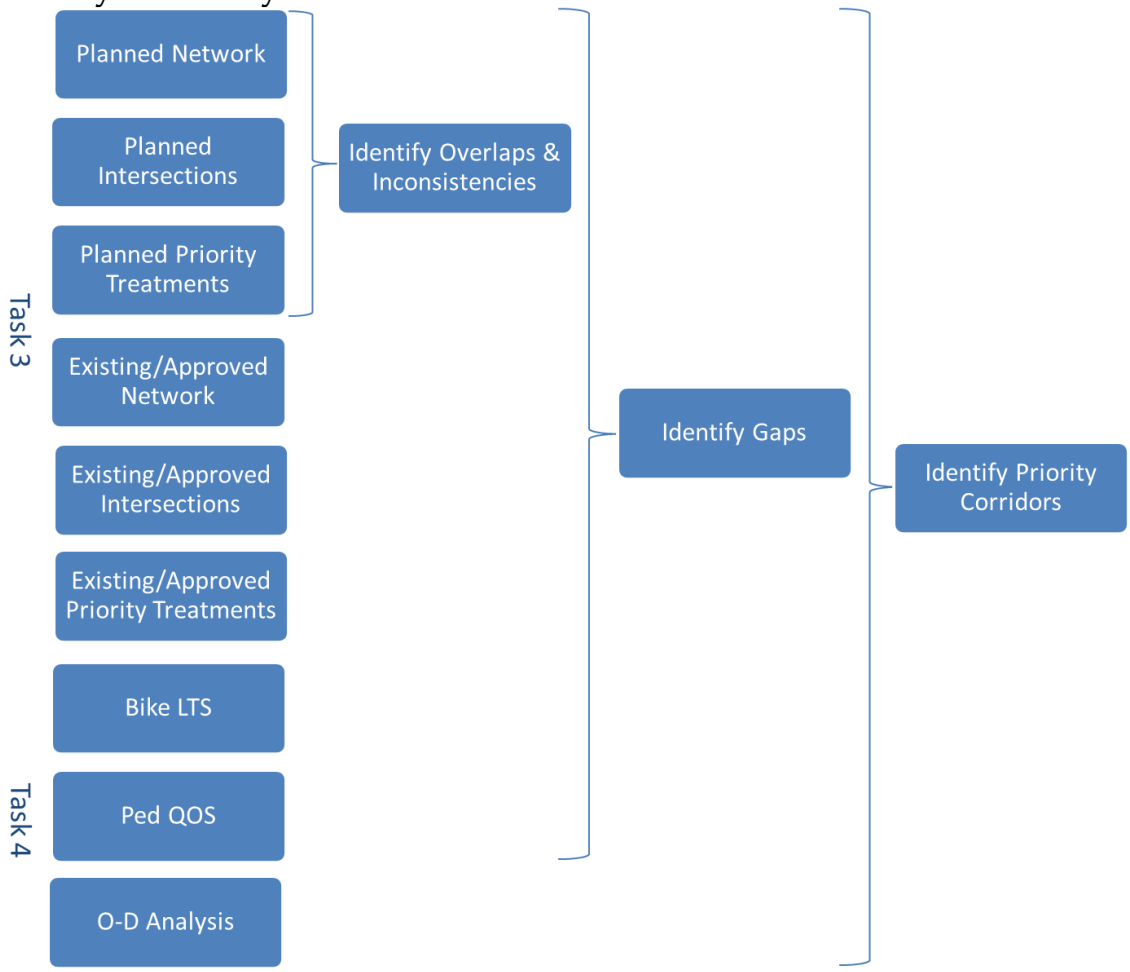
Deliverables:

- Proposed methodology
- Key travel demand corridors by mode

Task 5 System / Network Analysis

Drawing upon the mapping work completed under Tasks 3 and 4, the TJKM team, will analyze the network for each mode of transportation as indicated in Figure 3.

Figure 3: System Analysis



5a. Identification of Overlaps and Inconsistencies

(Lead for Auto & Transit: TJKM; Lead for Ped & Bike: Alta)

For each of the modes identified in Table 1, the Citywide planned network, planned intersection treatments, and planned priority treatments (generated in Task 3) will be synthesized into a single map, database and analysis framework for each mode of transportation. This map, databased and analysis framework will be used to identify overlaps and inconsistencies between different planning documents and studies as they relate to each mode of transportation.

Deliverables:

- Map, database and analysis framework regarding overlaps for each mode of

transportation
- Map, database and analysis framework on planning inconsistencies for each mode

5b. Identification of Gaps

(Lead for Auto & Transit: TJKM; Lead for Ped & Bike: Alta)

Planned networks, intersections and priority treatments will then be combined with information on existing and approved networks, intersections and priority treatments (produced in Task 3) in order to generate a Citywide system map, database and analysis framework for each mode. This map, database and framework will be used to identify system gaps for each mode. For non-motorized transportation, bicycle LTS and pedestrian QOS (from Task 4) will also be integrated in the Citywide analysis to ensure that the network analysis reflects issues and conditions that are relevant to each of the modes. The gap analysis will also consider results for walking, biking, driving and transit in the context of the location of transit destinations or hubs to understand and highlight first- and last-mile gaps.

Deliverables:

- Map, database and analysis framework regarding Citywide gaps for each mode

5c. Prioritization Criteria (Lead: TJKM)

The TJKM Team will develop draft prioritization criteria and a draft prioritization methodology for assessing network corridors. These criteria should reflect goals and policies outlined in subtask 2b, and may include items such as those listed below:

- Safety impacts on vulnerable users;
- Effect on mode shift and vehicle miles traveled (qualitative analysis);
- Effect on greenhouse gas emissions (qualitative analysis);
- Effect on performance or ridership of multiple modes;
- Synergistic effects on multiple modes or goals.

The TJKM team will also develop draft prioritization criteria and a draft prioritization methodology for assessing individual projects. In addition to network criteria listed above, project criteria may also include implementation considerations such as those listed below:

- Likely feasibility;
- Cost or relative cost;
- Potential synergies or opportunities; and
- Funding availability.

Prioritization criteria will be determined and agreed upon with City of Mountain View staff before proceeding to the next task.

Deliverables:

- Draft prioritization criteria

5d. Priority Corridors

(Lead for Auto & Transit: TJKM; Lead for Ped & Bike: Alta)

The TJKM team will use origin-destination, bicycle LTS, and pedestrian QOS analyses to identify priority corridors serving key land use destinations, employment centers and transportation hubs—for each mode of transportation at a Citywide level. Results for each mode will be compared to assess conflicts or opportunities between modes. For example, if a single corridor appears to be a priority corridor for all four modes (pedestrian, bicycle, transit and automobile), the TJKM team will look at opportunities to address all of these modes as well as parallel opportunities and associated tradeoffs.

The TJKM team will also work with the Shuttle Study team in order to provide information on first- and last-mile gaps that could be addressed through potential service modifications, as well as integrating information on future service options that should be reflected in the analysis.

Deliverables:

- Map, database and analysis framework regarding Citywide priority corridors for each mode

5e. Interactive Mapping (Lead: TJKM)

The TJKM Team will develop a set of user-friendly maps that reflect the above tasks in a manner that is suitable for public consumption.

The TJKM team will also develop an online tool to make the maps available in an accessible, interactive manner for use during the community outreach effort. After completion of the Plan, this online interactive map could be used to keep the public informed about the status of the infrastructure and services identified in the Plan and could be updated as conditions change.

The TJKM Team will develop an online interactive web input map that simply and clearly provides opportunities for individuals to interact with information about planned mobility infrastructure and service. This tool can either be open ended – allowing individuals to identify specific locations or routes for need – or allow individuals to provide feedback on particular locations or issues. The TJKM team will develop a web based tool that identifies key corridors and allows residents and visitors to comment on the appropriate priority for each corridor and the relevant investment in different modal improvements that may be relevant.

Deliverables:

- Highly accessible interactive maps
- Online interactive web input map

Task 6 Community Engagement

6a. Stakeholder and Community Engagement (Lead: TJKM)

The TJKM team will support City of Mountain View's community outreach efforts. The TJKM team will prepare study materials as directed by the City of Mountain View Project Manager, establish a Comprehensive Modal Plan website and surveys/mailings as needed. The TJKM team will identify and facilitate workshops with stakeholders and/or community members designed to receive meaningful input on network prioritization and other issues identified in Task 5.

Deliverables:

- Preparation and facilitation of three stakeholder and/or community workshops

6b. Interagency Engagement and Coordination (Lead: TJKM)

The TJKM team will also coordinate with regional transportation agencies, adjacent jurisdictions and other agencies regarding the implications of the above analyses for their plans, studies and cross-border efforts. The TJKM team will organize and facilitate up to three interagency meetings, to communicate and receive meaningful input on network prioritization and other issues identified in Task 5.

Deliverables:

- Preparation and facilitation of three interagency meetings

Task 7 Project Analysis and Prioritization

7a. Selected Costs Update (Lead: TJKM)

Under this task, TJKM Team will review and update the cost of the improvements and services that have been identified in various plans or studies that have been completed and adopted. The TJKM team will develop updated cost estimates for selected projects for which the current estimates seem unrealistic. The updated cost estimates will reflect full costs to the City including construction materials, labor, engineering/design, permits, administration, potential right-of-way acquisition, and contingency. If needed,

TJKM will also provide updated estimates of one-off or annual maintenance costs associated with facilities.

Deliverables:

- Updated cost estimates for selected projects

7b. Prioritization of Corridors

(Lead for Auto & Transit: TJKM; Lead for Ped & Bike: Alta)

Using prioritization criteria and methodologies developed in subtask 5c as well as findings from subtask 5d, the TJKM Team will assess and rank network corridors and individual projects associated with the corridors. This will include a comparison of tradeoffs across key corridors and modes.

Deliverables:

- Prioritized corridors

7c. Prioritization of Projects

(Lead for Auto & Transit: TJKM; Lead for Ped & Bike: Alta)

Using prioritization criteria and methodologies developed in subtask 5c as well as findings from subtask 5d, the TJKM Team will assess and rank individual projects associated with the corridors above.

The TJKM team will also develop a strategy that will rank and phase recommendations. The TJKM team will also develop an implementation plan for fundable priority infrastructure and service over the next 10 years and an unconstrained implementation plan for the next 20 years and identify how funding sources line up with opportunities. The TJKM Team will also provide information regarding the applicability of relevant funding sources and programs.

Deliverables:

- Prioritized list of projects
- Implementation plan

Task 8 Preparation and Presentation of Draft and Final Report

8a. Draft Plan (Lead: TJKM)

Based on the work completed under earlier tasks, the TJKM Team will prepare a Draft Comprehensive Modal Plan report. The plan document will include mapping and user-friendly interfaces so that the plan is concise and user-friendly.

Deliverables:

- Draft Report

8b. Final Plan (Lead: TJKM)

After review by the City, the Draft Plan will be revised based on the comments and input received from the City and other stakeholders. The Final Plan will be submitted to the City for approval and adoption.

Deliverables:

- Final Report

8c. Presentations (Lead: TJKM)

The TJKM Team will prepare and deliver presentations with assistance from City staff at a minimum of six meetings that may include the City Council, Bicycle/Pedestrian Advisory Committee, and/or Council Transportation Committee.

Deliverables:

- Preparation and delivery of presentations at six (6) meetings