
Deliverable D
List of Potential Projects and Strategies for
Transportation System Improvement
July 2017

Central Oahu Transportation Study

Prepared for
Oahu Metropolitan Planning Organization



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Document Control

Deliverable Name	Date	Activity Completed
Initial List of Projects and Strategies for Transportation System Improvements	12/30/16	First Draft
Initial List of Projects and Strategies for Transportation System Improvements, Version 2	4/7/17	2 nd Draft
List of Potential Projects and Strategies for Transportation System Improvement	7/21/17	3 rd Draft

This report was funded in part through grants from the Federal Highway Administration and Federal Transit Administration, U.S. Department of Transportation. The views and opinions of the agency expressed herein do not necessarily state or reflect those of the U.S. Department of Transportation.

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Overview of Central Oahu Transportation Study

The Central Oahu Transportation Study (COTS) is assessing the multi-modal transportation needs of the region and will identify key transportation system improvements, strategies and policies that can improve regional transportation mobility and access in a sustainable way. The strategies and system improvements will be technically feasible, financially realistic, sustainable, and meet regional transportation needs.

The Central Oahu Transportation Study is composed of nine tasks:

- Task 1: Coordinate and review past and on-going traffic, transit, and land use studies prepared by other agencies, establish a project management working group, and develop a stakeholder involvement process.
- Task 2: Identify performance measures and measures of economic sustainability to collect and establish a comprehensive baseline multi-modal transportation dataset.
- Task 3: Analyze and evaluate regional transportation, demographic, economic, and land use trends and issues.
- Task 4: Determine and assess current and future multi-modal needs and opportunities for the region through technical methodologies, user survey and stakeholder outreach. The technical forecasting of future traffic, transit, land use, and other related projections will utilize and be done in coordination with OahuMPO's current travel demand forecast model and Congestion Management Process.
- **Task 5: Identify potential strategies and system improvements for key corridors in the region, including but not limited to, transit improvements with connections to the Honolulu rail transit system and H-2.**
- Task 6: Assess order-of-magnitude of impacts of the potential strategies and system improvements utilizing identified performance measures. This order-of-magnitude assessment will include expected project and strategy implementation timing, project delivery costs including land acquisition, environmental impacts, and estimates of operations and maintenance costs.
- Task 7: Define the benefits and costs of the potential strategies and system improvements and compare those benefits and costs to each other.
- Task 8: Compare and prioritize those potential strategies and system improvements that meet the desired purpose mentioned above (technically feasible, financially realistic, and sustainable).
- Task 9: Develop recommendations and an implementation timeframe to set priorities for those strategies and system improvements.

Twelve deliverables document the results of the nine tasks and their subtasks. Briefly the reports include:

- A. Assessment of Previous Studies and Surveys associated with the study area and recommendations for further data collection or survey work as needed. Report A provides the assessment of the studies and surveys identified in two deliverables that have been submitted: List of Previous Studies and List of Previous Surveys.
- B. Identification of the Trends and Issues impacting the COTS area. This report will include the demographics, economics and land trends occurring in the study area as well as identify the impacts of those trends.
- B.2 Identification and definitions of Performance Measures, Sustainability Measures, Baseline and Data Elements that will be used to guide and evaluate project alternatives.
- C. Data Needs Memo will list the information needed based upon Deliverables A through B.2.
- C.2 Documents the results of the data collection identified in the Data Needs Memo.
- D. Discussion of strategies presented in previous planning and a list of improvements is presented in (this report).**
- E. The Preliminary Ranking of identified Alternatives will be detailed in this report. The performance measures identified in Report B will be applied to the alternatives. TransCAD model runs will provide a means to compare alternatives. The outcome of these tasks will be a ranking of alternatives and their impacts on the study area.
- F. Documents the Feasibility Assessment of the alternatives. Documentation will include identifying criteria for feasibility and sustainability assumptions; reporting on the impacts by performance measure; identification of environmental impacts and identified mitigations; and, assumptions for implementation all leading to a refinement of the alternative rankings.
- G. The Financial Assessment will be documented in this report. Financial assumptions and requirements including costs will be reviewed. The benefits and costs of the alternatives will be assessed and compared including any identified trade-offs.
- H. The Final Report on Prioritization and Recommendations for Implementation will summarize and prioritize strategies; identify recommendations; identify impacts of no implementation; recommend an implementation timeframe; and, identify any impacts if implementation is not accomplished within the recommended timeframe.
- I. This report will provide a summary of the Community Input and how that input was used to inform the study.
- J. Survey Results from any new surveys will be documented in this report.

Deliverable D is organized as follows:

- Overview of the Project and this Deliverable
- Chapter 1: Initial List of Projects
- Chapter 2: Methodology and Logic/Objectives for How the List of Potential Projects and Strategies Was Identified
- Chapter 3: Next Steps

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1.0 List of Potential Projects for Further Review

The purpose of this chapter is to describe the List of Potential Projects that will be analyzed in the Central Oahu Transportation Study as measures to improve current and future conditions. Projects were identified and consolidated from past studies, community input, and by the consultant team.

1.1 Project and Program List

The List of Potential Projects is provided in Table 1. A map of all projects is provided as Figure 1. At this stage in the study, 88 projects have been identified for review. The List of Potential Projects provides the following information for each projects:

- Title
- Identification number sorted by project type
- General Location
- Source documentation (COSCP, ORTP, special study, or added by study team or the public)

The projects are organized by transportation mode or program.

- Transit projects (General and High Capacity): 12 projects
- Bicycle projects (Paths, Lanes, and Routes): 23 projects
- Pedestrian projects (Location-specific, General, and Complete Streets): 7 projects
- Roadway projects (Highway, Major Arterial, and Interchanges): 33 projects
- Operational projects (Transportation Demand Management [TDM] and Intelligent Transportation Systems [ITS]): 11 projects
- Pricing Solutions projects: 2 projects

Projects are numbered such that the first number denotes the type of projects (e.g., Transit, Bicycle, Pedestrian, Roadway, Operational, Pricing Solutions) and the sub-type, and then an individual number after the decimal point.

1.2 Project Map

Figure 1 identifies the list of potential projects that correspond to the matrix in Table 1. Note that only those projects that have a location are included in Figure 1. Therefore, projects in categories 501.0, 502.0, and 601.0 are not mapped.

Table 1. List of Potential Projects

Project Number	Project Description	General Location	Source
TRANSIT PROJECTS			
101.0	GENERAL		
101.1	Bus Service Expansion	Islandwide	1,2,3,6
101.2	Construct Transit Centers	Islandwide	1,2,3,6
101.3	City Operations & Maintenance	Islandwide	1,2,3,6
101.4	Human Services Transportation Coordination Program	Islandwide	1,2,3,6
102.0	HIGH CAPACITY TRANSIT		
102.1	HART rail technology between Wahiawa and H-1	Central Oahu	1,3,6
102.2	Light Rail between Wahiawa and H-1	Central Oahu	6
102.3	Bus Rapid Transit between Wahiawa and H-1	Central Oahu	1,4,6
102.4	Flyer Stops between Wahiawa and H-1	Central Oahu	6
102.5	P & R with Flyer Stop in median mauka of Ka Uka Blvd	Central Oahu	7
102.6	HART rail technology between Mililani & H-1	Central Oahu	8
102.7	Aerial Gondola between Waipio & Wahiawa	Central Oahu	8
102.8	Aerial Gondola between Waipio & Pearl Highlands station	Central Oahu	8
BICYCLE PROJECTS			
201.0	BICYCLE PATHS (Off-street bicycle facility)		
201.1	New Pathway between Paiwa St and Kamehameha Hwy	Central Oahu Regional Park	1, 3, 4, 6
201.2	New Pathway between Anania Dr and Central Oahu Regional Park	Kipapa Gulch	1, 3, 4, 6
201.3	New Direct Kipapa Gulch Bike Bridge and Pathway	Kipapa Gulch	8
201.4	New Bike Pathway along Kamehameha Hwy.	Waipio	7
201.5	New Ped/Bike Path connecting Kam. Hwy at Waipahu Street to PH station via LCC	Leeward Community College	8
201.6	New Bike Pathway along Kamehameha Hwy. between Wahiawa and Anania Dr	Wahiawa	7
201.7	Bike Pathway on Cane Haul Road between H-2 & Pearl Highlands station	Pearl Highlands	8
201.8	Bicycle infrastructure around H-2 & Meheula	Mililani	8

Table 1. List of Potential Projects (cont.)

Project Number	Project Description	General Location	Source
201.9	Bike pathway along California Ave. between Kilea Pl. and Nonohe St	Wahiawa	8
201.10	Bike Pathway in Central Oahu Regional Park between Kamehameha Hwy and Paiwa St	Mililani	6
202.0	BICYCLE LANES (On-street bicycle facility delineated from vehicle traffic)		
202.1	Ainamakua Dr between Mililani Park & Ride and Kualapa St	Mililani Mauka	1, 3, 4, 6
202.2	Meheula Parkway between Mililani H-2 Interchange and Mililani H-2 Interchange	Mililani	1, 2, 3, 4, 6
202.3	Meheula Parkway between Mililani H-2 Interchange and Kapanoe St	Mililani Mauka	1, 2, 3, 4, 6
202.4	Kuahelani Avenue between Hokuahiahi Park and Meheula Parkway	Mililani	1, 3, 4, 6
202.5	Kamehameha Highway between H-1 and H-2	Waiawa Interchange	1, 2, 3, 4, 6
202.6	Waihona Street and Kamehameha Highway between Cane Haul Road bike path and Arizona Memorial	Waipio	6
203.0	BICYCLE ROUTES (On-street bicycle facility with street signs and/or sharrows)		
203.1	California Ave between Plum St and Iliahi Elementary	Wahiawa	1, 6
203.2	Kunia Rd btwen Anonui St and Wilikina Dr	Schofield to Waikele	6
203.3	Leilehua Golf Course Rd between Kamehameha Hwy and Wikao St	Waipio Acres	6
203.4	Kamehameha Highway between Haleiwa Bypass and Kuahelani Ave	Mililani	1, 6
203.5	Anania Dr between Meheula Pkwy and Kipapa Gulch Path	Mililani	3
203.6	Lanikuhana Ave from South end of Meheula Pkwy to Mililani Town Center	Mililani	1
203.7	Kamehameha Hwy between Waipio Uka St and Waipahu St	Waipio	6
PEDESTRIAN PROJCTS			
301.0	LOCATION-SPECIFIC		
301.1	Crosswalk across Kamehameha Hwy between Avocado St and Kilani St	Wahiawa at Olive Ave	3,6
301.2	Shared use path on Kamehameha Hwy between Lanikuhana Ave and Meheula Pkwy	Mililani	8
302.0	GENERAL		
302.1	Safe Routes to School	Islandwide	3
302.2	Pedestrian Crossing Safety	Islandwide	3
302.3	Mobility Hubs	COTS area transit centers	7

Table 1. List of Potential Projects (cont.)

Project Number	Project Description	General Location	Source
303.0	COMPLETE STREETS		
303.1	California Ave between Kamehameha Hwy and Wahiawa District Park	Wahiawa	6
303.2	Kipapa Dr between Hookelawaa St and Mililani Waena Elementary School	Mililani	6
303.3	Complete Streets modifications on priority roads	Central Oahu	6
ROADWAY PROJECTS			
401.0	KA UKA BLVD. & H-2 INTERCHANGE		
401.1	Ka Uka Blvd & H-2 Northbound On-Ramp to H-2 (freeway ramp widening & signal modification)	Waipio Interchange	1, 2, 3, 5
401.2	Ka Uka Blvd & H-2 Southbound On-Ramp to H-2 (freeway ramp approach widening)	Waipio Interchange	1, 2, 3, 5
401.3	Ka Uka Blvd & H-2 Southbound Off-Ramp to Ka Uka Blvd / Moaniani St. (freeway ramp approach widening)	Waipio Interchange	1, 2, 3, 5
401.4	Ka Uka Blvd & H-2 Northbound Off-Ramp to Limuana St (freeway ramp signal modification)	Waipio Interchange	1, 2, 3, 5
401.5	Ka Uka Blvd & H-2 Southbound Off-Ramp to Ka Uka Blvd / Moaniani St (freeway ramp widening & signal modification)	Waipio Interchange	1, 2, 3, 5
401.6	Ka Uka Blvd & H-2 Northbound Off-Ramp to Ka Uka Blvd (freeway ramp relocation & widening)	Waipio Interchange	1, 2, 3, 5
401.7	Ka Uka Blvd & H-2 Northbound On-Ramp to H-2 (new freeway ramp & overpass widening)	Waipio Interchange	1, 2, 3, 5
401.8	Ka Uka Blvd & H-2 Southbound On-Ramp to H-2 (new freeway ramp & overpass widening)	Waipio Interchange	1, 2, 3, 5
401.9	Ka Uka Blvd & H-2 Flyover Ramp	Waipio Interchange	8
402.0	KA UKA BOULEVARD		
402.1	Ka Uka Blvd between Moaniani St and Commercial Driveway/ Spine Rd (lane addition)	Waipio	5
402.2	Ka Uka Blvd Intersection with Commercial Driveway/ Spine Rd (intersection lane & signal modification)	Waipio	5
402.3	Ka Uka Blvd Intersection with Commercial Driveway/Spine Rd (intersection widening & modification)	Waipio	5
402.4	Ka Uka Blvd between H-2 and new development (new road)	Waipio	6
403.0	KAMEHAMEHA HIGHWAY		
403.1	Kamehameha Hwy & Lumiaina St Intersection (intersection widening & signal modification)	Waipio	5

Table 1. List of Potential Projects (cont.)

Project Number	Project Description	General Location	Source
403.2	Kamehameha Hwy & Waipahu St Intersection (intersection restriping & signal modification)	Waipio	5
403.3	Kamehameha Hwy & Ka Uka Blvd Intersection (intersection widening)	Waipio	5
403.4	Kamehameha Hwy between Ka Uka Blvd and North of Ka Uka Blvd. (add NB lane)	Waipio	5
403.5	Kamehameha Hwy between Ka Uka Blvd and Lanikuhana (widen from 3 to 4 lanes)	Waipio to Mililani	1, 2, 3, 4
403.6	Kamehameha Hwy between H-2 and Kilani Ave (unknown)	Wahiawa	6
403.7	Kamehameha Hwy Roosevelt Bridge (rehabilitation)	Kipapa Gulch	6
403.8	Kamehameha Hwy HOV lanes (Ka Uka Boulevard to Farrington Hwy)	Central Oahu	7
404.0	H-2 INTERCHANGES		
404.1	H-2 & Pineapple Road Interchange	New Interchange	1, 3, 5
404.2	H-2 & Meheula Pkwy (widen on-ramp)	Mililani Mauka	6
404.3	H-2 & Kamehameha Hwy (widen on-ramp)	Wahiawa	7
405.0	H-1 & H-2 INTERCHANGE		
405.1	Waiawa H-1/H-2 Interchange Eastbound/Southbound Merge Improvements	Waiawa Interchange	1, 3, 5
406.0	CENTRAL MAUKA ROADS		
406.1	New Road between Mililani Mauka and Pearl City	Central Oahu	4, 6
406.2	New Road between Whitmore Ave (SR 804) and California Ave	Wahiawa	4, 6
406.3	New Road between California Ave and Meheula Pkwy	Wahiawa	4, 6
407.0	PAIWA EXTENSION		
407.1	Extend Paiwa St from north of Lumiauau St to Kamehameha Hwy/Ka Uka Blvd intersection	Central Oahu	6
408.0	MILILANI ACCESS		
408.1	New H-2 Interchange at Mililani Mauka	Mililani Mauka	6
408.2	New road from Wikao St to P & R	Mililani Mauka	8
408.3	New road between H-2 and P & R	Mililani Mauka	8
408.4	New flyer stops at H-2 with pedestrian pathway to P & R	Mililani Mauka	7

Table 1. List of Potential Projects (cont.)

Project Number	Project Description	General Location	Source
TRANSPORTATION SYSTEM MANAGEMENT			
501.0	TRANSPORTATION DEMAND MANAGEMENT		
501.1	Free real-time online carpool matching	Central Oahu	3, 4
501.2	Outreach promotion and marketing of alternative transportation	Central Oahu	3, 4
501.3	Emergency ride home program	Central Oahu	3, 4
501.4	Major special events (e.g., Mililani Holiday Parade)	Central Oahu	3, 4
501.5	Employer based commuter/parking programs	Central Oahu	3, 4
501.6	Carsharing	Central Oahu	3, 4
501.7	Bikesharing	Central Oahu	7
501.8	Vanpool program	Central Oahu	3, 4
501.9	Work from home	Central Oahu	7
501.10	Alternate/shifted work hours	Central Oahu	7
502.0	INTELLIGENT TRANSPORTATION SYSTEMS (ITS)		
502.1	ITS (Real-time traffic info, dynamic signage, adaptive signals, etc.)	Central Oahu	3,4
PRICING SOLUTIONS			
601.0	PRICING		
601.1	Congestion pricing on H-1 or H-2	Central Oahu/ Islandwide	7,8
601.2	HOT lanes	Central Oahu	7,8
601.3	Parking strategies	Central Oahu	7

- Source:
1. Central Oahu Sustainable Communities Plan 2016
 2. Central Oahu Sustainable Communities Plan 2002
 3. Oahu Regional Transportation Plan 2040
 4. Transportation for Oahu Plan 2025
 5. Koa Ridge Traffic Impact Analysis Report
 6. Other Study
 7. Added by Project Team
 8. Added by Public

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2.0 Methodology and Logic/Objectives for How the List of Potential Projects and Strategies Was Developed

The purpose of this section is to describe the reasoning and methodology for preparing the List of Potential Projects. This was done in four steps.

- First, the study team reviewed previous studies and summarized recommended projects.
- Second, the study team analyzed the study area for gaps that had not been addressed by previous studies and added potential alternatives to address those gaps.
- Third, identified projects from the first two steps were presented at a public meeting on November 30, 2016. Additional projects identified by public attendees were added to the list.
- Fourth, other projects submitted to OahuMPO were added to the list.

The major source document for identifying projects in Step 1 was the Central Oahu Sustainable Communities Plan (COSCP). It is described in summary fashion in the subsections below.

2.1 Central Oahu Sustainable Communities Plan Priority Policies for Transportation

The policies in the COSCP Proposed Revised Plan will be used for the COTS to ensure the transportation/land use connection.

The current COSCP was adopted by the City Council in 2002. An update and review of the COSCP was released in May 2017 subject to review and decision-making by the Planning Commission and City Council. The COTS has taken its strategic direction from the COSCP update planning process.

- Automobile usage will be reduced by seamlessly integrating bus service with rail service using local shuttles and Bus Rapid Transit to connect Central Oahu communities to rail stations. (page 2-5)
- The rail stations will serve as the hubs for bus routes and include bike sharing facilities, making it easy to transfer from one transportation mode to another. Access to the rail transit system from other Central Oahu communities will be provided by mass transit bus service, park and ride facilities, and express bus service running within High Occupancy Vehicle (HOV) lanes. (page 2-23)
- Design the rights-of-way for major and minor arterials as landscaped parkways or greenways, complete with a landscaped median strip, landscaped sidewalks, and bikeways. Major arterials should have separate bike paths, and minor arterials should have bike lanes. Suggested width for major arterials, including right-of-way and planting strips, is 120 feet wide and for minor arterials is 100 feet wide. (page 3-10)
- Establish a network of bicycle paths and designated bicycle routes along major traffic corridors in order to improve safety and convenience and encourage increased use of bicycles for travel within the community. (page 3-52)
- Transportation Development Priorities: Meet projected demand for peak-hour transportation in Central Oahu by:
 - Increased use of transit; and
 - Transportation demand management through:

- Provision of improved services on High Occupancy Vehicle (HOV) facilities,
 - Provision of park-and-ride facilities; and
 - Use of other programs which encourage reduced use of the single occupant private automobile. (page 4-11)
- Transit (Bus and Rail)
 - Increase transit service in Central Oahu in order to enhance circulation among Central Oahu communities and between Central Oahu and the adjacent Ewa and North Shore areas, and to provide convenient service for peak-hour commuting.
 - Orient increases in arterial lanes to high occupancy vehicles (HOV) and mass transit. Develop exclusive lanes and park-and-ride facilities to improve bus transit speed and to provide enhanced incentive for commuters to opt for mass transit or HOV use.
 - Provide sites for bus transit centers and park-and-ride facilities as new communities are developed. (page 4-13)
- Bikeway System
 - Designate Kamehameha Highway, Kunia Road north of H-1, and Wilikina Drive as bike routes with a curbside vehicle land of minimum 12-foot width allowing shared use by bikes and automobiles. (page 4-14)
- Reduce reliance on the private passenger vehicle by:
 - Providing circulation systems with separated pedestrian and bicycle paths and convenient routes for public transit service. (page 4-14)

2.2 Projects Identified in Past Land Use and Transportation Plans

Several documents were reviewed to identify potential projects relevant to the COTS. These included ORTP related documents; City and County plans, reports, and documents; State of Hawaii plans, reports, and documents; environmental impact statements and assessment reports; and documents associated with the planned Koa Ridge development. These documents were listed in previous deliverables for this project: Deliverable 1.1a, *List of Previous Studies* (May 2016), and reviewed in Deliverable A, *Assessment of Previous Studies and Surveys* (September 2016).

2.3 Creating an Approach to Alternatives for a Multi-modal Transportation System

Criticism of past transportation studies is that projects were identified with the objective of relieving traffic congestion on the roadway network, rather than an objective to create a multi-modal transportation system or other policy directives.

This meant that new roads were justified for vehicles in new rights-of-way if better movement of general purpose vehicle traffic could be achieved. The new potential right-of-way existed to serve general purpose vehicle traffic. If the new right-of-way could be justified to serve a general purpose vehicle traffic objective, such as congestion relief, funds could become available to plan, design, program and construct the project. A project would be refined and expanded during the road planning process to include other modes, if this was deemed appropriate. If the road was not built, the other modes had no right-of-way to use to fill in the gaps in their respective modal networks.

The consequence of this approach during transportation project development was that unless the road could be justified for vehicles there was no accommodation of the other modes.

The COTS aims to take a different approach, one that examines uses of right-of-way for all modes, including transit, pedestrian, and bicycle. This is the approach that was taken for Honolulu's new rail line which required its own new transportation right-of-way. This multi-modal approach is consistent with the Complete Streets legislation provided in Section 264-20.5, Hawaii Revised Statutes (Act 54 SLH 2009) and Ordinance 12-15, City and County of Honolulu.

Pedestrian and Bicycle Modes

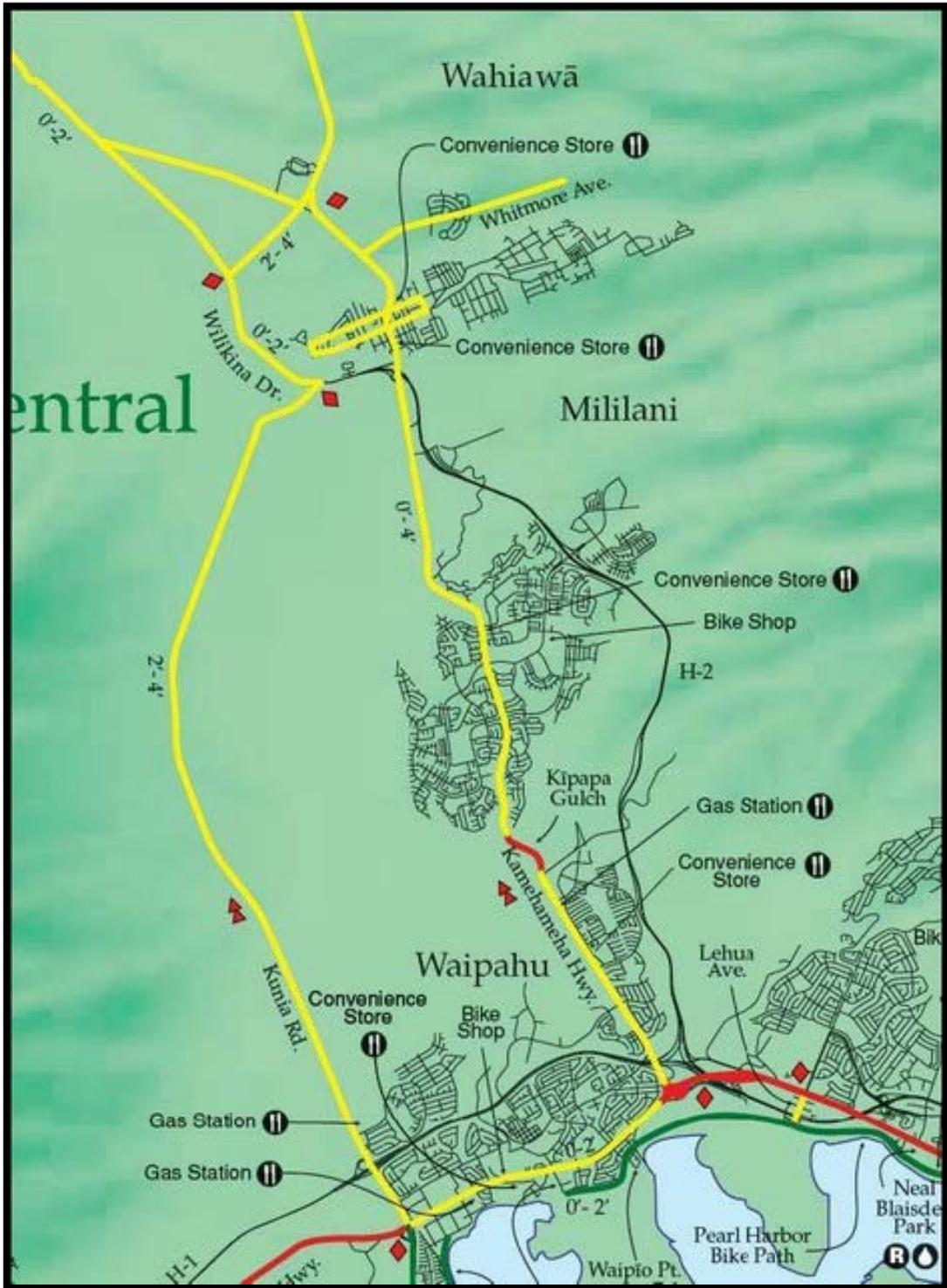
Two examples of where this altered approach to objectives would be relevant are the Central Mauka Road and the Paiwa Street extension. They certainly offer potential additions to the roadway network. But they could also offer valuable missing links to the bicycle network. Providing these missing bicycle network links may be more valuable and affordable than the additional roadway links the projects originally emphasized. They will be evaluated for their bicycle/pedestrian shared use paths and not just as an adjunct to a vehicular road. The extent to which a multi-modal approach will help address critical transportation problem within the COTS is one of the objectives of this study.

The bicycle maps in the State Bicycle Plan (see Figure 2) show three types of bike routes: 1) green color for suggested routes for novice bicyclists including bicycle paths, roads with bicycle lanes, or roads that are wide enough to accommodate bicyclists; 2) yellow color for suggested routes for experienced bicyclists, including roads with space for adequate shared use between bicyclists and motorists; and 3) red color for routes that are not "Bicycle Friendly", including roads that have heavy traffic and do not have adequate shared use between bicyclists and motorists.

There are no green routes in the COTS area, shown in Figure 2. There are two mauka-makai yellow routes. The one along Kamehameha Highway has a shoulder designated as being from 0 to 4 feet wide. At Kipapa Gulch this yellow route is broken and replaced with a red color. The second yellow route is along Kunia Road. This route offers a shoulder designated as being from 2 to 4 feet wide. However, the only access to Kunia Road from Mililani is from Wahiawa to the north and Farrington Highway to the south. There is no direct access for bicyclists from Mililani to Kunia Road.

One major transportation problem within the existing COTS area multimodal transportation network is that there are no mauka-makai bicycle or pedestrian connections across Kipapa Gulch. Some plantation roads do exist, but these are never mentioned in any studies or plans as future connections. These types of connections were mentioned by several participants in the November 30, 2016 community workshop, as shown on Figure 1.

Figure 2. Central Oahu Bike Map



Source: <http://hidot.hawaii.gov/highways/bike-map-oahu/>

A plantation road shared use path could connect Mililani with Koa Ridge. Although the edge of Wal-Mart and the entire Town Center of Mililani is less than 4,000 feet distance from the edge of the Koa Ridge development there is no planned shared use path. The elevation differences are not that great (from 720 feet elevation at Town Center of Mililani down to 340 feet at the bottom of the gulch and up to 540 feet elevation at Koa Ridge). These distances and elevation changes are routine for most bicyclists. Some projects have been identified to address this type of issue, but they have never been adequately analyzed as a solution to filling a significant gap in the bicycle network without being treated as predominately road projects. Otherwise, there is no way a person can safely and conveniently walk or bike between Mililani and Koa Ridge either now or in the future even if all known plans are implemented.

Transit Modes

The COSCP policies and guidelines and HART's reliance on rail patronage from Central Oahu place heavy emphasis on TheBus as an access mode. This merits further analysis, refinement, and identification in formal plans to reasonably assure that the expectations for the bus mode are achievable, resources are provided, and timing of rail opening and when bus is needed to transition to access. Past studies have offered many proposals on how bus operations can be enhanced, but these need to be updated, especially with the delay to rail service start, which is currently projected to be fully operational in 2025.

The Bus Mode would include the routes identified in the Bus/Rail Integration Plan for the Kamehameha Highway Station Group.¹ This plan identifies new routes to provide connections for Central Oahu to the Pearl Highlands and Waipahu Transit Center rail stations. These routes would serve the Koa Ridge development.

To fully and seamlessly integrate bus with rail using enhanced transit or Bus Rapid Transit (BRT), as well as to connect Central Oahu communities to each other and to the rail stations would require additional routes and trips. Both peak-period, peak-direction commuter routes and all-day, bi-directional services need to be enhanced. Projects identified in Figure 1 include new facilities to promote increased capacity. These include a park-and-ride lot in the median of H-2 perhaps with a flyover connection allowing pedestrians and bicycles to access bus services to connect with rail depicted in Figure 3. All peak period, peak direction express routes would serve the new flyer stop and park-and-ride.

Additional BRT and supporting bus route alignments would include other mauka-makai projects. One is replacing the Central Mauka Road and all of the variations of this concept with a busway and replacing the Paiwa Street extension with a busway and bicycle facility. These busways would be packaged with east west connector bus routes to form a complete busway network as shown in Figure 3.

¹ Bus/Rail Integration Plan for the Kamehameha Highway Station Group, April 2014; Honolulu Authority for Rapid Transportation. Page 12, Figure 3-1: 2030 Bus Network Serving KHSG Stations.

Figure 3. H-2 Park-and-Ride Conceptual Design



Treatments such as freeway flyer stops to serve the Mililani Park-and-Ride lot add bus only ramps to connect to an elevated pedestrian and bicycle link. This connection, between the Mililani Mauka park and ride lot and green space on the Ewa side of H-2, serves as a highly desirable alternative mode link between the two Mililani communities even for those not accessing bus services. It offers pedestrians an alternative safe pathway to the Meheula Parkway interchange with H-2 which is designed well for vehicle flow but is not friendly to other modes. Buses must now exit the freeway and spend ten minutes to access the Mililani Mauka Park and Ride stop on Ukuwai Street. Now, many express buses from the North Shore and Wahiawa simply bypass Mililani because of the amount of time that would be negatively imposed on the existing riders from those areas if the bus were to exit and spend ten minutes going to the Mililani Mauka Park and Ride.

Enhanced transit options that use alternate rail technology can offer high capacity and high quality of services. The COTS project list includes three variations which may be combined to provide increased levels of transit investment.

1. HART Rail Technology – COTS Projects 102.1 and 102.6; These projects represent various lengths of the extension of the existing HART rail technology along the H-2 corridor as discussed with participants at the November 30, 2016 COTS Community Meeting.
2. Light Rail Technology – COTS Project 102.2 along an alignment proposed at the November 30, 2016 COTS Community Meeting.
3. Aerial Gondola – COTS Projects 102.7 and 102.8, which use some type of aerial tram technology as proposed at the November 30, 2016 COTS Community Meeting.

3.0 Next Steps

The COTS team will review and prioritize new transit, bicycle, pedestrian, and travel demand management projects that effectively offer a sufficient enticement to change people’s travel behavior and achieve the desired reduction in automobile use identified in the Central Oahu Sustainable Community plan. The next steps for doing this are discussed below.

3.1 Steps in the COTS Project and Alternative Review Process

STEP ONE: A list of multi-modal projects which address transportation in Central Oahu is collected from various previous studies, as well as from community and agency input. This report comprises the list of potential projects, listed in Table 1 and identified in Figure 1.

STEP TWO: A filter of all the initial projects is made using Performance Measures, which are applied to projects to determine if the potential project would provide any benefit to the region (see Deliverable B-2). A matrix is prepared that compares these Performance Measures and that flags any that provide no benefit. Such projects may be candidates for no further work. Those that do provide transportation benefit become the Candidate Projects.

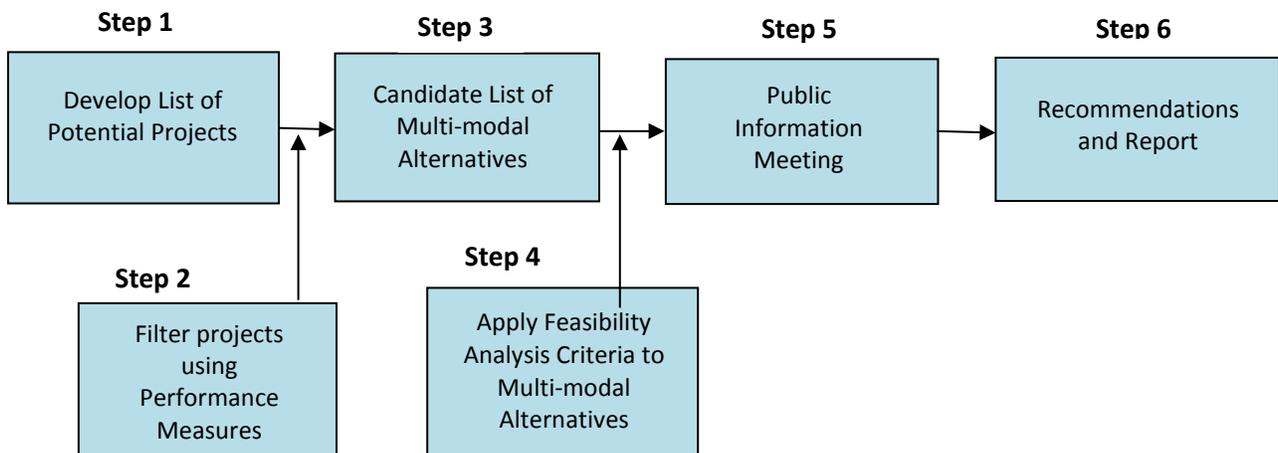
STEP THREE: Multi-modal alternatives are developed from the Initial Projects. An alternative may be as simple as a single project, combined with one or more projects, or as complex as an inter-related set of improvements and strategies.

STEP FOUR: The alternatives are subjected to Feasibility Analysis criteria to determine if the alternative is reasonable. As a result of this evaluation and analysis, alternatives may be modified or removed from further consideration.

STEP FIVE: Community reaction and preferences are measured through a Public Information Meeting.

STEP SIX: Recommendations are made and a Final Report prepared. The recommendations relate back to the Performance Measures.

Figure 4. Diagram of the COTS Steps



3.2 Filter Projects Using Performance Measures

The List of Potential Projects, provided in Table 1, will be filtered using the Performance Measures, which are in Deliverable B-2. The application of the Performance Measures to the List of Potential Projects determines whether the individual project would provide any benefit to the region. This application of the Performance Measures will include data collection, forecasting, and analysis of the List of Potential Projects. Data will be collected, and Travel Demand Modeling will be performed, where applicable. Upon completion of this step, a Candidate List of Projects and Alternatives (i.e., packages of projects) will be developed, which will be a refined list of potential improvements from the List of Potential Projects.

3.3 Apply Feasibility Analysis Criteria to Multi-Modal Alternatives

The Candidate List of Projects/Alternatives will be analyzed against Feasibility Criteria to determine if the projects are reasonable (i.e., their completion would not result in excessive cost, complexity, environmental issues, etc.). Feasibility Criteria includes measurable resources required for project delivery (human and financial) and ease of construction, which can impact the viability of a project or package of projects. The Feasibility Criteria includes a measurement of resources from the following categories: Construction, Environmental, Financial, and Regional Planning. Upon the completion of the application of the Feasibility Criteria, the Candidate List of Projects/Alternatives will be ranked as short-term, mid-term, or long-term.