



Experts Connecting Communities

APPENDIX C - EVALUATION METRIC SCORES



MEMORANDUM

To: Bill Louden and Josh Pilachowski
From: Nelson\Nygaard
Date: February 9, 2015
Subject: San Mateo CTMP Alternatives Evaluation Revised

This memorandum provides a description of the projects to be included in the alternatives evaluation for the San Mateo CTMP. Each project is then evaluated based on a set of metrics that enable a relative comparison across bicycle, pedestrian, and transit improvements.

ALTERNATIVE 1

Bicycle and Pedestrian Facility Improvements

1. Striped crossing with beacons to alert traffic at the following high demand and bus stop locations:

- Gray Whale Cove
- Montara State Beach
- 2nd Street
- 7th Street
- Moss Beach Lighthouse (16th Street)
- Virginia Street
- California Street
- Cypress Avenue
- HMB Airport
- North Capistrano Road
- Surfer's Beach Parking area, north of Coronado Street
- Medio Avenue
- Mirada Road
- Kehoe Avenue
- Terrace Avenue/Grand Boulevard
- Quarry Road (along SR 92)
- Pilarcitos Creek Road (along SR 92)
- SR 35 (along SR 92)

2. Sidewalks

Sidewalks are proposed along the following segments to provide a more continuous walking path for pedestrians:

- Sidewalks along Highway 1 in Montara, Moss Beach, Miramar, and developed areas of Half Moon Bay
- Sidewalk on Coronado Street and Avenue Alhambra in El Granada

3. Continuous Parallel Trail adjacent to Highway 1 for the entire study area

The Parallel Trail will provide pedestrians and cyclists with a direct connection to communities and locales along Highway 1. As envisioned this facility would be adjacent to Highway 1 and the Coastal Trail from Montara to Half Moon Bay, and composed of Class I, Class II and Class III bike facilities. These facilities will be part of the proposed North Coast Bikeway in the CBPP, connecting Daly City, Pacifica, and Half Moon Bay. Figure 1 shows the proposed location of the Parallel Trail.

4. Multi-use path along Airport Street

Providing a paved multi-use path along Airport Street is proposed as part of the Coastal Trail which will accommodate both pedestrians and cyclists. See Figure 1 for the location of this proposed facility.

5. Traffic signal updates throughout Half Moon Bay

In order to improve pedestrian and cyclist safety the following traffic signal improvements are recommended throughout Half Moon Bay:

- Pedestrian count-down indicators on all signalized crosswalks
- Crosswalk signal crossing adjustments to accommodate slower walking speeds
- Bicycle signal detector loops
- Pedestrian refuge spaces on wide road crossings

6. Designation of Main Street as a Class III bike route

Main Street in Half Moon Bay will be designated as a Class III bike route which is a shared roadway facility marked with sharrows.

Figure 1 Existing and Future Coastal Trail and Parallel Trail Facilities



Transit Improvements

7. Event Shuttle Service

To help alleviate parking demand and traffic congestion, shuttle service will be provided during seasonal events with high regional traffic increases, connecting Midcoast communities, Half Moon Bay, and high demand locations. For purposes of the alternatives analysis the following assumptions were made regarding the type of shuttle service that would be provided:

- 4 weekends of service, or 8 days total
- Operates from 8:00 a.m. to 6:00 p.m.
- Provides connections from either Hillsdale or Hayward Park Caltrain Station to three locations in the study area (the exact communities would be dependent on the event).
- Frequency of 30 minutes

8. Cabrillo Unified School District School Bus Service

Provide school bus service for Cabrillo Unified School District. Based on feedback received from the Technical Advisory Community, the school district would need a total of 10 buses to provide adequate service. Also, a facility for storing the vehicles and maintenance would also be needed.

ALTERNATIVE 2

The projects included in Alternative 2 are in addition to the improvements identified in Alternative 1.

Bicycle and Pedestrian Facility Improvements

1. Continuous Coastal Trail adjacent to Highway 1 through entire study area

Existing portions of the Coastal Trail run in a north-south direction west of Highway 1 and along Airport Street. The trail is currently paved and separated from the highway between the City of Half Moon Bay and Pillar Point Harbor, transitioning to an on-street route through Princeton, to a multi-purpose dirt path along the Pillar Point bluffs to Seal Cove in Moss Beach. The locations of additional facilities that are needed to create a continuous Coastal Trail are shown in Figure 1.

2. Class II bike lane along Capistrano Road

Provide a Class II bike lane along Capistrano Road in Princeton. This is currently being evaluated for the Plan Princeton project.

3. Class II bike lane along Airport Street

Provide a Class II bike lane along Airport Street in Princeton. This is currently being evaluated for the Plan Princeton project.

Transit Improvements

4. Expanded (frequency and geographic coverage) SamTrans local Midcoast and Half Moon Bay bus service

Just two fixed route transit services operate in or near the study area. These services provide north-south and east-west transit access within the study area at headways that range from 30 minutes in the peak period to 120 minutes in the off-peak period. Key features of existing fixed route transit services are summarized in Figure 2.

Figure 2 Existing Fixed Route Transit Services

| Route | Agency | Description | Peak Headway (min) | Off Peak Headway (min) | Span of Service |
|-------|----------|---|--------------------|-----------------------------|-----------------|
| 17 | SamTrans | Pacifica – Pescadero (weekday) Pacifica – Miramontes Point (weekend) | 30 | 60 weekdays 120 weekends | 6 AM – 9 PM |
| 294 | SamTrans | Half Moon Bay – Hillsdale Caltrain | 60 | 120 | 6 AM – 9 PM |

Given its limited coverage and extremely low headways, transit is unable to function as a primary mode of transportation for discretionary transit riders. To increase transit ridership, existing SamTrans bus service could be expanded both in terms of frequency of service and geographic coverage area. For purposes of the alternatives analysis the following assumptions were made regarding the type of service increase that would be made:

- Increase weekend frequency on Route 17 from 120 minutes to 60 minutes
- Increase weekend frequency on Route 294 from 120 minutes to 60 minutes.

5. Shuttle bus service on weekends during peak recreational times and special events

To help alleviate parking demand and traffic congestion, shuttle service will be provided the peak summer and fall season and for other select special events, connecting Midcoast communities, Half Moon Bay, and high demand locations. For purposes of the alternatives analysis the following assumptions were made regarding the type of shuttle service that would be provided:

- Shuttle service on weekends from the beginning of June to the end of October
- Special event weekend service up to four weekends, or eight days, a year outside of the peak summer period
- Operates from 8:00 a.m. to 6:00 p.m.
- Provides connections from either Hillsdale or Hayward Park Caltrain Station to three locations in the study area (the exact communities would be dependent on the event).
- Frequency of 30 minutes

6. Park and Ride locations

The creation of park and ride locations near transit stops can improve access to transit particularly for those potential riders who do not live within walking distance of bus service and

also provides a location for people to meet and carpool. For purposes of this analysis it is assumed that existing parking facilities at the following locations could be used as park and ride lots during the week:

- Pillar Point Harbor, Princeton
- Church of Jesus Christ of Latter Day Saints, Moss Beach
- Calvary Chapel or Our Lady of the Pillar churches in Half Moon Bay

Parking Improvements

7. Additional parking facilities for recreational users

Along a large portion of Highway 1 recreational users park along the highway due to the lack of designated parking facilities and as a result of spillover from existing parking facilities once they reach full occupancy. While the topography and lack of land that can be used for parking make it somewhat difficult to develop new parking facilities there are some areas of opportunity for improving parking supply and access.

1. Formalized parallel Montara State Beach parking: pave and mark parking spaces along the west side of Highway 1 at Montara State Beach with one-way access
2. Parking lot for Rancho Corral de Tierra access east of highway, which could also be available for overflow beach parking
3. Additional parking facilities along Highway 1
 - a. Potential future parking lot/ trail access alternatives to Quarry Park and POST Wicklow property, near Magellan Ave.
 - b. Potential future parking lot/ trail access alternatives at the intersection with Etheldore Street or north end of agricultural land across from airport.

ALTERNATIVE 3

The projects included in Alternative 3 are in addition to the improvements identified in Alternative 1 and Alternative 2 with some exceptions.

Bicycle and Pedestrian Facility Improvements

1. Pedestrian Over/Under Crossings

Instead of providing striped crossings with beacons to alert traffic at the following high demand and bus stop locations, provide pedestrian over/under crossings:

- Pedestrian over/under crossing at Gray Whale Cove
- Pedestrian over/under crossing at Montara Sanitary District building
- Pedestrian over/under crossing at Surfer's Beach Parking area, north of Coronado Street
- Pedestrian over/under crossing at Kehoe Avenue

2. Bike lane/route along SR 92

Provide a Class II bicycle route along State Route 92 from Half Moon Bay to the study area boundary.

Transit Improvements

3. New SamTrans local Midcoast and Half Moon Bay bus service route

Provide an additional SamTrans route serving Half Moon Bay, El Granada, Princeton, Moss Beach, Montara, and Pacifica. For purposes of this analysis the following routes were evaluated:

1. Montara-MossBeach-Devil's Slide Trail route
2. El Granada-Miramar-N. Half Moon Bay (to SR 92)

These routes would have local stops, reducing access distance for users, and allow access to high demand locations as well as connections to regional routes.

4. Transit to BART and San Mateo

In order to increase the number of commute trips that are made using transit rather than driving alone, bus service that provides connections to regional transit providers could be implemented during the morning and evening peak periods. This service would offer limited stops in order to decrease the travel time. Described below are two potential services.

1. Peak period express bus service between Half Moon Bay and Daly City BART Station
 - a. Frequency of 30 minutes during the morning and evening peak hour
 - b. Stops in Half Moon Bay, El Granada, Montara, and Pacifica
2. Increase weekday peak period frequency on Route 294 from 60 minutes to 30 minutes to improve connection to the San Mateo/Hillsdale Train Station.
3. Expand the weekday coverage of Route 294 to provide connections to El Granada and Princeton.

EVALUATION OF ALTERNATIVES

The selected evaluation metrics enable a relative comparison of projects that constitute each alternative. Point values are assigned for each metric based on its expected impact. A project can score up to a maximum of 15 points, with higher point totals meaning higher relative improvement as compared to current facilities and services.

- **Connectivity:** incorporates a quantitative measure of linear feet of network gaps filled and quality of facility/service, plus qualitative measures of new or enhanced connections between key destinations in the western county. *(Zero to three points)*
 - 0 points: Does not significantly enhance facility or average transit headway over 90 minutes.
 - 1 point: Enhanced existing facility or average transit headway between 60 and 90 minutes.
 - 2 points: All new or completed facility between local destinations (under 2 mi) or average transit headway between 30 and 60 minutes.
 - 3 points: All new or completed connection between regional destinations (over 2 mi) or average transit headway of 30 minutes or less.
- **Access:** incorporates qualitative measures of the extent to which a new or enhanced facility/service directly impacts a community or destination. *(Zero to three points)*
 - 0 points: Does not significantly enhance access to a community or destination.

- 1 point: Enhanced existing access to up to two communities or destinations.
- 2 points: Enhanced existing access to more than two communities or destinations.
- 3 points: All new access to at least one underserved community or destination.
- **Safety:** bonus for a project that enhances safety for travelers. *(Zero or one point)*
- **Shoreline:** bonus for a project that enhances public shoreline access. *(Zero or one point)*
- **Precedent:** bonus for a project recommended in previous studies. *(Zero or one point)*
- **Capital Cost:** relative estimated capital cost of the project. *(Zero to three points)*
- **Annual Cost:** relative estimated annual cost of the project. *(Zero to three points)*

Figure 3 Evaluation Metrics

| Metric | Description | Point Value |
|---------------------|--|---|
| Connectivity | Measures the extent to which a project fills a gap in bicycle or pedestrian networks or transit connections. | 0 to 3 (low to high connectivity) |
| Access | Measures the extent to which a project provides new facilities or service to currently underserved communities or existing destinations. | 0 to 3 (low to high access) |
| Safety | Bonus priority for safety improvements. | 0 or 1 |
| Shoreline | Bonus priority for enhanced public shoreline access. | 0 or 1 |
| Precedent | Bonus for a project recommended in one or more previous studies | 0 or 1 |
| Capital Cost | Measures the extent of the estimated capital cost for a project. | 0 to 3 (high to low capital cost) |
| Annual Cost | Measures the extent of the estimated annual operating and maintenance costs of a project. | 0 to 3 (high to low annual cost) |

Figure 4 shows the score for each of the projects as well as each alternative. An impact score is provided in addition to a project total score which incorporates project capital and annual operating costs. This allows the impact of a project to be compared to its cost.

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Figure 4 Evaluation of Alternatives

| | | Impact Metrics | | | | | Impact Subtotal | Cost Metrics | | Project Subtotal |
|--------------------------------|------------------------------------|--------------------------|--------------------|--------------------|-----------------------|-----------------------|-----------------|--------------------------|-------------------------|------------------|
| Project | | Connectivity (0 to 3) | Access (0 to 3) | Safety (0 or 1) | Shoreline (0 or 1) | Precedent (0 or 1) | | Capital Cost (0 to 3) | Annual Cost (0 to 3) | |
| Alternative 1 | | | | | | | | | | |
| 1 | Pedestrian Crossings | 1 | 1 | 1 | 1 | 1 | 5 | 1 | 3 | 9 |
| 2 | Sidewalks (Phase A) | 1 | 1 | 1 | 0 | 1 | 3 | 1 | 3 | 7 |
| 3 | Traffic signals | 1 | 0 | 1 | 0 | 0 | 2 | 3 | 3 | 8 |
| 4 | Community Street Sharrows | 1 | 2 | 1 | 0 | 1 | 4 | 3 | 3 | 10 |
| 5 | Bus Stop Amenities | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 3 | 5 |
| 6 | Increased Samtrans Weekend Service | 2 | 2 | 0 | 0 | 0 | 4 | 2 | 1 | 7 |
| 7 | Montara State Beach Parking | 1 | 1 | 0 | 1 | 1 | 4 | 2 | 3 | 9 |
| 8 | Gray Whale Cove Parking Lot | 1 | 1 | 0 | 1 | 1 | 4 | 2 | 3 | 9 |
| 9 | Improved Wayfinding Signs | 1 | 1 | 0 | 1 | 0 | 3 | 2 | 3 | 8 |
| Total for Alternative 1 | | | | | | | | | | 71 |

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| | | Impact Metrics | | | | | Impact Subtotal | Cost Metrics | | Project Subtotal |
|--|---|--------------------------|--------------------|--------------------|-----------------------|-----------------------|-----------------|--------------------------|-------------------------|------------------|
| Project | | Connectivity (0 to 3) | Access (0 to 3) | Safety (0 or 1) | Shoreline (0 or 1) | Precedent (0 or 1) | | Capital Cost (0 to 3) | Annual Cost (0 to 3) | |
| Alternative 2 (all measures in Alternative 1, plus the following) | | | | | | | | | | |
| 1 | Sidewalks (Phase B) | 1 | 1 | 1 | 0 | 1 | 3 | 1 | 3 | 7 |
| 2 | Continuous Parallel trail | 3 | 3 | 1 | 1 | 1 | 9 | 0 | 3 | 12 |
| 3 | Coastal Trail | 2 | 2 | 1 | 1 | 1 | 7 | 0 | 3 | 10 |
| 4 | Capistrano bike lane | 1 | 2 | 1 | 0 | 1 | 5 | 2 | 3 | 7 |
| 5 | Airport St. bike lane | 1 | 1 | 1 | 0 | 1 | 4 | 1 | 3 | 8 |
| 6 | Special Event shuttle service | 3 | 2 | 0 | 1 | 0 | 6 | 2 | 1 | 9 |
| 7 | Park and ride lots | 2 | 2 | 0 | 0 | 0 | 4 | 3 | 3 | 10 |
| 8 | School buses | 2 | 2 | 0 | 0 | 0 | 4 | 1 | 1 | 6 |
| 9 | Parking lot for Rancho Corral de Tierra | 1 | 1 | 0 | 1 | 1 | 4 | 1 | 3 | 8 |
| Total for Alternative 2 | | | | | | | | | | 148 |

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| | | Impact Metrics | | | | | Impact Subtotal | Cost Metrics | | Project Subtotal |
|---|---------------------------------|--------------------------|--------------------|--------------------|-----------------------|-----------------------|-----------------|--------------------------|-------------------------|------------------|
| Project | | Connectivity (0 to 3) | Access (0 to 3) | Safety (0 or 1) | Shoreline (0 or 1) | Precedent (0 or 1) | | Capital Cost (0 to 3) | Annual Cost (0 to 3) | |
| Alternative 3 (all measures in Alternatives 1 and 2, plus the following) | | | | | | | | | | |
| 1 | Sidewalks (Phase C) | 1 | 1 | 1 | 0 | 1 | 3 | 1 | 3 | 7 |
| 1 | Pedestrian over/under crossings | 2 | 1 | 1 | 1 | 0 | 5 | 0 | 3 | 8 |
| 2 | SR 92 bike lane | 3 | 3 | 1 | 0 | 1 | 8 | 0 | 3 | 11 |
| 3 | New SamTrans service | 3 | 3 | 0 | 0 | 0 | 6 | 1 | 0 | 7 |
| 4 | Transit to BART and San Mateo | 3 | 3 | 0 | 0 | 0 | 6 | 1 | 0 | 7 |
| 5 | Carlos Street Parking | 1 | 2 | 1 | 1 | 1 | 6 | 3 | 0 | 9 |
| 6 | El Granada recreational parking | 1 | 2 | 1 | 1 | 1 | 6 | 3 | 0 | 9 |
| Total for Alternative 3 | | | | | | | | | | 159 |

SUMMARY

In terms of potential net impact only (not including costs), the most effective projects are new or enhanced bicycle/pedestrian trail connections, new shuttle and transit services, and additional parking. In order, priority projects include the following:

1. Continuous parallel trail (Alt. 1) – 9 points
2. SR 92 Class II bike lane (Alt. 3) – 8 points
3. Coastal trail (Alt. 2) – 7 points
4. Special Event shuttle (Alt. 2) – 6 points
5. Pedestrian over/under crossings (Alt. 3) – 6 points
6. New SamTrans service (Alt. 3) – 6 points
7. Transit to BART and San Mateo (Alt. 3) – 6 points
8. Carlos Street Parking (Alt. 3) – 6 points
9. El Granada Beach parking (Alt.2) – 6 points

When capital and annual costs are added in, the most effective projects identified are parking projects, transit service, and bicycle facilities. In order, priority projects include the following:

1. Continuous parallel trail (Alt. 1) – 12 points
2. SR 92 Class II bike lane (Alt. 3) – 11 points
3. Coastal trail (Alt. 2) – 10 points
4. Park-and-Ride lots (Alt. 2) – 10 points
5. Community Street Sharrows (Alt. 1) – 10 points
6. Pedestrian crossings (Alt. 1) – 9 points
7. Special Event shuttle (Alt. 2) – 9 points
8. Montara State beach parking (Alt. 1) – 9 points
9. Carlos Street Parking (Alt. 3) – 9 points
10. El Granada Beach parking (Alt.2) – 9 points