SBCTA
Points of Interest Pedestrian Plan

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Executive Summary

The Points of Interest Pedestrian Plan (PIPP) aims to capture important locations in need of active transportation improvements that were not adequately captured in the original bicycle-centric Non-Motorized Transportation Plan (NMTP), the broad SBCTA Complete Streets Strategy, or the school site focused Safe Routes to School Plan (SRTSP). This PIPP provides a sample pedestrian plan for each of the 25 member jurisdictions, a list of additional pedestrian sites in need of pedestrian focused improvements based on extensive data analysis, and a framework for future plans that utilizes current best practices and a suite tools that can be used to expand the PIPP to other locations as needed.

1.0 Introduction

At one point in time or other, everyone is a pedestrian. Yet, according to the 2016 County of San Bernardino Community Indicators Report, only 1.8% of the local employees walked to work with a mere 1.6% taking advantage of public transportation. An effort to improve these rates was encourage through the passage of Complete Streets Act of 2008 (Assembly Bill 1358) which requires consideration of complete streets with any substantive revision to general plan circulation elements in order to assist in the reduction of greenhouse gas emissions in California as outlined in the California Global Warming Solutions Act of 2006. Local jurisdiction circulation elements must therefore plan for a balanced, multimodal transportation network that meet the safety and access needs of all users, regardless of age or abilities, of streets, roads and highways.

With this mandate came grant funding opportunities. However, in order to obtain grant funding for the planning and/or infrastructure improvements of an active transportation project, that project must be a part of a larger, more comprehensive plan. In order to address this requirement, SBCTA has been expanding the formerly bicycle-centric Non-Motorized Transportation Plan (NMTP) to include additional features such as the Complete Streets Strategy, the Safe Routes to School Plan, and this Points of Interest Pedestrian Plan.

1.1 Goals

SBCTA was awarded a Caltrans Cycle 1 Active Transportation Program grant in order to further develop

Some of the Plan's benefits include:

- Compliance with the State of California requirement for a Bicycle Transportation Plan for purposes of Caltrans Bicycle Transportation Account Funding. The NMTP provides member jurisdictions with the comprehensive bike plan required when applying for Active Transportation Program (ATP) grant funds. The addition of a PIPP is expected to help support local efforts in a similar manner when seeking funds for pedestrian projects.

- Input resource for Southern California Association of Governments (SCAG) Scenario Planning Model and San Bernardino County Community Vital Signs (CVS) public health data collection program which tracks health indicators across the County.

- Provide assistance with prioritization of limited public funds by providing an estimate of implementation cost along with the ability to analyzed planned paths and their geographic location relative to potentially significant locations like schools, business, transit routes, residential areas, and other existing and planned paths.

- A means for identifying potential gaps in pedestrian mobility, especially across jurisdictional boundaries, where collaborative efforts are needed in order to maximize facility connectivity. This connectivity enables more citizens to reach more places of business in a manner that is not only more affordable than by personal vehicles but healthier because of the exercise required and reduction in greenhouse gasses emitted.

1.2 Objectives

- Develop priority-setting guidelines that demonstrate how a jurisdiction can:
    - evaluate pedestrian needs through public-outreach and utilization of cutting-edge technologies (e.g. us of aerial photography, Google "street view", geographic information systems, walk audits, etc.),
    - identify points of interest (excluding schools which will be addressed in the SRTSP) that would benefit from a pedestrian plan based on the evaluation of pedestrian needs,
    - inventory existing pedestrian access to those points of interest,
    - estimate cost-effectiveness relative to project benefits, and
    - prioritize pedestrian plan projects for investment of local funds and/or for future requests for ATP and other non-motorized funds.
- Take advantage of economies of scale at the County level, reducing the need for duplicative efforts at the individual city-level by creating a Points of Interest Pedestrian Plan that not only captures the County-wide pedestrian needs of today but outlines a process that can be used in the future as needs may change.

- Open additional lines of communication between public works, planning agencies, and citizens.

- Incorporate the PIPP, with priority-setting guidelines and County-wide pedestrian plans for selected (to be determined though this project) priority points of interest, into the NMTP.

- Make PIPP project information available to the public through the existing web-based NMTP GIS application.

2.0 Data Analysis

2.1 Current Pedestrian Planning Efforts

After reviewing the websites of the member agencies and contacting the agencies directly as needed, below is the status of the relevant pedestrian plans in San Bernardino County, including the SBCTA Countywide Complete Streets Strategy and Safe Routes to School (SRTS) Inventory Needs Assessment, and the SBCTA Improvement to Transit Access for Cyclists and Pedestrians, both completed by Alta.

As part of the SBCTA Countywide Complete Streets Strategy and SRTS Inventory Needs Assessment, a jurisdictional survey was developed in 2014 that asked questions about Complete Streets policies and practices as well as SRTS programs. The result was that every responding jurisdiction, except for Fontana and Needles, reported having at least one plan relevant to Complete Streets or SRTS.

Table 1 below is directly from the May 2015 Draft of the Complete Streets Strategy document, and shows the status of complete streets efforts at the SBCTA member jurisdictions that responded to the survey. Three of the 17 jurisdictions that responded to the survey reported having Pedestrian Master Plans: Barstow, Chino, and Hesperia.

Table 1. Status of Complete Streets and Active Transportation Efforts at Jurisdictions

Jurisdiction	Pedestrian Master Plan	Bicycle Master Plan	Transit Master Plan	Safe Routes to School Plan	Complete Streets Design Guidelines	Street or Site Design Guidelines for School Areas
Adelanto						
Barstow	X	X	X			
Chino	X	X	X	X		
City of Colton		X			X	
City of Victorville		X				
Fontana						
Hesperia	X	X	X		X	
Highland		X		X		
Montclair		X				
Needles						
Omnitrans			X		X	
Ontario				X		
Rialto						
San Bernardino		X				
Twentynine Palms		X				X
Yucaipa		X		X		X

Note: Table includes all jurisdictions that provided responses to the survey.

As of late 2014, several jurisdictions reported working on Bicycle, Pedestrian, Transit, and/or SRTS plans, including Barstow, Chino, Rialto, and Yucaipa. Others noted that their existing plans are out of date. On February 17th, 2015, the City of Redlands adopted an updated comprehensive Bike Master Plan, to be used as the platform for constructing bike lanes and bike facilities. No responding jurisdictions have adopted Complete Streets policy resolutions or ordinances, or SRTS policies or ordinances. While no jurisdiction reported having a Bicycle or Pedestrian Advisory Committee or a SRTS Task Force, Chino staff noted that their Transportation Advisory Committee meets with school district, public works staff, and the police department, while Rialto has a Transportation Commission that supports Complete Streets and SRTS efforts. Table 2 below summarizes the documents for the current pedestrian planning efforts in the region.

Planning Effort	Identified Locations	Work Status	Completion Date
City of Barstow General Plan Circulation Element; Active Transportation Plan	• "STRATEGY 3.A.1: An inventory of discontinuous sidewalks on all qualifying roadways shall be compiled and individual improvement projects shall be funded through the Capital Improvement Program to connect these sidewalks." • "STRATEGY 3.A.2: Install pedestrian enhancements along and in the vicinity of the route of the Old Spanish Trail as designated on Exhibit C-2."	City working on Active Transportation Plan; concept submitted to SANBAG in 2014	General Plan Update approved February 2015
City of Chino Bicycle and Pedestrian Master Plan	• Plan identifies 13 prioritized school zones totaling 7.5 miles of pedestrian (sidewalk completion) projects and 526 curb ramp improvements around schools: 1. Anna Borba Fundamental/Adult School 2. Chino High School/Walnut Ave Elementary 3. Ramona Junior High School 4. Oxford Preparatory Academy 5. Don Antonio Lugo High School 6. Newman Elementary 7. EJ Marshall Elementary 8. Magnolia Junior High School 9. Howard Cattle/Rhodes Elementary 10. Buena Vista High School 11. Cal Aero Preserve Academy 12. Alicia Cortez Elementary 13. Chaffey College Chino Campus • "Cal Aero Preserve Academy and Chaffey College Campus area recommendations		Administrative Draft, September 2015

	will be dependent on their specific plans moving forward." • Plan also defines sidewalk typologies with corresponding level of infrastructure improvements needed for each type: o Arterial Sidewalks o Collector Sidewalks o Downtown Street Sidewalks (for area near City Hall and in the Preserve) o Neighborhood Sidewalks o Bicycle and Pedestrian Facilities		
City of Hesperia General Plan Circulation Element and Open Space Element	"The City is implementing a Downtown Revitalization Plan incorporating the area is bounded by Hesperia Road, Seventh Avenue, Willow Street, and Olive Street. Main, Yucca and Walnut Streets are not included in the Revitalization Area. As part of this revitalization, the City is incorporating the downtown elements of the non-motorized transportation plan [map of proposed Class I, II, and III bicycle facilities]. In addition, the City is developing an exercise trail/loop. The exercise loop will consist of 1.1 miles of trail and provide several exercise stations as well as a bicycle path."		General Plan Update approved April 2014
City of Hesperia Main Street and Freeway Corridor Specific Plan	• "Main Street corridor extends from I Avenue on the east to about a mile west of the interchange at the Interstate-15 Freeway." • "The City Center District, the heart of the Specific Plan area, is a mixed-use, pedestrian-oriented district with a vibrant mix of retail, office, residential and family entertainment uses. This district is the location of the recently constructed City Hall and Hesperia Branch Library, as well as of a large adjacent Civic Green - a park/public space for community activities. An upgraded streetscape that maximizes the quality of the pedestrian environment is also planned." • "The City Center District of the Specific Plan is intended to be a more pedestrian-		Effective October 2008; Amended April 2014

	scaled part of Hesperia. The mix of commercial and medium density residential development planned in this district will require that generous sidewalks be provided as well as pedestrian crossings that may include such enhancements as curb extensions at intersections, refuge medians on wide streets, pedestrian countdown signals at signalized intersections, ladder-style crosswalks for greater pedestrian visibility, street lighting, and shade trees."		
City of Rancho Cucamonga Circulation Master Plan for Bicyclists and Pedestrians	• "The plan is intended to complement local and regional planning efforts related to active transportation opportunities and guide strategic investments in infrastructure, programming, and education to promote community health and access to multi-modal transportation options, particularly in underserved areas of the City," namely Southwestern Rancho Cucamonga (roughly South of Foothill Blvd and West of Archibald Ave). • "This plan is intended to be a comprehensive update to the documents and data which already exist, such as the Trail Implementation Plan, the City's 2002 Bicycle Transportation Plan, and San Bernardino County's Non-Motorized Transportation Plan." • An Intersection Improvement Priorities project map was created to highlight 97 individual point locations that City Staff, the Consultant, and surveyed community members identified as being particularly problematic. These points were then ranked according to 7 individual criteria, and then mapped. • A comprehensive sidewalk inventory was undertaken to determine Right-Of-Way areas in Rancho Cucamonga where sidewalks or trails exist. Linear segments of roadway without these features were identified as		Received and Filed by City Council, May 2015

	• "Priority Segments" and labeled on a map of the City. Most of these segments are located in either the Southwestern or Northwestern-most areas of Rancho Cucamonga.		
City of Victorville Non-Motorized Transportation Plan Compass Blueprint Demonstration Project	• "The plan will utilize the Mojave River, river washes, public utility easements, existing specific plan paseo systems, future paseos and the existing street system to develop non-motorized facilities. However, this plan is conceptual in nature and the proposed alignments are not intended to show precise locations. Precise locations will be developed on a case-by-case basis after review by the appropriate City Departments, the Planning Commission, and the City Council." • Plan's programmatic recommendations and project cost analysis emphasizes on-road bikeways and off-road trails.		Final June 2010
San Bernardino County Complete Streets Strategy	No location-specific recommendations; general recommendations are for policies at the local and regional level to identify and prioritize pedestrian projects.		Draft May 2015
San Bernardino County Safe Routes to School Strategy	Plan identifies 61 schools in 9 jurisdictions (11 school districts) that are in the region's focus (highest need) areas and that have demonstrated interest in SRTS implementation.		Final November 2015
San Bernardino County Improvement to Transit Access for Cyclists and Pedestrians	• Highlights of recommended specific pedestrian improvements include: o "Nearly 50 new or improved pedestrian crosswalks for commuters and residents o Over 23 miles of new, ADA-compliant sidewalks o Over 2,300 new pedestrian-scale lighting elements in and around station areas o Over 1,700 new trees for shade and improved aesthetics" • Recommendations are for ten transit		Final November 2012

	station areas: 1. Montclair Metrolink Station 2. Upland Metrolink Station 3. Rancho Cucamonga Metrolink Station 4. Fontana Metrolink Station 5. Rialto Metrolink Station 6. San Bernardino Metrolink Station 7. Hunts Lane (San Bernardino) sbX Bus Rapid Transit (BRT) Station 8. Anderson Street (Loma Linda) sbX Station 9. Highland Avenue (San Bernardino) sbX Station 10. Palm Avenue (San Bernardino) sbX Station		
San Bernardino County Non-Motorized Plan	• While plan does not include location-specific recommendations, it contains Pedestrian Planning chapter describing "potential elements of a regionally based pedestrian transportation effort", including transit access, development of regional trails, and improving the pedestrian environment on regional arterials and at activity centers. • Plan "contains individualized plans for each of the 25 jurisdictions in San Bernardino County, with emphasis on the bicycle system."		Revised May 2015

2.2 Best Practices

The Pedestrian Plan List (Table 1) provided below contains a listing of pedestrian master plans throughout California, with consideration given to plans in San Bernardino County, in cities and regions similar to the SBCTA region, and plans completed recently enough to be relevant while also having allowed time for project implementation. We selected a series of plans that have a particularly relevant approach or implementation measure that would be applicable to this effort. Along with the column highlighting key elements from each of the plans, Appendices A and C include direct excerpts or materials from several of the plans to provide sample content. Appendix B provides specific and detailed recommendations for achieving pedestrian goals and addressing common challenges related to pedestrian planning, travel, and infrastructure.

The content in Table 1 identifies key aspects of each plan that should be considered by SBCTA. Using some metrics and measures in the proposal and others identified by the project team, these plans provide examples for the implementation of a best practice pedestrian plan. SBCTA should review this list and key aspects of the plans to arrive at a consolidated list of best practices and key metrics for inclusion in the PIPP.

Table 1: List of Pedestrian Master Plans

Pedestrian Plan	Lead Agency/ Jurisdiction	Year	Key Implementation Performance Metrics & Measures	Key Elements from Pedestrian Plans
Improvement to Transit Access for Cyclists and Pedestrians	SBCTA/San Bernardino County, CA	2012	• **Collaboration:** Creation of working groups and innovative partnerships helps in discussions of strategies, funding sources, maintenance, and evaluation. • **Standardization:** Performance measures by which roadway projects are designed and evaluated should be revised to be consistent with emerging multi-modal level-of-service modelling and achieve local desired outcomes.	• *In order to implement the recommendations presented in this report, a coordinated, multi-agency approach is critical. It is recommended that SBCTA develop a non-motorized transportation working group to meet regularly to coordinate and discuss strategies, funding sources, maintenance, and evaluation of proposed projects.* • *The standards and the performance measures by which roadway projects are designed should be revised to include all roadway users, consistent with emerging multi-modal level-of-service modeling.* • *Cities should consider updating the performance standards in their General Plans to evaluate projects by more than impacts on vehicular Level of Service.*
Monterey County Bicycle and Pedestrian Master Plan	Transportation Agency for Monterey County, CA	2011	• **Prioritization:** List of pedestrian priority projects, which scored highest based on pre-determined scoring criteria that included gap-filling potential, safety, and connections to important destinations.	• *Table 8-11 lists the top five pedestrian priority projects, which are also the top scoring Class 1 multi-use path projects when using the bikeway scoring criteria. Agency staff and Bicycle and Pedestrian Committee members prioritized the top scoring Class 1 projects because they serve the widest range of users. The projects are listed based on how well they fill gaps in the existing network, connect to community destinations and employment centers, and how well they address safety concerns.*
Chula Vista Pedestrian Master Plan	City of Chula Vista, CA	2010	• **Monitoring:** Maintaining consistent count programs, reporting on progress, providing regular updates, and convening advisory committees are methods for holding agencies accountable to the public. • **Financing:** Combination of funding capital and maintenance efforts, seeking and providing matching monies for competitive grants, and/or integrating pedestrian features into larger public projects.	• *Monitoring and evaluating a city's progress toward becoming pedestrian-friendly is critical to ensuring that programs and facilities are effective and to understanding changing needs.* • *The pedestrian and bicycle count program should be administered annually, in a geographically representative manner, and capture all types of bicycle and pedestrian trips including trips for recreation, commuting to work, and for other utilitarian purposes. It is recommended that counts be conducted along key corridors, busy downtown locations and major entrances to city parks.* • *A 20 year financial plan has been developed for Chula Vista's pedestrian capital and program recommendations. The financial plan has been organized by short (years 1-5), medium (years 6-10), and long (years 11-20) term pedestrian capital and program costs.*
Berkeley Pedestrian Master Plan	City of Berkeley, CA	2010	• **Guidance:** Provides specific and detailed infrastructure recommendations to achieve pedestrian goals important to Berkeley. • **Outreach:** Worked with local pedestrian groups and the school district to develop a standard safety and education handbook. • **Monitoring:** The Pedestrian Master Plan will be updated every five years as needed to reflect changes in needs and conditions, and projects identified should be included in the City's Capital Improvement Program.	• *Berkeley should implement the specific recommendations and streetscape enhancements as part of specific area plans.* • *The City may want to consider working with local pedestrian groups (e.g. School Traffic Safety Committees), as well as the school district, to develop a standard safety handbook and make it available to each school in a digital format for customization.* • *The Pedestrian Master Plan will be updated every five years as needed to reflect changes in needs and conditions.*

Table 1: List of Pedestrian Master Plans

Pedestrian Plan	Lead Agency/ Jurisdiction	Year	Key Implementation Performance Metrics & Measures	Key Elements from Pedestrian Plans
Santa Barbara Pedestrian Master Plan	Santa Barbara, CA	2006	• **Integration:** Pedestrian Plan goals are integrated into the larger Circulation Element of the Santa Barbara General Plan. • **Support:** Each goal is reinforced by implementation strategies and evaluation policies. • **Achievable:** Goals and policies are grounded in reality and implementable.	• ***Strategy 1.1.1*** *Use a systematic approach to developing, updating, and ranking the construction of sidewalks* • ***Strategy 1.1.2*** *Include a process to inform residents of on-going sidewalk design and construction* • ***Strategy 1.2.1*** *Identify the top ranked intersections that need improvements* • ***Policy 1.6*** *The City shall support the establishment and construction of urban trails to enhance circulation and provide recreational opportunities through parks and open spaces* • ***Policy 1.7*** *The City shall maintain, protect, and improve sidewalk facilities on an on-going basis and during public and private construction projects* • ***Policy 1.8*** *The City shall work with transit providers to develop high quality and pedestrian accessible transit stops* • ***Policy 2.2*** *The City shall develop and maintain maps that identify the most appropriate routes for children to walk to school* • ***Strategy 5.2.1*** *Emphasize pedestrian right-of-way especially in High Pedestrian Use zones through a combination of signage and enhanced enforcement* • ***Strategy 6.1.2*** *Consider connections between streets and pedestrian pathways in land development review* • ***Strategy 6.1.3*** *Encourage land development patterns that increase walking, provide connectivity between buildings and sidewalks, and allow for short trips between multiple destinations* • ***Strategy 6.2.2*** *Develop requirements and incentives for private property owners to provide pedestrian features into new projects* • ***Strategy 6.3.1*** *The City shall draw on the Pedestrian Master Plan when selecting priority pedestrian projects* • ***Strategy 6.4.2*** *Apply for local, State, and Federal grants for major pedestrian projects*
San Francisco WalkFirst Pedestrian Safety Capital Improvement Program	City of San Francisco, CA	2014	• **Messaging:** Precursor to City's Vision Zero initiative. • **Safety:** Prioritizes set of citywide capital improvement projects to reduce number and severity of pedestrian collisions, based on data-driven analysis to identify top pedestrian collision types and effective countermeasure pairings.	• *The WalkFirst Investment Strategy will be making capital improvement recommendations each budget year to work towards the City's goal of reducing serious pedestrian related injuries and fatalities by 50% in 7 years.*
Los Angeles County Active Transportation Strategic Plan	Metro/Los Angeles County, CA	2016	• **Regional focus:** Regional plan that focuses on access to transit, developing a low-stress regional network, and evaluation. • **Local capacity building:** Organized to help local cities build capacity by developing products and organizing data to local area for use in grant applications.	• *(Still in development)*

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Pedestrian Plan	Lead Agency/ Jurisdiction	Year	Key Implementation Performance Metrics & Measures	Key Elements from Pedestrian Plans
Pedestrian Master Plan	Carlsbad, CA	2008	• **Guidance:** Recommendations are made for infrastructure projects that should be implemented on a broad citywide basis, divided up into six major categories of improvements for easier prioritization. • **Timeline:** Lists out a set of projects due to be implemented within a 20 year timeframe.	• *A number of recommendations are made for infrastructure projects that should be implemented on a broad citywide basis. These projects were divided into six major categories of improvements: Infill of Sidewalk Gaps, Americans with Disabilities (ADA) Improvements, Signalized Intersections, Uncontrolled Crosswalk Improvements, Signage Improvements, and Safe Routes to School.* • *Following the citywide project recommendations, fifteen (15) of the highest priority project locations are identified and shown with preliminary project improvement plans. These projects seek to improve specific intersections, corridors, or other locations that were identified through the existing conditions review, extensive public input, and the pedestrian needs analysis.*
Pedestrian Safety Assessments for California Communities	University of California, Berkley	2013	• E's: Conduct review of programs, practices, and policies impacting pedestrian or bicycling safety and suggestions for improvement. • **Safety/Implementation:** Conduct site visits and develop concept plans that address observed safety issues and can be used for grant applications. • See **Appendix C** below for suggested pedestrian safety assessment pre-visit questions.	• *The objective of the California PSA is to enable California communities to: Improve pedestrian safety at specific locations and citywide; Create safe, comfortable, accessible, and welcoming environments for pedestrians; Enhance walkability, livability, and economic vitality.* • *Technical components of the PSA consist of two parts: 1) ranking the city by pedestrian safety performance, and 2) identifying locations in the city for evaluations.*

- ***Sample Language***

Pedestrian Plan	Key Implementation Performance Metrics & Measures
Improvement to Transit Access for Cyclists and Pedestrians	• *In order to implement the recommendations presented in this report, a coordinated, multi-agency approach is critical. … It is recommended that SBCTA develop a non-motorized transportation working group to meet regularly to discuss strategies, funding sources, maintenance, and evaluation of the proposed projects. The working group should be comprised of one to two representatives from each city and stakeholder groups, particularly Omnitrans and Metrolink.* (page 251) • *[I]t is recommended that proposed facilities should be included in City General Plans moving forward, and agencies explore innovative partnerships with transit operators and private development to implement the improvements.* (page 251) • *The standards and the performance measures by which roadway projects are designed should be revised to include all roadway users, consistent with emerging multi-modal level-of-service modelling. Cities should change the performance standards in their general plans rather than evaluating projects only by their impacts on vehicular Level of Service.* (page 251) • *Omnitrans should include them in their Short Range Transit Plan and apply for transit funding for them, which can be passed through to cities for design and construction of the projects.* (page 251)
Monterey County Bicycle and Pedestrian Master Plan	• *Table 8-11 lists the top five pedestrian priority projects, which are also the top scoring Class 1 multi-use path projects when using the bikeway scoring criteria. Agency staff and Bicycle and Pedestrian Committee members prioritized the top scoring Class 1 projects because they serve the widest range of users. The projects are listed based on how well they fill gaps in the existing network, connect to community destinations and employment centers, and how well they address safety concerns.* (page 8-10)
Chula Vista Pedestrian Master Plan	• *Monitoring and evaluating a city's progress toward becoming pedestrian-friendly is critical to ensuring that programs and facilities are effective and to understanding changing needs. Maintaining consistent count programs, reporting on progress, and convening advisory committees are methods for monitoring efforts and for holding agencies accountable to the public.* (pages 268-269) ○ *The pedestrian and bicycle count program should be administered annually, in a geographically representative manner, and capture all types of bicycle and pedestrian trips including trips for recreation, commuting to work, and for other utilitarian purposes. It is recommended that counts be conducted along key corridors, busy downtown locations and major entrances to city parks. Once the count locations have been established, it is recommended that they be maintained over time to provide a benchmark and ability to measure trends over time in walking and bicycling in Chula Vista. In addition to a citywide continuous count program, bicycle and pedestrian counts and assessments should be conducted whenever a local land development project requires a traffic impact study. A long-term financing source should be identified to*

Pedestrian Plan	Key Implementation Performance Metrics & Measures
	guarantee the longevity of the program. ○ *The Safety Commission conducts public hearings on matters related to public safety. ... [S]ince the Safety Commission is the forum for the public to bring up matters of public safety, it is recommended that the City expand the function of the Commission to include review of policies, programs, and projects impacting pedestrian safety.* • *The Pedestrian Master Plan should be updated every five years as necessary, to reflect changes in needs and conditions.* (page 277) • *Pedestrian projects and enhancements identified in this Pedestrian Master Plan and in future revisions should be included in the City of Chula Vista's Capital Improvement Program. This may be accomplished by a combination of funding capital and maintenance efforts, providing matching monies for competitive grants, and/or integrating pedestrian features into larger public projects.* (page 277) • *The City should actively seek competitive grant sources and allocate adequate matching monies to implement pedestrian projects.* (page 277) • *A 20 year financial plan has been developed for Chula Vista's pedestrian capital and program recommendations. The financial plan has been organized by short (years 1-5), medium (years 6-10), and long (years 11-20) term pedestrian capital and program costs.* (page 281)
Berkeley Pedestrian Master Plan	• *RECOMMENDATION: As a first priority, Berkeley should fill sidewalk gaps located in the flat central and western part of the City, particularly those between Cedar and Gilman west of San Pablo Avenue. ... As a second priority, Berkeley should continue to work with residents of the hills where new sidewalk segments are requested. ... Appendix A shows a list of the key sidewalk gap segments outside of the hills areas, and the estimated costs for installing these sidewalk segments.* (page 6-3) • *RECOMMENDATION: As a first priority, Berkeley should identify opportunities to install perpendicular curb ramps at all arterial/arterial intersections and then establish a schedule for constructing them where feasible. See Appendix A for a list of these locations.* (page 6-3) • *RECOMMENDATION: Berkeley should consider retrofitting truncated domes at all arterial/arterial intersections where they are currently lacking. ... See Appendix A for a list of these locations.* (page 6-4) • *RECOMMENDATION: At intersections with a history of high vehicle / pedestrian conflicts ... the City should consider: 1) installing Stop Lines five feet in advance of the crosswalks, to help position motorists back of the crosswalk when stopped; 2) install "Turning Traffic Must Yield to Pedestrians" (MUTCD R10-15) signage; and 3) if pedestrian conflicts appear to be related to right turn on red, consider prohibiting right turn on red at that location. ... A list of the signalized intersections with the highest rate of pedestrian collisions is provided in Appendix A.* (page 6-4)

Pedestrian Plan	Key Implementation Performance Metrics & Measures
	• *RECOMMENDATION: As a first priority, Berkeley should consider adjusting signal timing at the 15 arterial/arterial signals adjacent to senior centers and 10 locations adjacent to elementary schools to allow for a pedestrian walking speed of 2.8 to 3.5 feet per second. ... As a next priority, consider implementing this signal timing walking speed for all high pedestrian demand locations in the City. Appendix A identifies the top priority signal locations.* (page 6-5) • *RECOMMENDATION: Berkeley should continue to install countdowns on all new signal installations and when signals are upgraded. In addition, the City should plan to upgrade all signals to pedestrian countdown signals. A list of locations that need countdown signals is provided in Appendix A.* (page 6-5) • *RECOMMENDATION: Berkeley should consider installing audible signals at all signalized intersections. Signalized intersections near the homes of people who are visually impaired, focusing on arterial/arterial installations, should be a first priority. Locations near senior centers should also be high priorities. ... Appendix A lists locations recommended for audible signal installation.* (pages 6-5 – 6-6) • *RECOMMENDATION: Continue to upgrade pedestrian warning signs and signs near schools and senior centers to fluorescent yellow-green signage. A summary of the total signs that need to be upgraded by corridor is presented in Appendix A.* (page 6-7) • *RECOMMENDATION: The City should expand its program to install speed feedback signs on high priority corridors. Appendix A provides a list of locations and priorities for speed feedback sign installation.* (page 6-8) • *RECOMMENDATION: As part of any major streetscape enhancement or overlay project, the City should conduct a feasibility study of installing bulbouts at selected locations along the corridor. ... Bulbout designs should be standardized with input from the Fire Department and locations should be reviewed with the Fire Department to ensure bulbouts will not impact emergency vehicle access.* (page 6-8) • *RECOMMENDATION: Where feasible, Berkeley should implement the specific streetscape enhancements developed as part of specific area plans.* (page 6-10) • *RECOMMENDATION: Berkeley should continue to implement Safe Routes to School projects as part of their effort to improve pedestrian safety in school areas. The City should actively pursue SR2S grants for any needed pedestrian improvements located near school zones. Appendix A shows a list of prioritized locations for Safe Routes to School improvements.* (page 6-10) • *RECOMMENDATION: The City of Berkeley should implement the proposed bicycle/pedestrian path segments shown on the 2005 Bicycle Master Plan Update. ... Appendix A shows the key proposed bicycle and pedestrian shared-use path projects segments and costs for construction.* (page 6-11) • *The City may want to consider working with local pedestrian groups (e.g. School Traffic Safety Committees), as well as the school district, to develop a standard safety*

Pedestrian Plan	Key Implementation Performance Metrics & Measures
	handbook and make it available to each school in a digital format for customization. Each school should develop a school area pickup/drop-off circulation map of the campus and immediate environs to include in the handbooks, clearly showing the preferred pick-up, drop-off and parking patterns and explaining in text the reason behind the recommendations. This circulation map should also be a permanent feature in all school newsletters and can be based on maps already created by the city's Traffic Engineering division. (page 7-9) • *Educational and encouragement events related to bicycling and walking should be incorporated into existing curricula when practical.* (page 7-10) • *The Pedestrian Master Plan will be updated every five years as needed to reflect changes in needs and conditions. As part of this update, information on cost, feasibility, need, and other items should be included in the analysis of priorities and identification of projects.* (page 10-1) • *Pedestrian projects and enhancements identified in this Pedestrian Master Plan and in future revisions should be included in the City's Capital Improvement Program.* (page 10-1) • *The City's Bicycle and Pedestrian Planner should continue to evaluate pedestrian complaints and make recommendations for improvements.* (page 10-1)
Santa Barbara Pedestrian Master Plan	○ *Goal 1 – Improving the Pedestrian System* ▪ *Policy 1.1 The City shall expand the sidewalk network to increase walking for transportation and recreation* • *Strategy 1.1.1 Use a systematic approach to developing, updating, and ranking the construction of sidewalks* • *Strategy 1.1.2 Include a process to inform residents of on-going sidewalk design and construction* ▪ *Policy 1.2 The City shall improve pedestrian safety and comfort at intersections* • *Strategy 1.2.1 Identify the top ranked intersections that need improvements* • *Strategy 1.2.2 Annually review pedestrian complaints and crashes to implement ongoing improvements at intersections* • *Strategy 1.2.3 Adjust traffic signal operations as needs are identified* ▪ *Policy 1.3 The City shall enhance pedestrian corridors* • *Strategy 1.3.1 Identify the top priority corridor improvements* • *Strategy 1.3.2 Tailor corridor improvements according to neighborhood character and public input* ▪ *Policy 1.4 The City shall work to eliminate Highway 101 as a barrier to pedestrian travel*

Pedestrian Plan	Key Implementation Performance Metrics & Measures

- *Strategy 1.4.1 Identify opportunities to improve or add pedestrian crossings of Highway 101*
- *Strategy 1.4.2 Work with Caltrans to implement the projects identified in the Pedestrian Master Plan that enhance pedestrian safety and connectivity across the Highway 101 corridor and other State Highways*

▪ *Policy 1.5 The City shall assist neighborhoods that desire to improve pedestrian access to, from, and within their neighborhood*

- *Strategy 1.5.1 Develop a residential partnership program that enables neighborhoods to move forward with pedestrian access improvements*
- *Strategy 1.5.2 Develop flexible and accessible walkway options for neighborhoods to reflect their historical character and physical conditions*
- *Strategy 1.5.3 Protect, maintain, and expand residential connections including easements and historically used pedestrian short cuts that reduce walking distances and encourage walking*

▪ *Policy 1.6 The City shall support the establishment and construction of urban trails to enhance circulation and provide recreational opportunities through parks and open spaces*

▪ *Policy 1.7 The City shall maintain, protect, and improve sidewalk facilities on an on-going basis and during public and private construction projects*

- *Strategy 1.7.1 Develop ongoing funding resources for sidewalk and pedestrian related maintenance*
- *Strategy 1.7.2 Provide or improve pedestrian facilities whenever there is road resurfacing, major repair, utility installations, new construction, or overpass construction*
- *Strategy 1.7.3 Facilitate pedestrian travel during and through public and private construction zones*

▪ *Policy 1.8 The City shall work with transit providers to develop high quality and pedestrian accessible transit stops*

▪ *Policy 1.9 The City shall work to make the pedestrian environment accessible to those with disabilities, children, and the elderly*

- *Strategy 1.9.1 Create an ADA Transition Plan*
- *Strategy 1.9.2 Retrofit street corners, crossings, and transit stops that do not meet current accessibility standards*

○ *Goal 2 - Establishing and Enhancing Safe Routes to School*

▪ *Policy 2.1 The City shall assist in the development of a Safe Routes to School program*

- *Strategy 2.1.1 Provide coordination between local organizations, schools, the community, parents, neighborhoods, and City departments*

Pedestrian Plan	Key Implementation Performance Metrics & Measures

- *Strategy 2.1.2 Implement citywide and school specific education and encouragement programs*
- *Strategy 2.1.3 Implement enforcement, operational, and engineering measures as feasible on identified routes*

▪ *Policy 2.2 The City shall develop and maintain maps that identify the most appropriate routes for children to walk to school*

- *Strategy 2.2.1 Obtain input and buy-in by individual school principals for the walking route maps*
- *Strategy 2.2.2 Provide maps to City schools for distribution*
- *Strategy 2.2.3 Review maps every five years and update if appropriate*

▪ *Policy 2.3 The City shall identify and fund programs and improvements that will make it safer and more attractive for students to walk to school*

- *Strategy 2.3.1 Identify and develop education and encouragement projects working with the school community through the Safe Routes to School program*
- *Strategy 2.3.2 Identify Capital Improvement Programs (CIPs), working with the school community through the Safe Routes to School program*
- *Strategy 2.3.3 Apply for Safe Routes to School state funding and other grants to construct and implement educational and encouragement programs and capital improvements*

○ *Goal 4 - Pedestrian Design Guide*

▪ *Policy 4.1 The City shall establish and maintain pedestrian design guidelines*

- *Strategy 4.1.1 Establish principles for good pedestrian design*
- *Strategy 4.1.2 Establish guidelines for sidewalk corridors*
- *Strategy 4.1.3 Establish guidelines for street corners*
- *Strategy 4.1.4 Establish guidelines for street crossings*
- *Strategy 4.1.5 Work with MTD to establish appropriate designs for transit stops*

○ *Goal 5 – Encouraging People to Walk*

▪ *Policy 5.1 The City shall encourage people to walk through education and awareness efforts*

- *Strategy 5.1.1 Conduct effective pedestrian awareness campaigns*
- *Strategy 5.1.2 Educate City residents in such a way as to enable a cultural shift that embraces the many benefits of walking*
- *Strategy 5.1.3 Promote and conduct walk to work and walk to school days*
- *Strategy 5.1.4 Develop media to educate motorists regarding pedestrian right-of-way*

Pedestrian Plan	Key Implementation Performance Metrics & Measures

- *Strategy 5.1.5 Coordinate with the health community, schools, and other organizations interested in promoting walking*

- *Policy 5.2 The City shall work to enforce laws that protect pedestrians*
  - *Strategy 5.2.1 Emphasize pedestrian right-of-way especially in High Pedestrian Use zones through a combination of signage and enhanced enforcement*
  - *Strategy 5.2.2 Conduct targeted enforcement of right-of-way violations that involved pedestrians, especially at crosswalks and on sidewalks*

- *Goal 6 – An Institutional Foundation That Supports the Pedestrian*
  - *Policy 6.1 The City shall incorporate the Pedestrian Master Plan into the land development process*
    - *Strategy 6.1.1 Use the Pedestrian Design Guide in the project approval process*
    - *Strategy 6.1.2 Consider connections between streets and pedestrian pathways in land development review*
    - *Strategy 6.1.3 Encourage land development patterns that increase walking, provide connectivity between buildings and sidewalks, and allow for short trips between multiple destinations*
  - *Policy 6.2 The City shall pursue revisions to the Zoning Ordinance that will help implement the Plan*
    - *Strategy 6.2.1 Incorporate proposed design and zoning changes into updates of the zoning ordinance*
    - *Strategy 6.2.2 Develop requirements and incentives for private property owners to provide pedestrian features into new projects*
  - *Policy 6.3 The City shall incorporate pedestrian projects into its Capital Improvement Program (CIP)*
    - *Strategy 6.3.1 The City shall draw on the Pedestrian Master Plan when selecting priority pedestrian projects*
    - *Strategy 6.3.2 The City shall monitor potential pedestrian projects*
  - *Policy 6.4 The City shall maximize the amount of financial resources available for pedestrian projects*
    - *Strategy 6.4.1 Develop and update a 20-year Financial Plan*
    - *Strategy 6.4.2 Apply for local, State, and Federal grants for major pedestrian projects*

Pedestrian Plan	Key Implementation Performance Metrics & Measures
San Francisco WalkFirst Pedestrian Safety Capital Improvement Program	• *In February 2014, WalkFirst [was] presented its recommendations for pedestrian safety capital improvements to the SFMTA Commission for approval and inclusion in the FY2014/15 capital improvement plan. The WalkFirst Investment Strategy will be making capital improvement recommendations each budget year to work towards the City's goal of reducing serious pedestrian related injuries and fatalities by 50% in 7 years.*
Pedestrian Master Plan	• *A number of recommendations are made for infrastructure projects that should be implemented on a broad citywide basis. These projects were divided into six major categories of improvements: Infill of Sidewalk Gaps, Americans with Disabilities (ADA) Improvements, Signalized Intersections, Uncontrolled Crosswalk Improvements, Signage Improvements, and Safe Routes to School. As part of the citywide improvement project descriptions, specific recommendations are made for prioritizing these improvements, so that the city can implement them in a logical manner based on the areas of greatest need first. ... Following the citywide project recommendations, fifteen (15) of the highest priority project locations are identified and shown with preliminary project improvement plans. These projects seek to improve specific intersections, corridors, or other locations that were identified through the existing conditions review, extensive public input, and the pedestrian needs analysis. Project implementation requires that all pedestrian projects and programs be implemented through Carlsbad's Capital Improvement Program process.* (page 52) • *This plan sets out an ambitious list of projects to be implemented over the next 20 years. The Pedestrian Master Plan and future updates should serve as a guide in the allocation of capital, maintenance, administrative, and matching funds. The Plan is also designed to provide staff and the public with flexibility as opportunities and needs arise. The Pedestrian Master Plan should be updated every five years as needed, to reflect changes in needs and conditions.* (page 92)

2.3 Infrastructure Strategies

Problem	Recommendation
Infill Of Sidewalk Gaps	• Areas without sidewalks may force pedestrians to walk along the edge of the roadway, or may cause pedestrians to cross at undesignated crossing locations. Infilling gaps will increase impervious area which is subject to National Pollutant Discharge Elimination System (NPDES) stormwater permit requirements. Drainage issues must be considered with new construction. • Include infill of sidewalk gaps in local Capital Improvement Plans (CIPs), with prioritization of pedestrian activity areas. Grant funding and private development are other implementation options.
ADA Improvements	• Install perpendicular curb ramps at all arterial/arterial intersections and then establish a schedule for constructing them where feasible. Curb ramps at arterial/collector intersections should be evaluated on a case-by-case basis when a city is undertaking construction, maintenance or repair projects that affect the public right of way. • Maintain an up-to-date ADA transition plan
Signage and Striping	• At intersections with a history of high vehicle/pedestrian conflicts (based on SWITRS data or the pedestrian exposure analysis), a city should consider: 1) installing Stop Lines three to five feet in advance of the crosswalks, to help position motorists back of the crosswalk when stopped; 2) install "Turning Traffic Must Yield to Pedestrians" (MUTCD R10-15) signage; and 3) if pedestrian conflicts appear to be related to right turn on red, consider a leading pedestrian interval and/or prohibiting a right-turn on red at that location. • Consider the adoption of a crosswalk policy that specifies conditions for the installation of uncontrolled crossings and provides guidance on the recommended treatments for local contexts, per Federal Highway Administration guidance
Signal Timing Adjustment	• Consider adjusting signal timing at arterial/arterial signals adjacent to senior centers locations adjacent to elementary schools to allow for a pedestrian walking speed of 2.8 to 3.5 feet per second. This slower walking speed is consistent with MUTCD recommendations for walking rates for slower pedestrians. Consideration of signal operation and signal coordination by the Department of Public Works traffic engineers and signal technicians is necessary for this recommendation.
Audible Signals	• Consider installing audible signals at all signalized intersections. Signalized intersections near the homes of people who are visually impaired, focusing on arterial/arterial installations, should be a first priority. Locations near senior centers should also be high priorities. A list of prioritized intersection locations for audible pedestrian signal installation should be developed.

Problem	Recommendation
Bulbouts	• As part of any major streetscape enhancement or overlay project, a city should conduct a feasibility study of installing bulbouts at selected locations along the corridor. Consider the feasibility of installing bulbouts at uncontrolled crosswalk locations on a case-by-case basis where appropriate.
Signage Improvements	• Continue to upgrade pedestrian warning signs and signs near schools and senior centers to fluorescent yellow-green signage.
Parking Restrictions	• Parking restrictions (red curb) should be installed one parking-stall length (20 to 24 feet) adjacent to both sides of all marked crosswalks. Disabled parking (blue curb) may also be suitable for such areas and should be considered where appropriate.
Speed Feedback Signs	• Expand program to install speed feedback signs on high priority corridors.
Safe Routes To School	• Continue to implement Safe Routes to School projects as part of an effort to improve pedestrian safety in school areas.

Source: Berkeley Pedestrian Master Plan

2.4 Needs Analysis (Safety)

For this PIPP there was *a countywide collision analysis*, using pedestrian-involved crash data in San Bernardino County from 2004 to 2013 (last 10 years available), obtained from the California Statewide Integrated Traffic Records System (SWITRS).

Overall Trends

Between 2004 and 2013, 213,088 traffic collisions were reported in San Bernardino County (averaging out to over 21,000 collisions per year, or about 58 per day). Of those collisions, 5,199 (2.4%) involved a pedestrian, which resulted in 477 pedestrians killed and 4,557 pedestrians injured over 10 years, which averages out to about one pedestrian killed and almost ten pedestrians injured *per week*. The total number of collisions steadily decreased between 2004 and 2013, with a slight increase between 2004 and 2005. At the same time, the number of pedestrian-involved collisions fluctuated over time, but pedestrian-involved collisions increasingly accounted for a larger percentage of total crashes over time. Figures 1 and 2 show trends in overall collisions and pedestrian-involved collisions between 2004 and 2013. Figure 3 shows the percentage of all collisions that involved a pedestrian.

Figure 1: Total Collisions, San Bernardino County 2004-2013

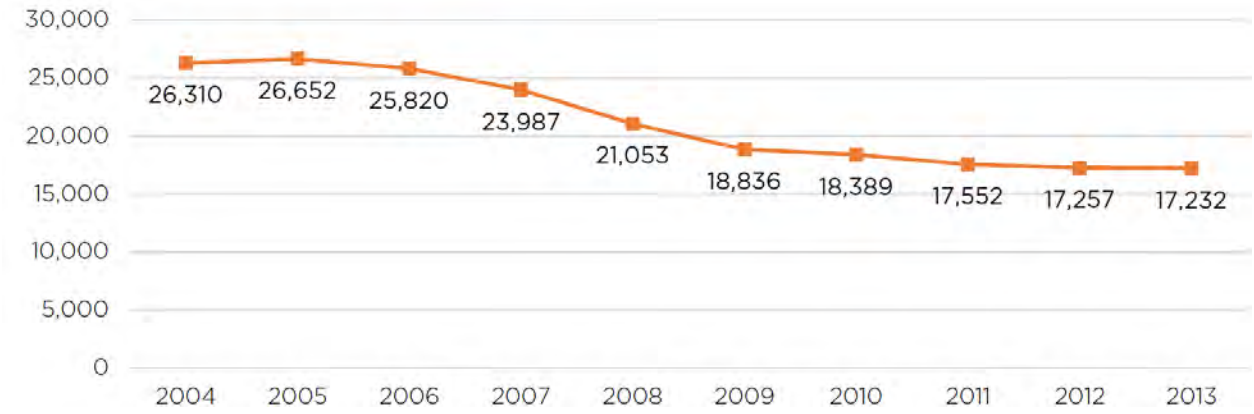


Figure 2: Pedestrian Involved Collisions, San Bernardino County 2004-2013

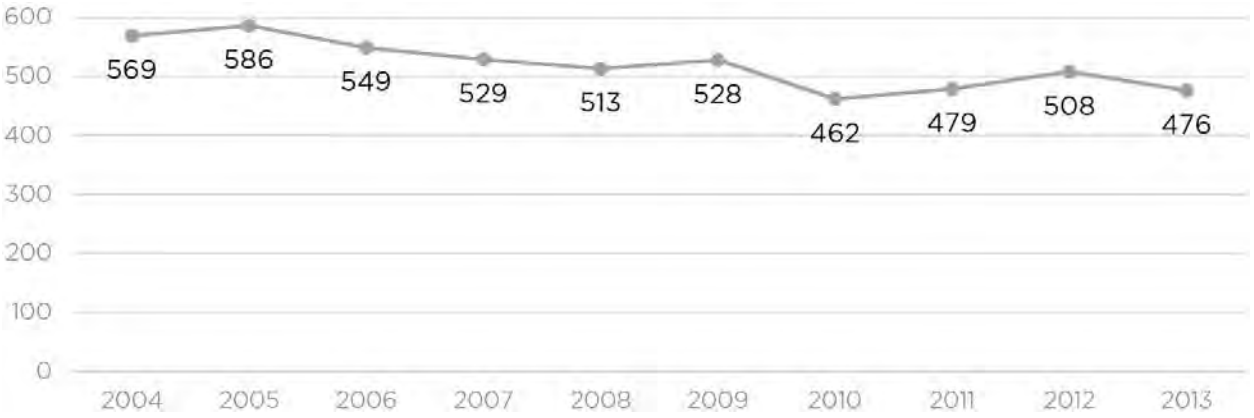
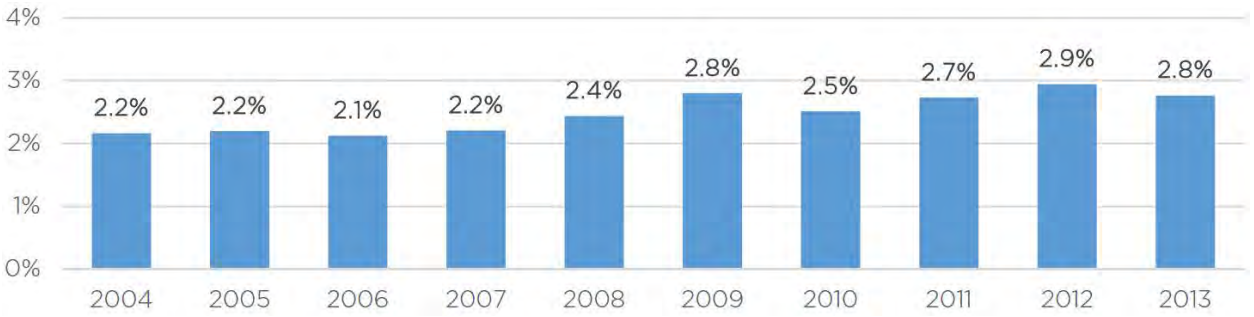
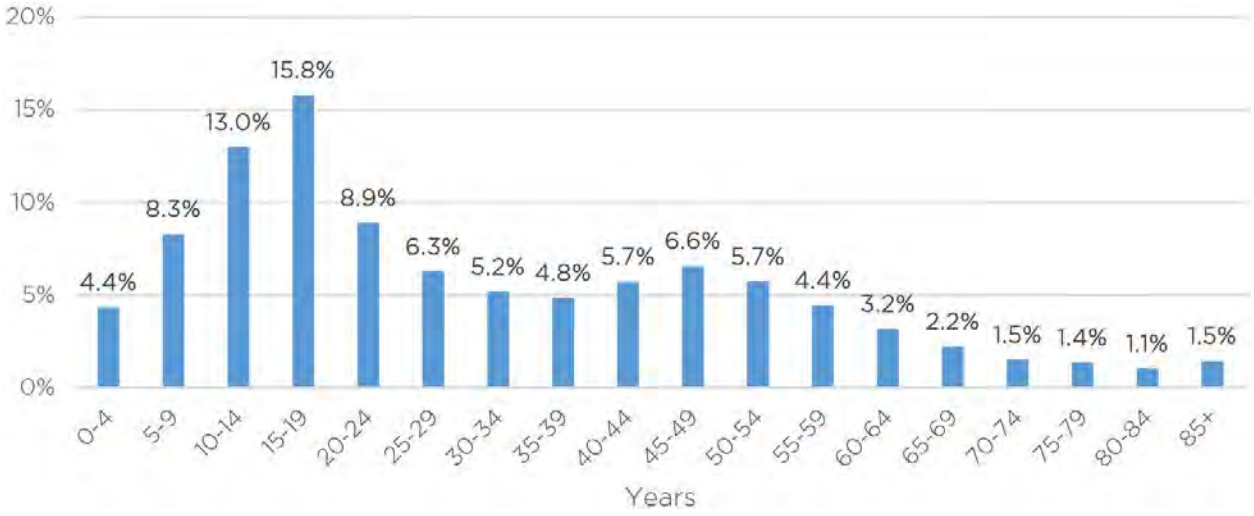


Figure 3: Percentage of Collisions Involving a Pedestrian, San Bernardino County 2004-2013



Youth and adolescents, ages 10-19 years old, experienced more collisions than any other age group. Although the higher number of collisions may be due to higher rates of walking among these age groups, the data is concerning because this population is limited in other transportation options. Additionally, travel habits developed at a young age influence travel behavior in later stages of life, so addressing safety issues to encourage walking for this age demographic can have long lasting effects. Figure 4 shows the age distribution of pedestrians involved in collisions between 2004 and 2013.

Figure 4: Age of Pedestrian Involved in Collision, San Bernardino County 2004-2013



Collision Types

The majority of pedestrian collisions involved a vehicle, accounting for 94.7% of pedestrian-involved collisions. The next most common types of collisions involving a pedestrian were sideswipe (one motor vehicle strikes the side of another with a glancing blow), broadside (one motor vehicle strikes another vehicle at an angle greater than that of a sideswipe), and rear end (two motor vehicles traveling in the same direction make direct contact). Table 1 shows the distribution of collision types as reported.

Table 1: Pedestrian Collision Types, San Bernardino County 2004-2013

Type of collision	# of pedestrian-involved collisions	% of total pedestrian-involved collisions
Head-On	145	2.8%
Sideswipe	181	3.5%
Rear End	174	3.3%
Broadside (Right-Angle)	184	3.5%
Hit Object	86	1.7%
Overturned	14	0.3%
Vehicle/Pedestrian	4,292	82.6%
Other	49	0.9%
Not Stated	74	1.4%

Collision Factors

Almost 93% of pedestrian-involved collisions were caused by a code violation. Besides pedestrians and other parties failing to follow traffic rules (pedestrian violation, pedestrian right of way), unsafe speed was the next most common cause for a collision. Collisions, however, can be the result of more than one cause or set of conditions. Table 2 shows the violation categories for pedestrian-involved collisions.

Table 2: Cited Violation for Pedestrian Collisions, San Bernardino County 2004-2013

Violation category	# of pedestrian-involved collisions	% of pedestrian-involved collisions
Driving or Bicycling Under the Influence of Alcohol or Drug	137	2.7%
Impeding Traffic	6	<1%
Unsafe Speed	373	7.3%
Following Too Closely	2	<1%
Wrong Side of Road	40	<1%
Improper Passing	18	<1%
Unsafe Lane Change	14	<1%
Improper Turning	265	5.2%
Automobile Right of Way	90	1.8%
Pedestrian Right of Way	1,063	20.8%
Pedestrian Violation	2,309	45.2%
Traffic Signals and Signs	109	2.1%
Hazardous Parking	12	<1%
Lights	1	<1%
Brakes	2	<1%
Other Equipment	8	<1%
Other Hazardous Violation	56	1.1%
Other Than Driver (or Pedestrian)	74	1.4%
Unsafe Starting or Backing	134	2.6%
Other Improper Driving	37	<1%
Pedestrian or "Other" Under the Influence of Alcohol or Drug	0	0%
Fell Asleep	2	<1%
Unknown	228	4.5%
Not Stated	126	2.5%

Looking at movements leading up to the collision helps to better understand the situation and identify ways to prevent future collisions. In vehicle-pedestrian collisions, both the driver and pedestrian were most commonly proceeding straight prior to the collision. The next most common movement for drivers was making a left or right turn. Table 3 shows movements preceding vehicle-pedestrian collisions.

Table 3: Vehicle Movement Prior to Pedestrian Collision, San Bernardino County 2004-2013

Movement preceding collision	Driver	Pedestrian
Stopped	2.5%	2.1%
Proceeding Straight	64.4%	36.6%
Ran Off Road	>1%	0%
Making Right Turn	10.3%	<1%
Making Left Turn	11.9%	<1%
Making U-Turn	>1%	0%
Backing	2.7%	<1%
Slowing/Stopping	1.3%	<1%
Passing Other Vehicle	>1%	0%
Changing Lanes	>1%	<1%
Parking Maneuver	>1%	0%
Entering Traffic	1.4%	6.4%
Other Unsafe Turning	1.2%	0%
Crossed Into Opposing Lane	>1%	<1%
Parked	>1%	<1%
Merging	0%	0%
Traveling Wrong Way	>1%	<1%
Other	>1%	22.1%
Not Stated	1.2%	31.0%

The pedestrian was most commonly crossing not in a crosswalk when the collision occurred, followed by crossing in a crosswalk at an intersection. Table 4 shows the distribution of pedestrian actions during collisions.

Table 4: Pedestrian Action Prior to Pedestrian Collision, San Bernardino County 2004-2013

Pedestrian Action	# of collisions	% of collisions
Crossing in Crosswalk at Intersection	1,458	28.0%
Crossing in Crosswalk Not at Intersection	75	1.4%

Pedestrian Action	# of collisions	% of collisions
Crossing Not in Crosswalk	1,851	35.6%
In Road, Including Shoulder	1,422	27.4%
Not in Road	320	6.2%
Approaching/Leaving School Bus	8	<1%
Not Stated	65	1.3%

Collision Location

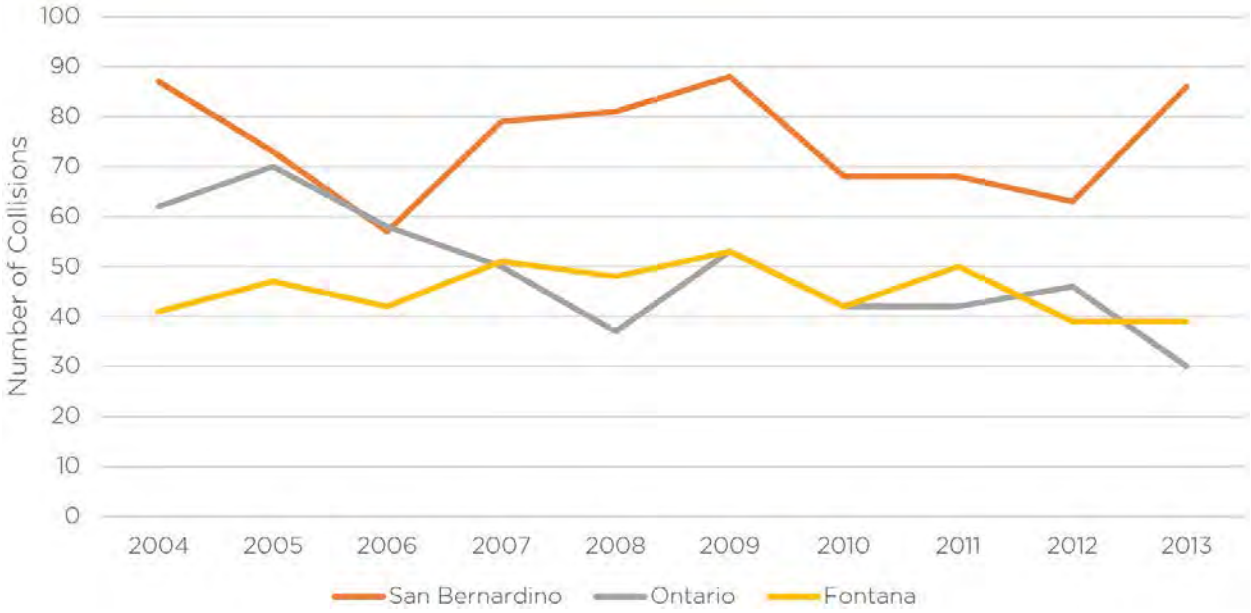
Pedestrian collisions were concentrated in the southwest corner of the county, most notably in the cities of San Bernardino, Ontario, and Fontana; each of these cities experienced over 9% of the county's collisions. The unincorporated areas combined experienced over 14% of the county's collisions. Table 5 shows the distribution of pedestrian-involved collisions by city/jurisdiction. Figure 5 shows trends of pedestrian-involved collisions in San Bernardino, Ontario, and Fontana. Between 2006 and 2009, the city of San Bernardino saw an increase in pedestrian collisions, and the numbers from 2012 and 2013 indicate the start of another upward trend. Ontario and Fontana have continued to increase or remain stable over time, but have relatively higher collision numbers than other cities in the county.

Table 5: Pedestrian Collision Location by City, San Bernardino County 2004-2013

City	# of pedestrian-involved collisions	% of total pedestrian-involved collisions
Adalanto	25	<1%
Apple Valley	123	2.4%
Arrowhead (unincorporated)	140	2.7%
Barstow	74	1.4%
Barstow (unincorporated)	70	1.3%
Big Bear Lake	25	<1%
Cajon (unincorporated)	402	7.7%
Chino	150	2.9%
Chino Hills	70	1.3%
Colton	121	2.3%
Fontana	452	8.7%
Grand Terrace	10	<1%
Hesperia	159	3.1%
Highland	100	2.0%

City	# of pedestrian-involved collisions	% of total pedestrian-involved collisions
Loma Linda	42	<1%
Mojave (unincorporated)	1	<1%
Montclair	153	3.1%
Morongo Basin (unincorporated)	56	1.1%
Needles	9	<1%
Needles (unincorporated)	11	<1%
Ontario	490	9.9%
Rancho Cucamonga	245	5.0%
Rancho Cucamonga (unincorporated)	109	2.2%
Redlands	229	4.6%
Rialto	325	6.6%
San Bernardino	750	15.2%
Twentynine Palms	55	1.1%
Upland	191	3.9%
Victorville	283	5.7%
Victorville (unincorporated)	70	1.4%
Yucaipa	85	1.7%
Yucca Valley	52	1.1%

Figure 5: Pedestrian Involved Collisions, Cities of San Bernardino, Ontario, and Fontana, 2004-2013



Additionally, some cities have had an upward trend in pedestrian collisions over the last five years (2009-2013), shown in Figure 6. Table 6 shows the number of pedestrian collisions in each city by year.

Figure 6: Pedestrian Involved Collisions, Cities of Chino, Montclair, Redlands, San Bernardino, Upland, Hesperia, Victorville (unincorporated), and Cajon (unincorporated), 2004-2013

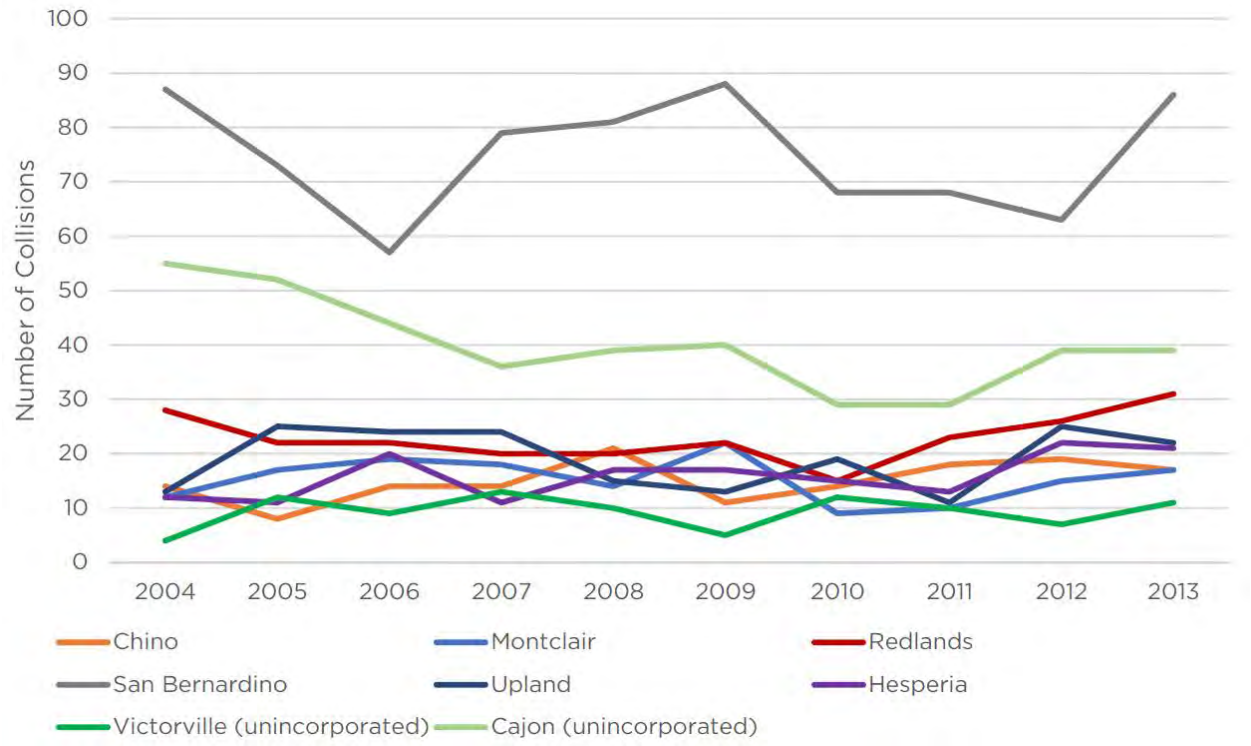


Table 6: Pedestrian Collisions by City, San Bernardino County 2004-2013

City	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Adalanto	1	4	3	1	2	3	3	3	0	5
Apple Valley	24	6	14	11	11	15	12	15	9	6
Arrowhead (unincorporated)	16	15	13	14	22	14	13	12	14	7
Barstow	5	7	15	6	6	9	7	8	6	5
Barstow (unincorporated)	7	10	4	15	4	5	6	6	3	8
Big Bear Lake	1	5	1	5	3	3	2	1	3	1
Cajon (unincorporated)	55	52	44	36	39	40	29	29	39	39
Chino	14	8	14	14	21	11	14	18	19	17
Chino Hills	5	5	4	4	9	6	5	10	15	7
Colton	5	24	11	9	6	12	16	12	15	11
Fontana	41	47	42	51	48	53	42	50	39	39

City	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Grand Terrace	1	2	2	1	2	1	0	1	0	0
Hesperia	12	11	20	11	17	17	15	13	22	21
Highland	12	11	9	10	10	12	7	10	8	11
Loma Linda	5	3	5	4	5	5	7	2	4	2
Mojave (unincorporated)	0	0	0	1	0	0	0	0	0	0
Montclair	12	17	19	18	14	22	9	10	15	17
Morongo Basin (unincorporated)	4	5	11	6	10	5	3	2	7	4
Needles	1	1	1	1	1	2	0	0	2	0
Needles (unincorporated)	2	3	2	0	1	0	3	0	1	0
Ontario	62	70	58	50	37	53	42	42	46	30
Rancho Cucamonga	25	25	32	31	15	25	17	26	25	24
Rancho Cucamonga (unincorporated)	42	29	20	16	20	17	21	16	16	9
Redlands	28	22	22	20	20	22	15	23	26	31
Rialto	47	43	35	37	24	32	26	19	33	29
San Bernardino	87	73	57	79	81	88	68	68	63	86
Twentynine Palms	9	6	6	4	6	4	6	4	7	3
Upland	13	25	24	24	15	13	19	11	25	22
Victorville	22	28	36	25	35	25	30	39	25	18
Victorville (unincorporated)	2	12	9	13	10	5	12	10	7	11
Yucaipa	6	10	9	8	11	6	6	11	11	7
Yucca Valley	1	7	7	4	8	3	5	8	3	6

When looking at the distribution of pedestrian fatalities and injuries, the Cajon unincorporated area, city of San Bernardino, the Rancho Cucamonga unincorporated area, and cities of Ontario, Victorville, Rialto, and Apple Valley raise concerns as they experience a larger burden of pedestrian fatalities in the county. Table 7 shows the distribution of pedestrian fatalities and injuries by city.

Table 7: Percentage of Pedestrian Fatalities and Injuries by City, San Bernardino County 2004-2013

City	% of countywide pedestrian fatalities	% of countywide pedestrian injuries
Adalanto	>1%	<1%
Apple Valley	5.2%	1.5%
Arrowhead (unincorporated)	>1%	3.3%
Barstow	1.7%	1.3%
Barstow (unincorporated)	3.6%	1.2%
Big Bear Lake	>1%	<1%
Cajon (unincorporated)	14.5%	7.9%
Chino	1.0%	3.2%
Chino Hills	1.0%	1.3%
Colton	1.2%	2.7%
Fontana	4.8%	8.5%
Grand Terrace	0%	<1%
Hesperia	4.4%	2.5%
Highland	1.9%	1.8%
Loma Linda	>1%	<1%
Mojave (unincorporated)	0%	<1%
Montclair	1.7%	3.3%
Morongo Basin (unincorporated)	2.7%	<1%
Needles	0%	<1%
Needles (unincorporated)	>1%	<1%
Ontario	6.1%	10.4%
Rancho Cucamonga	4.6%	4.2%
Rancho Cucamonga (unincorporated)	8.4%	4.1%
Redlands	1.9%	4.7%
Rialto	5.2%	6.7%
San Bernardino	9.4%	15.2%
Twentynine Palms	2.3%	<1%
Upland	1.9%	4.1%
Victorville	6.1%	4.5%
Victorville (unincorporated)	5.0%	1.6%

City	% of countywide pedestrian fatalities	% of countywide pedestrian injuries
Yucaipa	>1%	1.6%
Yucca Valley	2.5%	<1%

In most cities, the majority of collisions occurred on non-state highways. However, in the Arrowhead unincorporated area, and the cities of Big Bear Lake and Yucca Valley, almost half of the collisions occurred on a state highway; in the unincorporated areas of Barstow, Needles, and Morongo Basin, at least half of the collisions occurred on a state highway. Table 8 shows the location type where collisions occurred. For comparison, in the entire county, 11.1% of pedestrian collisions occurred on a state highway, 1% occurred at an intersection, 2.2% occurred on a ramp or collector road, and 85.7% occurred on a non-state highway.

Table 8: Location of Pedestrian Collisions by City, San Bernardino County 2004-2013

City	State Highway	Intersection	Ramp or Collector	Non-state highway
Adalanto	12.0%	0%	0%	88%
Apple Valley	18.7%	2.4%	0%	78.9%
Arrowhead (unincorporated)	45.0%	7.1%	0%	47.9%
Barstow	1.4%	1.4%	0%	97.3%
Barstow (unincorporated)	64.3%	0%	1.4%	34.3%
Big Bear Lake	48.0%	0%	0%	52%
Cajon (unincorporated)	32.1%	0.5%	9.7%	57.7%
Chino	0%	0%	3.3%	96.7%
Chino Hills	1.4%	0%	0%	98.6%
Colton	0%	0%	0.8%	99.2%
Fontana	0.9%	0.4%	0.4%	98.2%
Grand Terrace	0%	0%	0%	100%
Highland	0%	0%	0%	100%
Hesperia	0.6%	0.6%	0%	98.7%
Loma Linda	0%	0%	0%	100%
Mojave (unincorporated)	0%	0%	0%	100%
Montclair	0%	0%	4.6%	95.4%
Needles	0%	0%	0%	100%
Needles (unincorporated)	83.3%	0%	0%	16.7%
Ontario	6.5%	1.2%	1.6%	90.6%

City	State Highway	Intersection	Ramp or Collector	Non-state highway
Redlands	4.4%	2.2%	0.9%	92.6%
Rialto	9.2%	1.5%	0%	89.2%
Rancho Cucamonga	0.4%	0%	1.2%	98.4%
Rancho Cucamonga (unincorporated)	31.6%	0%	14.6%	53.9%
San Bernardino	0.5%	0%	0.7%	98.8%
Twentynine Palms	40.0%	3.6%	0%	56.4%
Upland	8.4%	1%	0%	90.6%
Victorville	7.4%	0.4%	2.5%	89.8%
Victorville (unincorporated)	33.3%	1.1%	4.3%	61.3%
Yucaipa	0%	0%	0%	100%
Yucca Valley	46.2%	9.6%	0%	44.2%

Conclusion

This analysis identifies geographic locations and location types where pedestrians could benefit from safety improvements in San Bernardino County. More in-depth analysis within smaller geographic areas or topics of interest can help to identify specific treatments and strategies for implementation.

2.5 Bicycle and Pedestrian Counting Strategy

For this PIPP *a data collection strategy was tailored to the SCAG Bike Count Data Clearinghouse framework*. The strategy is based on the experience gained from over 10 years of developing and administering the National Bicycle and Pedestrian Documentation (NBPD) Project, while the SCAG Bike Count Data Clearinghouse framework builds on the NBPD and Federal Highway Administration (FHWA) Traffic Monitoring Guide methods. The SCAG Bike Count Data Clearinghouse is an interactive web portal that compiles existing non-motorized count data and makes it available for download – note that the framework is still a work in progress as of the writing of this memo, and its structure and requirements are subject to change.

There is no “one size fits all” strategy for collecting pedestrian volume data; data collection approaches must be tailored to fit local needs and the intended final application(s) of the data. According to the bicycle data collection literature review from the SCAG Bike Count Data Clearinghouse project, limited U.S. research exists to guide important elements of program development, such as establishing appropriate numbers, locations, and durations of counts; as a result, these decisions are currently driven primarily by budgetary constraints. The same likely holds true for pedestrian data collection.

According to the National Cooperative Highway Research Program (NCHRP) Report 797: *Guidebook on Pedestrian and Bicycle Volume Data Collection*, planning a count program typically involves the following steps:

- Specifying the general data collection purpose,
- Identifying data collection resources,
- Selecting count locations and determining the count timeframe, and
- Considering available counting methods.

Data Collection Purpose

The data collection purpose is generally to provide local jurisdiction staff with information that can then be used to inform decisions about how to plan for future projects and where to invest resources to further enhance pedestrian infrastructure and programs throughout San Bernardino County.

Furthermore, according to SCAG's *Conducting Bicycle and Pedestrian Counts: A Manual for Jurisdictions in Los Angeles County and Beyond*, pedestrian counts can be conducted in order to:

- Determine existing travel patterns and demand;
- Identify corridors where current use and potential for increased use is high;
- Track trends over time;
- Evaluate the effectiveness of programs and/or facilities to promote walking (e.g., before and after studies);
- Improve pedestrian safety and evaluate the impact of different design treatments on collision rates;
- Identify locations for pedestrian facility improvements and design appropriate treatments;
- Measure demographic changes as facilities that increase user comfort and attract a wider range of pedestrians are developed;
- Assess future pedestrian travel demand; and
- Prioritize pedestrian improvement projects.

It is important to note, however, that pedestrian counts are not meant to measure the exact number of people who walk in a jurisdiction, nor are they intended to determine the proportion of all trips made on foot. Given that counts typically occur once a year and over a one day period, they are more useful in providing a "snapshot" that enables the identification of basic trends in pedestrian travel over time. Identifying the exact number of pedestrians in any given jurisdiction can be better accomplished through a combination of U.S. Census data, National Household Travel Survey (NHTS) data, or a statistically representative survey of residents and visitors. These additional sets of data also can validate local count efforts and/or provide a more complete understanding of pedestrian volumes. Still, local annual pedestrian counts are critical for understanding dynamics at specific locations, which inform future network safety improvements or other enhancements.

Data Collection Resources (Clearinghouse)

Local jurisdictions often conduct or have control over existing motor vehicle count efforts. These efforts include regular monitoring and traffic impact analyses. The easiest way to obtain pedestrian count data may be to leverage these existing efforts. If leveraging existing vehicle count efforts does not serve a jurisdiction's needs, SCAG's *Conducting Bicycle and Pedestrian Counts: A Manual for Jurisdictions in Los*

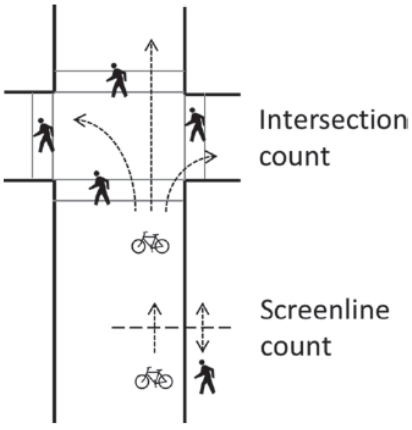
Angeles County and Beyond, provides a primer on conducting pedestrian counts as a separate effort; the extent of the effort depends on the budget and/or the availability of in-house staff.

Agencies and jurisdictions can upload count data to the SCAG Bike Count Data Clearinghouse, located at bikecounts.luskin.ucla.edu (see Figure 1 for a screenshot of the View Count Data map showing counts in Loma Linda and San Bernardino as of December 2015). The Clearinghouse provides a single central location for the uploading, viewing, and downloading of bicycle count data. Agencies submit their data directly via an upload interface. By collecting many agencies' bicycle count data in one place, the Clearinghouse creates a large regionwide data set, enabling more in-depth analysis of bicycle travel behavior and bicycle volumes. The SCAG Bike County Data Clearinghouse was designed exclusively for bicycle count data due to practical limitations, yet pedestrian data may be incorporated into the Clearinghouse in the future.

Traffic counts are conducted one of four ways: screenline, intersection turning movements, occupancy, and on-off counts. Screenline and intersection turning movement counts produce volumes data most suitable for the tracking of general use trends and travel behavior– see diagram on the right for explanation of screenline vs. intersection counts.

The Bike Count Data Clearinghouse only includes screenline and intersection counts. The upload of screenline count data is relatively straightforward, whereas uploading intersection count data requires advance planning and calculations. It is therefore strongly recommended that jurisdictions in the SBCTA region adopt the screenline count methodology from *Conducting Bicycle and Pedestrian Counts: A Manual for Jurisdictions in Los Angeles County and Beyond*.

The SCAG Bike County Data Clearinghouse website contains a sequence of screens/prompts that facilitate the entering and uploading of bicycle and pedestrian count data. They are as follows (also shown in Figure 2), with notes on special circumstances:



- Add to an Existing Data Set or Create a New Data Set. Users create named data sets for each batch of counts they are uploading. This enables users to remember distinct count efforts, and to save their progress when they have partially completed the data entry, and resume where they left off later.
- Add Locations: Users select the location at which counts were conducted. Users may select an existing count location as shown on a map, or they may create a new location.
- Add Count Periods and Count Volumes. For each location, the user will then enter the times and dates during which that location was counted, and the volumes by 15-minute increment. For turning movement counts and intersection counts, agencies will need to sum the relevant movements in order to enter them as screenline volumes. Turning movement counts will need to be summed according to the following formula shown in the diagram.

Figure 1: SCAG Bike Count Data Clearinghouse, View Count Data Map Screenshot

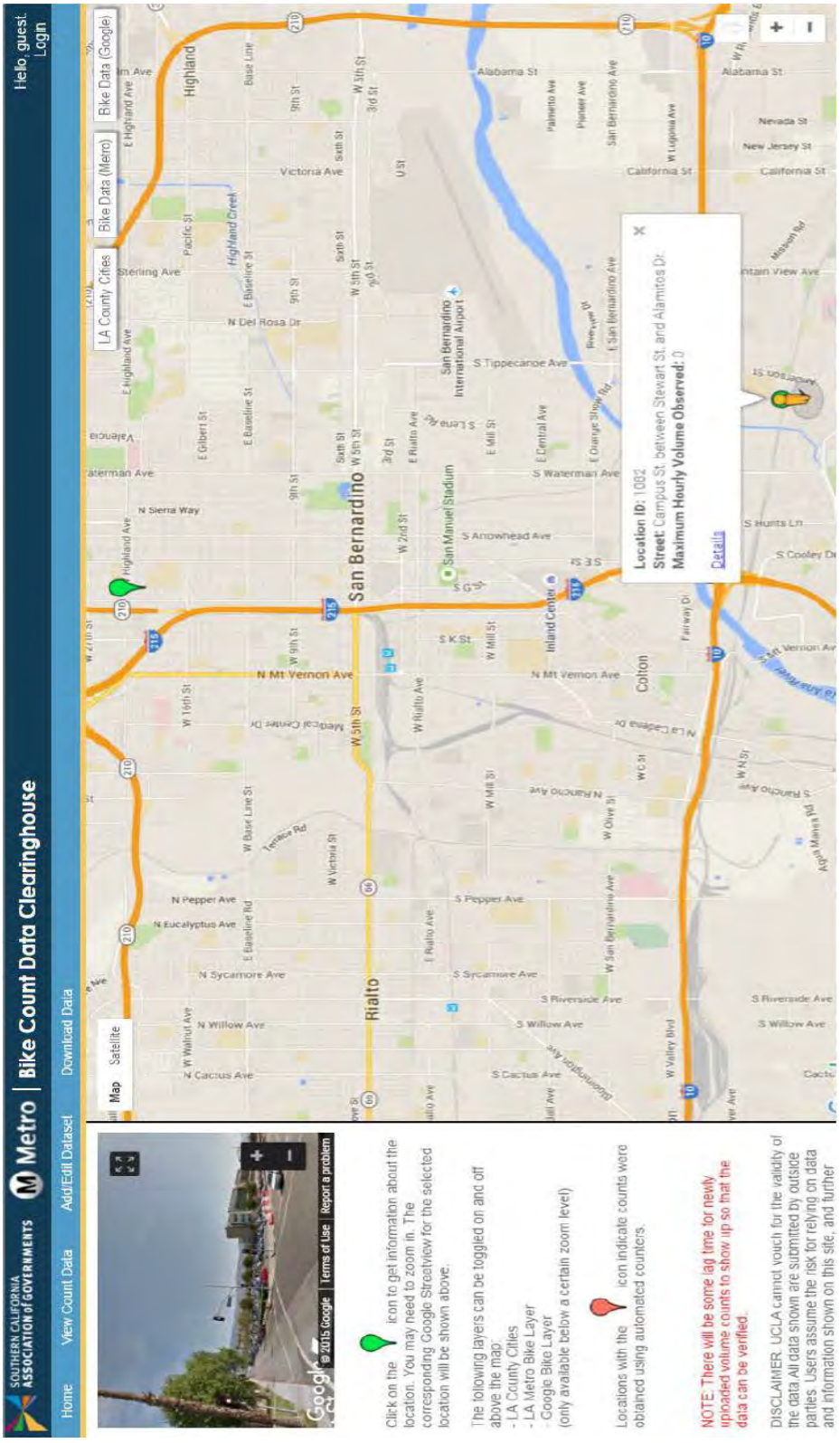
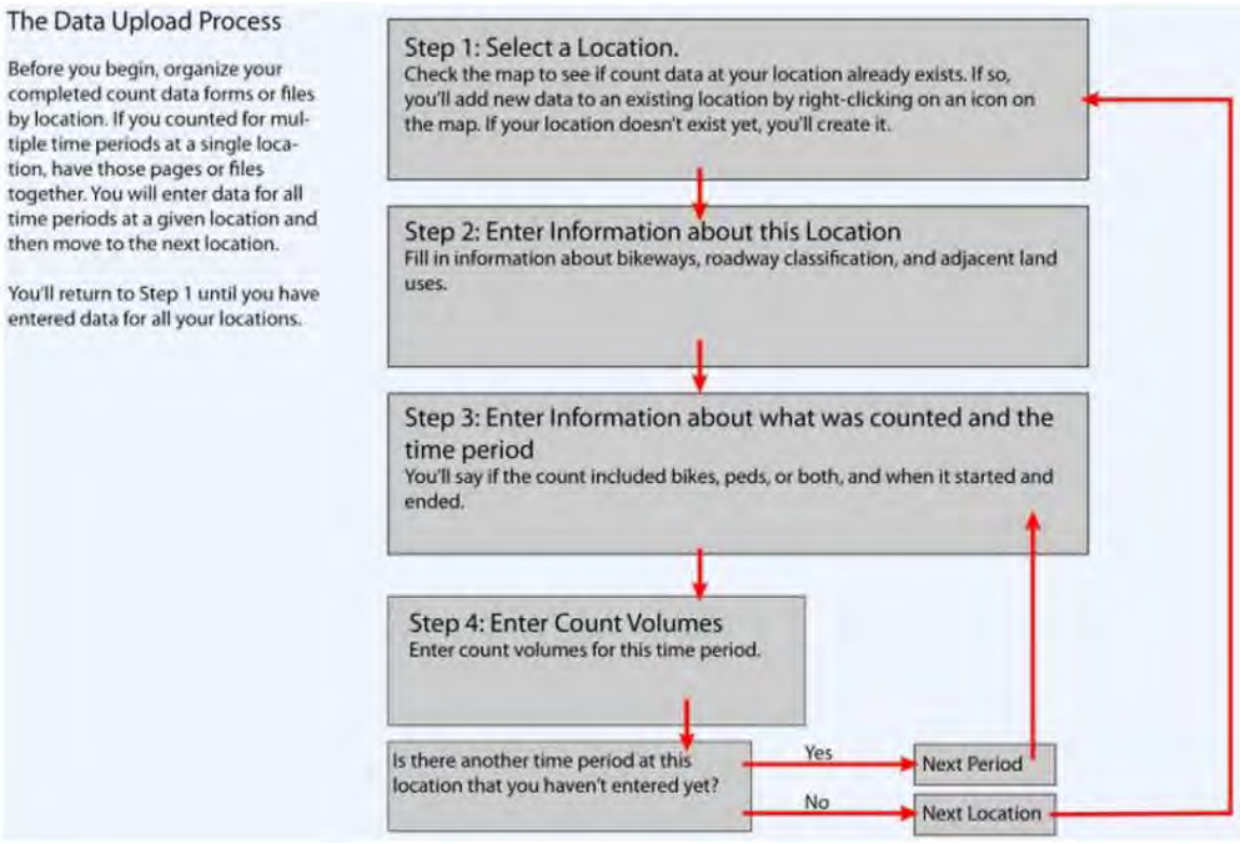


Figure 2: SCAG Bike Count Data Clearinghouse, Data Upload Process



The SCAG Bike Count Data Clearinghouse framework may provide new/revised definitions of data requirements, potentially including:

- Count locations – SCAG may request specific types of locations to have a systematic sample from which to extrapolate;
- Duration – # of hours, days, weeks, etc., important for extrapolation;
- Technology – automated vs. manual;
- Time period for before and after counts – immediately after, 1 year after, etc.;
- Data delivery – what interval and duration will SCAG want them stored at, which may not matter as much if SCAG maintains raw data.

Count Locations and Timeframe (Methodology)

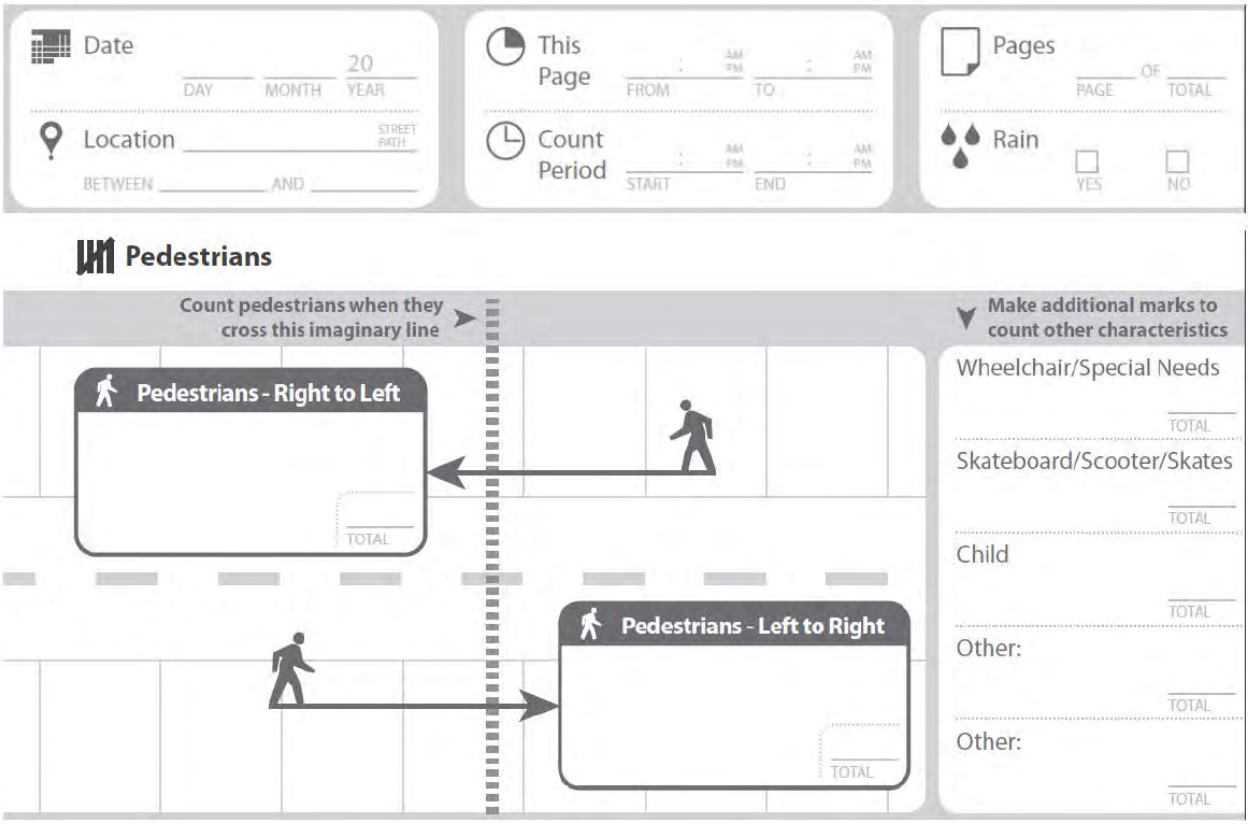
The decision of where to count can be determined by one or more of the following:

- Destinations that attract pedestrians: Schools, downtown, major retail or employment areas, high density residential areas, civic uses, and major transit stations or stops are some examples;
- Public facilities for non-motorized travel: trails, pedestrian and bicycle bridges;
- Specific locations where there is already a history of non-motorized counts, collisions involving pedestrians, or planned facilities for non-motorized travel;

- Locations where new pedestrian facilities are planned, so that before and after counts may be conducted;
- If resources are limited, focus on locations where you expect to observe high pedestrian volumes.

For each intersection to be counted, a "screenline" is drawn at or near selected legs of the intersection. Pedestrians are then counted as they crossed the screenline in either direction throughout a two-hour count period. This method is illustrated in the screenline count form template from *Conducting Bicycle and Pedestrian Counts: A Manual for Jurisdictions in Los Angeles County and Beyond* (Figure 3).

Figure 3: Pedestrian Data Collection Screenline Count Form



For manual data collection, the following count periods are suggested:

1. Suggested duration at each location
    a. Three (3) consecutive counts from 7:00 AM to 9:00 AM on weekdays;
    b. Three (3) consecutive counts from 4:00 PM to 6:00 PM on weekdays;
    c. One (1) from 11:00 AM to 1:00 PM on a non-holiday weekend;
    d. Additional off-peak counts, as needed
2. Minimum duration at each location
    a. Two (2) count periods from 7:00 AM to 9:00 AM on weekdays;
    b. Two (2) count periods from 4:00 PM to 6:00 PM on weekdays;

c. One (1) count period from 11:00 AM to 1:00 PM on a non-holiday weekend

September is generally the preferred month for bicycle and pedestrian counts; counting in September helps to reduce variation in travel patterns due to summer vacations and weather amenable to walking. Counting in the middle of the week (Tuesday, Wednesday, Thursday) helps to eliminate variation of commute patterns due to extended weekends or holidays.

Counts are best collected on a regular basis in order to determine trends in walking activity. The following guidelines provide count frequency suggestions:

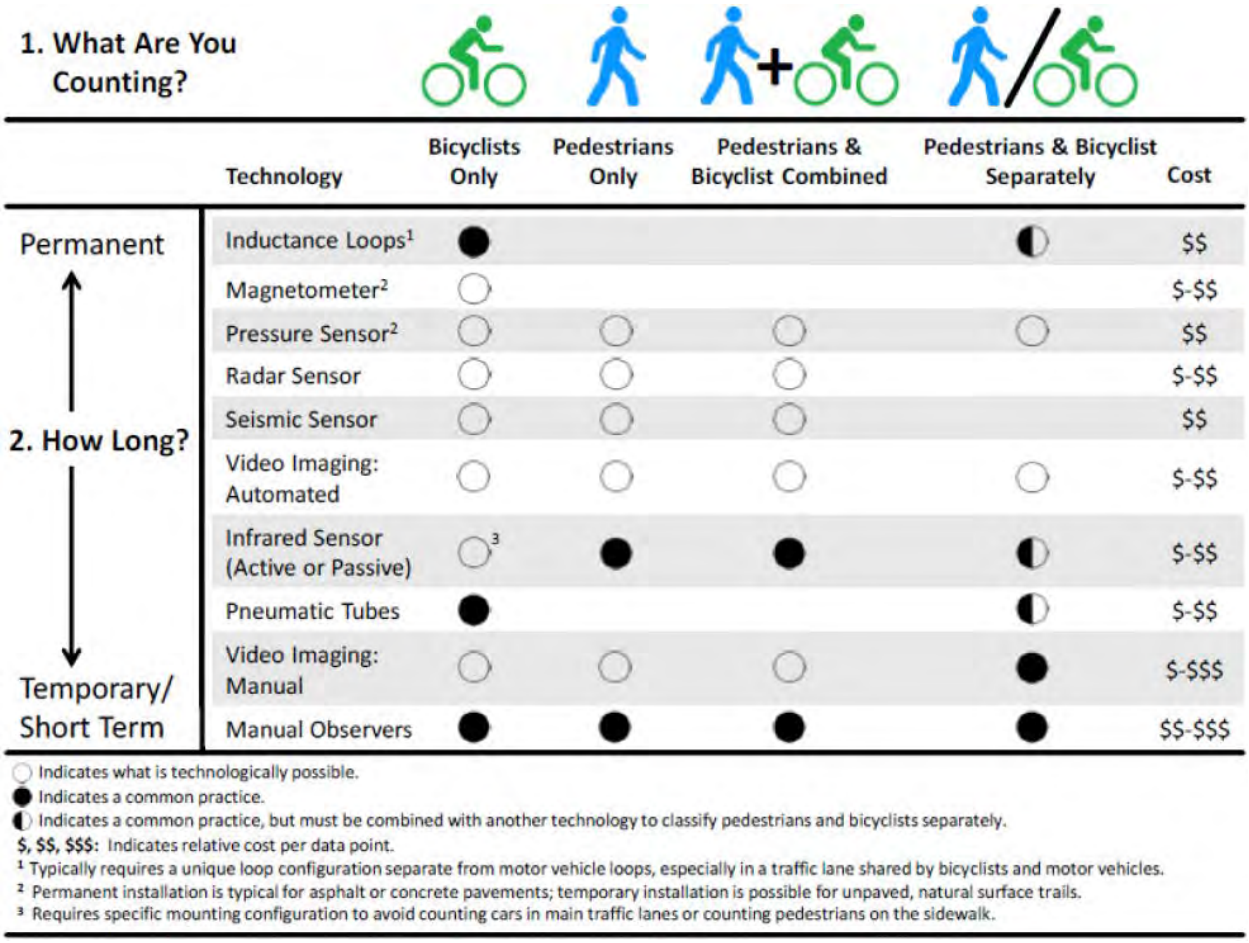
1. Suggested frequency
    a. Quarterly counts (September, January, May, and July), while requiring a greater effort, can provide valuable information about trends throughout the year;
    b. Ideally, schedule counts to correspond with the dates suggested by the NBPD project, which facilitates collection of consistent data nationwide (http://bikepeddocumentation.org/);
    c. Counts should be conducted during the same month each year, avoiding vacation/holiday periods, except when counting popular tourist routes
2. Minimum frequency
    a. Once per year, ideally on the mid-September date suggested by the NBPD project;
    b. Jurisdictions with fewer counting resources may count every other year

Given that many agencies' resources are limited, it is important to note that some count data is better than none at all.

Available Counting Methods

Methods and technologies for pedestrian counts overlap with bicycle count methods and technologies. Commercially available counters use a variety of technologies and features that can vary dramatically and affect how, what, where, and how long counts are collected. Cost per data point can also vary greatly between counters. Figure 4 presents a simplified flowchart from FHWA that can help to narrow possible choices based on the two most important aspects of data collection.

Figure 4: Flowchart for Selecting Non-Motorized Count Equipment



Based on budget and commercial availability, a final decision can be more easily made about technology to be deployed. Table 1 provides additional technology information for counting bicyclists and pedestrians, various attributes of each technology, and their strengths and weaknesses.

Table 1: Commercially-Available Pedestrian Counting Technologies

Technology	Typical Application	Strengths	Weaknesses
Pressure sensor/pressure mats	Permanent counts Typically unpaved trails or paths	Some equipment may be able to distinguish bicyclists and pedestrians	Expensive/disruptive for installation under asphalt or concrete pavement
Seismic sensor	Short-term counts on unpaved trails	Equipment is hidden from view	Commercially-available, off-the-shelf products for counting are limited
Radar sensor	Short-term or permanent counts Bicyclists and pedestrians combined	Capable of counting bicyclists in dedicated bike lanes or bikeways	Commercially-available, off-the-shelf products for counting are limited
Video Imaging – Automated	Short-term or permanent counts Bicyclists and pedestrians separately	Potential accuracy in dense, high-traffic areas	Typically more expensive for exclusive installations Algorithm development still maturing
Infrared – Active	Short-term or permanent counts Bicyclists and pedestrians combined	Relatively portable Low profile, unobtrusive appearance	Cannot distinguish between bicyclists and pedestrians unless combined with another bicycle detection technology Very difficult to use for bike lanes and shared lanes May have higher error with groups
Infrared – Passive	Short-term or permanent counts Bicyclists and pedestrians combined	Very portable with easy setup Low profile, unobtrusive appearance	Cannot distinguish between bicyclists and pedestrians unless combined with another bicycle detector Difficult to use for bike lanes and shared lanes, requires careful site selection and configuration May have higher error when ambient air temperature approaches body temperature range May have higher error with groups Direct sunlight on sensor may create false counts
Video Imaging – Manual Reduction	Short-term counts Bicyclists and pedestrians separately	Can be lower cost when existing video cameras are already installed	Limited to short-term use Manual video reduction is labor-intensive
Manual Observer	Short-term counts Bicyclists and pedestrians separately	Very portable Can be used for automated equipment validation	Expensive and possibly inaccurate for longer duration counts

2.6 Cost Estimation

The Fehr & Peers consultant team created at calibrated spreadsheet-based standardized cost estimation tool that can be used to estimate the costs of pedestrian (and bicycle) infrastructure. This spreadsheet has a user friendly input interface, cost estimation engine, cost reporting feature, and can be further updated to include unit costs reflecting SANBAG and member agency unit cost rates that may change over time. The primary use of this tool is by local jurisdictions during the development and review of active transportation plans, bicycle master plans, pedestrian master plans, and specific plans. The tool can also be used in a sketch-planning capacity to provide conceptual cost estimates for a given bicycle and/or pedestrian project.

Tool Overview

The Tool is a Microsoft-Excel based tool that allows for user input regarding project details. Based on bicycle and/or pedestrian facility type, mileage, number and type of intersection, and design elements, a cost is automatically calculated. The Tool is organized into three tabs in Excel:

Cost Calculator: This is the primary area of user input. This is where users should enter the basic information such as project description, segment information, mileage, number and type of intersections, and design elements. Cost per segment and per project is calculated on-the-fly in this tab as inputs are entered and adjusted.

Report: This is the primary output of the tool. The Report Tab automatically saves all information entered on the Cost Calculator and reflects all data stored in the database. This can be used as a comprehensive project list for Active Transportation Plans. Each project and segment is listed as a row.

Cost Assumptions: This allows for direct input of assumptions of soft costs, unit costs, and design parameters for each of the design elements and is used to calculate project costs. This is organized into four areas: (1) Assumptions & Soft Costs, (2) Unit Costs, (3) Composite Unit Costs, and (4) Corridor Unit Costs.

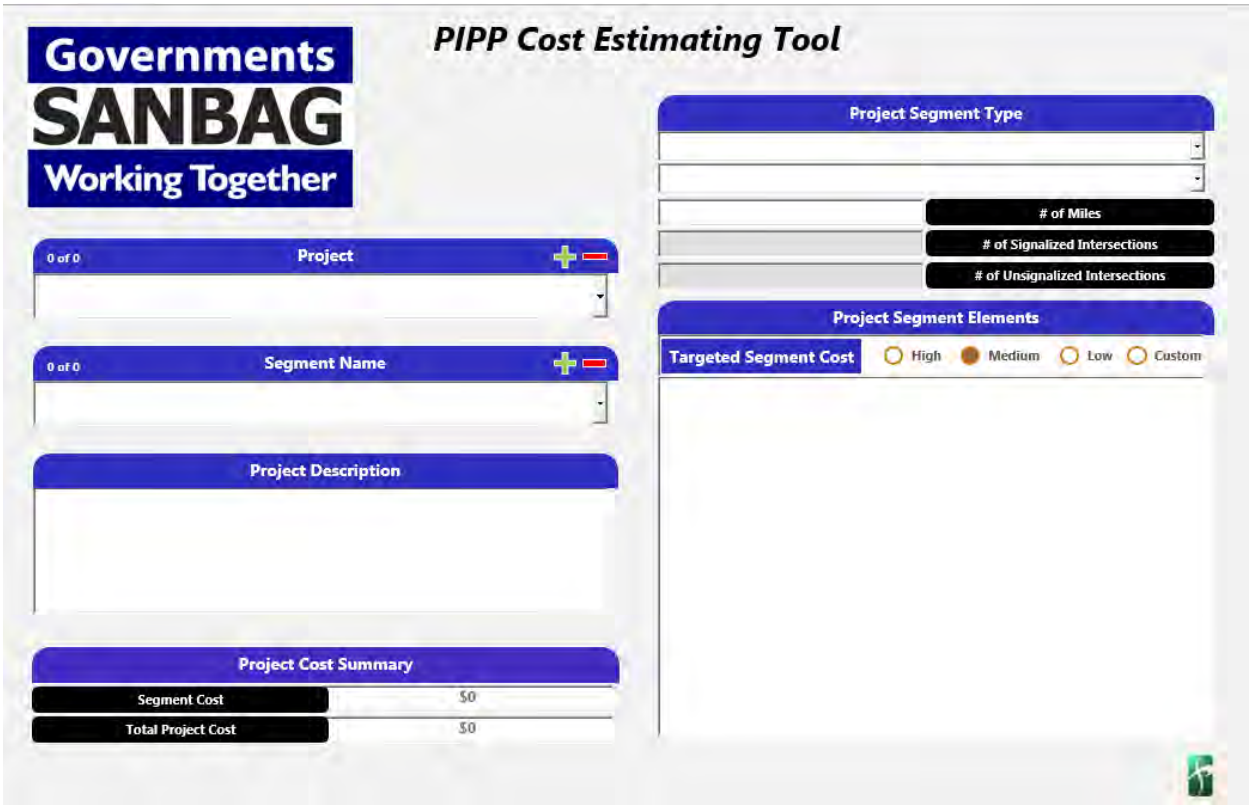
Entering Projects (Cost Calculator Tab)

To enter a project, the Cost Calculator Tab should be selected. Selecting the green "+" sign will enter a new Project. The Cost Calculator is organized into several areas of input:

P**roject Information** ("Project" and "Project Description")

Segment Information ("Segment", "Project Segment Type", and "Project Segment Elements")

Cost Information ("Segment Cost" and "Total Project Cost")



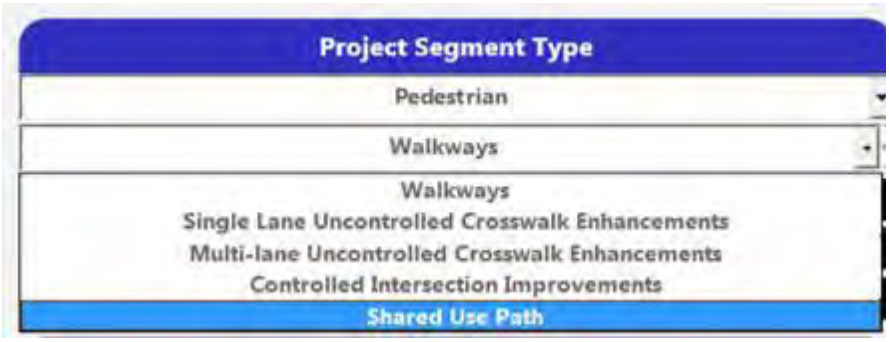
PROJECT INFORMATION ("PROJECT" AND "PROJECT DESCRIPTION")

First, Project information should be entered. The Project is considered to be an overall umbrella for individual segments. For example, "Town of Yucca Valley Shared Use Paths" might be a project name. Under that umbrella, several distinct segments may exist: "San Andreas Trail", "Crosswalk Enhancements for San Andreas Trail", and "Yucca Washington Trail." Similarly, the Project Description applies to all segments under the project. The Project Name should be entered first, after which the Tool will prompt the user to input a Segment Name. After that, the Project Description should be entered.

SEGMENT INFORMATION ("SEGMENT", "PROJECT SEGMENT TYPE", AND "PROJECT SEGMENT ELEMENTS")

Segment Name and Type

Once the Project is identified, the Tool will prompt the user to enter a Segment Name, which should be descriptive both in terms of project extents and facility type.



Once the Segment Name is identified, the Segment Type should be identified. For simplicity, these have been divided into either Bicycle or Pedestrian Projects. A Project may have both Bicycle and Pedestrian links, but a Segment must be one or the other. Based on the selection of Bicycle or Pedestrian Segment Type, a list of potential project types is generated in the next drop down list.

With the facility type selected, users are then asked to input the mileage of the facility as well as the number of signalized and unsignalized intersection. The mileage information is used where a "link" type improvement is selected, such as a walkway (e.g., sidewalk, path, or shoulder) or bikeway (e.g., bicycle lane, path, cycle track, bicycle boulevard, etc.). The intersection information is used as a multiplier for intersection improvements. For example, when curb extensions are selected for Uncontrolled Crosswalk Enhancements, the cost for curb extensions at a crosswalk will be multiplied by the number of unsignalized intersections.

Segment Elements and Targeted Segment Cost

Once the facility type, mileage, and number and type of intersection have been input, the Tool will automatically generate the relevant design elements. Each Project Segment Element has a checkbox next to it that can be selected or deselected to address the design elements of the given project. If the user is less familiar with the specific design elements, there is an opportunity to select a Targeted Segment Cost of high, medium, or low. If design elements are selected and unselected beyond the defaults, the Targeted Segment Cost switches to "Custom."

Cost Information ("Segment Cost" and "Total Project Cost")

As design elements are selected and deselected, the Segment Cost will automatically calculate. The Total Project Cost will sum the costs of all other Segments in the Project. If more detailed cost estimates are available for a project, it is possible to override the Segment Cost. This can be done by double-clicking into the Segment Cost area, which will prompt the user to manually input a cost. This will then be saved for that Segment and will be reported in the Report along with all other Segments and Projects.

Revising and Deleting Projects (Cost Calculator Tab)

Projects and Segments can be revised by navigating to the relevant Project or Segment, double- clicking into the text box, and editing the text. The Project and Segment Name sections both have drop-down menus that allow users to navigate between Projects and Segments, respectively.

Projects and Segments can be added or deleted by selecting the red "+" or

"– "sign next to Project and Segment, respectively. The user will be prompted with a screen confirming the deletion of that Project or Segment.

Project list (Report Tab)

As projects are entered, revised, and deleted, the Report Tab creates a running list of inputs. The report is organized by Project and then by Segment, with each receiving a respective row. Segment Type, Facility, and Project Elements (e.g., the checkboxes of design elements) are listed along with the Segment Cost.

Modifying Assumptions (Cost Assumptions Tab)

The Cost Assumptions tab houses all of the assumptions used to calculate the cost estimates. The inputs in this tab apply to all Projects and Segments in the network. Therefore, when a user changes something on this tab, the change will apply to all projects in the network. If assumptions need to be adjusted for a specific project, it is recommended that users do a "Save As" to isolate those adjustments to the assumptions. Areas that allow user input are shown in light green.

This tab is divided into four main areas, each of which build on each other to create the final costs used to calculate the Project Segment Elements and Segment Costs:

- **Assumptions & Soft Costs**: This section houses basic assumptions, such as block length, in addition to soft cost and contingency assumptions.

    1. **Unit Costs**: Recent unit costs contextualized for the San Bernardino Area are listed under Base Cost. The Base Costs are then multiplied by the soft cost assumptions to derive the Adjusted Costs, which includes all soft costs and contingencies.

    2. **Composite Unit Costs**: The Adjusted Costs are then multiplied across the Quantities and Units of design parameters for each design element to create a Composite Unit Cost. Design assumptions, such as, width of a sidewalk or median refuge can be made in this area.

    3. **Corridor Costs**: Corridor costs multiply the Composite Unit Cost against the number of design elements present per mile or intersection. For example, the curb extension cost derived in Composite Unit Costs is then multiplied against a quantity of four curb extensions per intersection. Similarly, the raised landscape buffer calculation is then multiplied by a quantity of two to estimate the cost on both sides of the street, as in one- way cycle tracks with landscaped buffers.

Additional Information

Unit Cost Sources

The unit costs included in the Cost Estimating Tool represent an up-to-date database of prevailing construction costs per unit typically observed in California, as validated by information from local jurisdictions and through the results of recent of bid documents. The unit costs should continue to be

validated moving forward as SANBAG maintains the Cost Estimating Tool and/or as local jurisdictions modify the tool for their local purposes.

Maintenance

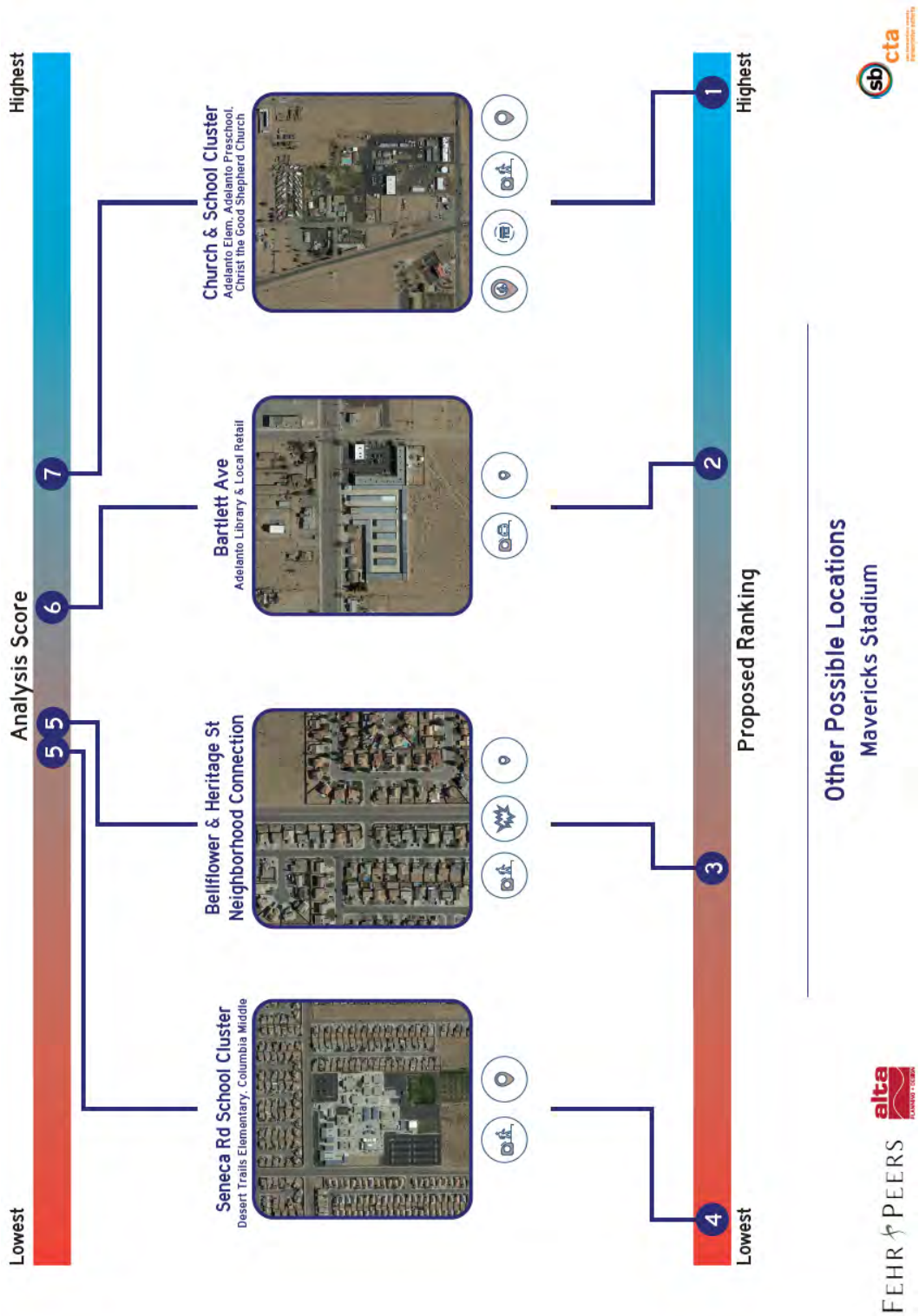
Maintenance costs can vary considerably for the various types of pedestrian and bicycle improvements included in this Tool. As such, maintenance is not specifically accounted for the costs derived from the Tool. For Class 2 and 3 bikeways, as examples, pavement markings will be replaced when the roadway is resurfaced. The additional cost to the overall pavement project would be similar to the cost for new striping and pavement marking. For cycle tracks, maintenance can vary depending on if the separation is striped or if it is a raised island with landscaping. Maintenance of landscaping should be considered relative to other landscaping maintenance performed by the local agency and incorporated into that program.

Pedestrian facilities such as sidewalks and curb extensions can have a life span of 50 years or more assuming they are constructed correctly. However, tree roots or base failures can cause premature failure.

Shared-use paths require regular maintenance to maximize their life span. It is recommended that paths be included in the local agencies pavement management program. Maintenance costs can be calculated using the following assumptions: slurry seal at 5 and 10 years at $1 per square foot & overlay at 15 years at $4 per square foot.

3.0 Local Points of Interest Pedestrian Plans

3.1 City of Adelanto Points of Interest:



City of Adelanto Priority Point of Interest: Church and School Cluster

City of Adelanto Suggested Improvements: Church and School Cluster

Jonathan St & Air Expy

2a) Review pedestrian crossing equipment for malfunctions and general maintenance (i.e., no broken pedestrian push button). Striping is faded and may not be visible to vehicles traveling at high speeds or when dark; consider restriping crossing and stop bars and increasing the pedestrian crossing countdown time.
2b) Explore a sidewalk connection between US-395 and Jonathan St to link to the existing sidewalk on US-395. Continue the connection between the various land uses by installing a crosswalk across Jonathan St and adjusting the advance stop bar as appropriate.

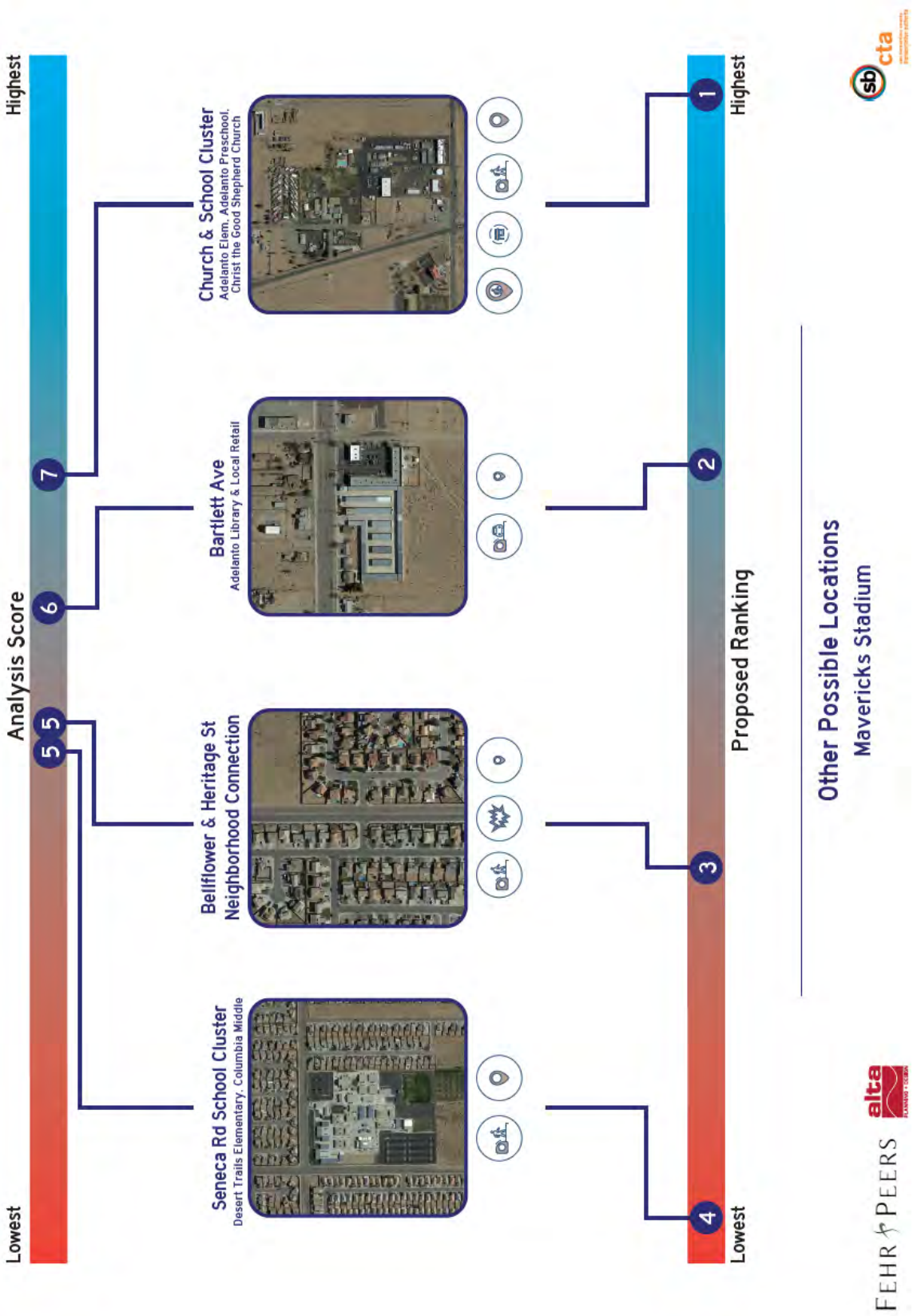
Jonathan St Corridor

3a) Provide a pedestrian crossing from High Desert Homes to the sidewalk on the western side of Jonathan St. In this school zone setting, a mid-block crossing with enhanced crosswalk features is recommended.
3b) Install sidewalk infrastructure along the eastern side of the road. At the southern end of the school, replace an existing crosswalk with a raised, high-visibility crosswalk.
3c) Extend sidewalk infrastructure on western side of Jonathan St from Lawson Ave to Air Expy. Include a radar speed feedback sign before the school zone.

Jonathan St at Adelanto School District

4) Connect Jonathan St to Adelanto School District facilities via a widened and ADA compliant pedestrian connection (i.e., sidewalk or walkway).

3.2 Town of Apple Valley Points of Interest:



Town of Apple Valley Priority Point of Interest: James A Woody Community Center and Parks

Town of Apple Valley Suggested Improvements: James A Woody Community Center and Parks

Powhatan Rd - Retail and Park Access

1) Consider installing a sidewalk along the west side of Pawnee Rd to complete a contiguous shortest-path pedestrian facility linking Apple Valley Village to Woody Park.
2) Consider installing sidewalks on north side of Powhatan Rd between Navajo Rd and Pawnee Rd.
4) Replace existing crosswalks on north and east legs of intersection with high-visibility striping. Review pedestrian countdown signals to ensure adequate crossing time of 3.5ft./second.

Powhatan Rd - School and Neighborhood Access

3a) Consider installation of sidewalks on Powhatan Rd between Navajo Rd and Rancherias Rd to connect with sidewalks constructed along Rancherias Rd to Yucca Loma Rd as part of the Yucca Loma Elementary Safe Routes To School project.
3b) Consider installing sidewalks on north side of Powhatan Rd between Rancherias and Navajo Rd.

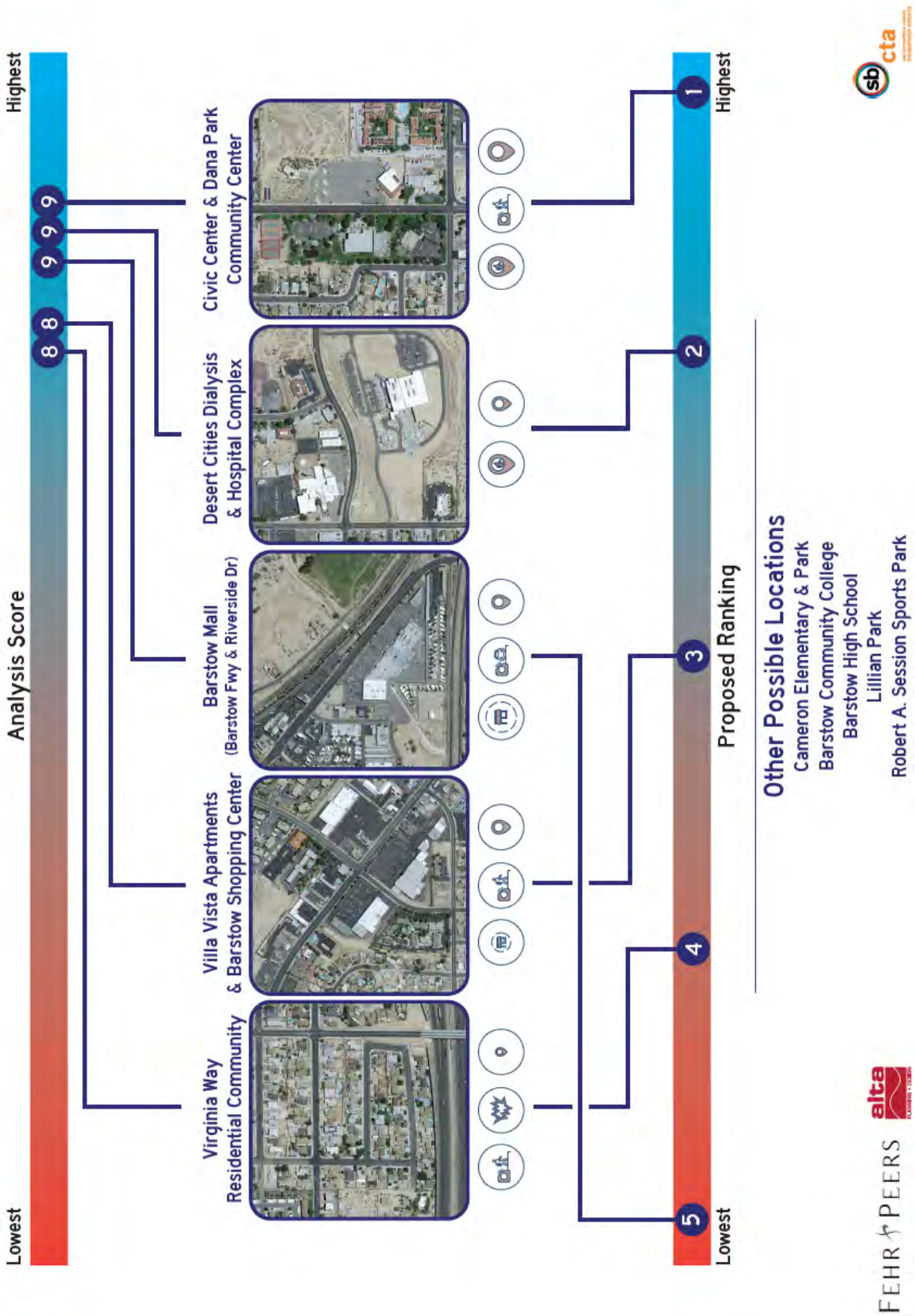
State Route 18 at Navajo Rd

5) Work toward implementation of improvements developed as part of the Apple Valley Village Corridor Enhancement Plan.

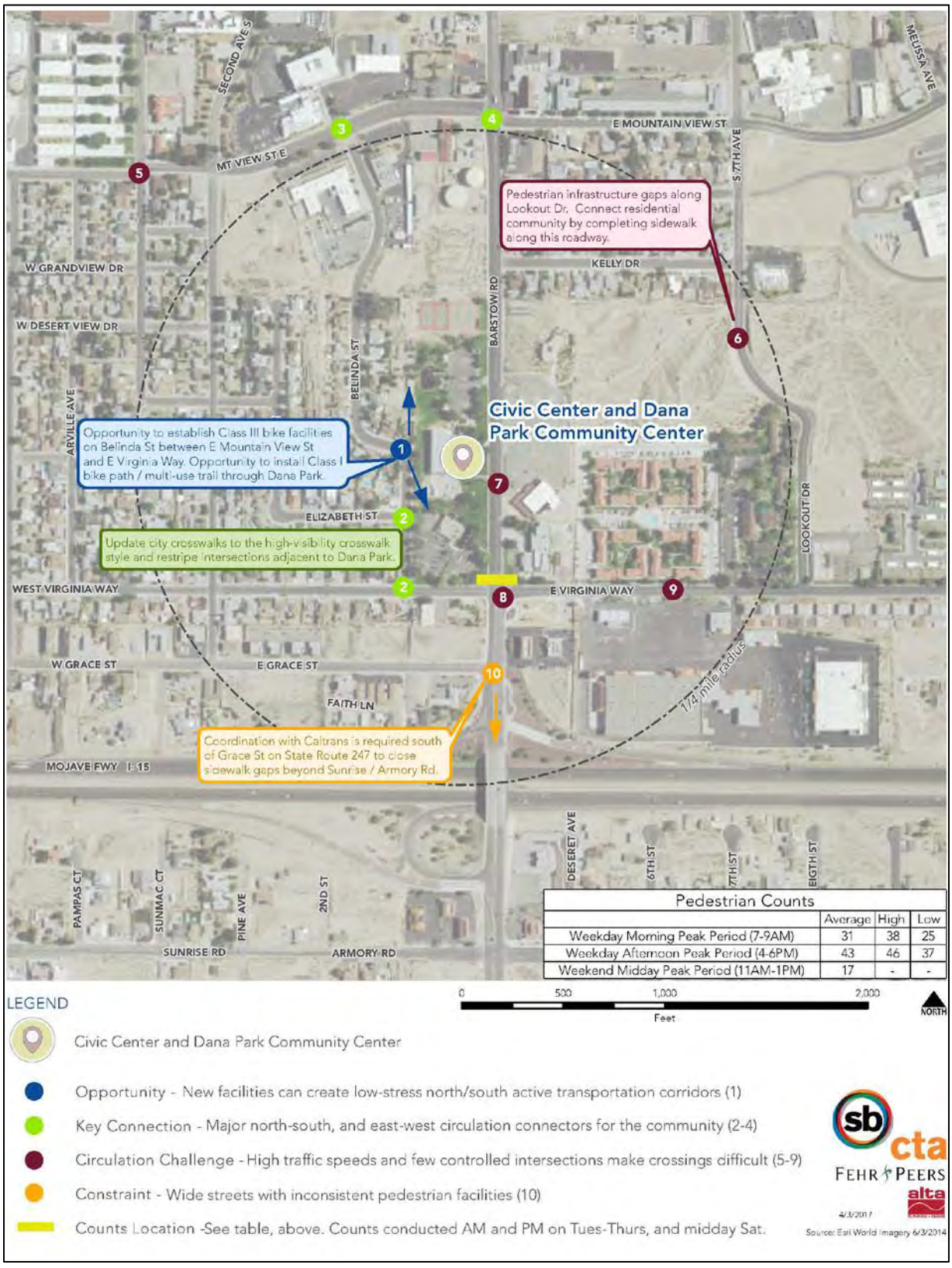
Ottawa Rd at Navajo Rd

6) Monitor pedestrian volumes, vehicle volumes, and collision history at this location to better understand usage and conditions. If signal warrants are met, consider installing a traffic signal and high-visibility marked crosswalks at all four legs of this intersection.

3.3 City of Barstow Points of Interest:



City of Barstow Priority Point of Interest: Civic Center and Dana Park Community Center



City of Barstow Suggested Improvements: Civic Center and Dana Park Community Center

Mountain View St - Civic Complex

3) Implement wayfinding signage for both the Route 66 downtown business / cultural district and Dana Park. Install a median with pedestrian refuge in crosswalk at Belinda Ave / Belinda St on E Mountain View St, along with MUTCD R1-6 signage and Rectangular Rapid Flashing Beacons.
4) Restripe crosswalks with ladder markings at each leg. Install curb extensions to reduce turning radii, widen the sidewalks, shorten pedestrian crossing distance, in order to increase motorist's visibility of pedestrians.
5) Restripe intersection with high-visibility crosswalks. Additionally, install curb extensions on west leg of intersection.

Barstow Rd & Virginia Way - Residential, Community Center, and Park Accessibility

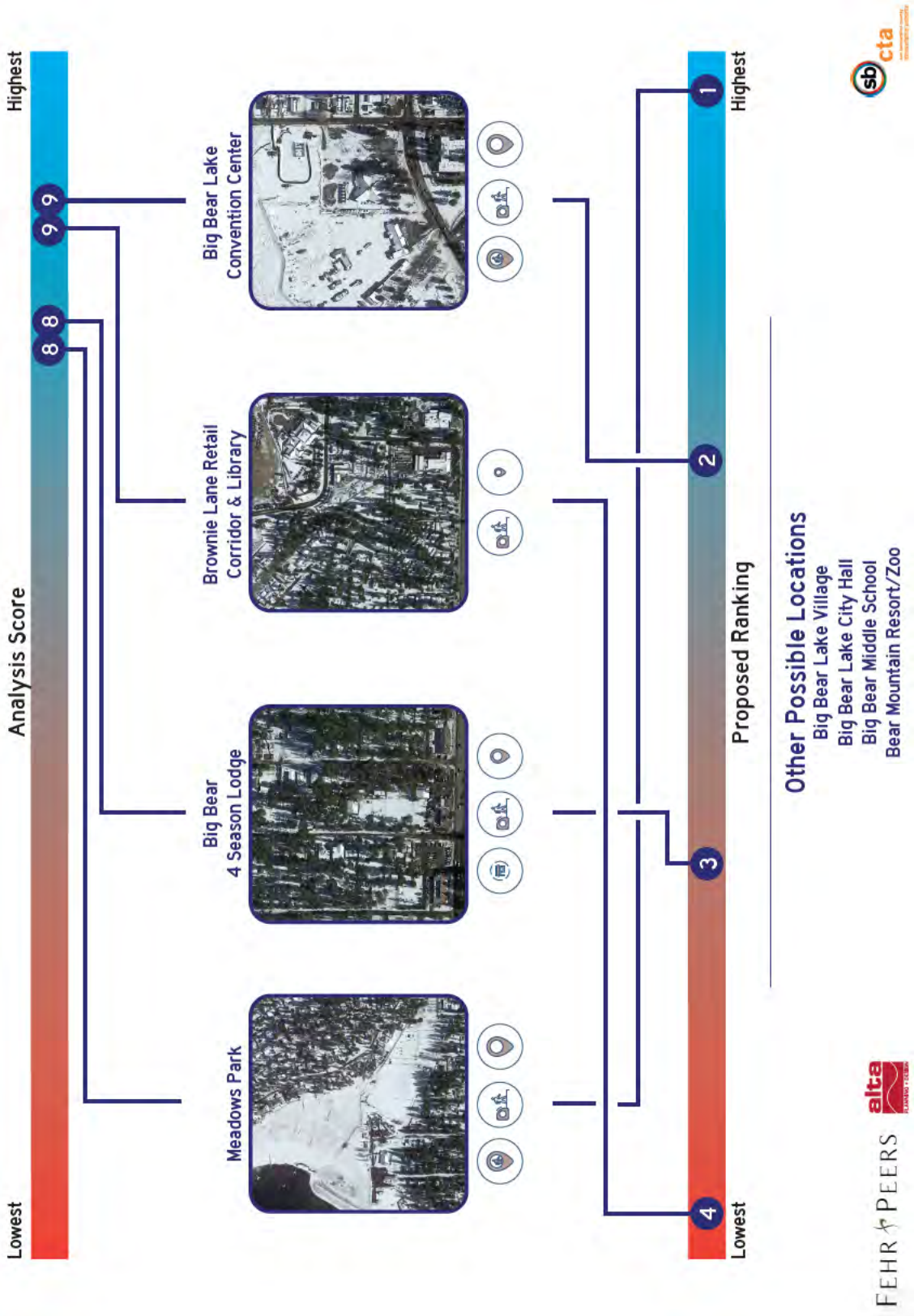
7) Install mid-block crossing across Barstow Rd with high-visibility crosswalk and Pedestrian Hybrid Beacon (aka HAWK crossing) along with MUTCD R1-6 signage and advance yield markings. This crossing treatment could be installed to connect Dana Park at the Al Vigil Community Swim Center and/or Cora Harper Community Center and include a median with pedestrian refuge.

8) Eliminate the "pork-chop" right-turn and increase the intersection and curb radii so that there is no slip lane for the right-turn lane and consolidate two pedestrian crossings into one crossing.

Recently-Developed Civic, Commercial, Retail, and Residential Area

9) Establish guidelines for future retail construction to promote shortest-path pedestrian access to retail and direct connections to bus stops.

3.4 City of Big Bear Lake Points of Interest:



City of Big Bear Lake Priority Point of Interest: Big Bear Lake Convention Center

City of Big Bear Lake Suggested Improvements: Big Bear Lake Convention Center

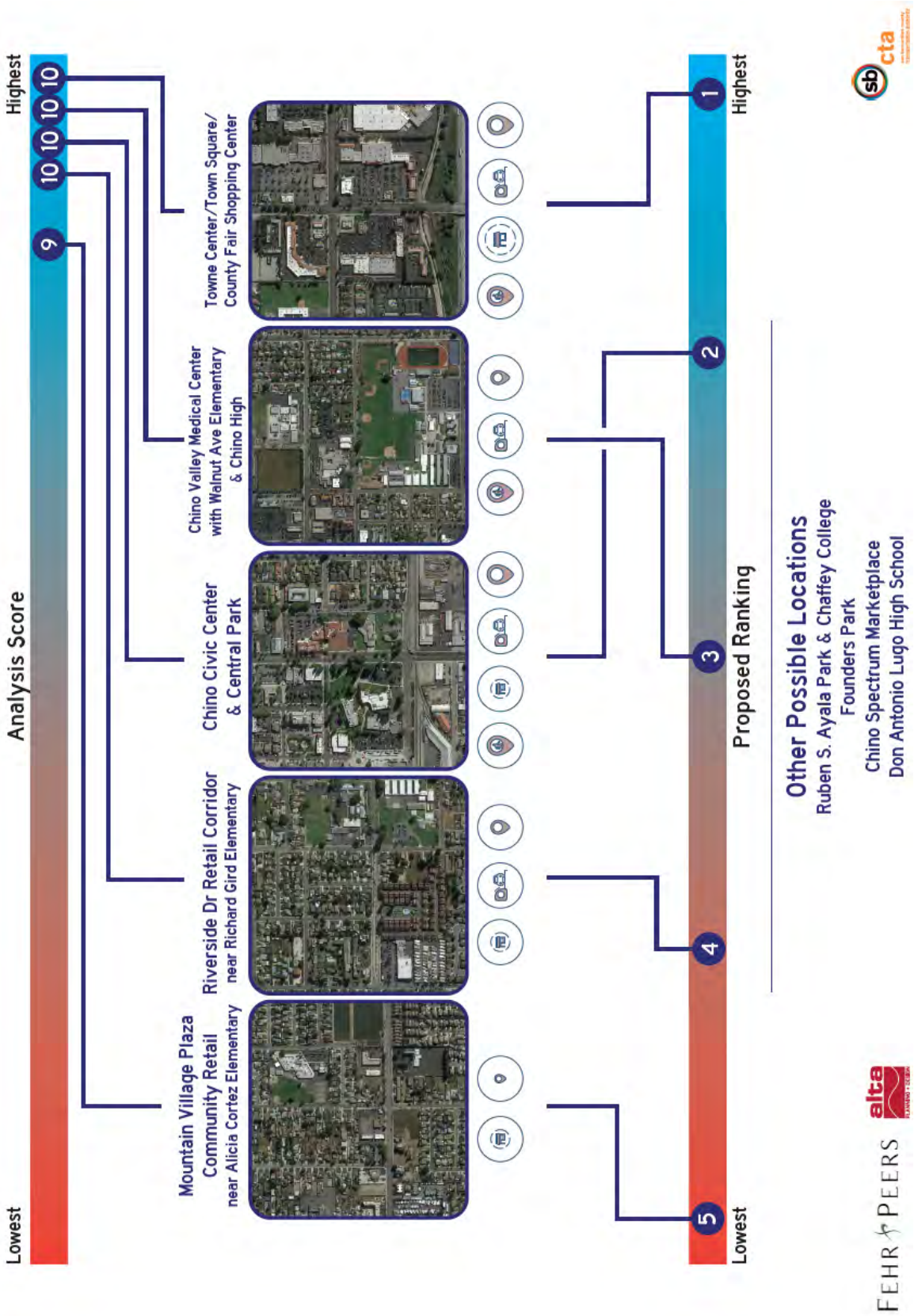
Big Bear Blvd

1) Build a pedestrian and bicycle pathway that connects the Stanfield Marsh Boardwalk to North Division Dr and the Convention Center.
3) Improve connection between Stanfield Marsh Boardwalk and public land (operated by Department of Water and Power) through wayfinding signage and ADA-compliant infrastructure.
5) Work with private land owners to ensure proper easements are in place for a new pathway; discuss opportunities for roadway connections; identify signage that would keep private land free of trespassers.

Division Dr & Big Bear Blvd

4a) Consider installing a high visibility crossing with pedestrian countdown beacon. An east/west crossing should be considered if appropriate sidewalk infrastructure is in place on Big Bear Blvd.
4b) Consider providing a comprehensive sidewalk connection between intersection and motel. Relocate utility boxes to make sidewalk ADA-compliant and free from obstructions.
4c) Connect bus stop to intersection and Convention Center with appropriate pedestrian infrastructure:
- Paved or concrete sidewalk
- Stairs at grade change
- ADA-compliant ramp

3.5 City of Chino Points of Interest:



City of Chino Priority Point of Interest: Towne Center/Town Square/County Fair Shopping Center

City of Chino Suggested Improvements: Towne Center/Town Square/County Fair Shopping Center

Philadelphia St & Telephone Ave

1) Update signal timing to include protected left-turn phase on Philadelphia St to eliminate conflict with pedestrians traveling east-west. Also, provide crosswalks across all four legs.

Philadelphia St & Central Ave

3) Explore limiting access to one entrance per side, to limit conflict zones between pedestrians and vehicles on the N/E corner. The N/W corner provides an example of successful incorporation of frontage driveways with streetscape treatments.

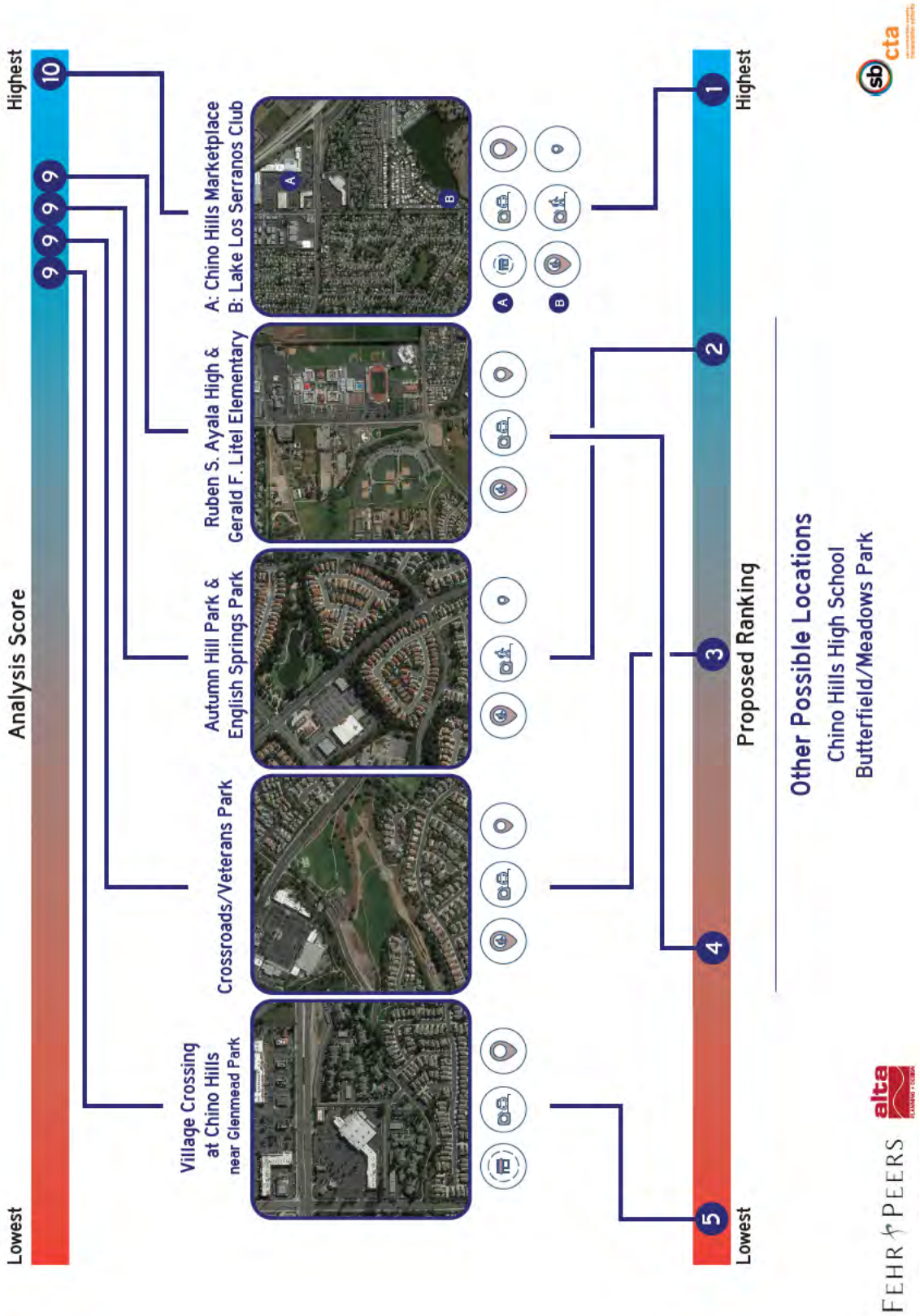
Philadelphia St between Town Ave and Benson Ave

5) Restripe stop bars at driveways on Philadelphia St between Town Square and Benson Ave so that pedestrians have room to cross when vehicles are stopped.

Central Ave & SR-60 WB Ramps

6) Monitor collision history and pedestrian behavior on this stretch of Central Avenue. If pedestrian collision history or pedestrian demand is observed, install a mid-block crossing, serving pedestrian desire line that utilized the existing median for pedestrian refuge. A signal modification and Caltrans approval would be needed. Crossing could also include high-visibility crosswalk striping, yield limit lines, pedestrian crossing signage, and a pedestrian hybrid beacon.

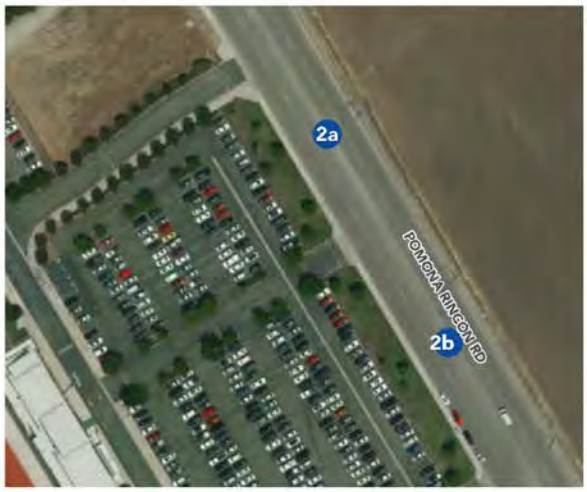
3.6 City of Chino Hills Priority Point of Interest:



City of Chino Hills Priority Point of Interest: Chino Hills High School

City of Chino Hills Suggested Improvements: Chino Hills High School

Pomona Rincon Rd



2a) Add midblock pedestrian crossing with median refuge island and Rectangular Rapid Flash Beacon (RRFB).
2b) Add protected bike lanes by converting one travel lane in each direction on Pomona Rincon Rd.

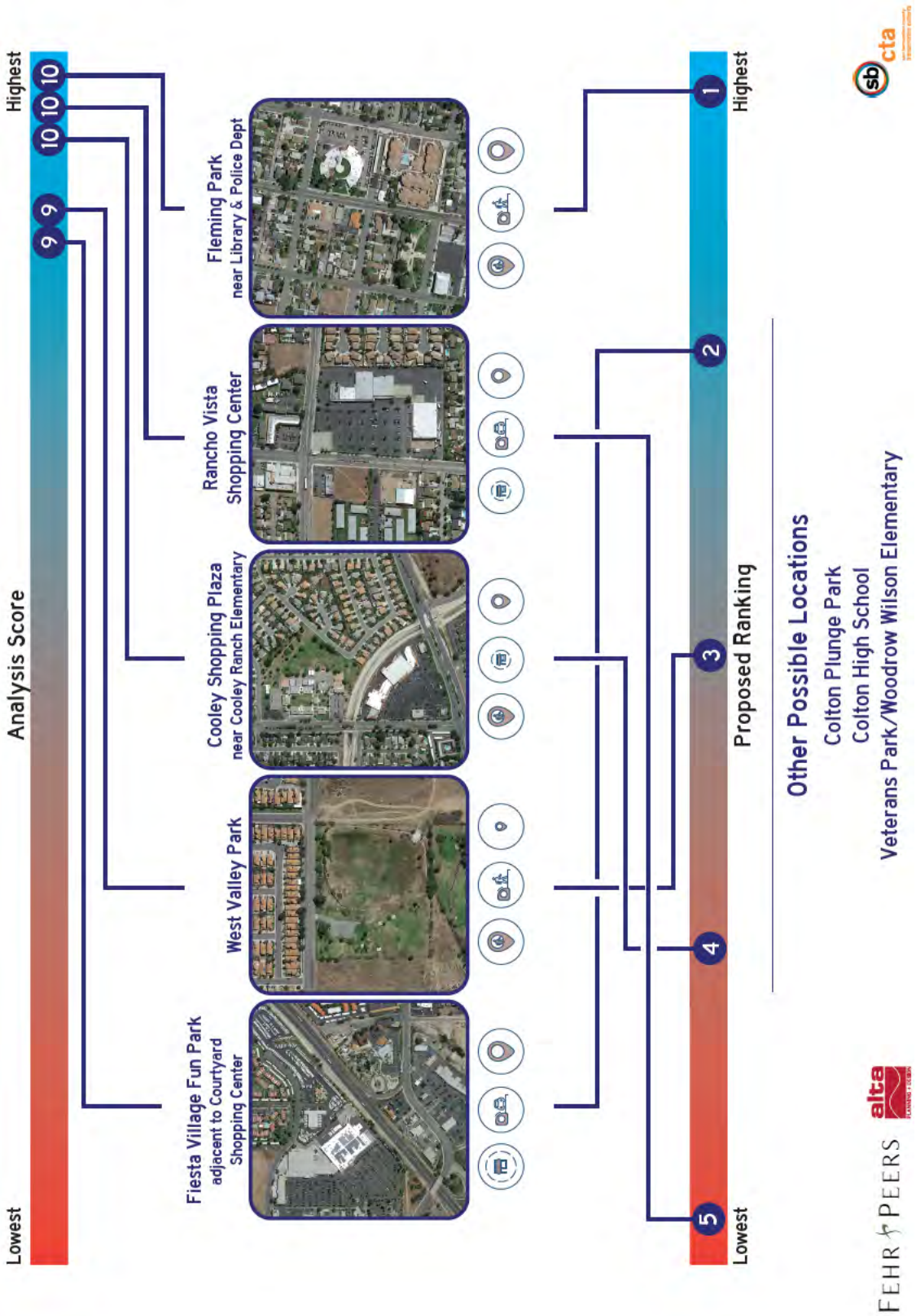
SR-71 Overpass

5) Add yield limit lines and RRFB for high-speed, high-volume crossings along school walking route.

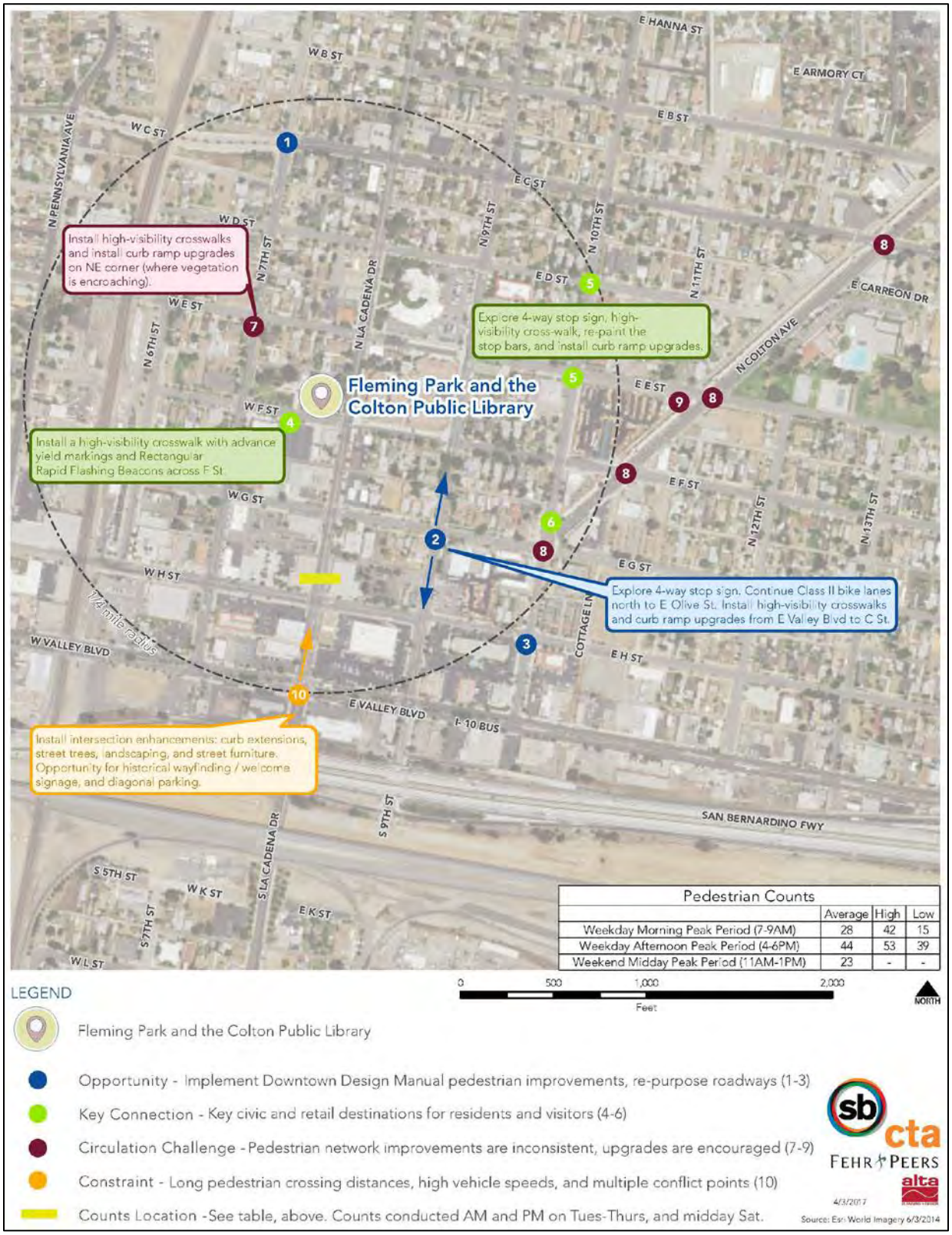
Soquel Canyon Pkwy & Butterfield Ranch Rd

6a) Install stop bars on all approaches.
6b) Consider leading pedestrian interval signal treatments to address conflicts with turning vehicles.
6c) Relocate bike lane striping to between through lane and right-turn lane. Include green skip striping along merge zone.

3.7 City of Colton Points of Interest:



City of Colton Priority Point of Interest: Fleming Park and the Colton Public Library



City of Colton Suggested Improvements: Fleming Park and the Colton Public Library

Rails with Trails

1a) Extend park to shift the free right-turn lane, consolidating two crossings into one while maintaining capacity and add a Class I Multi-Use Path from Pennsylvania Ave up to C St.
1b) Implement a bicycle boulevard on C St.
1c) Explore possibility of a Multi-Use Path adjacent and parallel to the westernmost railroad tracks.
1d) Install a sidewalk along south side of C street.
1e) Install high-visibility crosswalks and advanced stop bars at this intersection, along with wayfinding signage in each direction.
1f) Replace painted median with a raised median that provides pedestrian refuge.

H St - Pedestrian Connector

3) Continue to enhance H St intersections with curb extensions; add street trees, landscaping, street furniture, and add diagonal parking as per the "pedestrian corridor" designation in the City's Downtown Design Manual.

Colton Ave - Future Bus Rapid Transit Corridor

6) Install wayfinding signage between the Class I Multi-Use Path along Colton Ave directing users toward the Class II Bike Lane on G St and to Fleming Park.
8) Re-stripe crosswalks with high-visibility markings, review countdown timer to ensure at least a 3.5 ft/sec crossing time, and prioritize curb ramp upgrades. Add curb extensions to shorten crossing distances.
9) Install sidewalks to allow access to Colton Plunge Park and Central Park, improving the pedestrian network between the Colton Ave Multi-Use Path and Downtown Colton.

3.8 County of San Bernardino Priority Point of Interest: Crestline – Lake Drive Corridor

County of San Bernardino Suggested Improvements: Crestline – Lake Drive Corridor

Lake Dr between Springwater Rd and Forest Shade Rd

1) Install a midblock crosswalk along this stretch of Lake Dr, specifically at the bus stop located along the southern side. Restrict parking directly adjacent to the crosswalk and install protective bollards at each end.

Midblock Crossing along Lake Dr

2a) Restrict parking directly adjacent to crosswalks to improve pedestrian access/visibility. Install protective bollards at each end of the crosswalk.
2b) Install pedestrian crossing signage and road markings for approaches to each marked midblock crosswalk. Consider installing pedestrian yield signs on the roadway centerline approaching each crosswalk.

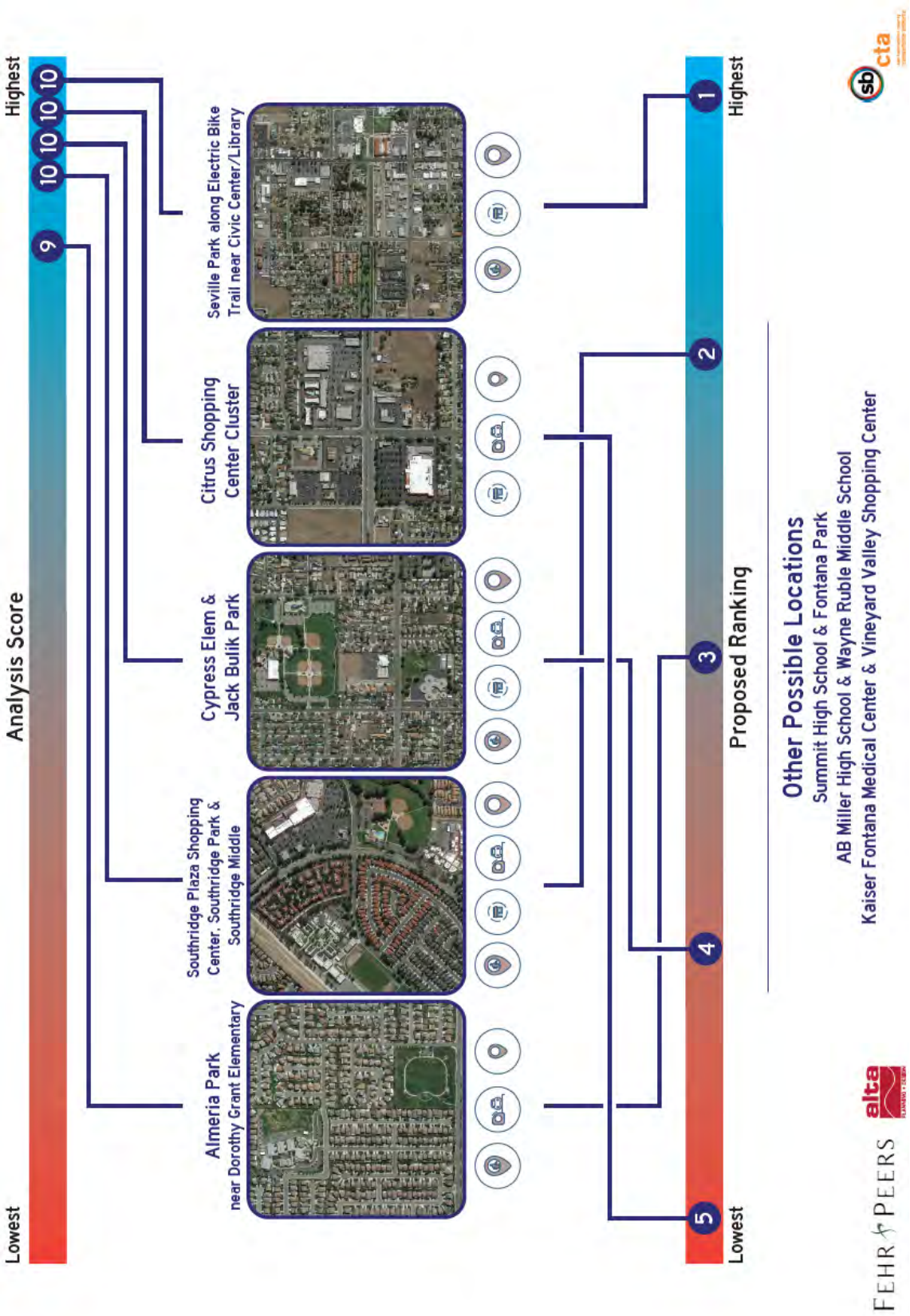
Lake Dr & Thousand Pines Rd

3) Install a crosswalk across Thousand Pines Rd and tighten the intersection with a more perpendicular southbound approach to slow turning vehicles, improve visibility, and shorten the crossing distance.

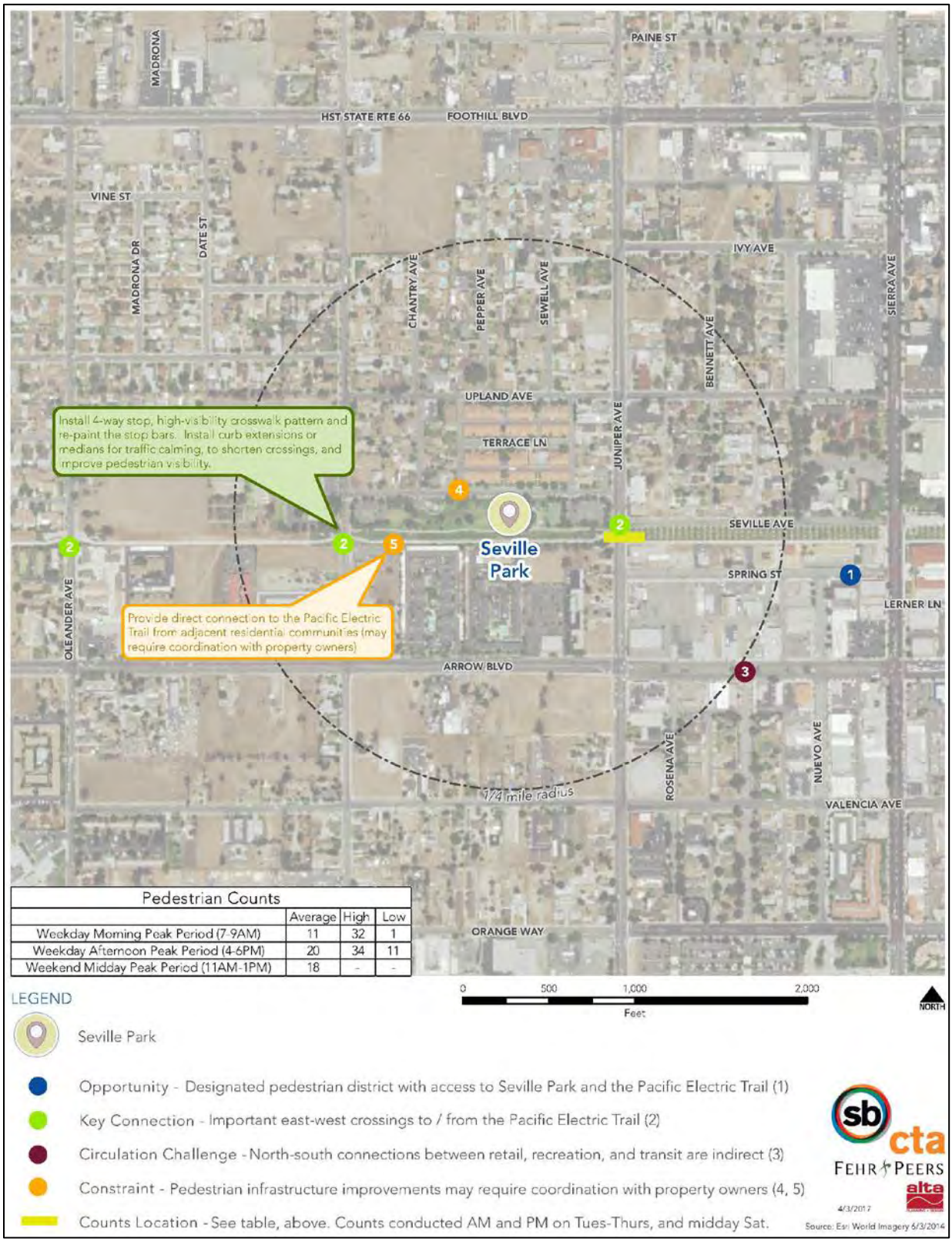
Lake Dr & Manzanita Dr

4) *Option 1:* Install a crosswalk across Manzanita Dr and Springy Path and a "pork chop" raised island between the right-turn and left-turn lanes out of Manzanita Dr to serve as a pedestrian refuge.
Option 2: Install a crosswalk across Manzanita Dr and Springy Path, tighten the intersection and reduce right turn radius from Manzanita Dr to reduce pedestrian crossing distance.

3.9 City of Fontana Points of Interest:



City of Fontana Priority Point of Interest: Seville Park



City of Fontana Suggested Improvements: Seville Park

Spring St - Arts and Design District

1) Spring St has the potential to become a "living street" with a pedestrian promenade and a design district. Encourage that pedestrian-scale amenities be implemented in this area, including: lighting, street furniture, bike racks, parklets, outdoor dining, and street-oriented buildings with minimum setbacks. Automatic or removable bollards can be implemented for temporary vehicular access restrictions; parking could be accessed from the alley behind these buildings on Spring St and Nuevo Ave.

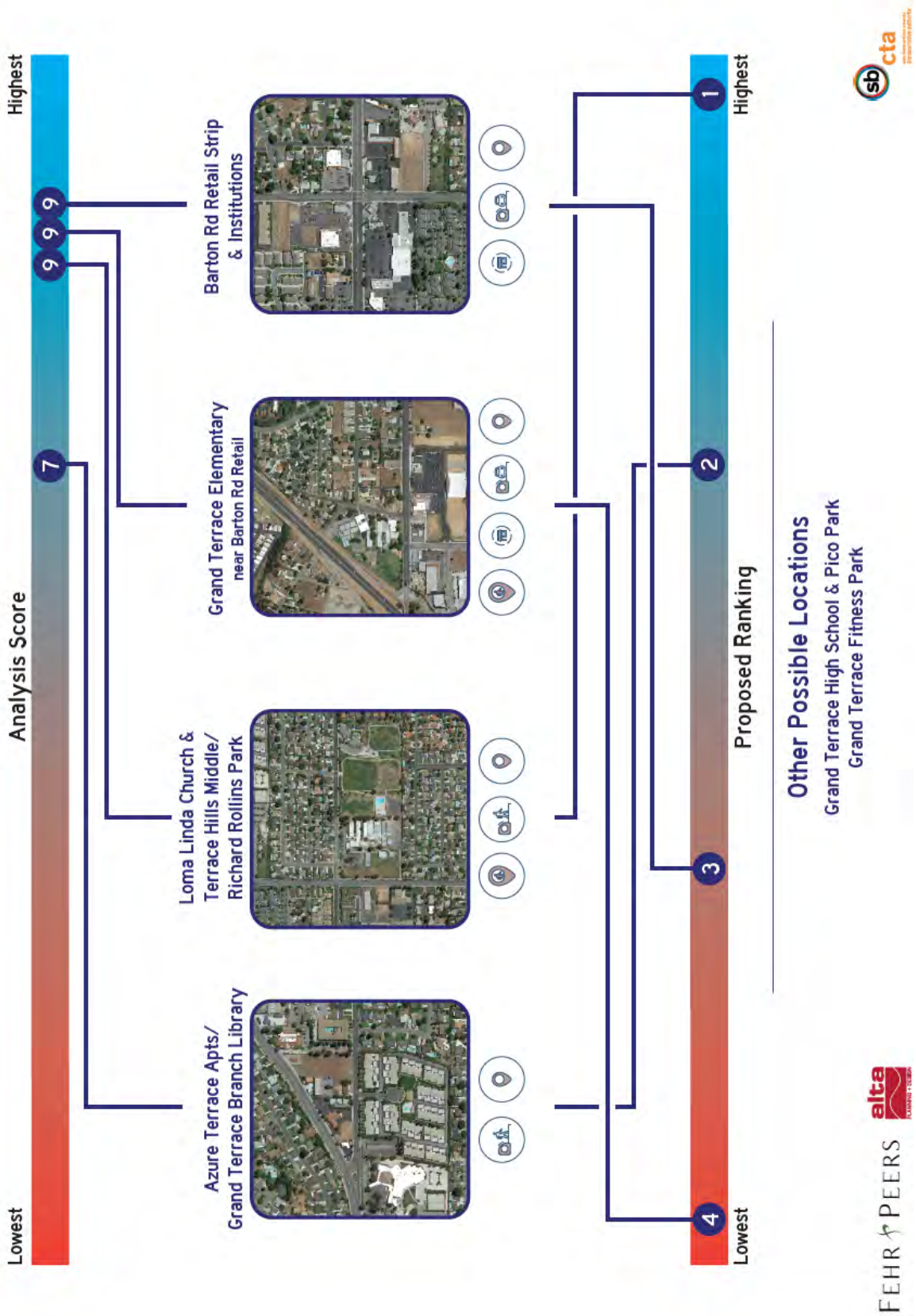
Arrow Blvd - Recreational and Transit Routes

3a) Consider closing off the free right-turn lane from Juniper Ave to Arrow Blvd and re-purposing this space for a plaza or parklet.
3b) Install high-visibility crosswalk pattern at Bennett Ave with Rectangular Rapid Flashing Beacons, pedestrian crossing (CA MUTCD R1-6) signs, and advance yield markings. Implement wayfinding signage for Seville Park, Fontana Metrolink, and other areas of interest, as Bennett Ave provides a direct north-south connection.
3c) Install high-visibility crosswalk markings at Nuevo Ave with pedestrian crossing (CA MUTCD R1-6) signs and a pedestrian refuge island in the median.
3d) Install curb extensions at intersections along the southern frontage of Arrow Blvd, that mirror existing parking, to facilitate east-west crossings in this district.

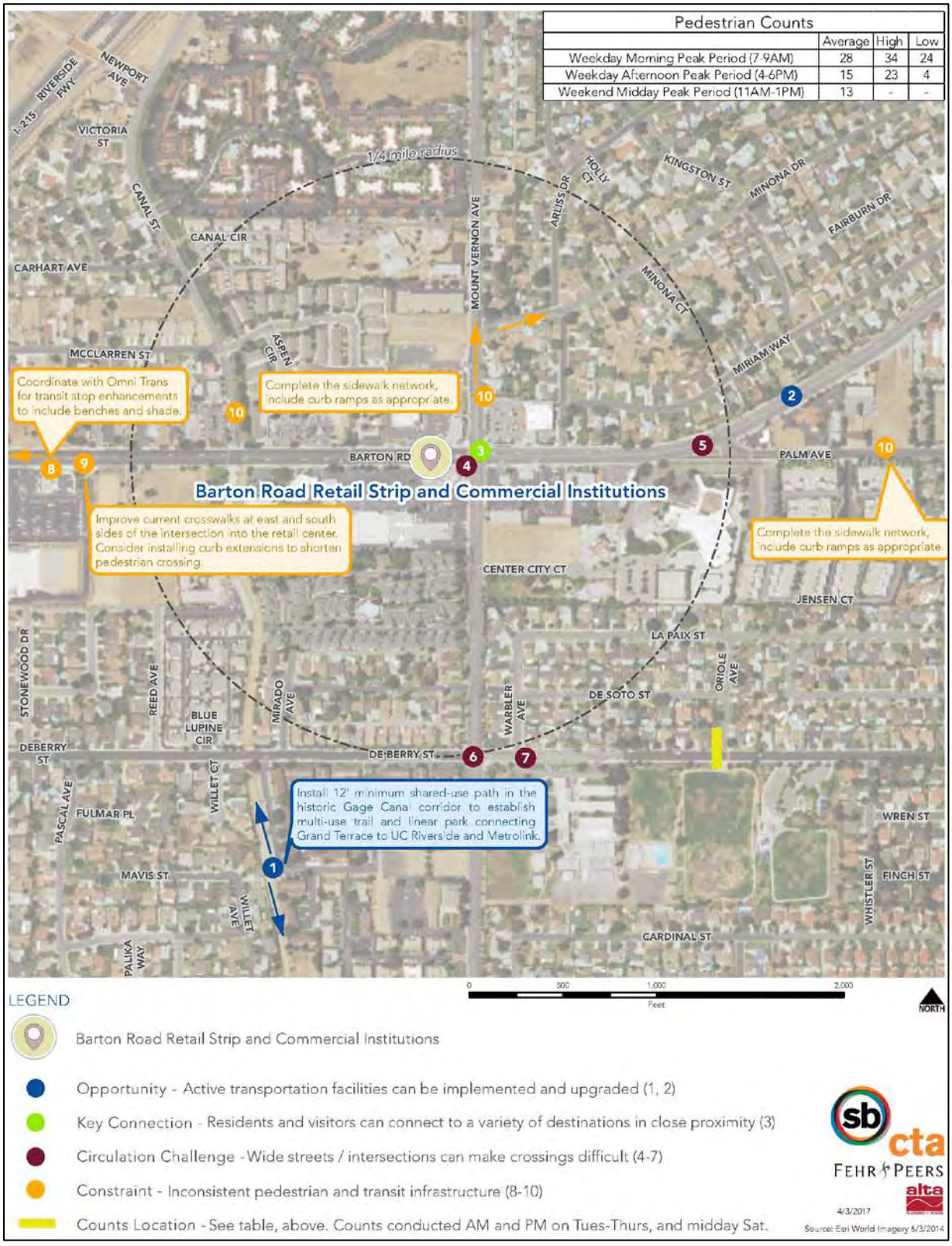
Seville Ave - Residential / Park Connections

4a) Add advance yield line and Rectangular Rapid Flashing Beacons to the crosswalk across Cypress Ave.
4b) Install sidewalks and curb ramps in this neighborhood.
4c) Encourage underground utilities to facilitate sidewalk installation. Include curb extensions at each of these intersections along Seville Ave.
4d) Stripe high-visibility crosswalk pattern across Seville Ave for park access.

3.10 City of Grand Terrace Points of Interest:



City of Grand Terrace Priority Point of Interest: Barton Road Retail Strip and Commercial Institutions



City of Grand Terrace Suggested Improvements: Barton Road Retail Strip and Commercial Institutions

Barton Rd & Mt. Vernon Ave - Retail Core

3) Explore bike lanes on Mt. Vernon Ave north of Barton Rd. Create a "protected intersection" with corner safety islands and green paint added to conflict-zone striping and the bike lanes themselves along Barton Rd. (See #6 below for additional treatment recommendations.)
4) Install pedestrian countdown signals at this intersection, with advance stop bars and enhanced curb ramps as a near-term upgrade. Or, implement these in conjunction with the project outlined above (#3).

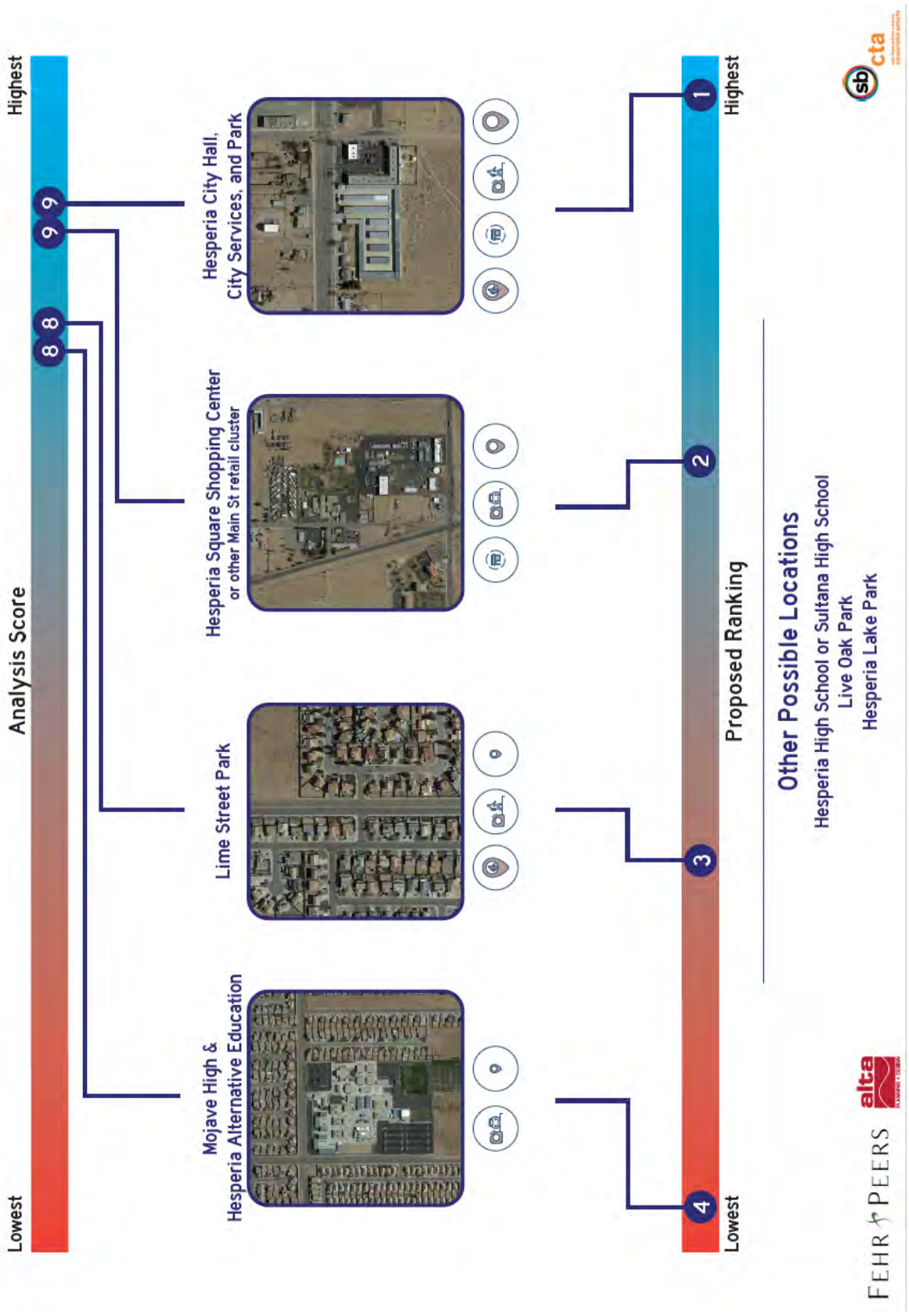
Barton Rd & Palm Ave - Residential Crossings

2) Re-stripe class II bike lanes with buffer-striping and narrow vehicle lanes as traffic calming measure.
5) Prioritize curb ramp upgrades at this intersection - adding a crosswalk with Rectangular Rapid Flashing Beacon (RRFB), advance yield teeth line, and "yield to pedestrian" signage (CA MUTCD R1-6, R1-9). Further study will be required to determine the most appropriate crossing location and treatments.

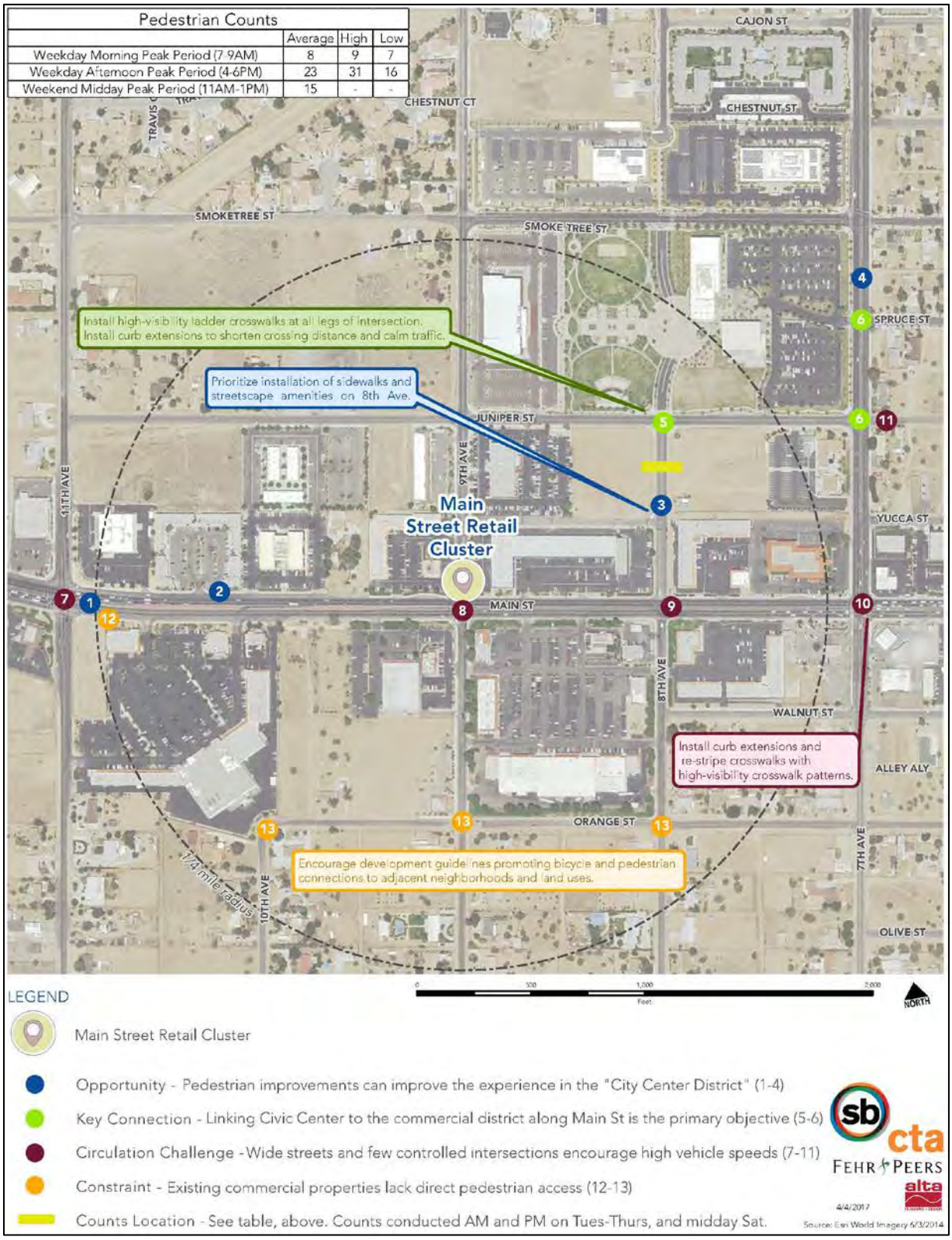
Mt. Vernon Ave & De Berry St - Residential, School, and Recreation Connections

6) Enhance this current marked crosswalk with advance yield markings and curb extensions for crossing De Berry St. Consider implementing a road diet with buffered bike lanes and curb extensions at each of the major intersections along Mt Vernon Ave.
7a) Install curb extensions or a median with pedestrian refuge, yield to pedestrian signage, and advance yield markings at this existing crosswalk to shorten crossing distance and calm traffic. Install curb extensions at school driveway entrances to decrease radii, shorten crossing distance, improve pedestrian visibility and limit exposure, and, to slow the vehicle turning movements.
7b) Explore additional speed humps or traffic calming treatments if vehicles travel at high speeds on De Berry St.

3.11 City of Hesperia Points of Interest:



City of Hesperia Priority Point of Interest: Main Street Retail Cluster



City of Hesperia Suggested Improvements: Main Street Retail Cluster

Main St - Gateway

1) Opportunity to "choke-down" Main St between 7th and 11th Ave with curb and sidewalk extensions to slow traffic while generally maintaining capacity and accounting for truck route accessibility. Main St gateway signage and improved lighting should be implemented as well.
2) Work with Victor Valley Transit Authority on guidelines for bus stops to include shade structures, seating, route timetables, and trash / recycle containers. Hesperia's Main St and Freeway Corridor Specific Plan recommends street trees and median landscaping plus other pedestrian-oriented amenities.
7) Install curb extensions and pedestrian refuge islands to shorten the crossing distance. Re-stripe crosswalks with high-visibility ladder markings.
12) Establish guidelines for future retail construction to promote shortest-path pedestrian access to retail and connections to bus stops.

Civic, Residential, Commercial, and Recreation Connections

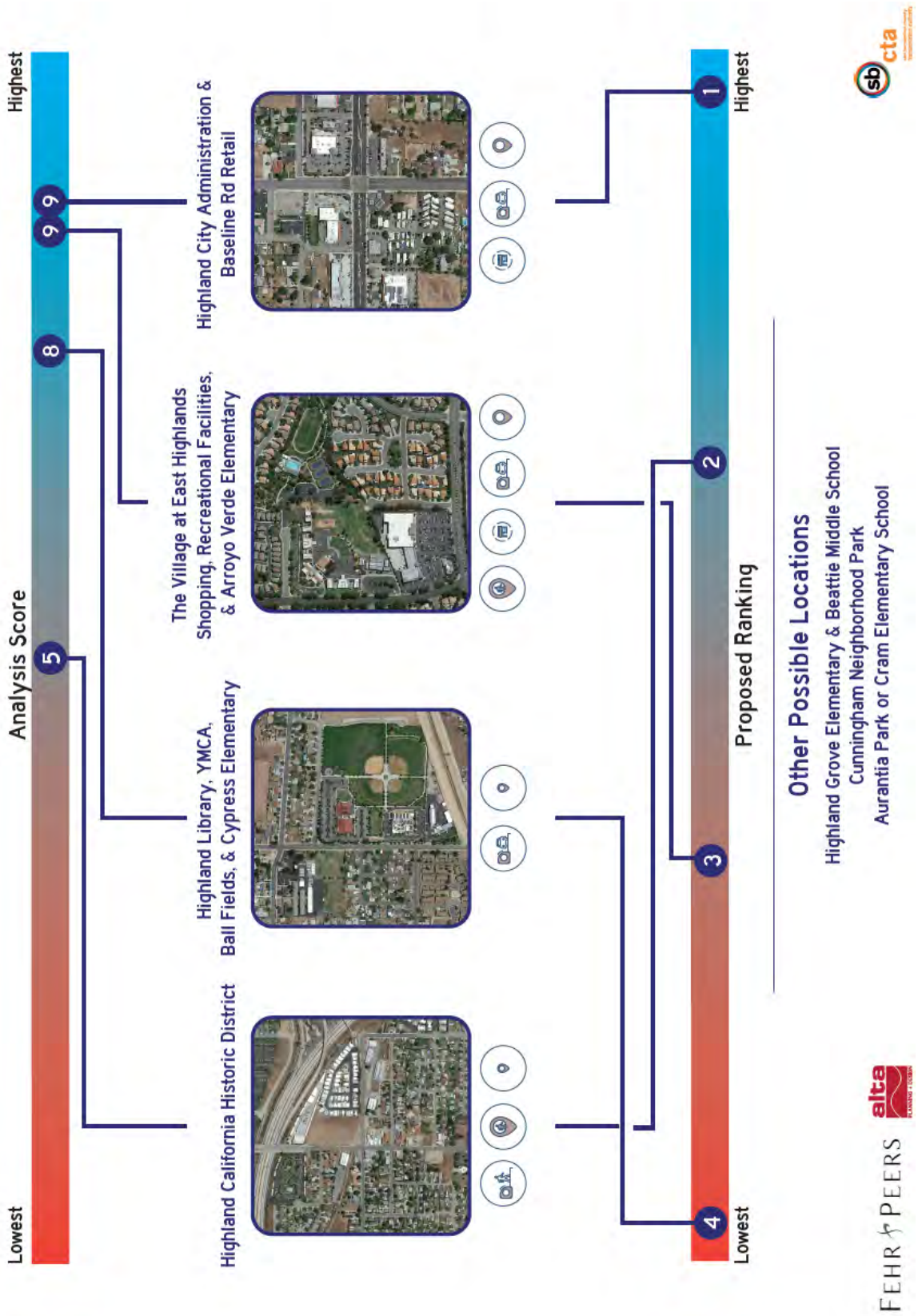
4) Opportunity to implement a road diet with a re-striping plan to convert a travel lane in each direction, maintain a center turn lane, add curb extensions at the intersections and also widen the bike lane with buffer striping or physical barrier.
6) Install high-visibility ladder crosswalks and Pedestrian Hybrid Beacons across 7th Ave to connect residences with pedestrian generators.
11) Extend sidewalk infrastructure.

Note: Spruce St has been improved since this image was taken, Juniper St has not.

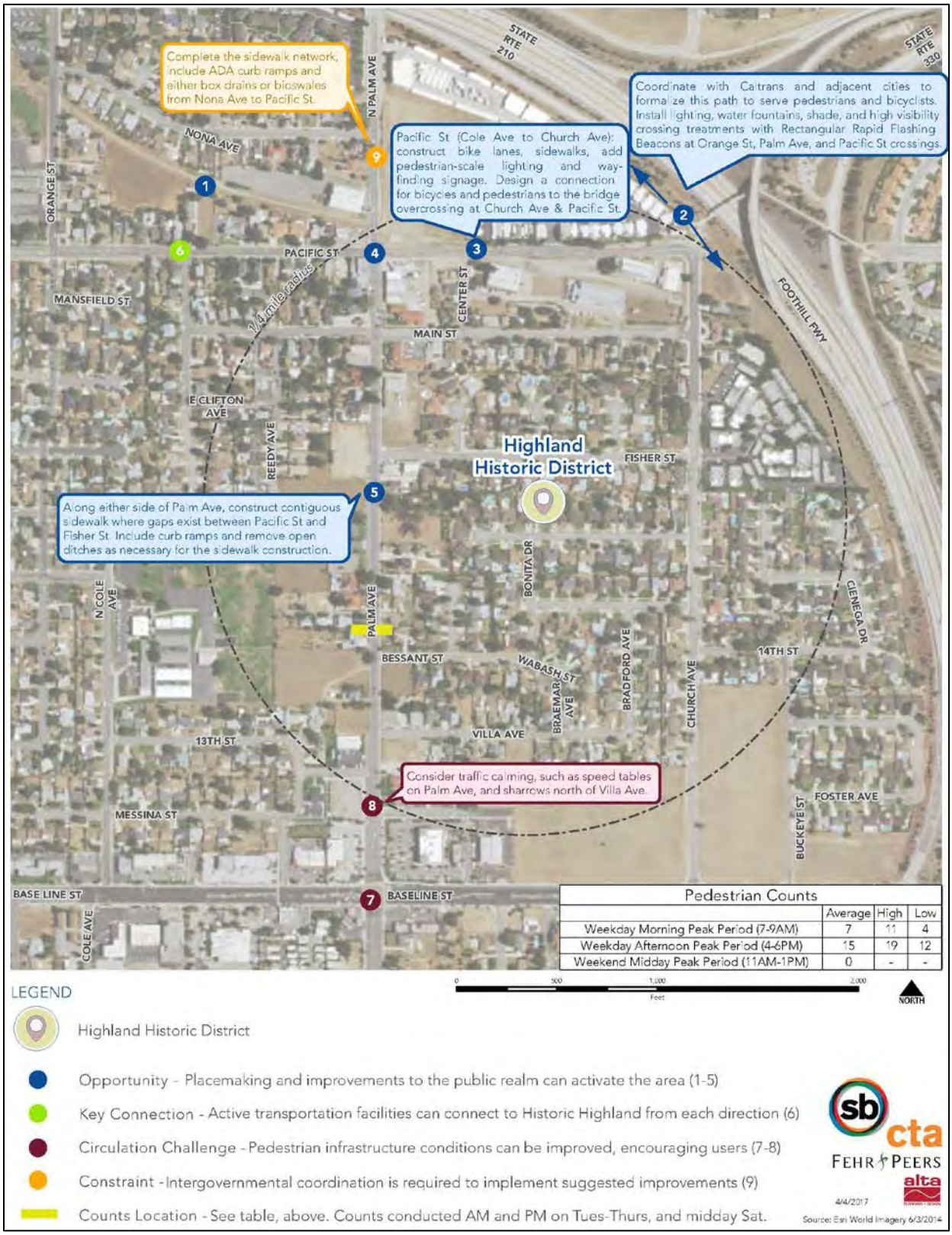
Main St - Central Business Area

8) Install curb extensions and pedestrian safety islands to shorten the crossing distance. Re-stripe crosswalks with high-visibility ladder markings.
9) Install high-visibility ladder crosswalks and Pedestrian Hybrid Beacons across Main St at 8th St. Install curb extensions and pedestrian safety islands to shorten the crossing distance.

3.12 City of Highland Points of Interest:



City of Highland Priority Point of Interest: Historic District



City of Highland Suggested Improvements: Historic District

Rail Line Trail and Park Opportunity

1) Convert abandoned railroad right-of-way to a linear park with trail or multi-use path from Orange St to Palm Ave, with option to extend to future path adjacent to SR-210 (see recommendation #2).
4) On Palm Ave, construct roundabout and entry monument at Pacific St intersection to calm traffic and welcome the community to the Historic District. Construct high-visibility and/or raised decorative crossings, roadway narrowing with bulb-outs, parklets, cafe-style outdoor dining, pedestrian-scale lighting, street furniture, bike racks, class II bicycle lanes, green-backed sharrows and conflict markings through intersections between Nona Ave and Fisher St.

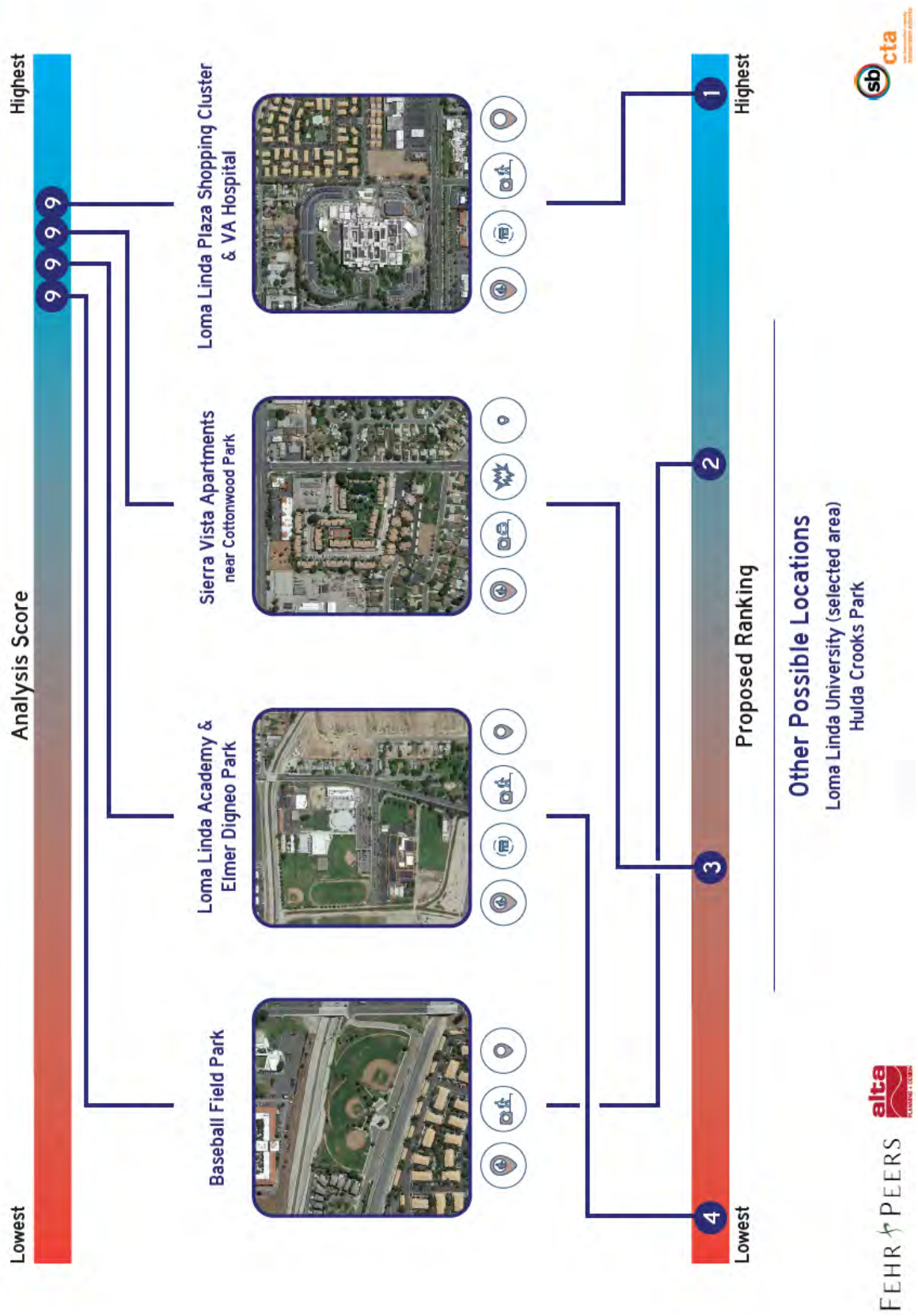
Residential, Commercial, and Schools Connection

6a) On Pacific St, construct high-visibility and/or raised crosswalks at the intersections of Palm Ave, Cole Ave, and Orange St.
6b) Prioritize curb ramp upgrades and sidewalk installation on south side of Pacific St and along Cole Ave. Explore a 3-way stop with high-visibility crosswalks. If stop signs are unwarranted, install a raised crosswalk through the intersection as a "speed table" along with "pedestrian ahead" signs (CA MUTCD SW24-3) and pavement markings, advance yield markings and "yield here to pedestrians" signs (CA MUTCD R1-5a).
6c) Complete the sidewalk network and include upgraded curb ramps. Re-stripe lane widths to 10' and stripe Class II bike lanes as per HSIP 2016 plans. Encourage undergrounding of utilities in anticipation of these improvements. Plant tree canopy on south side of Pacific St.

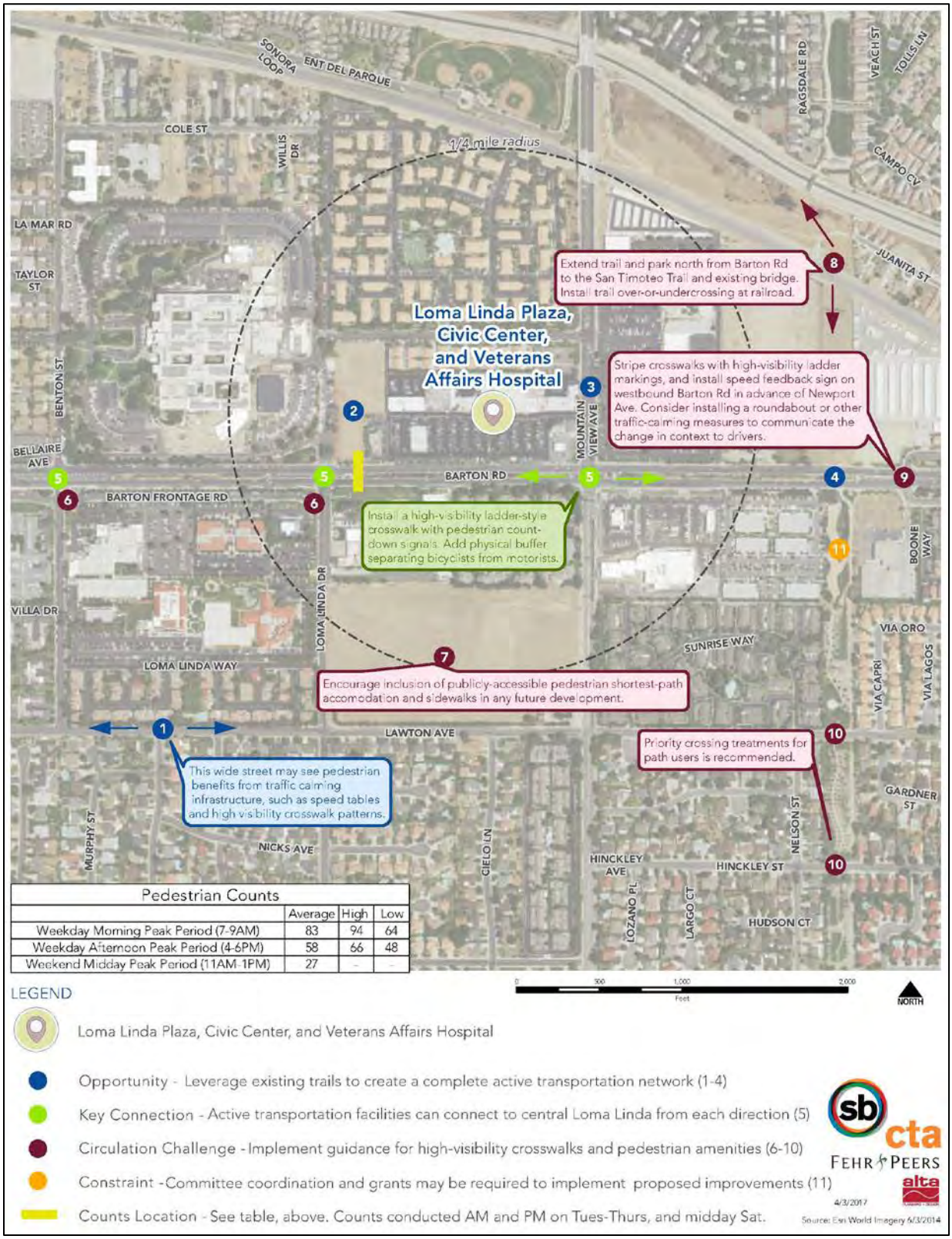
Base Line St. - Civic and Commercial Connections

7a) Consider extending median to Cole Ave, which provides a pedestrian refuge island. Install wayfinding signage for Historic Highland District.
7b) Add additional signage (i.e. CA R1-6, R1-5) and a Pedestrian Hybrid Beacon with advanced yield markings to this midblock crossing.
7c) Consider a road diet with protected bike lanes on Palm Ave.

3.13 City of Loma Linda Points of Interest:



City of Loma Linda Priority Point of Interest: Loma Linda Plaza, Civic Center, and Veterans Affairs Hospital



City of Loma Linda Suggested Improvements: Loma Linda Plaza, Civic Center, and Veterans Affairs Hospital

Plaza Connectivity

2) Encourage that future development on these parcels include paths that formalize these visible desire line trails by including publicly-accessible pathways linking pedestrian origins and destinations.
3) Install bike lanes north of Barton Rd. Install wayfinding from Mountain View Ave bike lanes to canal trail, power line trail, and baseball fields / park.

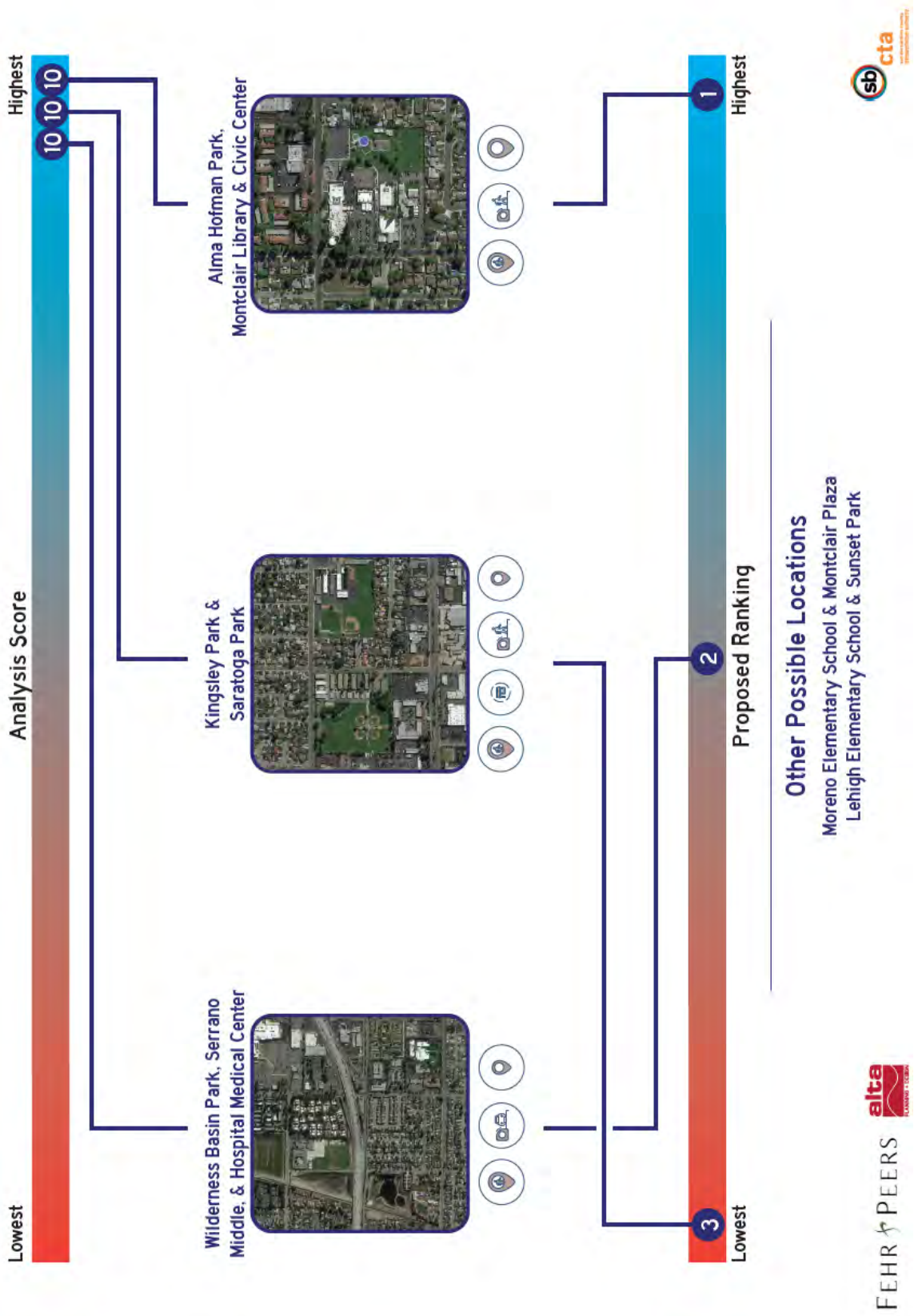
SCE Easement Trail

Barton Frontage Rd - Civic and Commerical

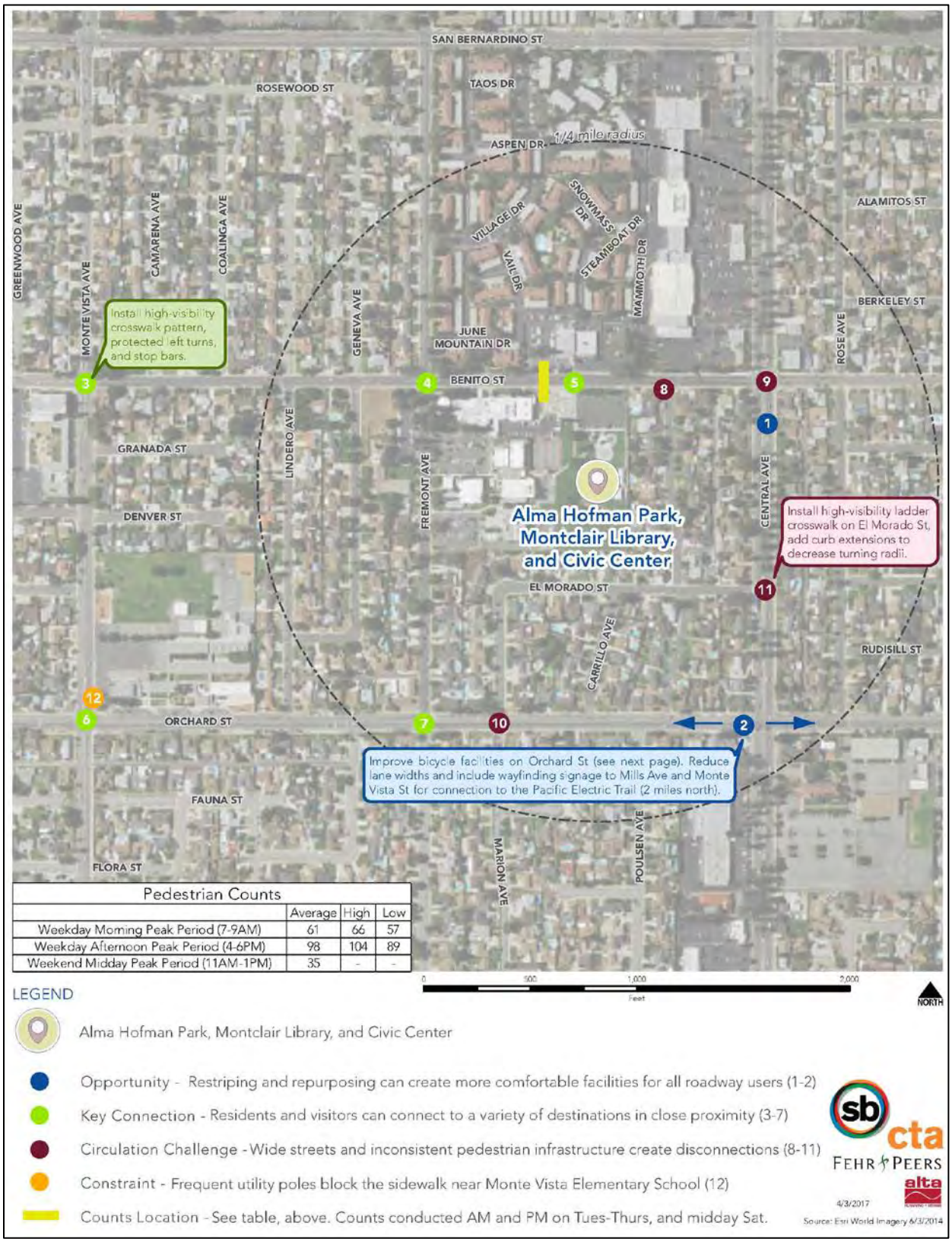
5a) Install pedestrian countdown timers with a minimum 3.5 feet/sec crossing time. Widen median and install pedestrian refuge areas similar to the Loma Linda Dr intersections (6b). Upgrade crosswalks to ladder-style striping. Add sharrow markings and striping to the conflict zone where the bike lane transitions to a right-turn lane.
5b) Install pedestrian countdown signals with a minimum 3.5 feet/sec crossing time. Upgrade crosswalks to ladder-style striping. Add sharrow markings and striping to the conflict zone where the bike lane transitions to a right-turn lane.
6a) Install high-visibility crosswalks across Barton Frontage Rd. Prioritize curb extensions (with ramp upgrades) to shorten the crossing distance.
6b) Install high-visibility crosswalks across Barton Frontage Rd. Prioritize curb extensions to shorten the crossing distance.

4) Install pedestrian and bicycle overcrossing at Barton Rd creating opportunity for "Welcome to Loma Linda" gateway signage to be incorporated as well. Alternatively, consider an enhanced crossing with high-visibility crosswalk, advanced yield markings, Pedestrian Hybrid Beacon (PHB), and median island with pedestrian refuge.
10) Install high-visibility raised crosswalks, advance yield markings, and ramp upgrades. Install W11-15 and W11-15P signage on street in advance of crossing.
11) The loose DG aggregate creates uneven terrain for pedestrians and bicyclists. Pave a Class I Bikeway along the eastern side of the SCE Easement with formalized crossings using as described in location 4 above.

3.14 City of Montclair Points of Interest:



City of Montclair Priority Point of Interest: Alma Hofman Park, Montclair Library, and Civic Center



City of Montclair Priority Point of Interest: Alma Hofman Park, Montclair Library, and Civic Center

Retail Connections

1) Install Class IV parking-protected bike lanes striped with green paint, add conflict zone striping near intersections. Paint "T" perpendicular parking stall markings. Narrow all existing vehicle travel lanes to calm traffic.
9) Install curb extensions, sharrows, and bike route signage on Benito St. Include countdown pedestrian indicators at the signals (with 3.5 ft/second timing).

Monte Vista Elementary School

6) Install high-visibility crosswalk pattern and school crossing signage, curb extensions, ramp upgrades, and advanced stop bars.
12) Narrow travel lanes to widen sidewalk, or work with utility company to prioritize undergrounding of utility infrastructure to enhance accessibility.

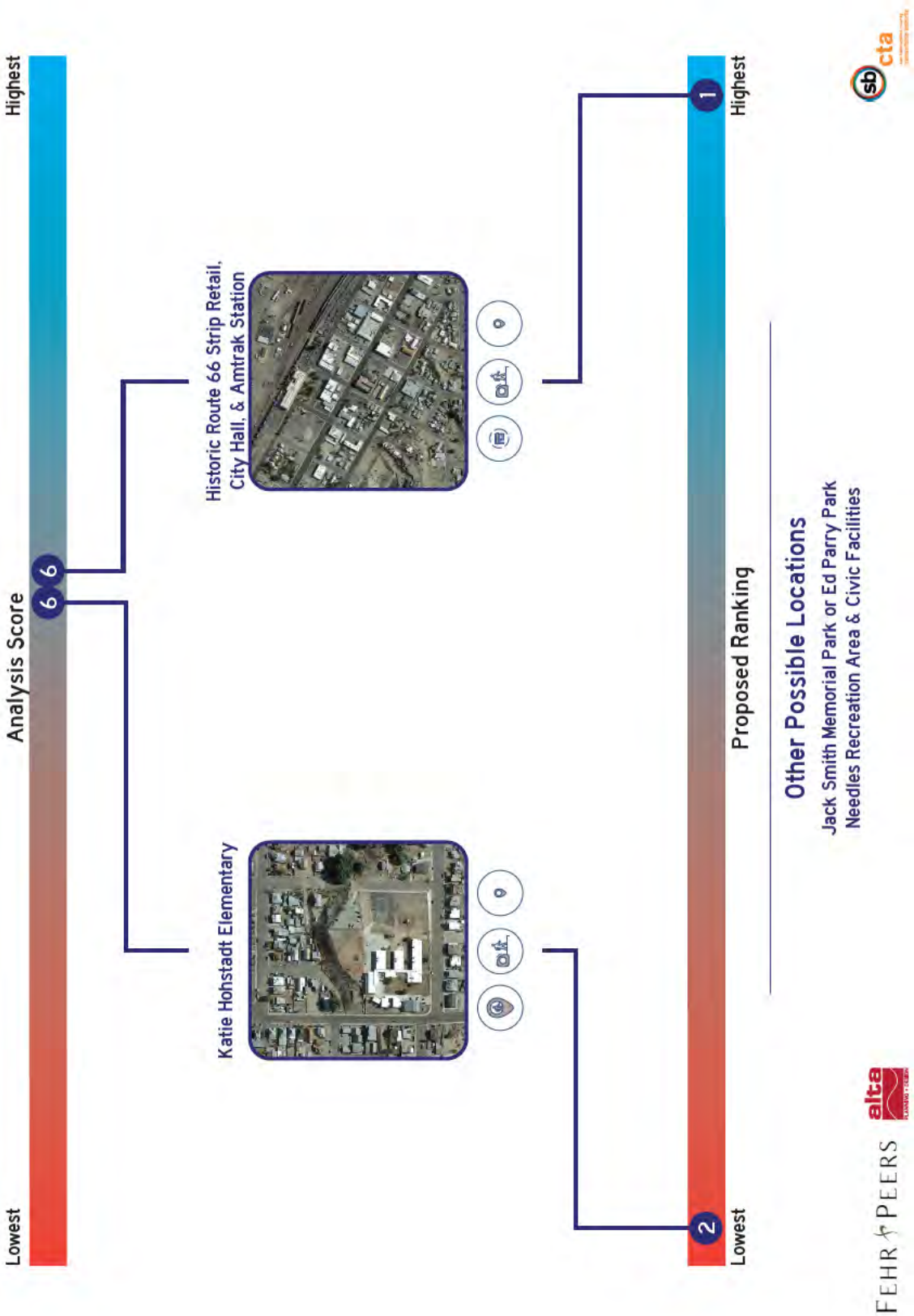
Benito St - Community Sites Connectivity

4) Install high-visibility crosswalk pattern, curb extensions, and curb ramp upgrades.
5) Install mid-block crossing and Rectangular Rapid Flashing Beacon (RRFB) along Benito St to connect Alma Hofman Park and retail center to the north. Install advance yield markings and "yield to pedestrian" signage (CA MUTCD R1-6, R1-9).
8) Install sidewalk to connect the 90' missing sidewalk gap along the west side of Poulsen Ave, adjacent to Benito St.

Orchard St - Residential, School, and Retail Connections

7) Install high-visibility crosswalk pattern, curb extensions, pedestrian crossing signs (SW 24-2, 3 (CA)), and pedestrian refuge islands where the median stop signs and concrete pads are currently located.
10) Implement a road diet by converting the outermost travel lanes in each direction. Add buffered Class II bike lanes and install curb extensions, high-visibility crosswalk pattern, and advanced stop bars at controlled intersections along Orchard St. Additional intersections should be considered for neighborhood traffic circles, pending further study.

3.15 City of Needles Points of Interest:



City of Needles Priority Point of Interest: Historic Route 66 Retail, City Hall, and Amtrak Station

City of Needles Suggested Improvements: Historic Route 66 Retail, City Hall, and Amtrak Station

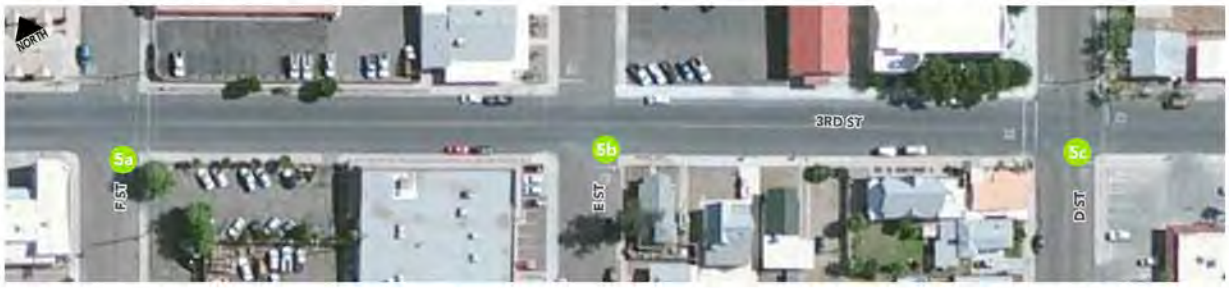
Employment, Recreation, Retail, and Transportation

1) Install high-visibility crosswalk and curb extensions on Quinn Ct.
2) Install high-visibility ladder crosswalk, curb extensions, and curb ramp upgrades on Quinn Ct at the alley connecting F St and E St.
7) Formalize drop-off zone here, re-site dumpsters to Amtrak or BNSF parking lot. Stripe high-visibility crosswalk between Santa Fe park and the Route 66 Plaza entrance.
8) Prioritize installation of sidewalks along Front St from F St to B St. Install high-visibility mid-block crosswalk, curb extensions, advance yield teeth line, and yield to pedestrian signage in front of BNSF offices entrance (former Amtrak station).

Historic Route 66

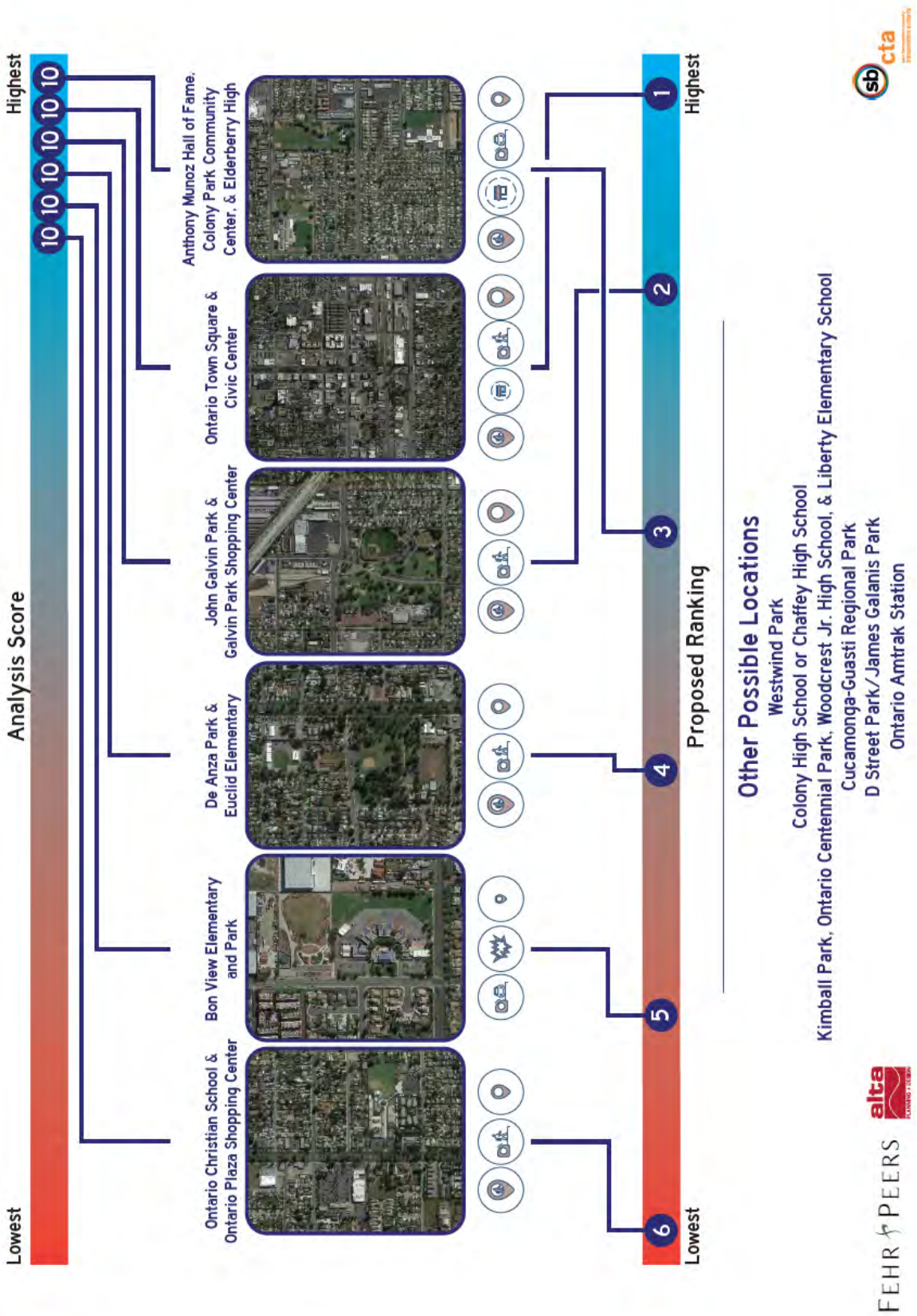
3) Implement a 4-to-3-lane road diet with center turn lane and add Class II buffered bike lanes with curb extensions.
4a) Explore high-visibility crosswalk and curb extensions to shorten crossing distances and also provide motorists better visibility of pedestrians.
4b) Install four-way stop or Rectangular Rapid Flashing Beacon (RRFB), high-visibility crosswalk, and consider adding curb extensions to shorten pedestrian crossing distances.

Downtown Needles - Residential, Retail, and Community Connections

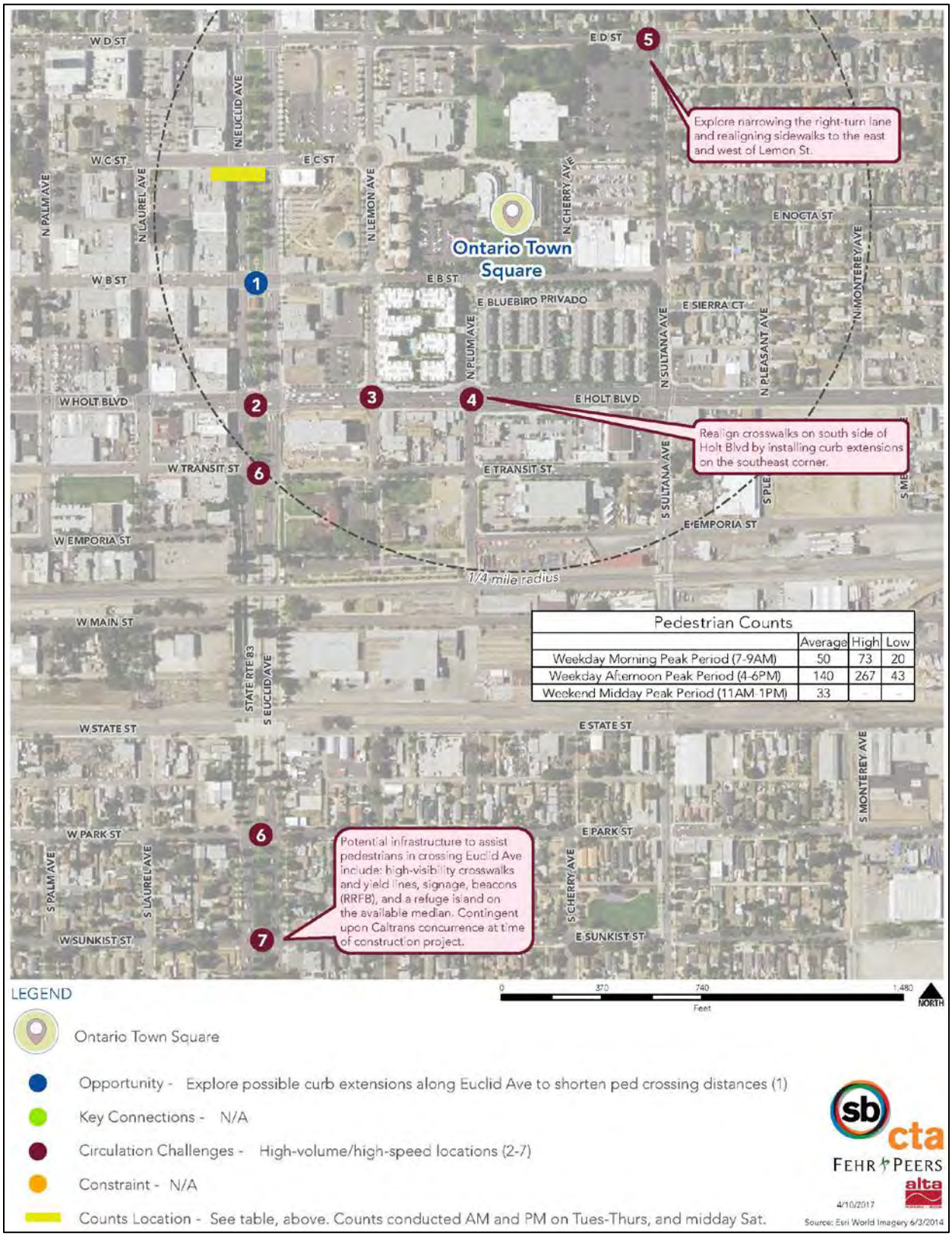


5a) Explore installation of four-way stops (or mountable traffic circles with advance yield teeth line), high-visibility crosswalks, and consider adding curb extensions to shorten the pedestrian crossing distance.
5b) Explore installation of four-way stop, high-visibility crosswalks, and curb extensions to alert motorists to the presence of pedestrians at this intersection.
5c) Install high-visibility crosswalks and curb extensions. Create guidelines for future development to maintain minimum setbacks with street-oriented buildings and an arcade for providing shade along the sidewalks. Consider incorporating wayfinding signage directing people to pedestrian points of interest around Historic Needles.

3.16 City of Ontario Points of Interest:



City of Ontario Priority Point of Interest: Ontario Town Square



City of Ontario Suggested Improvements: Ontario Town Square

Euclid Ave & B St

1) Add yield limit lines and RRFB for high-speed, high-volume crossings along school walking route.

Holt Blvd & Euclid Ave

2a) Realign left-turns outside of the median and incorporate curb extensions along the sidewalk to facilitate pedestrian crossings.
2b) Monitor intersection for high pedestrian activity, collisions, or vulnerable populations utilizing crossing to ensure adequate crossing times.

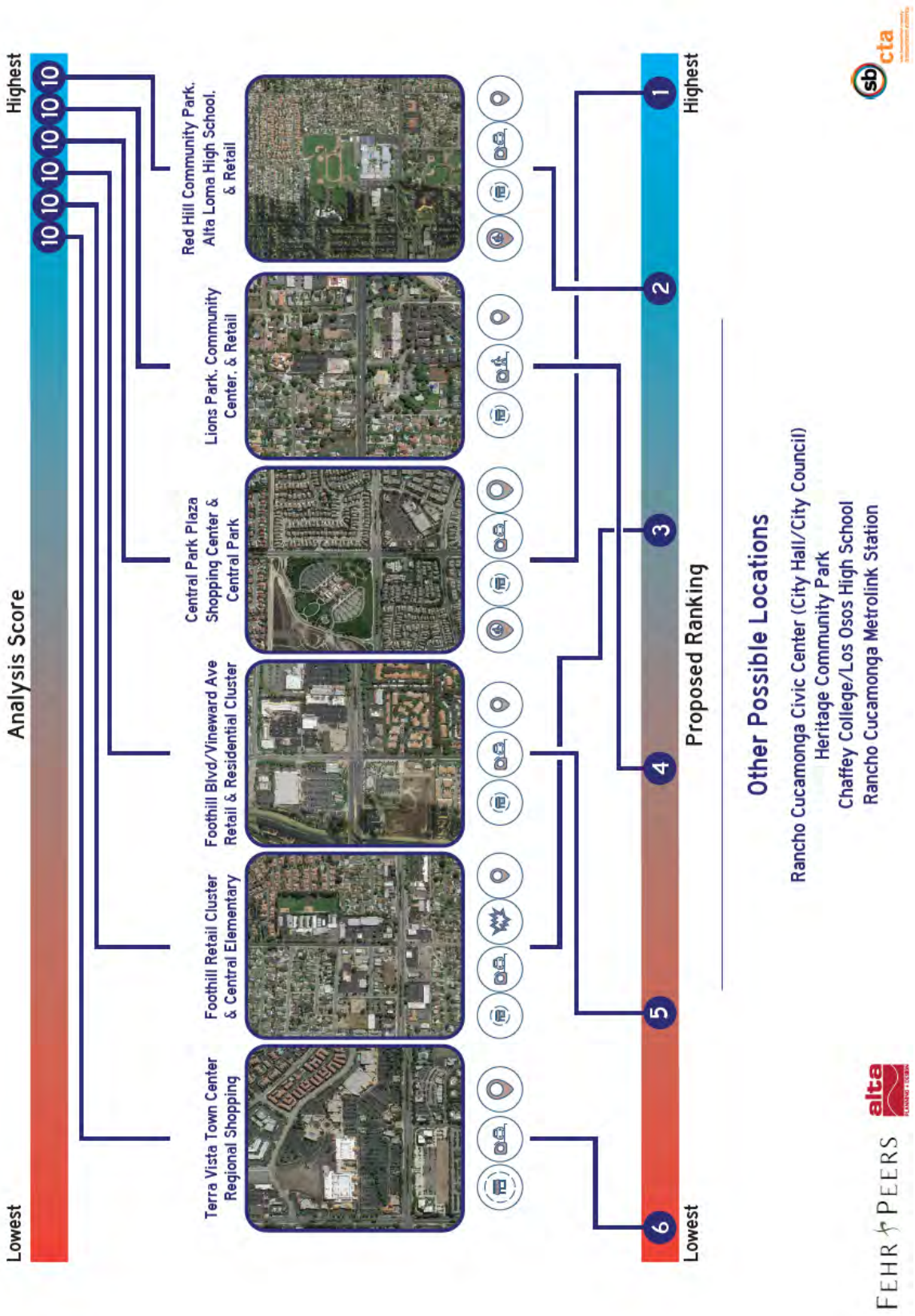
Holt Blvd & Lemon St

3) Explore narrowing of right-turn lane and realign sidewalks to the east and west of Lemon St.

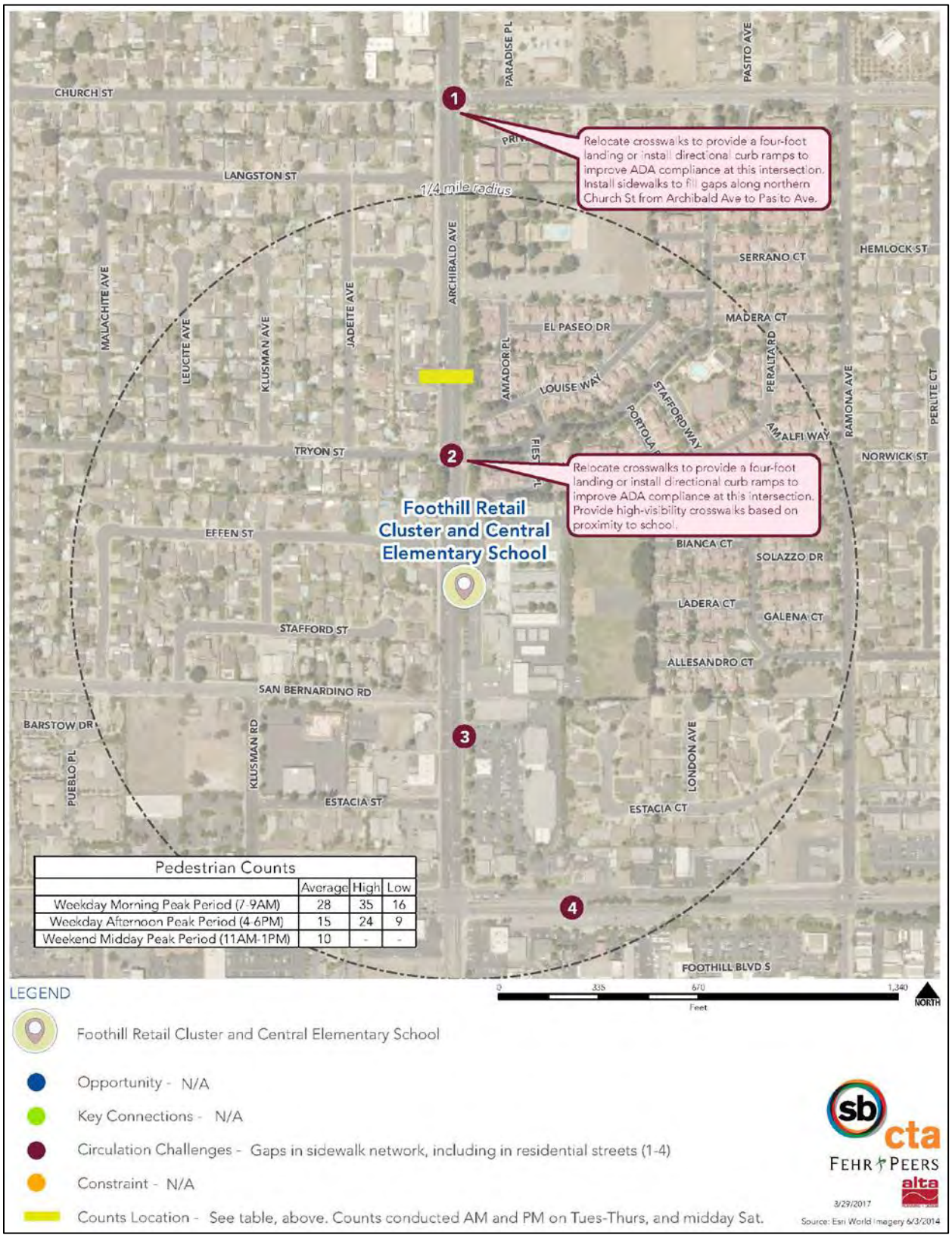
Euclid Ave near Ontario Station

6) Potential improvements at these intersections include Caltrans approved curb extensions to slow traffic and high-visibility crosswalks with yield lines across the minor streets. For crossing Euclid Ave, potential improvements include: high-visibility crosswalk with yield lines, signage, RRFBs, and a refuge within the available median. Contingent upon Caltrans concurrence at time of construction project.

3.17 City of Rancho Cucamonga Points of Interest:



City of Rancho Cucamonga Priority Point of Interest: Foothill Retail Cluster and Central Elementary School



City of Rancho Cucamonga Suggested Improvements: Foothill Retail Cluster and Central Elementary School

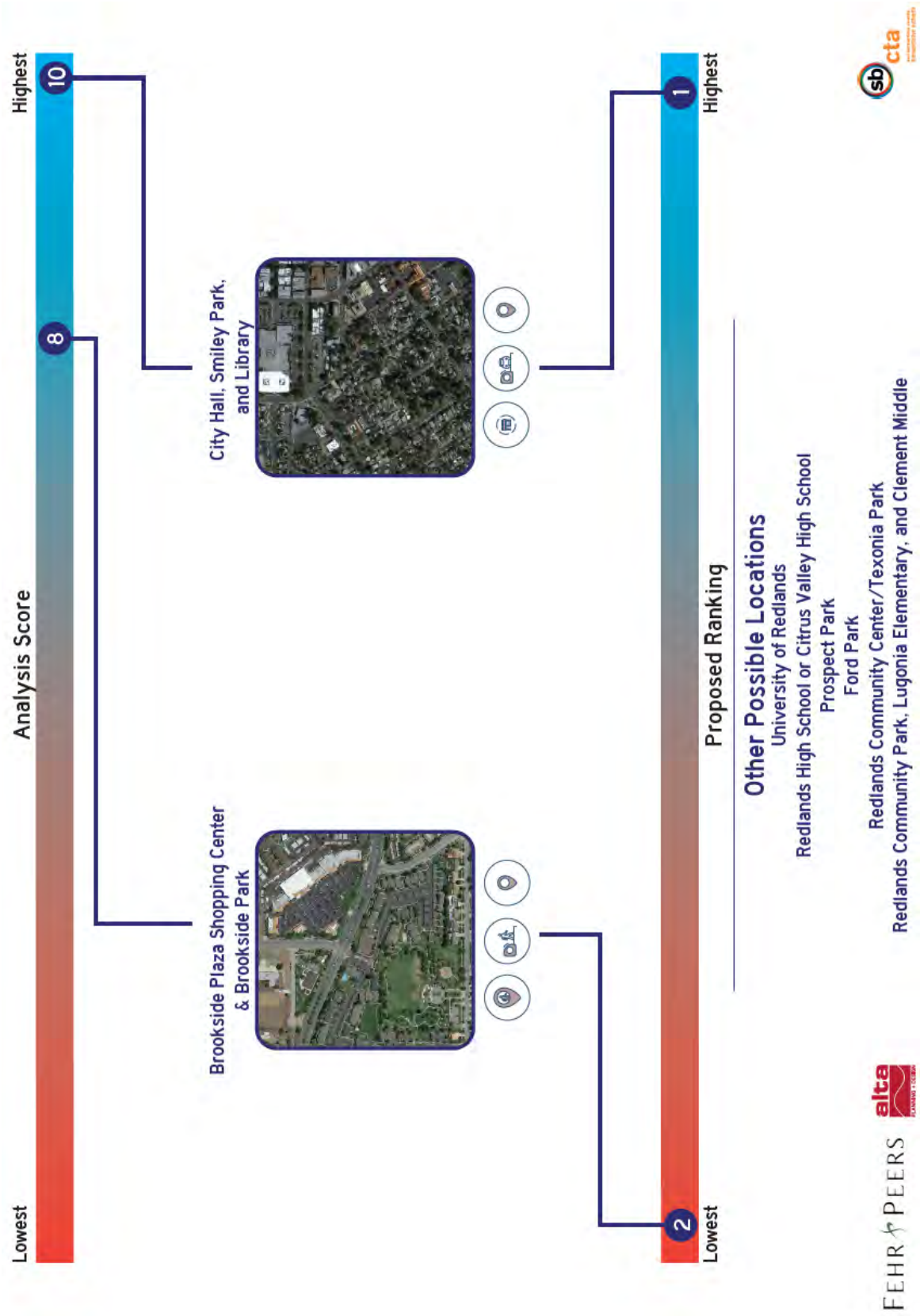
Archibald Ave & Shopping Center Driveway

3) Add a crosswalk for pedestrians crossing this driveway and signage to alert vehicles to pedestrians.

Foothill Blvd near Archibald Ave

4) *Option 1:* Add a sidewalk on the southern edge of the frontage road, along businesses.
Option 2: Install a sidewalk parallel to and between the bicycle lane and parking along the frontage road, and move frontage road parking south to accommodate the sidewalk. Also, include crosswalks at each end of the frontage road to delineate a direct path of travel and communicate the potential presence of pedestrians.

3.18 City of Redlands Points of Interest:



City of Redlands Priority Point of Interest: City Hall, Smiley Park, and Library

City of Redlands Suggested Improvements: City Hall, Smiley Park, and Library

Redlands Bowl, Smiley Park, and A.K. Smith Library

1a) Install high-visibility crosswalks that connect the park pathways to the neighborhood sidewalks on Parkwood Dr and Glenwood Dr.
1b) Implement mid-block crossings (with yield lines) to better connect Smiley Park, Redlands Bowl, and AK Smiley Library based on demand or collision history.

Brookside Ave at Grant St & Eureka St

3a) Consider making the crosswalk more visible through the installation of pedestrian crossing signs. Install curb cuts that align with the crosswalk.
3b) Extending the Brookside Ave medians could create pedestrian refuge islands at the crosswalk mid-point. Adjusting the northern curb cuts to align better with crosswalks would enhance pedestrian conditions by shortening crossing distances.

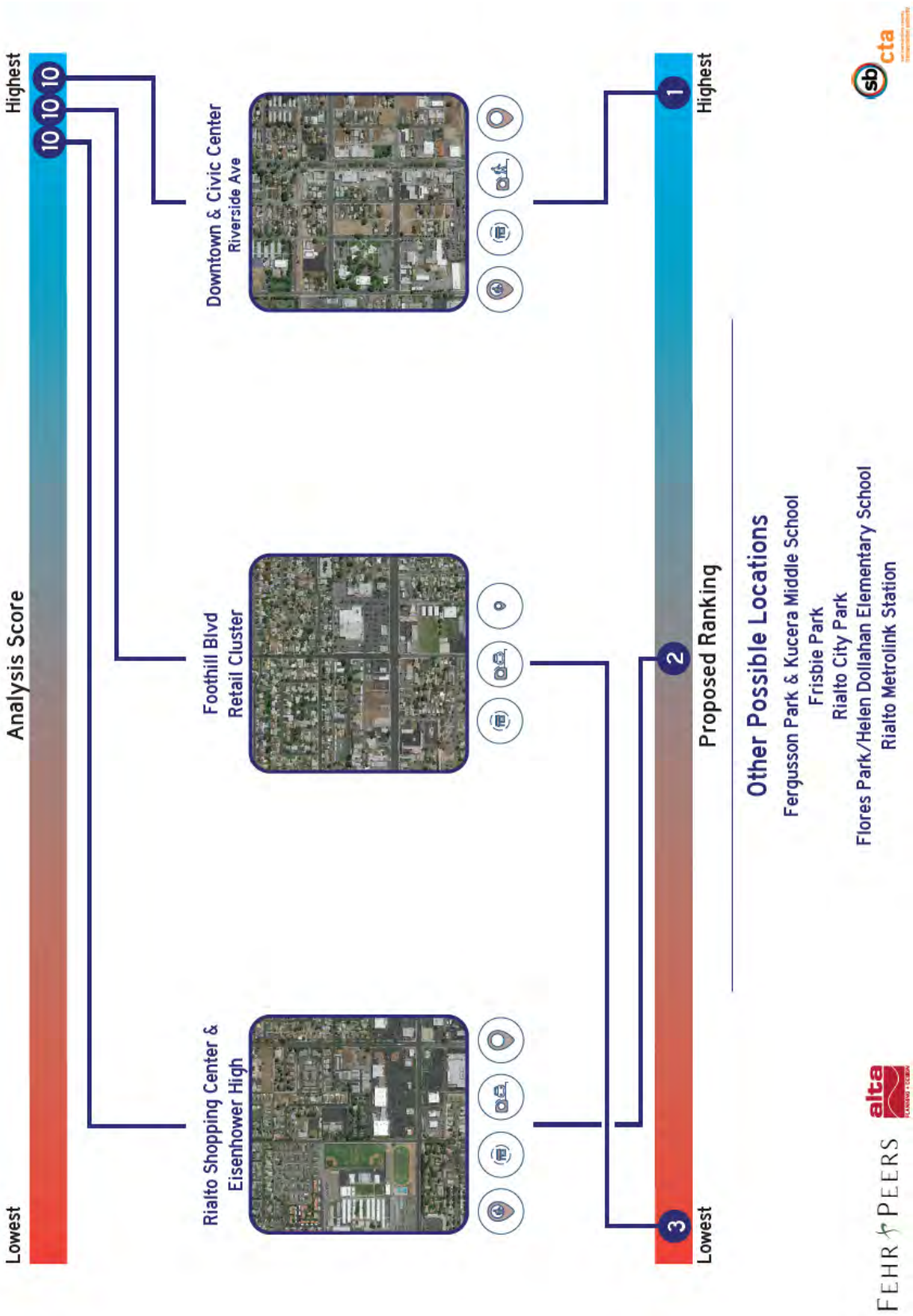
Olive Ave between Grant St & 4th St

4a) Convert existing crossing into a high-visibility crosswalk.
4b) Installing curb extensions out to the bike lanes will shorten the length of the north/south crossings and push activated RRFBs will alert drivers of crossing pedestrians.

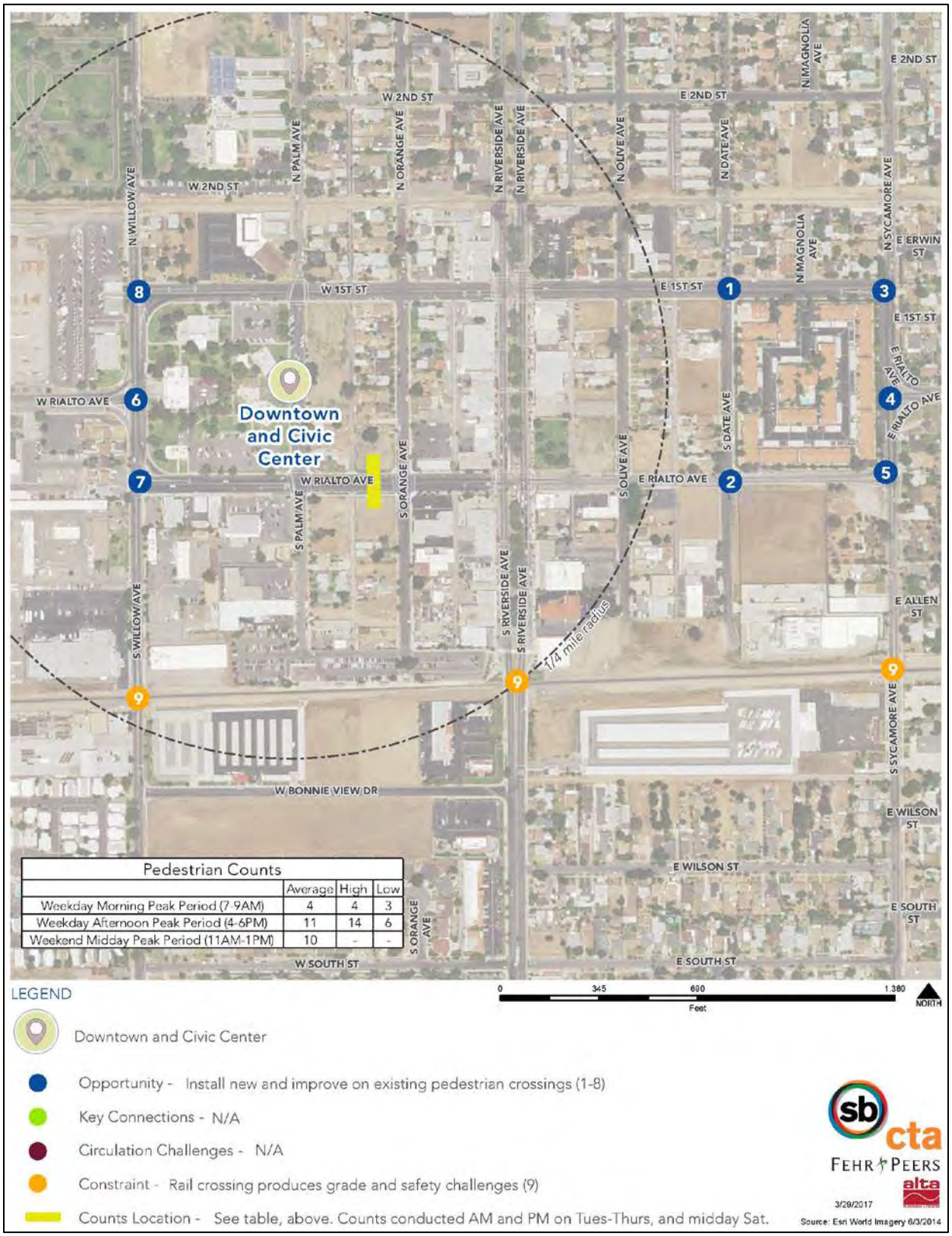
Vine St

5a) Extend southeast curb to shorten intersection crossing and realign the library driveway entrance/exit to be perpendicular to Vine St.
5b) Consider making the crossings more visible with additional enhancements.

3.19 City of Rialto Points of Interest:



City of Rialto Priority Point of Interest: Downtown and Civic Center



City of Rialto Suggested Improvements: Downtown and Civic Center

Sycamore Ave & Date Ave At 1st St & Rialto Ave

1) Review the sidewalks and curb cuts for ADA-compliance near the senior apartment complex.
2) Build out the sidewalk network when empty lots on the southern portion of east Rialto Ave are developed. Ensure the sidewalks and curb cuts are ADA-compliant.
3) Install a northside crosswalk at the stop sign for pedestrians to cross Sycamore from east-west with the appropriate MUTCD markings (Fig. 3B-16/17) and signs (R1-5A). Install ADA-compliant sidewalks and curb cuts.
4) Install crosswalk on the east leg of the intersection to cross Rialto Ave north-south and install signage (R1-5A) and striping (Fig. 3B-16/17). Install sidewalks and curb cuts that are ADA-compliant.
5) Install a southside crosswalk at the stop sign for pedestrians to cross Sycamore Ave from east-west with appropriate MUTCD markings. Install ADA-compliant sidewalks and curb cuts.

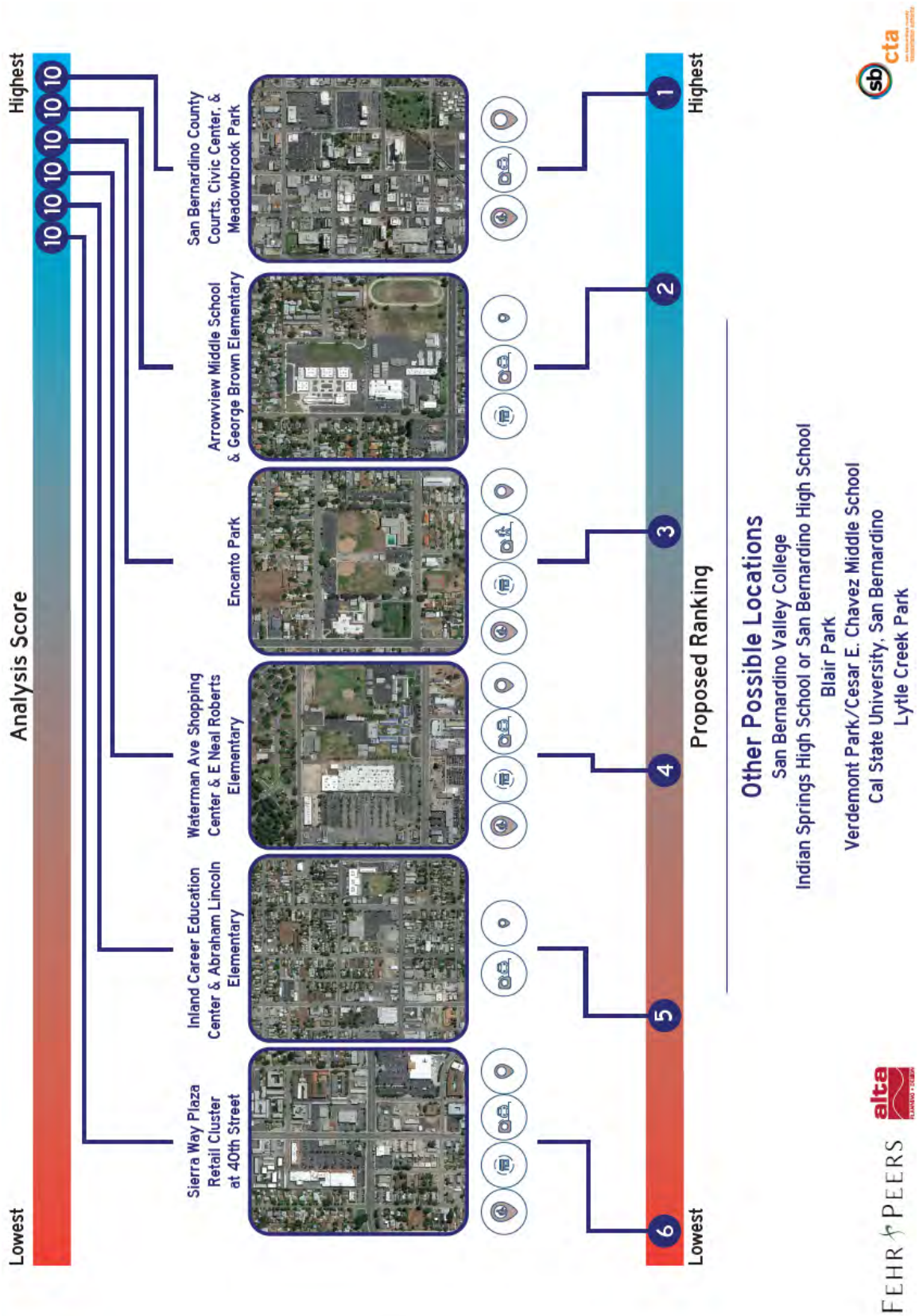
Willow Ave (East of City Hall)

6) Enhance the crossing with high visibility crosswalks, ADA-compliant ramps and pedestrian signage and striping per MUTCD standards as descrived in 4 above. Restripe intersection geometries to improve Level of Service. Install APS-compliant ADA push buttons.
7) Install APS-compliant ADA push buttons.
8) Enhance the crossing with high visibility crosswalks, ADA-compliant ramps, and pedestrian signage and striping per MUTCD standards as descrived in 4 above. Install APS-compliant ADA push buttons.

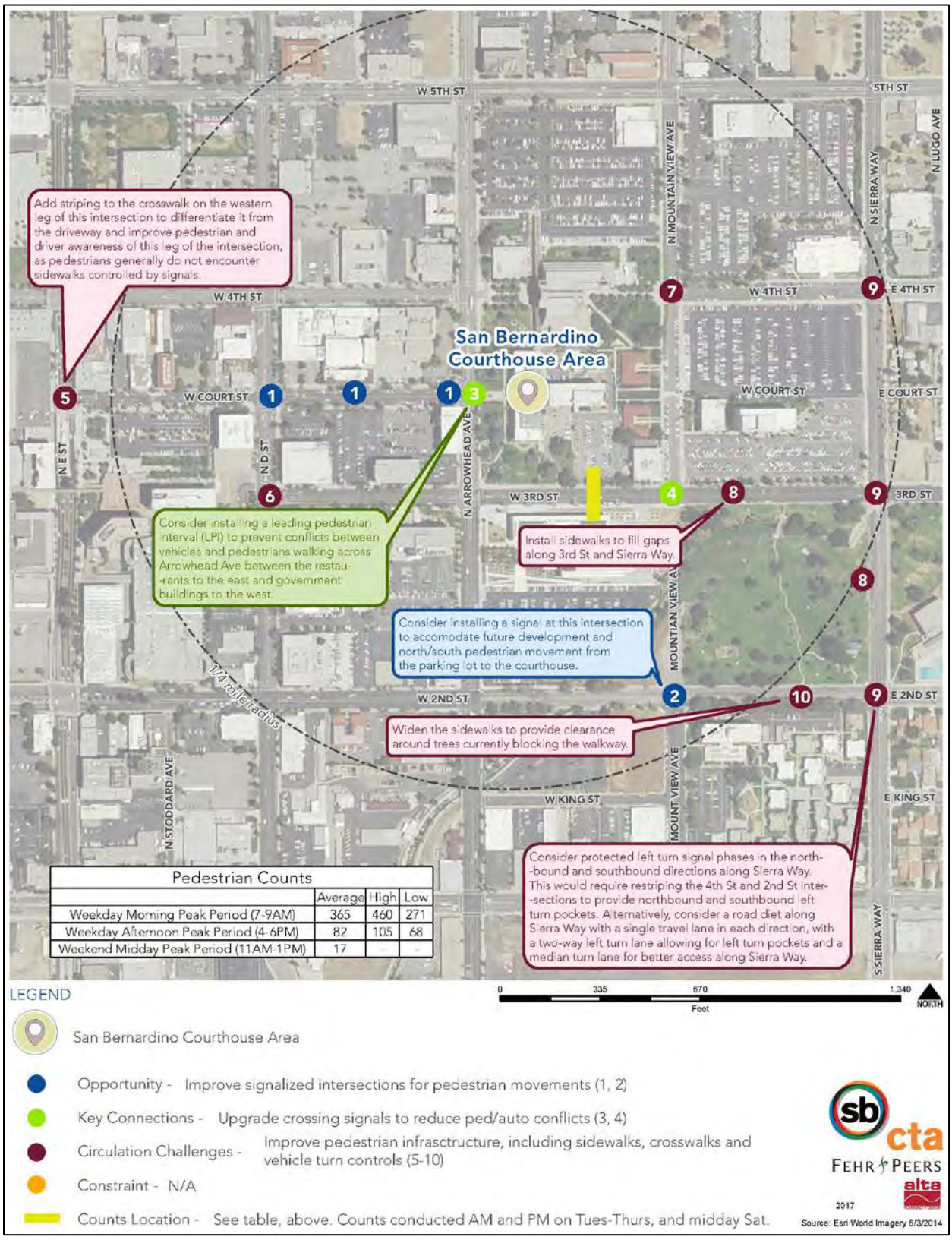
Rialto Metrolink Station

9) For RR crossings at Willow Ave, Riverside Ave, and Sycamore Ave, ensure that sidewalk rail crossings are ADA-compliant. Consider installing gates blocking pedestrian movements during active train movements.

3.20 City of San Bernardino Points of Interest:



City of San Bernardino Priority Point of Interest: San Bernardino Courthouse Area



City of San Bernardino Suggested Improvements: San Bernardino Courthouse Area

Court St between E St and Arrowhead Ave

1a) Convert the painted bulbouts at Court St's signalized intersections between D St and Arrowhead Ave to paved bulbouts similar to the bulbouts at Court St's intersections west of D St.
1b) Install paved bulbouts at any future midblock crossing between D St and Arrowhead Ave similar to the bulbouts provided for the midblock crossing between E St and D St.

3rd St & Mountain View Ave

4) Install a Pedestrian Hybrid Beacon (PHB) to help address conflicts between vehicles and heavy pedestrian volumes across 3rd St in the morning between the parking lot to the northwest and the courthouse to the southeast.

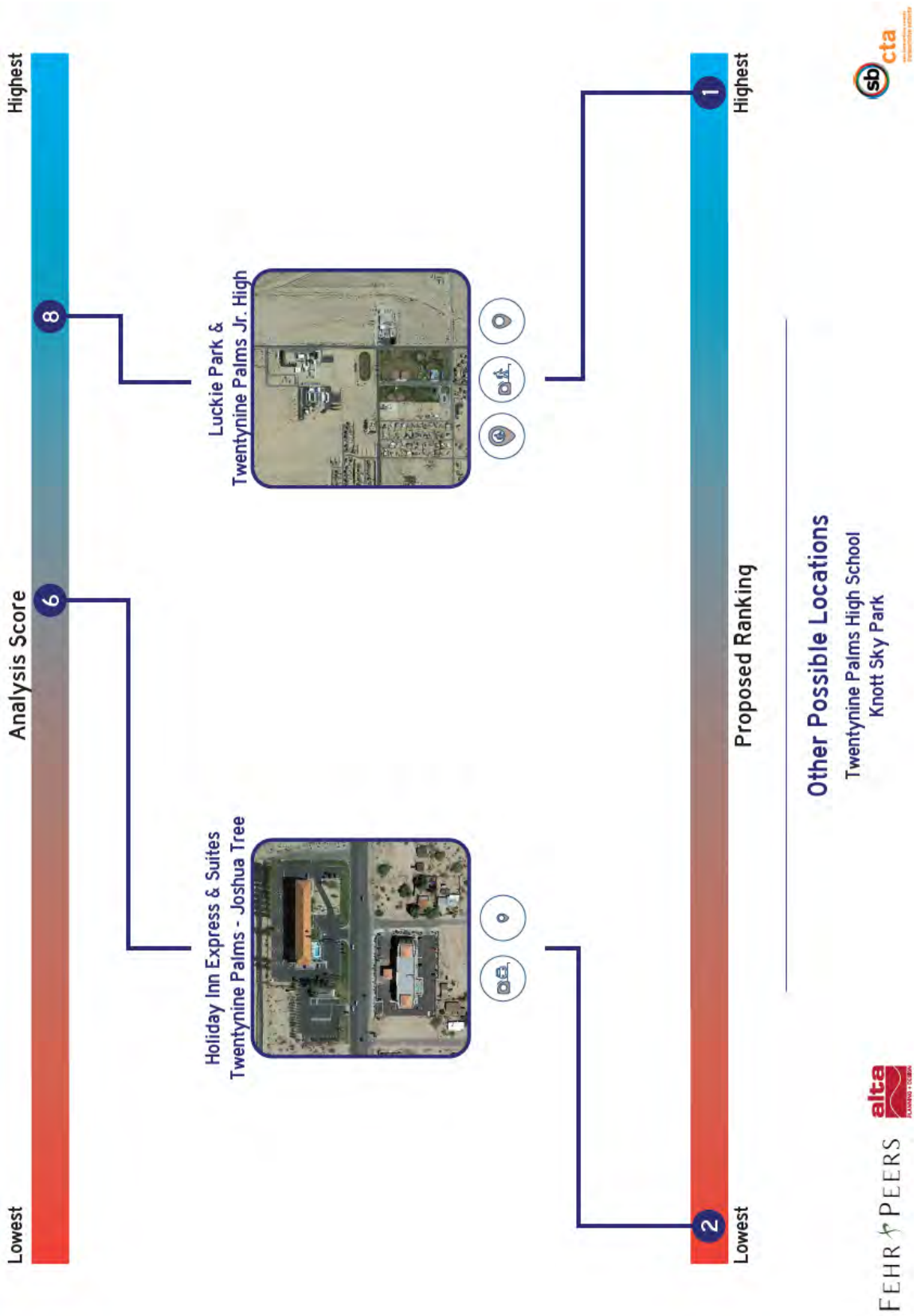
3rd St & D St

6a) Install marked crosswalks, a sidewalk, curb cuts, and a stop bar along the intersection's western leg to accommodate this direct and heavily-utilized north-south pedestrian movement across the Civic Plaza drop-off driveways.
6b) Convert the westbound left turn signal phase to a protected signal phase to reduce conflicts with heavy pedestrian volumes due to the intersection's offset geometry.

4th St & Mountain View Ave

7a) Provide curb ramps at all corners of this intersection.
7b) Provide signage directing mobility-impaired pedestrians (e.g., due to a wheelchair, walker, or stroller) to the midblock crossing to the south of the intersection, which is ADA-accessible.

3.21 City of Twentynine Palms Points of Interest:



City of Twentynine Palms Priority Point of Interest: Luckie Park and Twentynine Palms Junior High School

City of Twentynine Suggested Improvements: Luckie Park and Twentynine Palms Junior High School

School and Park Accessibility

1) Install sidewalk on north side of Two Mile Rd, particularly the section between Utah Trail and Luckie Ave. Opportunity to install streetscape enhancements like shade trees and designated street parking as well.
3) Install high-visibility ladder crosswalks and curb ramps (with sidewalks on east side). Prioritize enhanced crosswalk features including curb extensions, MUTCD school signage, and yellow crosswalk markings across west leg of intersection.
4) Install sidewalks on Two Mile Rd west of Luckie Park to Desert Knoll Ave.
5) Restripe existing crosswalks with high-visibility ladder markings and, install Rectangular Rapid Flashing Beacons on Two Mile Rd. Install upgraded curb ramps at Luckie Park entrance.

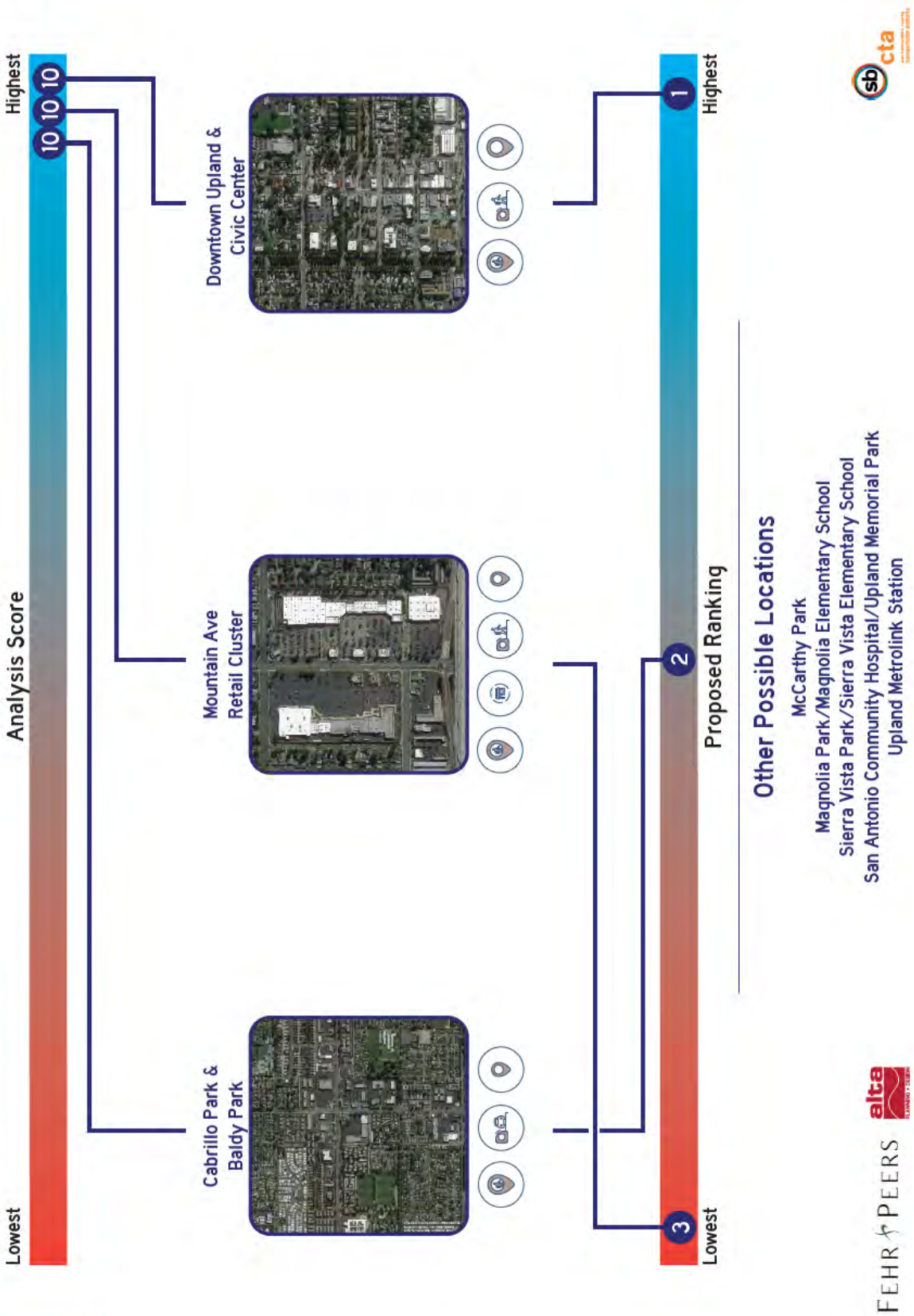
Residential to Recreation Connections

2) Implement a road diet to include center turn lane, one travel lane in each direction, and Class II buffered bike lanes on Joe Davis Dr.
6) Prioritize installation of sidewalks along Joe Davis Dr west of Luckie Park.
7) Restripe existing crosswalks with high-visibility crosswalks, Pedestrian Hybrid Beacons or Rectangular Rapid Flashing Beacons can enhance uncontrolled crossings across to Joe Davis Dr.
8) Install high-visibility ladder crosswalks and curb extensions to shorten crossing distance and provide motorists better visibility of pedestrians.

Safe Routes to Twentynine Palms Jr. High School

9a) Create a shortest-path paved multi-use trail with pedestrian-scale lighting to connect Luckie Park with Twentynine Palms Junior High School.
9b) Provide a sidewalk connection to allow pedestrians an opportunity to access the school from this point at Utah Trail.

3.22 City of Upland Points of Interest:



City of Upland Priority Point of Interest: Downtown Upland and Civic Center

City of Upland Suggested Improvements: Downtown Upland and Civic Center

A St & 2nd Ave

2) Install thermoplastic high-visibility crosswalks.

3rd Ave & D St

3a) Apply consistent crosswalk markings at all legs of this intersection.
3b) Install yield lines and pedestrian signage for approaches with uncontrolled crossings.

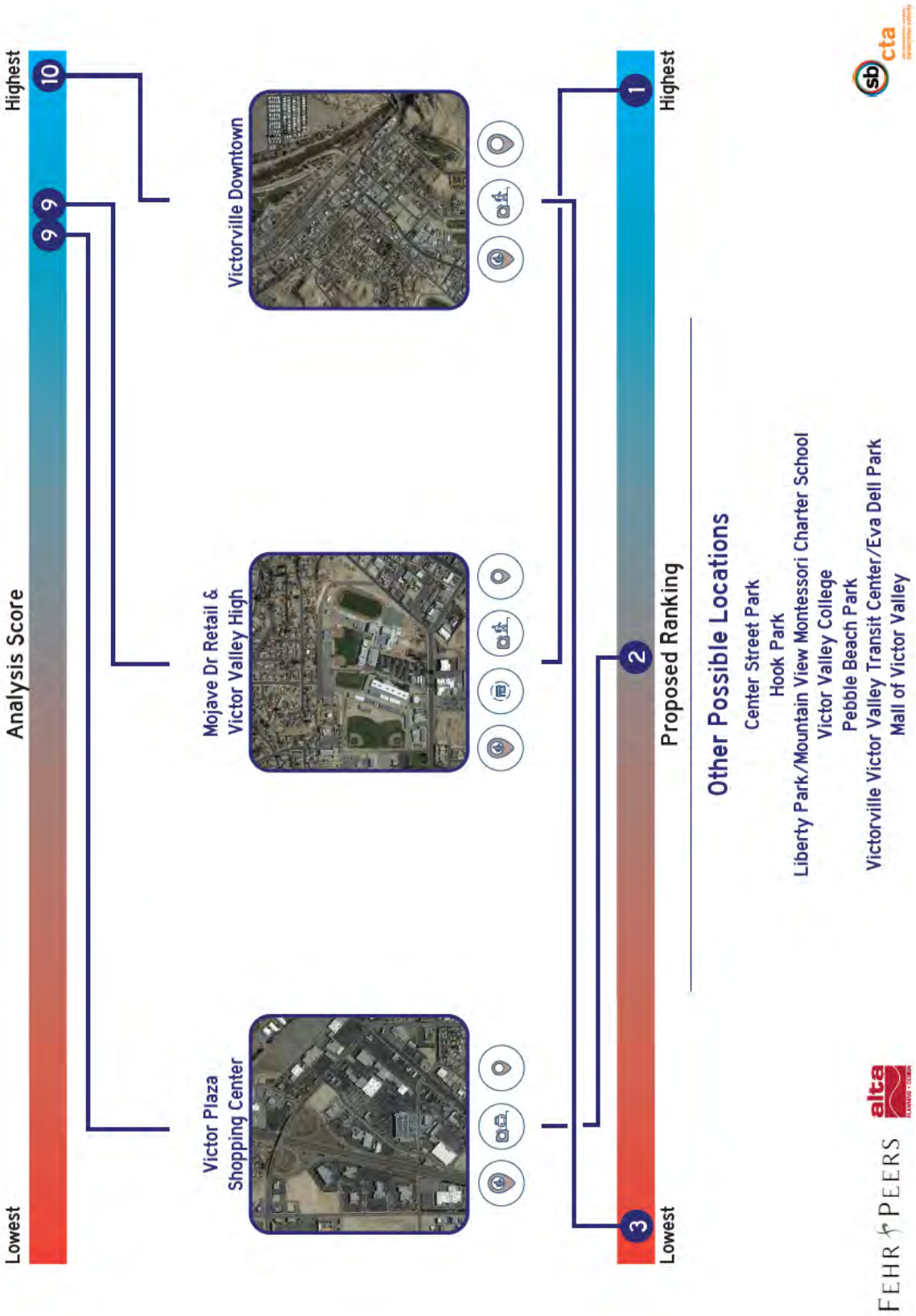
Bike Path Connections w/ 1st Ave, 2nd Ave, and 3rd Ave

4) Install thermoplastic ladder style crosswalk with both crosswalk signs and advanced crossing ahead signs.

Euclid Ave & C St

5a) Install a curb ramp at the southwest corner of the intersection.
5b) Install up-to-date pedestrian signage for each approach along Euclid Ave.
5c) Install thermoplastic high-visibility crosswalks with yield lines and standarized signage.

3.23 City of Victorville Points of Interest:



City of Victorville Priority Point of Interest: Old Town Victorville

City of Victorville Suggested Improvements: Old Town Victorville

Old Town Victorville Station

1) Consider adding a high-visibility pedestrian crossing, with push-activated RRFB, yield lines, and FYG crossing signage to connect Old Town Victorville to Amtrak station building. Consider the addition of a traffic signal, if approved by Caltrans.

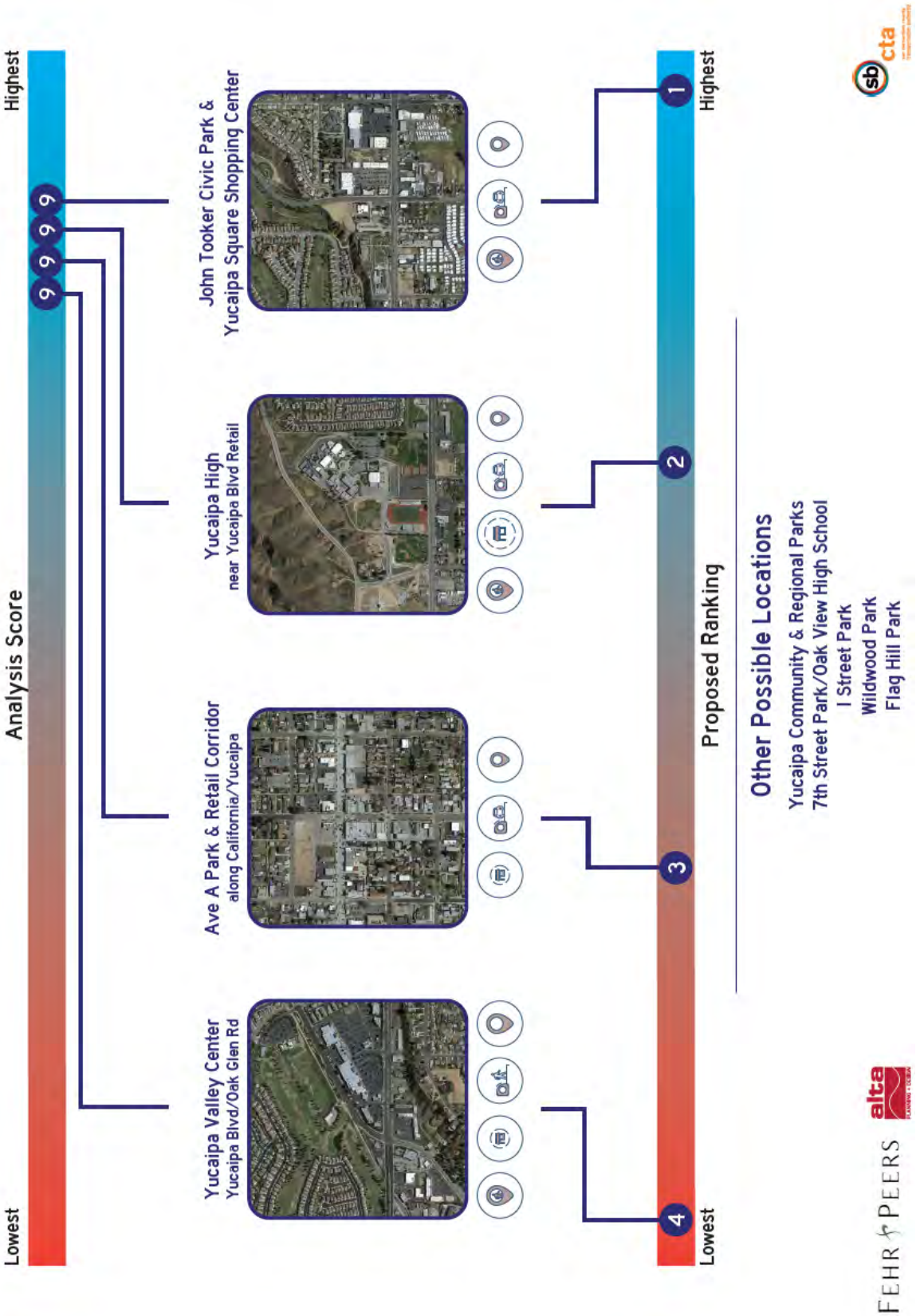
6th & 7th St Connections to Sixth St Prep School

3a) Replace existing crosswalks with highly-visible, horizontal pattern appropriate for school zone as done at Forrest Ave & 6th St along with the installation of a mid-block crosswalk in front of the school.
3b) Consider the installation of yield lines and a RRFB or in-road signage, for this high-speed, high-volume crossing.
3c) Paint crossings with consistent striping pattern, construct ADA compliant curbs, and consider realigning off-set crosswalks with bulbouts.

B St & C St Pedestrian Improvements

5a) Shift stop bars so they occur before reaching the curb cuts to help reduce vehicle and pedestrian conflicts.
5b) If sidewalks are built along B & C St towards the direction of Victor Valley Memorial Park, consider implementing crosswalk infrastructure across Hesperia Rd.

3.24 City of Yucaipa Points of Interest:



City of Yucaipa Priority Point of Interest: John Tooker Park, Civic Center, Retail, and Regional Transit Hub

City of Yucaipa Suggested Improvements: John Tooker Park, Civic Center, Retail, and Regional Transit Hub

Shortest-Path Pedestrian Connectivity

2a) Enhance crosswalk by adding high-visibility crosswalk and stop bars. Re-stripe the #2 and #3 travel lanes to 10 feet.
2b) Enhance crosswalks by adding high-visibility ladder markings and stop bars to shorten the crossing distance. Add a pedestrian refuge at the center median. Update the countdown timer to ensure adequate crossing time of 3.5 feet/second.
3) Install high-visibility midblock crosswalk with advance yield markings and Pedestrian Hybrid Beacon (PHB) with appropriate pedestrian crossing signage (CA MUTCD R1-6, R1-9); use existing median as a pedestrian refuge island, install pedestrian call button.

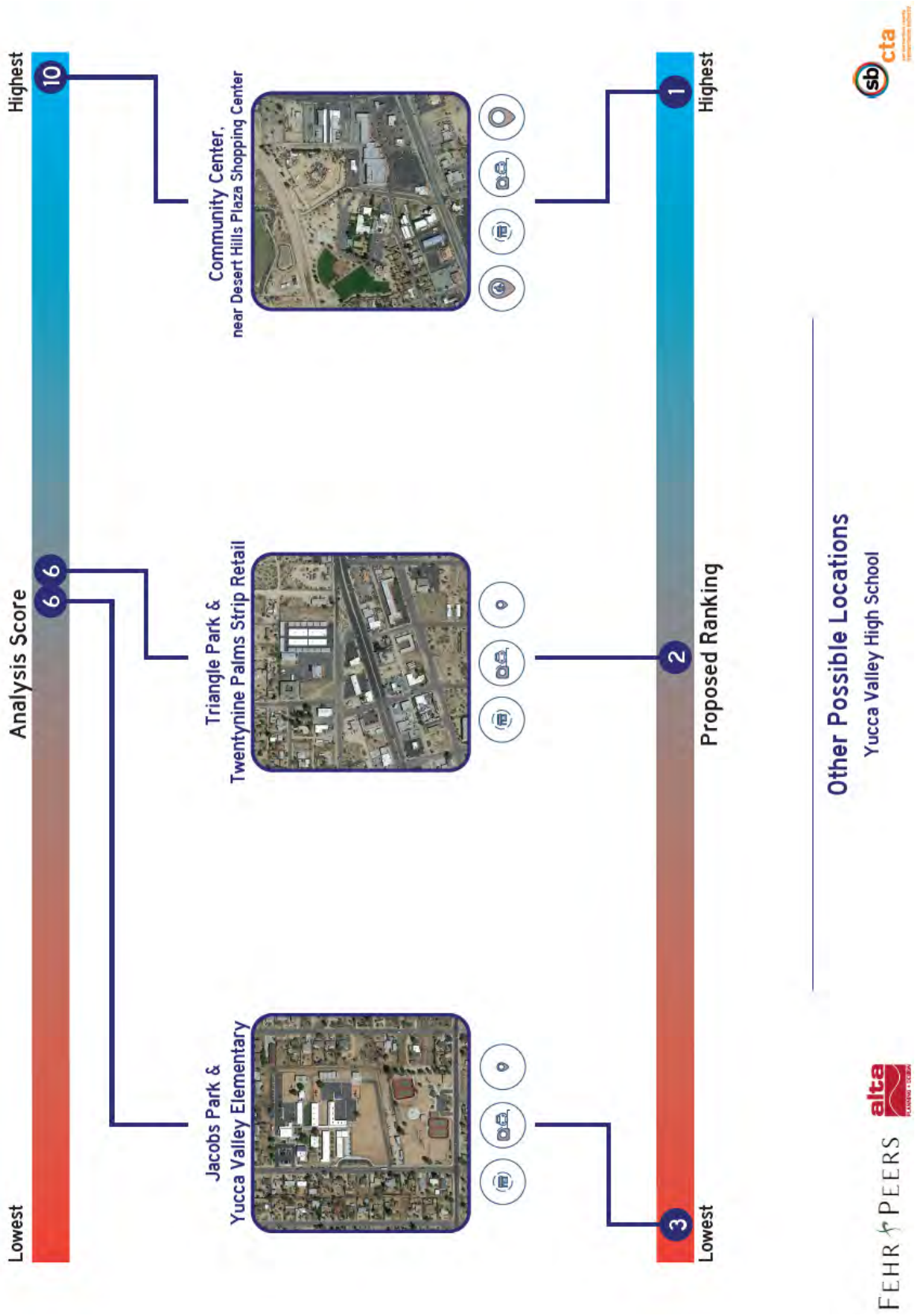
Multimodal Access to Transit Station

4) Improve pedestrian-scale wayfinding signage to and through the transit center.
5a) Improve direct pedestrian accesibility to the transit station by adding a pathway through the parking lot entrance. Install a Rectangular Rapid Flashing Beacon and raised median pedestrian island at 5th St crossing to the retail center in order to provide direct shortest-distance access.
5b) Improve direct pedestrian accesibility to the transit station by adding a pathway through the driveway entrance. Encourage future re-development at Library site to provide shortest-path public access as well.

Residential Connections

6) Prioritize installation of sidewalks and crosswalks with upgraded curb ramps throughout residential areas within a half mile of the Point of Interest. Consider installing curb extentions at key intersections to improve pedestrian crossings and, installing buffered Class II bike lanes to narrow vehicle lanes and calm traffic.

3.25 Town of Yucca Valley Points of Interest:



Town of Yucca Valley Priority Point of Interest: Community Center, near Desert Hills Plaza Shopping Center

Town of Yucca Valley Suggested Improvements: Community Center, near Desert Hills Plaza Shopping Center

Sage Ave & Twentynine Palms Hwy

1a) Update signal timing to include protected left-turn phase on northbound and southbound approaches of Sage Ave & Twentynine Palms Hwy.
1b) Consider adding sidewalks to connect Twentynine Palms Hwy to Twentynine Palms Outer Hwy along Sage Ave and Barberry Ave.

Antelope Trail & Dumosa Ave

4) Install pedestrian facilities on Dumosa Avenue to Yucca Valley Community Center using crosswalks, curb cuts, and the addition of missing sidewalks.

Antelope Trail

6) Create pedestrian connections to the Yucca Valley Community Center and Park from existing facilities between Dumosa Ave and the Community Center with the addition of crosswalks and sidewalks at the intersection of Antelope Trail & the Community Center entrance.

4.0 Appendix A – Cost Effectiveness Model

A cost-benefit analysis (CBA) has been conducted on this PIPP. The CBA helps to evaluate both the costs of a proposed project and its potential benefits. The costs are determined by looking at the capital and maintenance costs over a twenty-year period. The benefits consider the impact on environmental sustainability, quality of life, economic competitiveness, and safety for the same time period. The estimated benefits of constructing the proposed projects are then compared to the estimated costs of implementation, to get a benefit-cost ratio. A summary of the CBA is linked from this document and includes estimated costs, estimated benefits, net present value, the internal rate of return, and benefit-cost ratio for each jurisdiction's investments (the proposed pedestrian improvements).

This data can be used by SBCTA and its member jurisdictions in the project planning, approval, and implementation process. The results of this analysis (summarized below in Table 1 with more detail through the linked document) can help individual cities better understand and communicate the investments in and benefits from pedestrian improvements. There are several different output tables found in the Appendices of the CBA itself, each of which help explain how dollars are translated into various types of benefits for residents. Jurisdictions can use this information to inform stakeholders how pedestrian infrastructure can result in numerous and diverse benefits for the community.

4.1 Link to Content

The CBA can be found by clicking anywhere in Table 1.

Table 1: 20-year Cost-Effectiveness Summary (20 years post-construction at 3% Discount Rate)

Jurisdiction	Estimated Costs	Estimated Benefits of Active Transportation (No Build)	Estimated Benefits of Active Transportation (Build)	Net Present Value	Internal Rate of Return	Benefit-Cost Ratio
Adelanto	$2,783,000	$7,230,000	$52,320,000	$23,520,000	32.76%	18.8
Apple Valley	$3,294,000	$11,953,000	$61,563,000	$58,270,000	45.41%	18.7
Barstow	$3,255,000	$19,433,000	$32,539,000	$29,290,000	38.70%	10.0
Big Bear Lake	$11,242,000	$3,180,000	$8,220,000	-$3,020,000	-5.20%	0.7
Chino	$2,701,000	$30,697,000	$122,914,000	$120,220,000	72.45%	45.5
Chino Hills	$3,097,000	$12,500,000	$64,859,000	$61,770,000	51.54%	21.0
Colton	$3,288,000	$12,049,000	$58,989,000	$55,700,000	44.91%	18.0
Crestline	$779,000	$2,100,000	$5,844,000	$5,060,000	57.08%	7.5
Fontana	$5,309,000	$72,795,000	$224,007,000	$218,700,000	64.27%	42.2
Grand Terrace	$7,830,000	$1,811,000	$14,923,000	$7,090,000	7.03%	1.9
Hesperia	$7,082,000	$9,691,000	$81,198,000	$74,120,000	30.98%	11.5
Highland	$15,909,000	$7,591,000	$38,741,000	$22,830,000	9.27%	2.4
Loma Linda	$6,585,000	$30,540,000	$68,887,000	$62,300,000	36.64%	10.5
Montclair	$3,871,000	$43,950,000	$60,429,000	$56,560,000	48.04%	15.6
Needles	$5,209,000	$5,806,000	$10,956,000	$3,260,000	0.87%	1.1
Ontario	$4,268,000	$257,270,000	$387,713,000	$383,450,000	95.28%	90.8
Rancho Cucamonga	$1,836,000	$127,200,000	$337,515,000	$335,680,000	181.32%	184.1
Redlands	$2,350,000	$58,308,000	$144,808,000	$142,460,000	97.92%	61.6
Rialto	$9,019,000	$43,892,000	$90,388,000	$81,370,000	28.44%	10.0
San Bernardino	$5,416,000	$58,052,000	$245,639,000	$240,220,000	78.36%	45.3
Twentynine Palms	$6,172,000	$64,626,000	$64,626,000	$58,460,000	50.08%	10.5
Upland	$7,166,000	$51,890,000	$121,002,000	$113,830,000	40.62%	16.9
Victorville	$1,665,000	$22,695,000	$137,874,000	$136,210,000	116.30%	82.7
Yucaipa	$5,016,000	$20,696,000	$50,610,000	$45,590,000	35.86%	10.1
Yucca Valley	$2,555,0000	$16,979,000	$28,663,000	$26,110,000	41.51%	11.2
SBCTA Region	$125,301,000	$669,970,000	$2,062,570,000	$1,937,260,000	30.02%	16.5