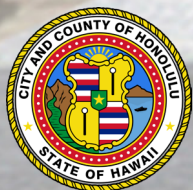




# ALA WAI ALTERNATIVES ANALYSIS



*Honolulu*  
COMPLETESTREETS

JANUARY 2020





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## ACRONYMS & ABBREVIATIONS

ACS - American Community Survey

BLNR - Board of Land and Natural Resources

CPTED - Crime Prevention through Environmental Design

CZM - Coastal Zone Management

DBEDT - Department of Business, Economic Development & Tourism

DEA - Draft Environmental Assessment

DLNR - Hawaii Department of Land and Natural Resources

DTS - Department of Transportation Services

FONSI - Finding of No Significant Impact

HDOT - Hawaii Department of Transportation

HECO - Hawaiian Electric Company

HRS 343 - Hawaii Environmental Policy Act

IAP2 - International Association for Public Participation

LEHD - Longitudinal Employer-Household Dynamics

NEPA - National Environmental Policy Act

O-D - Origin-Destination

PBOT - Portland Bureau of Transportation

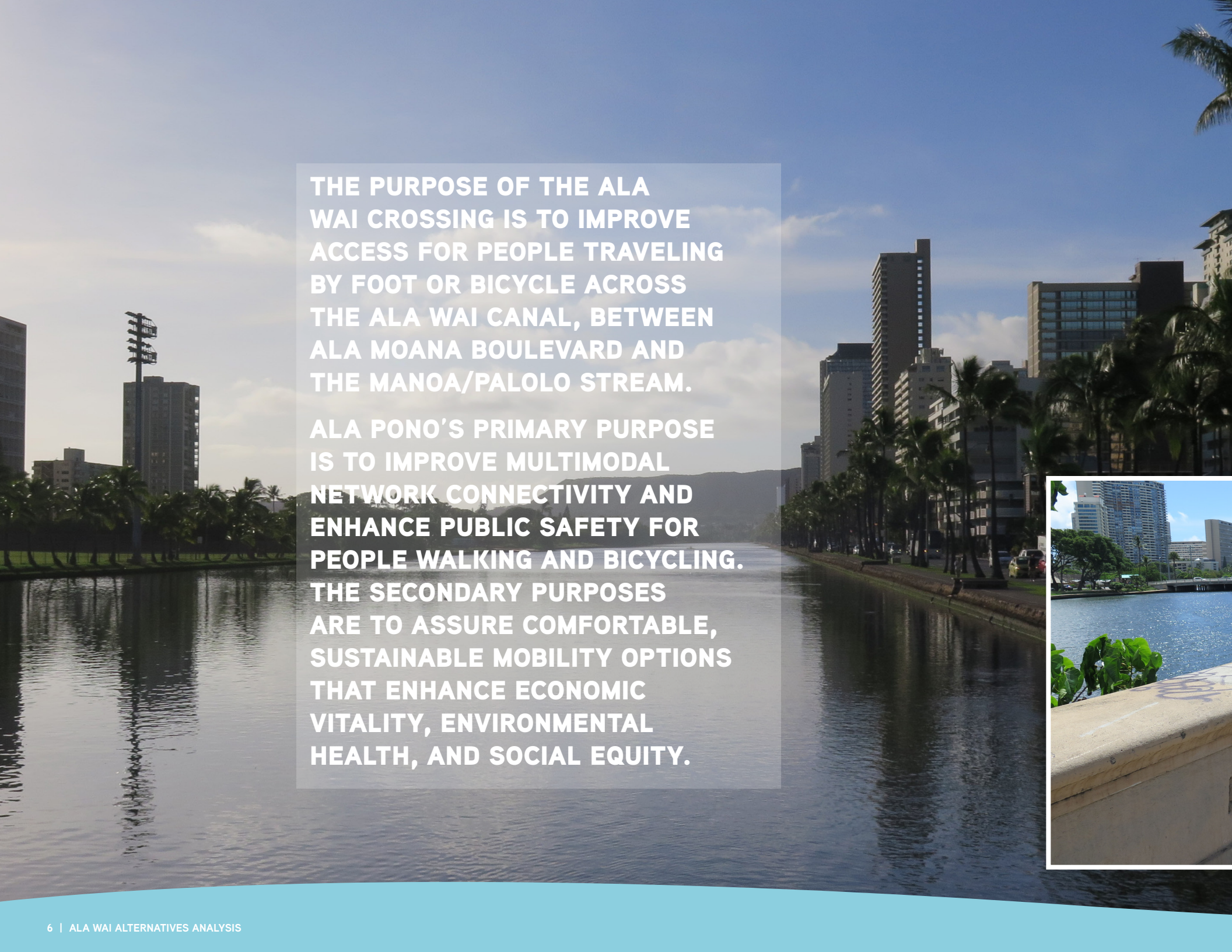
SDOT - Seattle Department of Transportation

USACE - United States Army Corps of Engineers

## WHAT IS ALA PONO?

Ala Pono means “the right path forward.” It was chosen as the name for this Ala Wai Crossing alternative analysis because of its efforts to reestablish cultural, social, and historical connections mauka to makai, through physically connecting communities by way of a crossing that is designed with cultural and historical contexts in mind.





**THE PURPOSE OF THE ALA WAI CROSSING IS TO IMPROVE ACCESS FOR PEOPLE TRAVELING BY FOOT OR BICYCLE ACROSS THE ALA WAI CANAL, BETWEEN ALA MOANA BOULEVARD AND THE MANOA/PALOLO STREAM.**

**ALA PONO'S PRIMARY PURPOSE IS TO IMPROVE MULTIMODAL NETWORK CONNECTIVITY AND ENHANCE PUBLIC SAFETY FOR PEOPLE WALKING AND BICYCLING. THE SECONDARY PURPOSES ARE TO ASSURE COMFORTABLE, SUSTAINABLE MOBILITY OPTIONS THAT ENHANCE ECONOMIC VITALITY, ENVIRONMENTAL HEALTH, AND SOCIAL EQUITY.**





# 1

## PURPOSE & NEED

**Ala Pono's primary purpose is to improve multimodal network connectivity and enhance public safety for people walking and bicycling.**

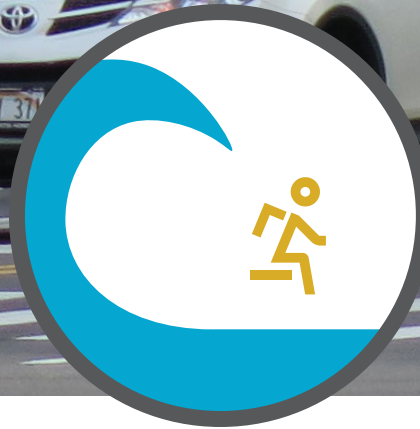


**The purpose and need** of a project establishes the basis for a range of reasonable alternatives and assists with the identification of metrics to evaluate the alternatives resulting in the selection of the highest-scoring alternative.



# 17 CRASHES INVOLVING PEOPLE WALKING AND BICYCLING IN THE VICINITY OF THE ALA WAI CANAL BETWEEN 2012-2016

Source: Hawaii Department of Transportation (HDOT)



## TRAFFIC SAFETY

People who bike, walk or scooter across across the canal strongly agreed that the **existing facilities are unsafe (76%), uncomfortable (65%), and out of the way (67%).**

A history of collisions involving people walking and bicycling on and near existing canal crossings indicates the need for an additional safe, comfortable, convenient crossing of the canal.

Source: 2018 Origin-Destination (O-D) Survey

## IMPROVED NON-MOTORIZED EMERGENCY EVACUATION AND PUBLIC SAFETY

All evacuation routes out of Waikiki today rely on three existing bridges (Ala Moana, McCully, and Kalakaua) concentrated on the west end of the canal. **Waikiki hosts 32,000 regular employees and 4 million annual visitors.** Evacuation options by foot and by bike for both residents and tourists are imperative in the event of a tsunami or emergency.

Source: 2015 Longitudinal Employer-Household Dynamics (LEHD), Waikiki Improvement Association.

## COMPLETE STREETS CONNECTIVITY

**The Ala Wai Canal creates a 1.33-mile long barrier in Honolulu's street network.**

With several Complete Streets corridor improvements and crucial pedestrian and bicycle connections planned in the vicinity, a new crossing of the Ala Wai Canal would complete a key network gap.

Source: City and County of Honolulu

## TRAVEL TIME AND CONVENIENCE

**A new crossing of the Ala Wai Canal could save 20 minutes of travel time for people on foot and 10 minutes for travelers by bike.**

Travel time and convenience are key factors influencing people's travel decisions. 75% of respondents identified travel time as a top travel priority and 57% selected convenience.

Source: 2018 O-D Survey





## AFFORDABLE ACCESS

Waikiki and McCully-Moiliili are home to relatively high proportions of transportation-marginalized residents, with **17% of residents over 65 years of age and 7% of households living under the poverty level.**

Increasing the convenience and comfort of walking and bicycling for residents around the canal lowers transportation costs for people most likely to walk or bike and who would benefit most.

Source: American Community Survey (ACS), 2016 Five-Year Estimates

## ENVIRONMENTAL AND PUBLIC HEALTH

**65% of people who cross the bridge several times a day walk and bike.**

Enhancing the comfort and convenience of active travel modes decreases greenhouse gas emissions and increases public health supporting more physical activity, mitigating chronic disease and obesity.

Source: 2018 O-D Survey

## VIBRANT CANAL

**96,000 residents, 87,000 employees, and 23,000 students live, work, and go to school within convenient walking and bicycling distance of the Ala Wai Canal.**

Waikiki is a world-class destination. Enhancing the appearance and activating the environment along the Ala Wai Canal will enhance the quality of life of residents and employees nearby, bolster economic vitality, and add attractive public space to this regional destination.

Source: ACS, 2016 Five-Year Estimates, 2015 LEHD, OahuMPO Travel Demand Model

UPWARDS OF

**25%** OF WAIKIKI AND MCCULLY-MOILIILI RESIDENTS DO NOT OWN A CAR AND REGULARLY COMMUTE BY MEANS OTHER THAN CAR

Source: OahuMPO Travel Demand Model







# 2

## RELEVANT PROJECTS & PROGRAMS

**Improved access across the  
Ala Wai Canal is not a new idea.**

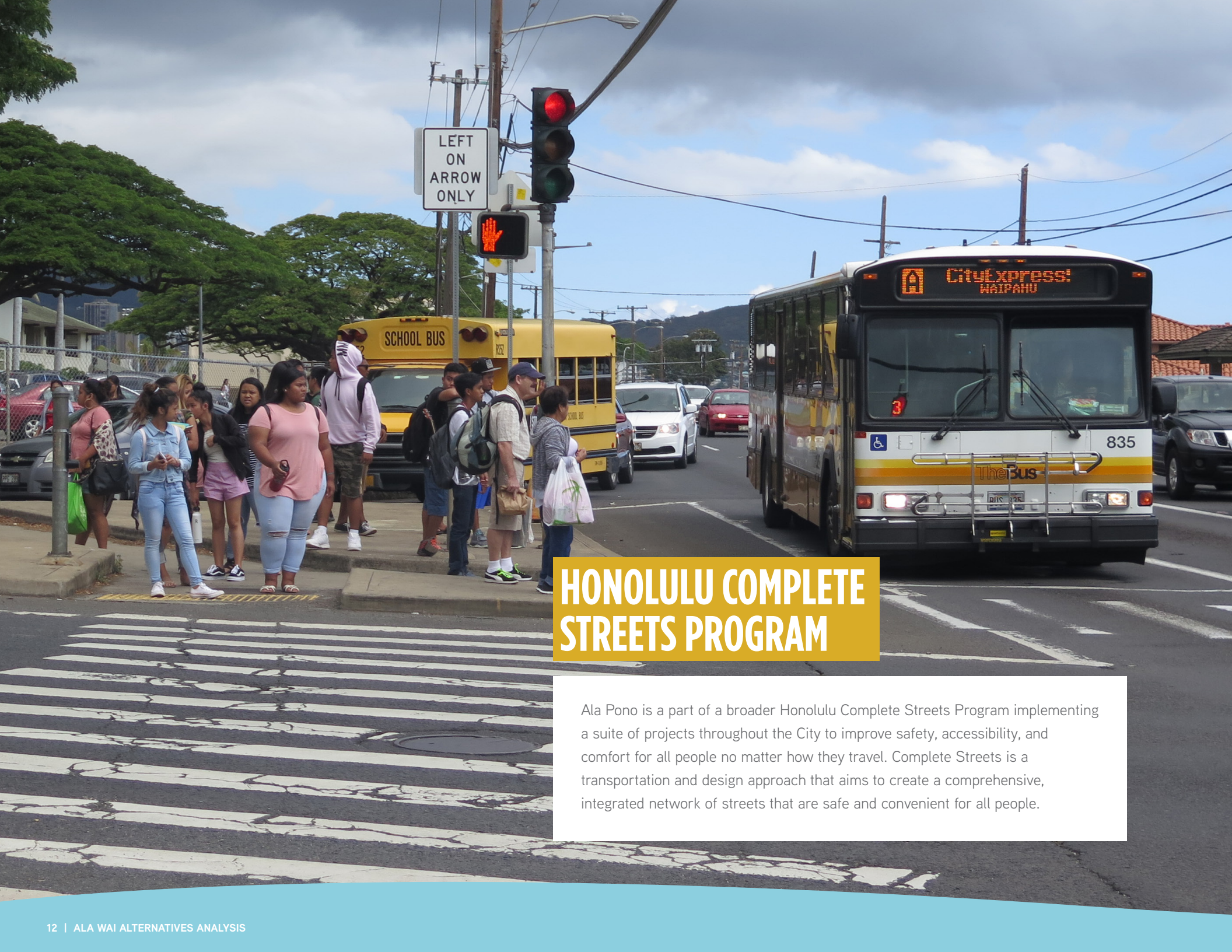


A key need identified in many of Honolulu's transportation visions over the last twenty years, improved canal crossings linking the Waikiki and McCully-Moiliili neighborhoods has long been integral to building a balanced and integrated multimodal transportation network.

**Ala Pono's analysis of alternatives for improved or new canal crossings is implementing the recommendations and policy guidance of the following regional and area plans:**

- Oahu Pedestrian and Bike Plans (2018/2019)
- Waikiki Regional Circulator Study (2013)
- Honolulu Complete Streets Design Manual (2016)
- Oahu Regional Transportation Plan 2040 (2016)
- Waikiki Transportation Plan (1971)



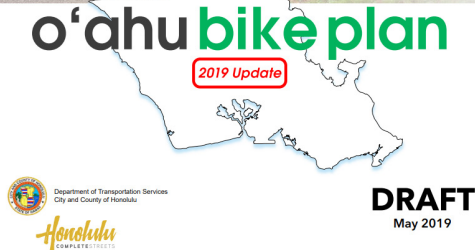


## HONOLULU COMPLETE STREETS PROGRAM

Ala Pono is a part of a broader Honolulu Complete Streets Program implementing a suite of projects throughout the City to improve safety, accessibility, and comfort for all people no matter how they travel. Complete Streets is a transportation and design approach that aims to create a comprehensive, integrated network of streets that are safe and convenient for all people.



# The Oahu Bike Plan proposes a shared-use path connecting University Avenue and Kalaimoku Street across the Ala Wai Canal — one of the alternatives Ala Pono analyzed.



## OAHU PEDESTRIAN AND BIKE PLANS

The Oahu Bike Plan is a toolkit of design, policy, and program guidance that guides the Honolulu Department of Transportation Service's (DTS) bikeway planning for the entire island of Oahu. Notably, this plan includes a proposed shared-use path connecting University Avenue and Kalaimoku Street across the Ala Wai Canal—one of the proposed alternatives Ala Pono analyzed.

## SURROUNDING COMPLETE STREETS CORRIDORS

The City and County of Honolulu adopted a Complete Streets Policy in 2012 and published a Complete Streets Design Manual in 2016. The Design Manual applies to all projects impacting public rights-of-way along City and County of Honolulu streets.

With the Design Manual available to guide future projects, the City and County began work on Complete Streets projects, including Ala Pono. Seven of these corridor projects are currently in planning or design phases. Projects on University Avenue and Ala Wai Boulevard will provide a low-stress connection to the Ala Wai Canal, directly linking to crossing improvements studied by Ala Pono.





## OAHU COASTAL COMMUNITIES EVACUATION PLAN

The Honolulu Department of Emergency Management began developing emergency evacuation zones in 2012, identifying locations of refuge areas, shelter locations, and tsunami evacuation zones.

**Ala Pono utilized tsunami evacuation zone boundaries, and refuge and shelter locations to analyze how an improved crossing of the Ala Wai Canal could improve emergency evacuation.<sup>1</sup>**

## HAWAII'S CLIMATE CHANGE ADAPTATION POLICY

Climate change adaptation planning is an initiative of the Hawaii Office of Planning's Coastal Zone Management (CZM) program. Focusing on adjustments to natural and built environments, in response to actual and expected climate change impacts. Ala Pono referred to adaptation priority guidelines to determine feasible alternatives, especially bridge types for a new canal crossing.

**Capital projects must be planned and designed to remain functional through forecasted sea level rise and other impacts of climate change.**

## WAIKIKI PRE-DISASTER RECOVERY PROJECT

The Waikiki Pre-Disaster Recovery Project is a pilot recovery planning initiative that builds understanding of Waikiki disaster recovery needs and promotes disaster planning prior to an event.

The first phase of the Waikiki Pre-Disaster Recovery Project produced disaster planning resources to build momentum for planning prior to a disaster including a vulnerability assessment, disaster debris management plan and business recovery guide.

**Most notably, the Phase One Report includes a recommendation for adding pedestrian bridges across the Ala Wai Canal at University Avenue, and alongside Kalakaua Avenue.**

## MAYOR'S DIRECTIVE ON CLIMATE CHANGE AND SEA LEVEL RISE

The 2018 directive from Mayor Caldwell instructs all departments and agencies at the City and County of Honolulu to establish policies to address, minimize risks from, and adapt to the impacts of climate change and sea level rise. Ala Pono utilized this guidance to create an evaluation framework that highly ranked alternatives that **best integrate climate change adaptation, proactively reduce GHG emissions, and prepare for the physical impacts of climate change.**



**ALA WAI CANAL  
FLOODWALLS  
USACE**

**ALA WAI 46KV UNDERGROUND  
CABLE RELOCATION**  
Hawaiian Electric Company  
New Cable Alignment  
Existing Cable Alignment

**'IOLANI SCHOOL  
EXPANSION**  
'Iolani School

**ALA WAI CANAL  
MAINTENANCE  
DREDGING**  
Hawai'i DLNR

**HONOLULU COMPLETE STREETS  
IMPLEMENTATION CORRIDORS**  
Honolulu DTS  
Metcalf St      Ala Wai Blvd  
University Ave      Kuhio Ave  
McCully St      Kalakaua Ave





# CURRENT PROJECTS ALONG THE ALA WAI CANAL



**Ala Wai Canal Flood Risk Management Project (United States Army Corps of Engineers [USACE]):** The purpose of the Ala Wai Canal Flood Risk Management Project is to reduce the damages and risks associated with flooding in the Ala Wai Watershed. Project features include debris and detention basins in the upper reaches of Makiki, Manoa, and Palolo streams, three multi-purpose detention basins, and flood control elements along the Ala Wai Canal, including floodwalls averaging four feet in height with an earthen levee at the perimeter of the Ala Wai Golf Course and detention basins near the Ala Wai Park playfields. Floodwalls are intended to protect surrounding areas from the impacts of riverine flood drainage and sea level rise.



**Ala Wai 46kv Underground Cable Relocation (Hawaiian Electric Company [HECO]):** HECO is the energy provider for the island and is planning a relocation of 46kV cable underneath the Ala Wai Canal. The proposed relocation of the 46kV cable underneath the Ala Wai Canal is a consideration for the Ala Pono project as the proposed location of the 46kV cable will run parallel to and in the same corridor as a new bridge at the University Street alignment. Pre-consultation comments from HECO indicated no concerns with the project, but noted that no structures be built above the proposed cable alignment in order to maintain continuous access to their facilities.



**Honolulu Complete Streets Corridors (City and County of Honolulu):** Through the Complete Streets Program, the City and County of Honolulu began work in eight Complete Streets Corridors, including Ala Pono. Seven of these corridor projects are currently in planning or design phases. Projects on University Avenue and Ala Wai Boulevard will provide a low-stress connection to the Ala Wai Canal, directly linking to crossing improvements studied by Ala Pono.



**'Iolani School Expansion ('Iolani School):** 'Iolani School is expanding the existing 'Iolani School campus to provide redeveloped and expanded K-1 classrooms and support spaces, a new Lab/Studio Building and a Residential Hall. The project will replace existing K-1 classrooms, faculty apartments, and five existing apartments located along La'au Street. 'Iolani School anticipates increasing their student enrollment upon completion of the project and housing students from off-island.

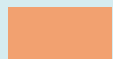


**Ala Wai Canal Maintenance Dredging (Hawaii Department of Land and Natural Resources [DNLR]):** DNLR plans to maintenance dredge the Ala Wai Canal, repair damaged and deteriorating sections of the Ala Wai Canal walls, and assess appropriate treatment of the stairs leading into the canal as they've become a safety concern. The purpose of this project is to remove accumulated silt and sediments, improve protection of nearshore State marine waters and aquatic life, improve public health and safety, decrease the potential for property damage from flooding and a deteriorating canal structure, and improve aesthetics along the Ala Wai Boulevard sidewalk.

# A NEW ALA WAI CROSSING PUTS MORE PLACES WITHIN WALKING AND BIKING DISTANCE OF WAIKIKI



Sample Starting Point



Existing Walkshed in 20 minutes (1 mile)



Expanded Walkshed

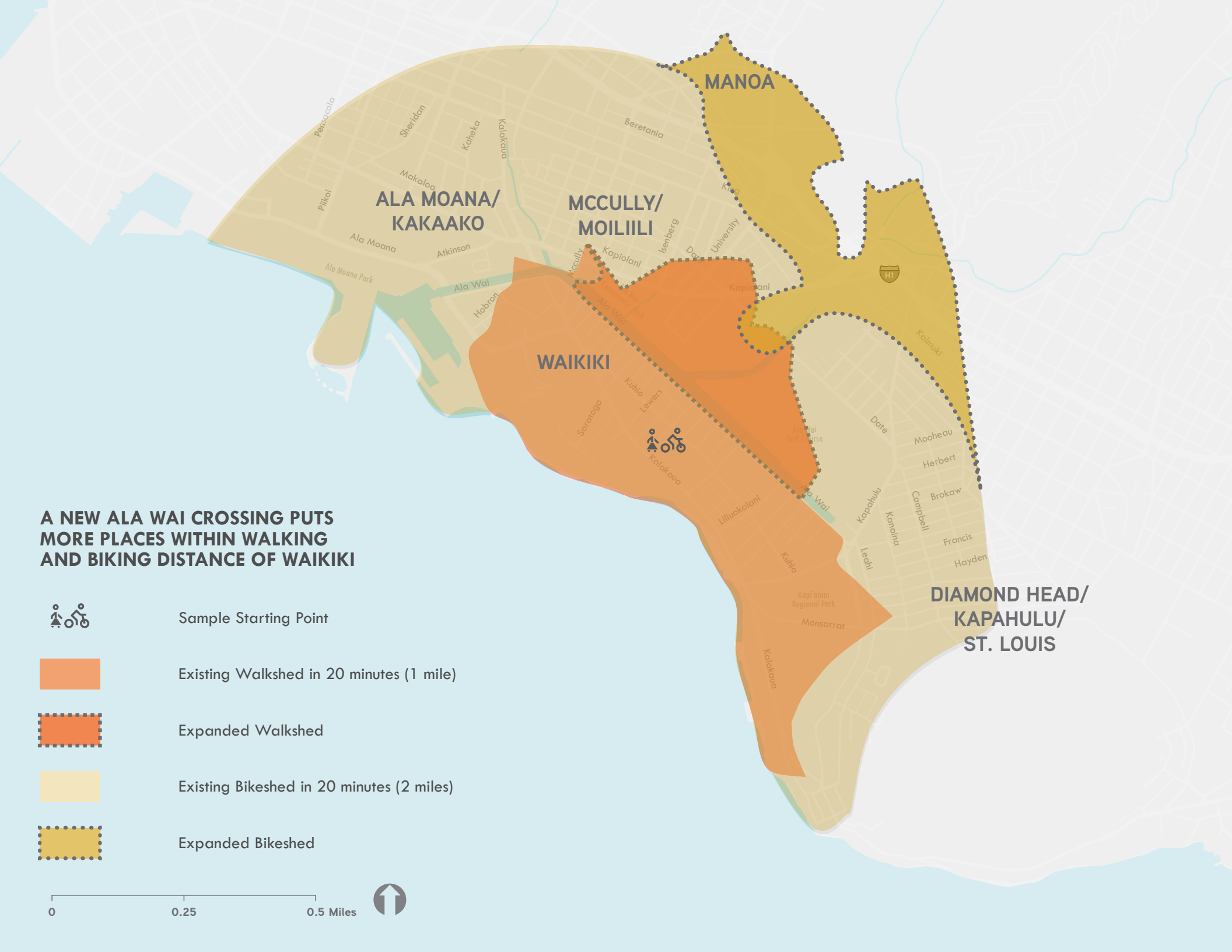


Existing Bikeshed in 20 minutes (2 miles)



Expanded Bikeshed

0 0.25 0.5 Miles





# 3

## EXISTING CONDITIONS

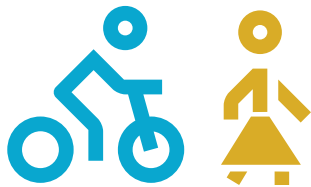
**The current demographics, infrastructure, land use, and travel patterns around the canal help identify how and where to improve access.**

### STUDY AREA

Ala Pono's goals to enhance complete streets connectivity and access for people traveling by foot or bicycle across the canal narrowed the analysis to areas where residents, employees, and travelers could reasonably take trips by foot or bike. Ala Pono's study area is defined as the area around the canal within a 20-minute walk or bike ride from Waikiki, both with the existing canal crossing and with a new mid-canal crossing. This study area, or the project walk and bikeshed, was used throughout the alternatives analysis to measure existing and possible access, how people are currently traveling, and how travel could change with an improved crossing.

# WHO LIVES, WORKS, AND GOES TO SCHOOL AROUND THE CANAL TODAY?

**87,000** PEOPLE  
CURRENTLY LIVE IN AN AREA  
WHERE THEY CAN EASILY WALK OR  
BIKE ACROSS THE ALA WAI CANAL  
TO OR FROM CENTRAL WAIKIKI.



RESIDENTS BORN OUTSIDE THE UNITED  
STATES MAKE UP

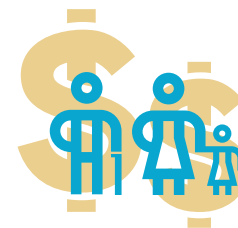
**ONE-THIRD**  
OF THE CANAL AREA POPULATION.



THE NEIGHBORHOODS  
AROUND THE CANAL ARE  
ESTIMATED TO GAIN

**5,550**  
NEW RESIDENTS BY 2045.

MEDIAN HOUSEHOLD INCOMES ARE  
**17% TO 29% LOWER**  
IN NEIGHBORHOODS AROUND THE CANAL THAN  
HONOLULU'S MEDIAN HOUSEHOLD INCOME OF \$77,161.



IN ALA MOANA AND MOILIILI,  
**8.8%** OF FAMILIES HAVE  
AN INCOME BELOW THE POVERTY  
LEVEL, 2.7 PERCENTAGE POINTS  
HIGHER THAN HONOLULU.



THE NEIGHBORHOODS AROUND  
THE CANAL ARE HOME TO

**7,000+** PEOPLE  
EXPERIENCING A DISABILITY.  
**ONE IN TEN**  
HONOLULU RESIDENTS ARE  
EXPERIENCING A DISABILITY.



**13%** OF RESIDENTS  
IN WAIKIKI AND  
**20%** OF THOSE  
LIVING IN ALA MOANA  
AND MOILIILI ARE  
UNDER 19 YEARS OLD.

Source: 2016 ACS 5-Year Estimates



## WHAT ARE THE WALKING AND BICYCLING CONDITIONS AROUND THE CANAL NOW?

- Current crossings provide basic facilities for people walking and bicycling. Existing bridges only have basic sidewalks not buffered from traffic and minimal bike facilities, which create a high stress experience for people walking and bicycling.
- School districts span both sides of the Ala Wai Canal, which requires students to cross the canal to walk or bike to school. There are 23 schools within a 20-minute walk or bike ride from Waikiki.
- Currently, if someone is walking between central Waikiki and Ala Wai Park or Elementary School, they must travel one mile each way or 20 minutes out of direction to get across the canal.

**Current crossings provide basic amenities for people walking and bicycling.**



## WHAT ARE THE PARKING CONDITIONS AROUND THE CANAL TODAY?

The parking supply on both sides of the canal is a mix of public and private spaces. Of the 2,587 on-street parking spaces recorded around the canal, 82% are available fare-free.

The utilization of on-street parking within the study area already exceeds the City's recommended Urban Core parking utilization target, with many streets experiencing a rate higher than 85% throughout the day while off-street facilities are under-utilized at 70%. This usage pattern leaves people with an impression that parking is scarce in the area. Understandably, community members express frustration and concern about the impact of a new crossing on people looking for residential, Waikiki-bound, and park-access parking.

Given this condition, a new Ala Pono crossing is unlikely to make a perceptible difference to nearby on-street parking demand. Any increase in demand for parking as a result of a new crossing is likely to be observed in off-street parking facilities, such as the Ala Wai Neighborhood Parking lot. Some of the pedestrian and bicycle activity on a new crossing will be the result of mode shift out of cars, however this is unlikely to prompt significant changes in local parking demand.

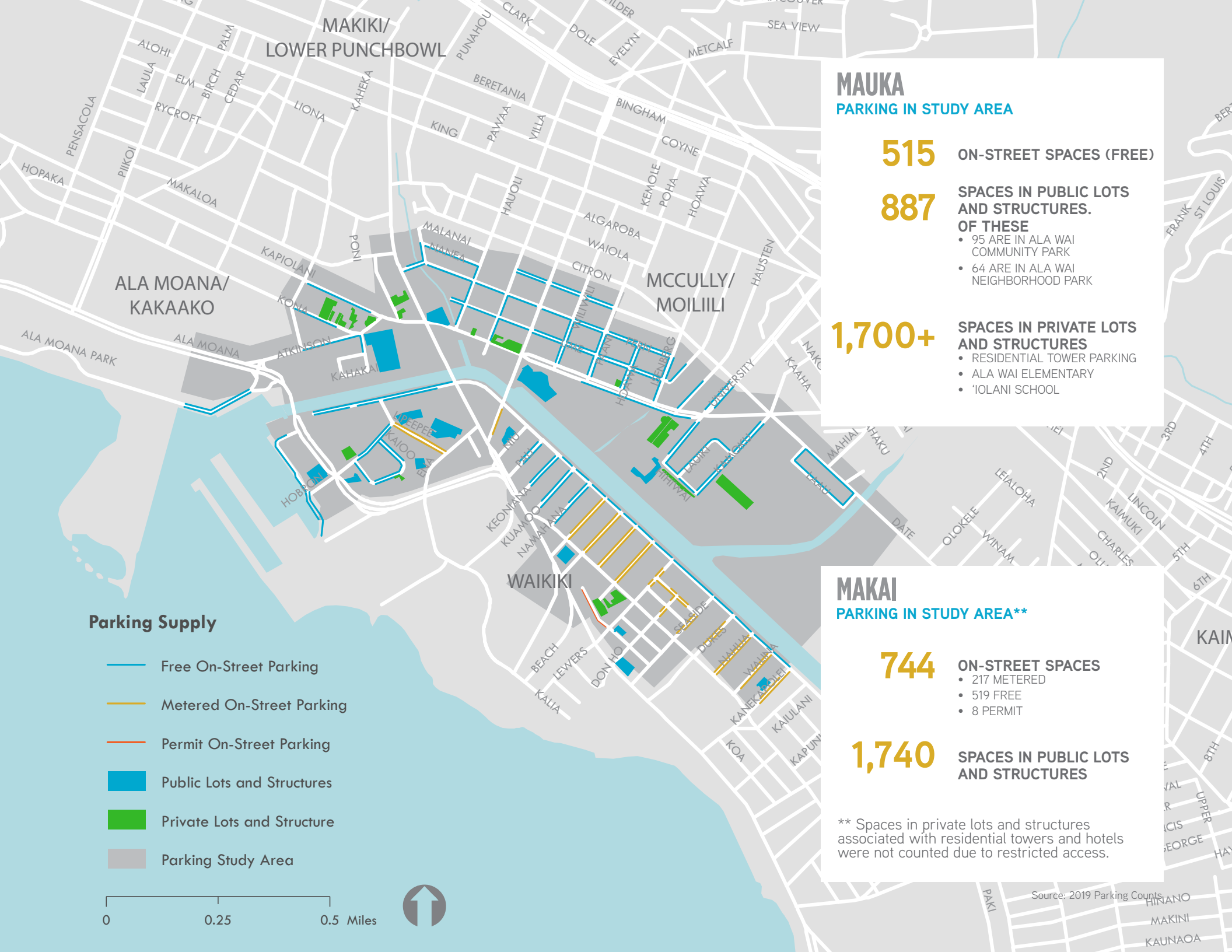
Parking management strategies should be further studied as a separate effort to improve management of existing parking resources. **A sample of parking management strategies that could be applied for improved turnover or resident access include:**

- Pricing existing parking supply
- Resident Parking Zones
- Shared-Parking agreements with private lot operators
- Transportation Demand Management services and infrastructure
- Enhanced communication about parking availability
- Shuttle services from remote parking
- Wayfinding, signage, and information improvements

**Ala Pono crossing is unlikely to make a perceptible difference to nearby on-street parking demand.**







MAKIKI/  
LOWER PUNCHBOWL

ALA MOANA/  
KAKAOKO

MCCULLY/  
MOILIILI

WAIKIKI

## MAUKA

### PARKING IN STUDY AREA

515

ON-STREET SPACES (FREE)

887

SPACES IN PUBLIC LOTS  
AND STRUCTURES.  
OF THESE

- 95 ARE IN ALA WAI COMMUNITY PARK
- 64 ARE IN ALA WAI NEIGHBORHOOD PARK

1,700+

SPACES IN PRIVATE LOTS  
AND STRUCTURES

- RESIDENTIAL TOWER PARKING
- ALA WAI ELEMENTARY
- 'IOLANI SCHOOL

## MAKAI

### PARKING IN STUDY AREA\*\*

744

ON-STREET SPACES

- 217 METERED
- 519 FREE
- 8 PERMIT

1,740

SPACES IN PUBLIC LOTS  
AND STRUCTURES

\*\* Spaces in private lots and structures associated with residential towers and hotels were not counted due to restricted access.

Source: 2019 Parking Counts

### Parking Supply

- Free On-Street Parking
- Metered On-Street Parking
- Permit On-Street Parking
- Public Lots and Structures
- Private Lots and Structure
- Parking Study Area

0 0.25 0.5 Miles



## HOW IS LAND AROUND THE CANAL USED TODAY?

- All Ala Pono alternatives are located partially within the Honolulu Waikiki Special District, objectives for which include supporting multi-modal transportation, emphasizing pedestrian orientation, and maintaining viewsheds where possible.
- The land on the makai side of Ala Wai Canal owned by the City and County of Honolulu jurisdiction and thus land acquisitions are not anticipated for a new crossing.
- Recreation and education land uses dominate much of the mauka side, including the Ala Wai promenade, community park, neighborhood park, community garden, and golf course, as well as Ala Wai Elementary School and the 'Iolani School.
- 579 acres of land in the Ala Wai Canal area are dedicated to preserved lands, parks, and other recreational facilities. Residential condominiums and apartments comprise much of the land use on the makai side of the canal.
  - » Over 70,000 people live in the Ala Wai Canal area.
- Scenic views play an integral role in sense of place around the Ala Wai Canal.

**The Ala Wai Canal and much of the land adjacent to it are owned and operated by public agencies.**

### WHO OWNS AND OPERATES THE LAND AROUND THE ALA WAI CANAL?

Property	Jurisdiction	Details
Ala Wai Canal	State of Hawaii	Board of Land and Natural Resources (BLNR) / Department of Land and Natural Resources (DLNR)
Ala Wai Neighborhood Park	State of Hawaii	Honolulu Department of Parks and Recreation (State of Hawaii E.O. 569 & 2036 to City and County of Honolulu for park purposes)
Ala Wai Community Gardens	City and County of Honolulu	Honolulu Department of Parks and Recreation
Streets neighboring the canal	City and County of Honolulu	Honolulu Department of Facility Maintenance
Ala Wai Elementary School	State of Hawaii	Hawaii Department of Education
Ala Wai Promenade	City and County of Honolulu	Honolulu Department of Facility Maintenance
Ala Wai Golf Course	City and County of Honolulu	Honolulu Department of Enterprise Services
Waikiki-Kapahulu Public Library	State of Hawaii	Hawaii State Public Library System

Source: Honolulu Department of Transportation Services; Ala Wai 46kv Underground Cable Relocation, Final Environmental Assessment (2017)

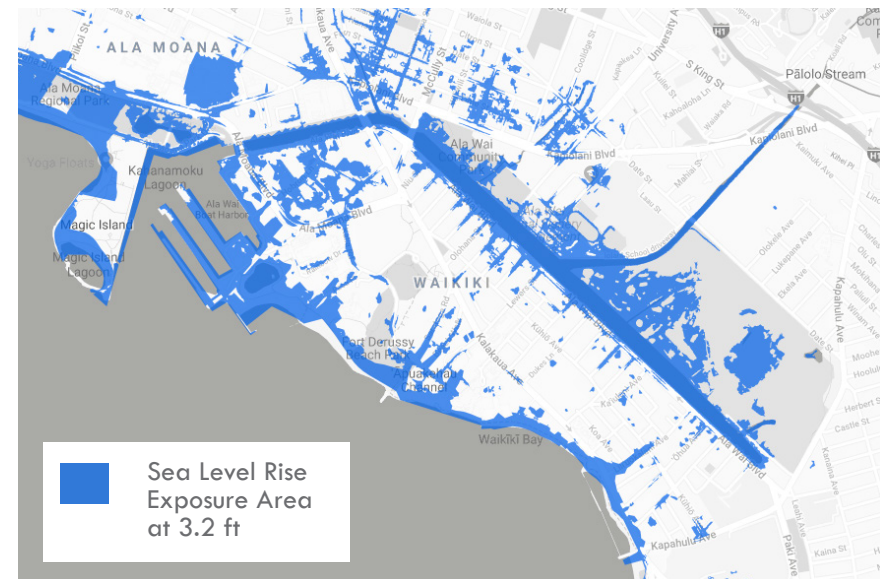


## HOW MAY NATURAL HAZARDS AND CLIMATE CHANGE IMPACT THE ALA WAI CANAL IN THE FUTURE?

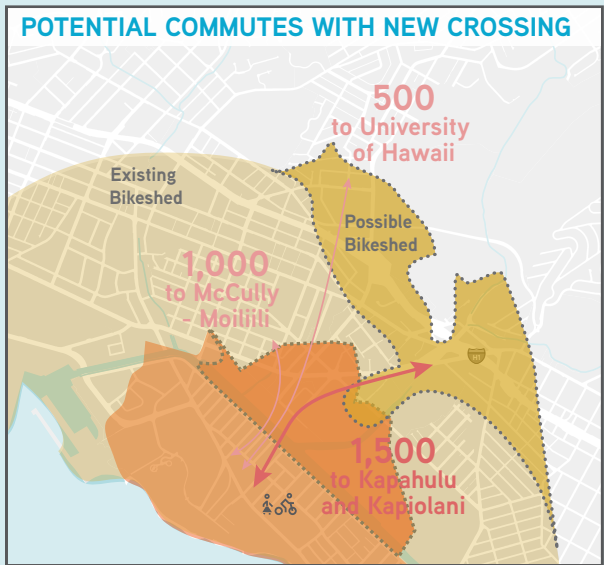
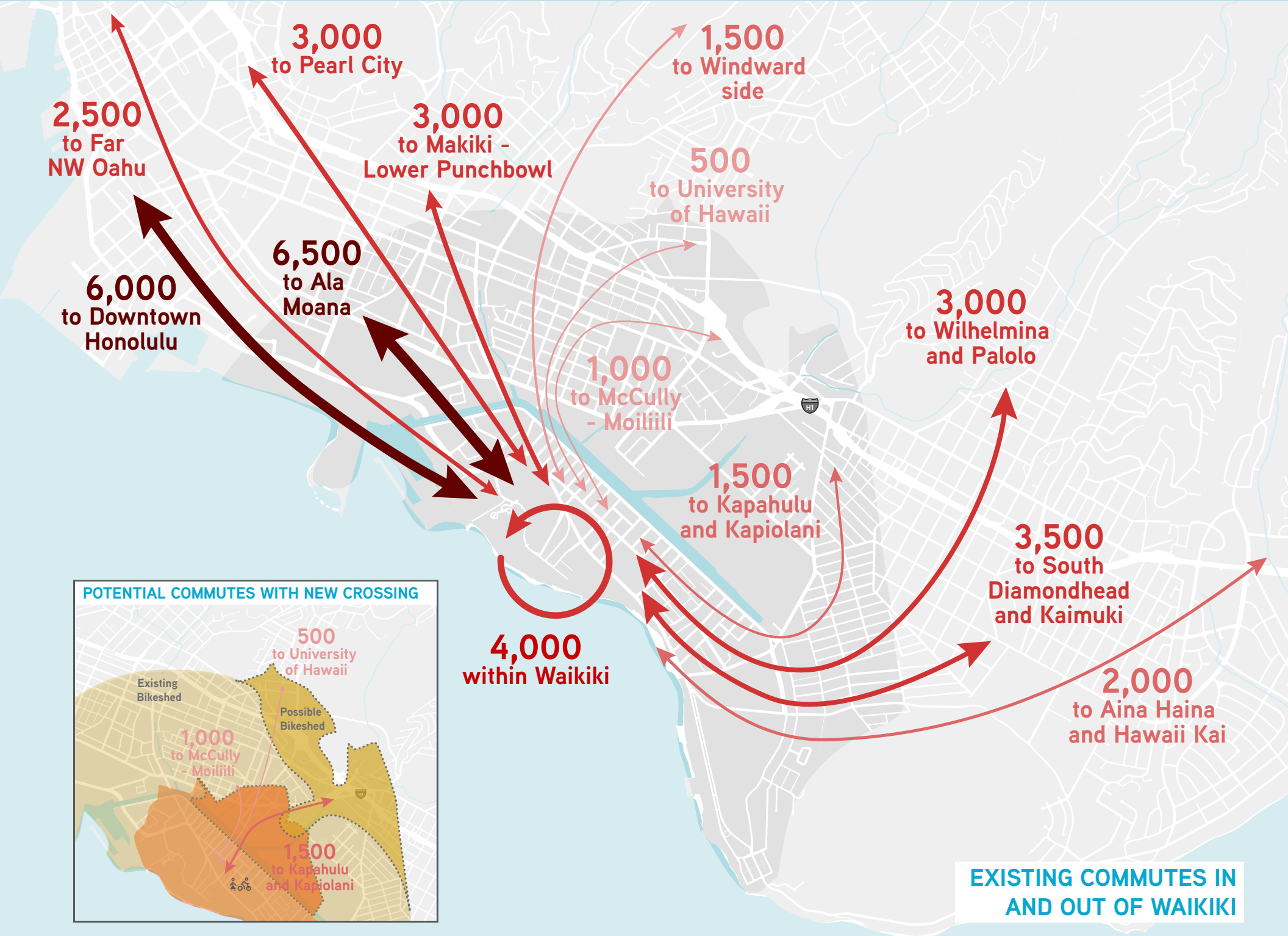
- Forecasts of sea level rise are projected to reach one foot of rise by 2050, and three feet by 2100, according to analysis of the City and County's Climate Change Commission, which informed the mayor's Directive No. 18-01.
- Under the Mayor's Directive No. 18-01, capital projects should be planned and designed to remain functional through forecasted sea level rise of three to six feet, based on its intended service life and critical function.
- According to the Department of Emergency Management, the area around the Ala Wai Canal is in the Extreme Tsunami Evacuation Zone due to the potential for storm surge during an extreme weather event.
- In the event of a tsunami or other emergency, it would take all Waikiki residents and employees at least 45 minutes to walk to one of the safe sites on the mauka side of the canal, with approximately 21,500 people crossing the McCully Street bridge, and 13,900 people walking around the canal via Kapahulu Avenue.

**Under the current conditions, in the event of a tsunami or other emergency, it would take all Waikiki residents and employees at least 45 minutes to walk to one of the safe sites.**

**LAND AREA CHANGE UNDER 3.2 FEET OF SEA LEVEL RISE CONDITIONS**



Source: Pacific Islands Ocean Observing System







# HOW ARE PEOPLE TRAVELING AROUND AND ACROSS THE CANAL TODAY?

- In Honolulu, approximately 38,000 Waikiki-based daily commute trips start or end on the makai side of the canal.
- An average resident in the canal area is more likely to travel by active transportation than the average Oahu resident. In the neighborhoods around the Ala Wai Canal, 19% of residents travel by walking or bicycling; a rate 8 percentage points higher than that of Oahu.

## DAILY TRAVEL VOLUMES ACROSS EXISTING CROSSINGS

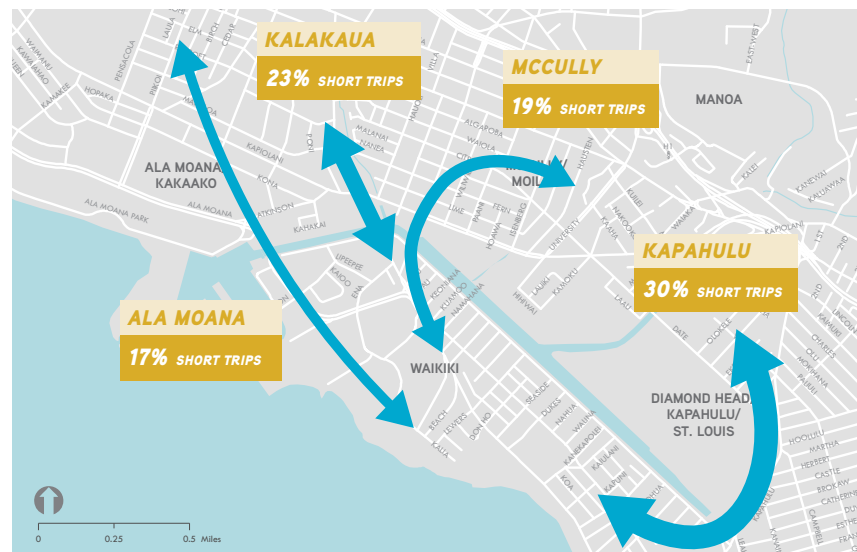
ALA MOANA BLVD	KALAKAUA AVE	MCCULLY ST	KAPAHULU AVE	
4,650	3,950	3,250	2,500	
71,000	70,000	72,000	36,000	

Source: 2018 Traffic Counts

# WHAT MODES ARE PEOPLE USING TO CROSS THE CANAL TODAY?

- Most travel in and out of Waikiki is made by car.
- 17-30% of car and motorcycle trips into Waikiki across each of the bridges are a short walking or biking distance from Waikiki (less than 2 miles).
- 2018 survey respondents cited their top travel modes as driving alone, bicycling, and walking. However, people walking and bicycling represent the highest proportion of travelers who cross the canal several times a day.
- Upwards of 25% of Waikiki and McCully-Moiliili residents do not own a car and regularly commute by means other than a private automobile.

## TRIP LENGTHS ACROSS EXISTING CROSSINGS



Source: 2018 Traffic Counts & 2017 AirSage Origin-Destination Data







# 4 ALTERNATIVES ANALYSIS METHODOLOGY

Guided by the Purpose and Need statement, the Ala Pono Alternatives Analysis Process was structured to identify project alternatives, evaluate each alternative, select the highest scoring alternative, evaluate bridge types, and plan for implementation. This process is summarized in this chapter. More detail about each of these steps can be found in following chapters indicated by its respective Alternative Analysis Process icon.

## CASE STUDY: SULLIVAN'S CROSSING PEDESTRIAN/BICYCLE BRIDGE, PORTLAND, OR

The Portland Bureau of Transportation (PBOT) conducted an Alternatives Analysis to evaluate several bridge types and alignments for a new pedestrian/bicycle bridge over Interstate 84 and the Union Pacific Railroad. The Alignment Criteria Matrix was comprised of the following evaluation criteria:

**Economics:** Construction cost, long-term maintenance cost

**Aesthetics:** Gateway, opportunity to create public space, views from and of the bridge

**Community:** Connectivity to nearby neighborhoods, destinations, and key walking and bicycling routes, impacts to private property and business routes

**Safety and Security:** Sightlines, Crime Prevention through Environmental Design (CPTED), safe transitions, emergency vehicle access

**Constructability:** Roadway and railroad impacts, schedule, staging

**Permitting:** Complexity, duration

**Accessibility:** Universal access, minimal grade change

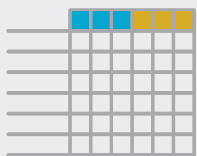
**Landscape:** Preservation of valuable landscape elements

# ALTERNATIVES ANALYSIS PROCESS



## PROJECT ALTERNATIVES (CHAPTER 5)

Each alternative was evaluated for feasibility, potential environmental impact, and alignment with the project's purpose and need. The New Crossing and Enhance Existing Crossing alternatives have multiple alignments or locations for possible implementation.



## ALTERNATIVES ANALYSIS (CHAPTER 6)

Evaluation criteria were selected for each project need and organized into an evaluation matrix. This data-driven analysis captured differences between alternatives across the range of identified primary needs.



## HIGHEST SCORING ALTERNATIVE (CHAPTER 6)

The analysis and public feedback identified the approximate University Avenue alignment as the highest-scoring alternative that best achieves the project's purpose and need to improve access for people traveling by foot or bicycle across the Ala Wai Canal.



## BRIDGE TYPE EVALUATION (CHAPTER 7)

With a new crossing in the vicinity of University Avenue as the highest-scoring alternative, Ala Pono evaluated the types of bridges that most aligned with the community's preferred bridge experience based on feedback from community meetings. The bridge type evaluation also used criteria to assess the feasibility and potential impacts of different bridge types for a new crossing.



## IMPLEMENTATION & NEXT STEPS (CHAPTER 9)

The Ala Wai Alternatives Analysis identified the preferred alternative. Following the Alternatives Analysis phase, the City and County will move into the Preliminary Engineering phase to further evaluate the preferred alternative. Environmental Assessment will occur during this project phase.

## CASE STUDY: NORTHGATE PEDESTRIAN AND BICYCLE BRIDGE, SEATTLE, WA

The purpose of the Northgate Pedestrian and Bicycle Bridge:

- Provide a walking and bicycling connection across Interstate 5 (I-5), reducing average walking distance by 1.2 miles and travel time by 30%.
- Connects bicycle routes for people of all ages and abilities.
- Connect North Seattle College (west) with the future Sound Transit light rail station and urban village (east).

The Seattle Department of Transportation (SDOT) completed a feasibility report in 2012 that evaluated possible alignments and bridge types for spanning I-5, using the following evaluation criteria:

- Connectivity
- Visual Presence
- Environmental Sustainability
- Safety
- Constructability
- Construction & Maintenance Cost
- Qualitative Benefits



# ALTERNATIVE ANALYSIS METRICS

**Ala Pono weighted the metrics associated with each primary need according to their relative importance to the overall project.** For example, public input received the highest weighting to ensure that feedback received during community engagement was adequately considered. Consistent with the City and County of Honolulu’s Complete Streets Ordinance (Ordinance 12-15), connectivity and traffic safety metrics were also weighted highly as improved connectivity and the comfort of people walking and bicycling are key project needs. The resulting scores ranked alternatives based on their potential to meet the project’s purpose and need and align with public input.

## CASE STUDY: I-880 BICYCLE/PEDESTRIAN BRIDGE AND TRAIL PROJECT, FREMONT, CA

The City of Fremont evaluated various bridge types to provide a safe and convenient pedestrian and bicycle connection across Interstate 880 (I-880) from the Warm Springs/South Fremont BART station to jobs, schools, and key employment destinations in Fremont’s Innovation District on the east side of I-880.

The City evaluated three different bridge types including Tied-Arch, Twin-Tower Cable-Stayed, and Single-Tower Cable Stayed. The I-880 project included assumptions similar to Ala Pono including limiting concepts to only those constructible without a center pier touching down in the center of I-880 and evaluating the potential to provide an architecturally iconic connection as a key placemaking element within a regional corridor. The I-880 project considered environmental, traffic, future maintenance and inspection, constructability and cost impacts to evaluate bridge type alternatives.

## PROJECT SCOPING ALTERNATIVES



Source: City of Fremont

# 5

# PROJECT ALTERNATIVES

Ala Pono **evaluated a variety of alternatives to improve access for people traveling by foot or bicycle across the Ala Wai Canal, between Ala Moana Boulevard and the Manoa/Palolo Stream.**







**A B C**

### ENHANCE EXISTING CROSSINGS:

Improve existing canal crossings with possible solutions ranging from reconfiguration of the existing bridge travel lanes to structural solutions to create more space for people walking and bicycling.



**D E**

### CREATE A NEW CROSSING:

Create a new canal crossing with a bicycle and pedestrian bridge at either University Avenue or in the vicinity of the Ala Wai Golf Course.

### NO BUILD

No new crossing or improvements to existing crossings, establishing an existing conditions baseline for the alternatives analysis.

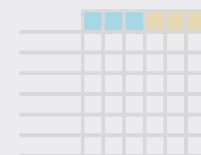
### OTHER ALTERNATIVES

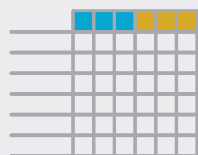
Three non-bridge solutions were assessed:

- Aerial Tram: Construct an aerial tram to transport people across the Ala Wai Canal.
- Aqua Bus: Establish a network of dock locations and a fleet of vessels to transport people along with bicycles, strollers, and wheelchairs across the Ala Wai Canal.
- Tunnel: Construct a tunnel under the Ala Wai Canal for people walking and bicycling.

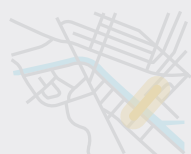


PROJECT ALTERNATIVES





ALTERNATIVES ANALYSIS



## EVALUATION METRIC

### PUBLIC INPUT

## THE PROJECT MUST:

Align with the preferences of the community as expressed throughout the public engagement



### CONNECTIVITY

Fulfill the need for expanded connectivity for people walking and bicycling between key destinations and Complete Streets corridors in the study area



### POTENTIAL ENVIRONMENTAL IMPACTS

Avoid and/or mitigate any potential environmental impacts including direct impacts to parks, residences, business properties, and other environmental, cultural, and historic resources



### IMPLEMENTATION

Be implementable with an achievable capital and operational cost as well as a reasonable design and construction time



### TRAFFIC SAFETY

Reduce the exposure of people walking and bicycling to high-crash locations and provide a low-crash link across the canal improving public safety for all and reducing the number of crashes in the study area



### TRAVEL TIME AND CONVENIENCE

Improve travel times and convenience for people crossing the Ala Wai Canal by bike and foot



### ENHANCE SUSTAINABLE MOBILITY AND IMPROVE PUBLIC HEALTH

Encourage the use of sustainable and active transportation modes to improve public health in the study area



### AFFORDABLE ACCESS

Serve elderly, young, and low-income populations to provide lower cost transportation options for the people who need affordable alternatives the most and are most likely to walk or bike



### IMPROVED NON-MOTORIZED EMERGENCY EVACUATION AND PUBLIC SAFETY

Enhance emergency evacuation by foot or bicycle and create more foot traffic in the study area to enhance public safety through consistent on-street activity



### VIBRANT CANAL

Bolster the economic vitality of the study area by creating a landmark character, bolstering public life and commercial activity in the area

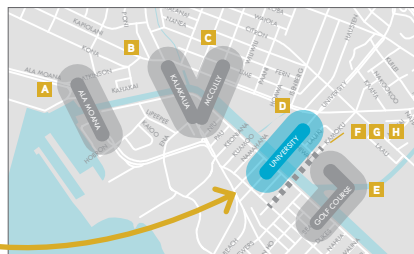


# HIGHEST SCORING ALTERNATIVE & BRIDGE TYPE EVALUATION

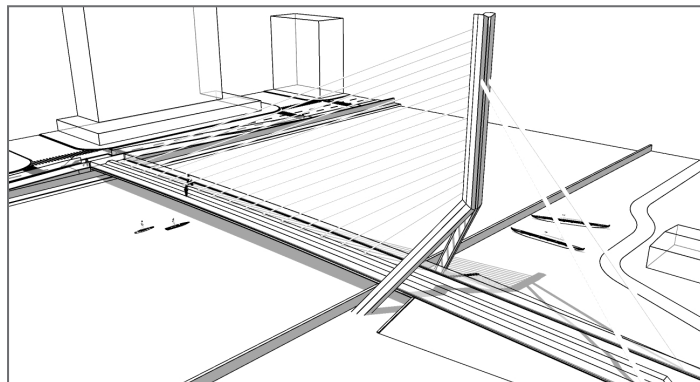
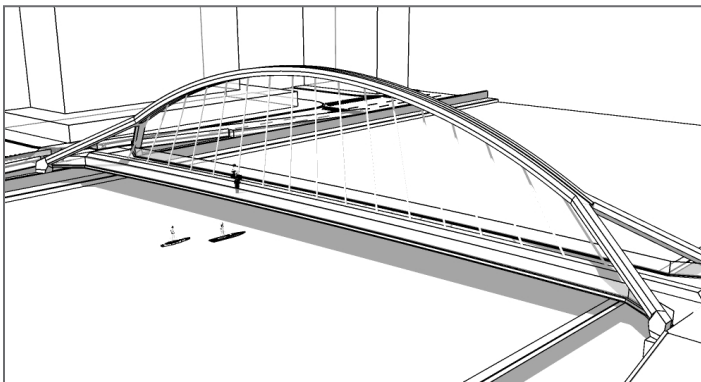
Ala Pono's alternatives analysis and public feedback identified a new crossing in the vicinity of **University Avenue** as the highest-scoring alternative that best achieves the project's purpose to improve access for people traveling by foot or bicycle across the Ala Wai Canal. A detailed summary of the alternatives analysis is provided in Chapter 6.

**46% OF RESPONDENTS  
PREFER A PEDESTRIAN AND BICYCLE  
BRIDGE AT UNIVERSITY AVENUE  
OVER THE OTHER ALTERNATIVES**

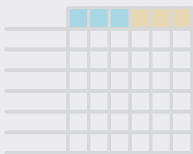
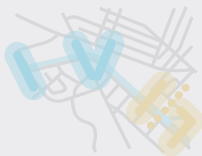
Source: Intercept Survey and Online Survey (1,016 responses)



With a new crossing in the vicinity of University Avenue as the highest scoring alternative, Ala Pono evaluated the bridge types that most aligned with the community's preferred bridge experience based on feedback from community meetings. With a distinct visual form that minimizes impacts to views, the bifurcated concrete arch bridge and cable-stayed concrete bridge types ranked highly through public input.



Both types, along with other bridge types that may minimize visual impacts, will be further evaluated during the preliminary engineering phase and the environmental process. In the event of new information found in the preliminary engineering phase, the recommendation may be to move forward with a different bridge type and/or a different location, still fulfilling the intent of the Ala Pono Project. Details regarding the multi-factor analysis of bridge type are described in Chapter 7.



ALTERNATIVES ANALYSIS



BRIDGE TYPE EVALUATION







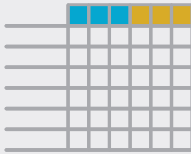
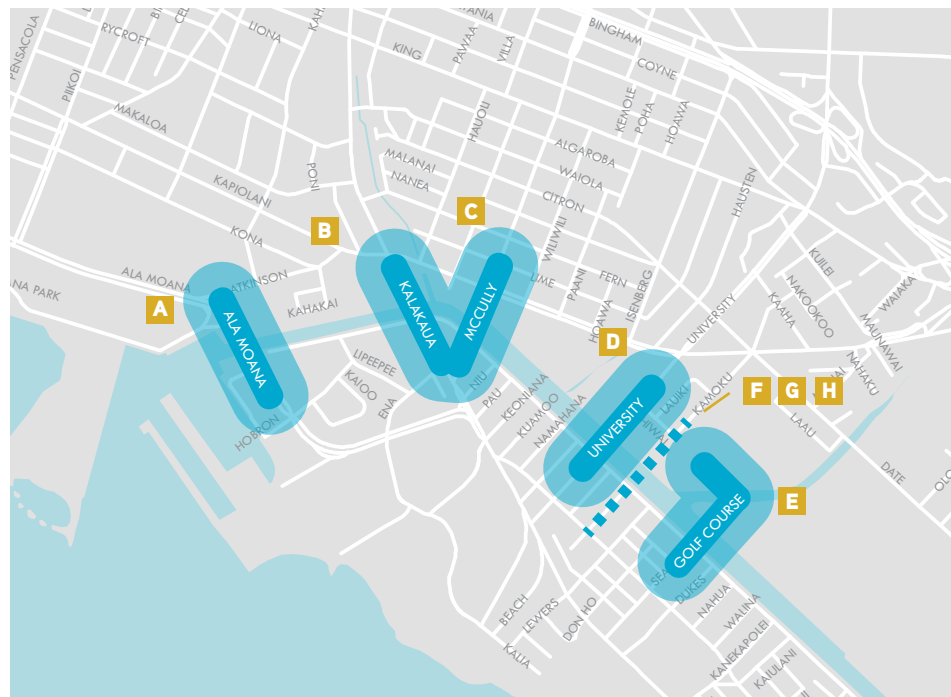


# 6

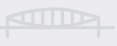
# ALTERNATIVES ANALYSIS

This chapter describes the project alternatives analysis in detail.

PROJECT ALTERNATIVES



ALTERNATIVES ANALYSIS



# EVALUATION MATRIX

Data-driven analysis informed the evaluation of crossing alternatives. Alternatives were ranked according to their potential to meet the project goals expressed in the purpose and need statement.



PUBLIC INPUT



COMPLETE STREETS CONNECTIVITY



POTENTIAL ENVIRONMENTAL IMPACTS



IMPLEMENTATION



TRAFFIC SAFETY



TRAVEL TIME AND CONVENIENCE



ENHANCE SUSTAINABLE MOBILITY AND IMPROVE PUBLIC HEALTH



AFFORDABLE ACCESS



IMPROVED NON-MOTORIZED EMERGENCY EVACUATION AND PUBLIC SAFETY



VIBRANT CANAL

**TOTAL SCORE**











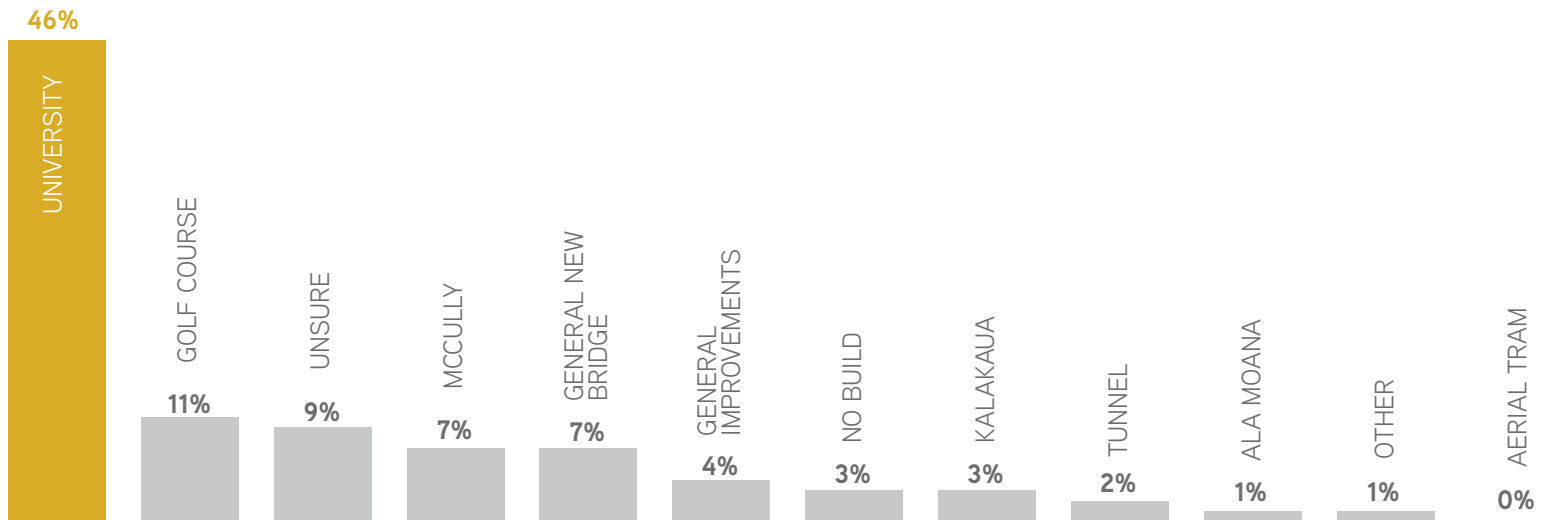


## PUBLIC INPUT

46% of intercept and online survey respondents preferred a new crossing in the vicinity of University Avenue (intercept survey n = 890, online survey n = 191).

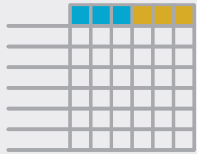
- Most respondents live in the neighborhoods around the Ala Wai Canal.
- Most respondents drive alone as their primary mode of transport.

**A pedestrian and bicycle bridge in the vicinity University Avenue was the preferred alternative by a large majority of public outreach respondents.**

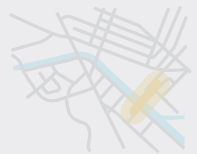


Source: 2018 O-D Surveys

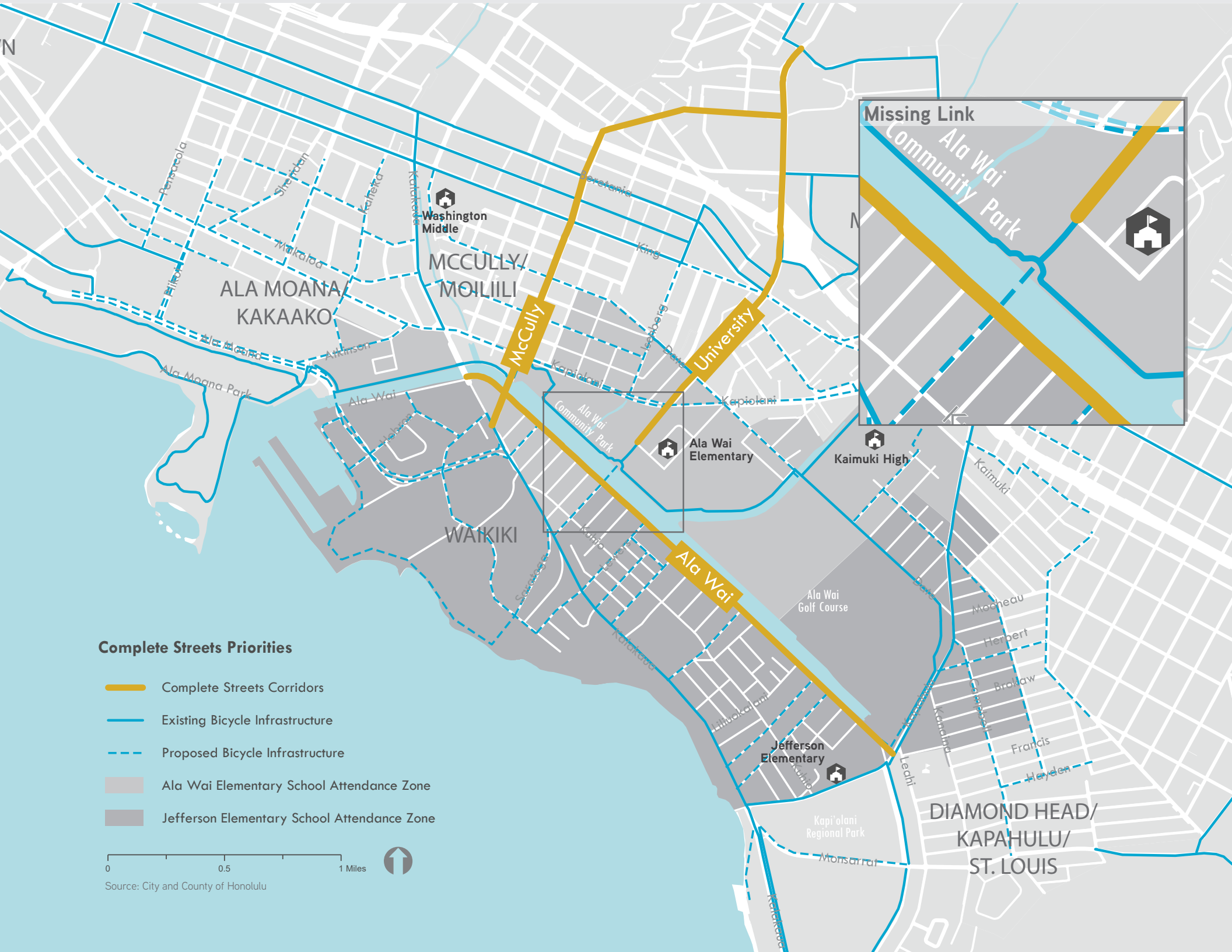
INTERCEPT AND ONLINE SURVEY  
FEEDBACK RESPONSES TO DATE



ALTERNATIVES ANALYSIS





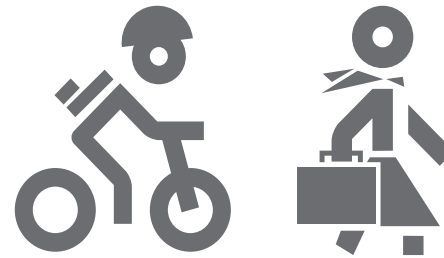




## COMPLETE STREETS CONNECTIVITY

- A new crossing in the vicinity of University Avenue expands walkable and bikeable access to Waikiki for 3,000 more commuters.
- There is currently a gap in the walking and bicycling network between the mauka and makai sides of the canal.

**A new crossing in the vicinity of University Avenue connects Complete Streets corridors and closes a gap in the walking and bicycling network.**

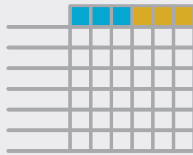


WITH A NEW CANAL CROSSING,

**3,000+**

MORE PEOPLE WOULD BE ABLE TO WALK OR BIKE TO WORK.

Source: 2015 LEHD



ALTERNATIVES ANALYSIS



	NO BUILD	ALA MOANA	KALAKAUA	MCCULLY	UNIVERSITY	GOLF COURSE	AERIAL TRAM	AQUABUS	TUNNEL
EXPANDS THE AREA ACCESSIBLE BY WALKING AND BIKING	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
EXPANDS THE POTENTIAL FOR WALK AND BIKE COMMUTING	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
CONNECTS PRIORITY BICYCLE AND PEDESTRIAN FACILITIES	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

DOWNTOWN

## UNIVERSITY BRIDGE

One city-owned parcel affected

New bridge would preserve existing park use

No residential or commercial properties directly impacted

UH Manoa

MANOA

McCULLY/  
MOILIILI

PALOLO









KAIMUKI

Ala Wai  
Golf Course

WAIKIKI

DIAMOND HEAD/  
KAPAHULU/  
ST. LOUIS

### Land Use within Walk and Bike Shed

 Low Density Residential / Mixed-Use	 Waikiki Special District: Public Precinct
 Medium Density Residential / Mixed-Use	 State Jurisdiction
 Preservation	 Waikiki Special District: Resort Precinct
 Community / Neighborhood Commercial	 High Density Residential / Mixed-Use

## ALA WAI GOLF COURSE BRIDGE

Two city-owned parcels affected

New bridge would preserve existing park and golf course use

No residential or commercial properties directly impacted

0 0.5 1 Miles



Source: City and County of Honolulu





## POTENTIAL ENVIRONMENTAL IMPACT

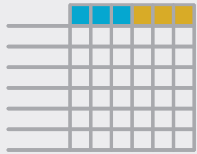
Land use in the project walk and bikeshed:

- 15% is dedicated to preserved lands, parks, and other recreational facilities.
- 46% is dedicated to low to medium density residential or mixed-use.
- 13% is dedicated to community or neighborhood commercial.

Minimal impacts to parks would not affect the recreational use of Ala Wai Community Park or the Ala Wai Golf Course.



**A New bridge would not directly impact private properties in the study area.**

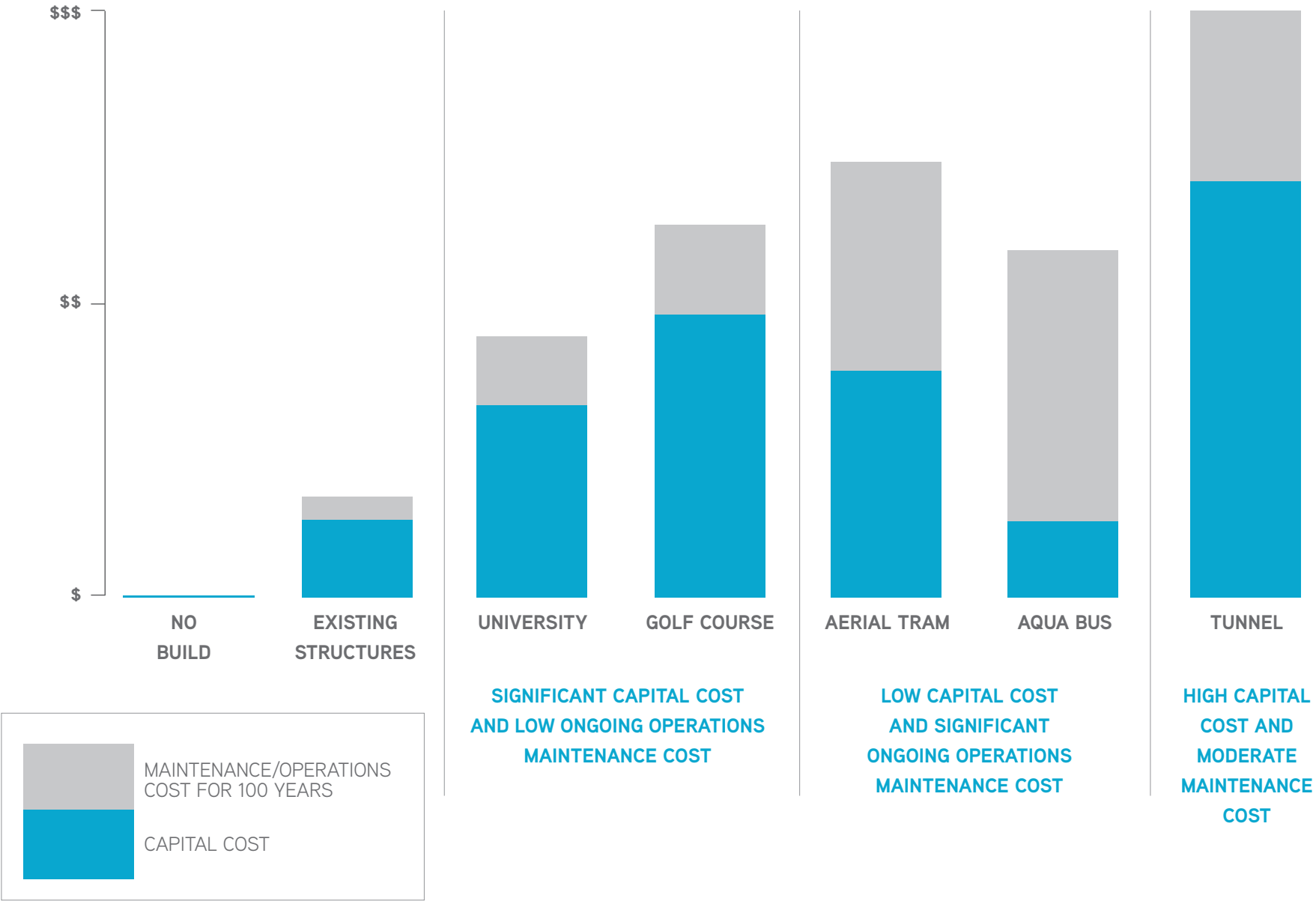


ALTERNATIVES ANALYSIS



	NO BUILD	ALA MOANA	KALAKAUA	MCCULLY	UNIVERSITY	GOLF COURSE	AERIAL TRAM	AQUABUS	TUNNEL
POTENTIAL IMPACTS TO SECTION 4(F) PROPERTIES	●	●	●	●	●	●	●	●	●
NUMBER OF POTENTIAL IMPACTED RESIDENTIAL PROPERTIES (DIRECT)	●	●	●	●	●	●	○	●	●
NUMBER OF POTENTIAL IMPACTED BUSINESS PROPERTIES (DIRECT)	●	●	●	●	●	●	○	●	●
POTENTIAL FOR INDIRECT IMPACTS TO RESIDENTIAL PROPERTIES	●	●	●	●	●	●	○	●	●
POTENTIAL FOR INDIRECT IMPACTS TO BUSINESSES/COMMUNITY	●	●	●	●	●	●	●	●	●

CAPITAL COST & MAINTENANCE/OPERATIONS ESTIMATES





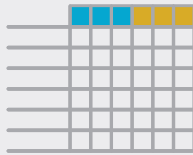
## IMPLEMENTATION

- Enhancing existing crossings requires significantly lower capital and maintenance cost.
- New crossing alternatives require significant capital costs with low maintenance cost.
- Aerial tram, aqua bus, and tunnel alternatives require the most ongoing maintenance cost with varying levels of capital cost.

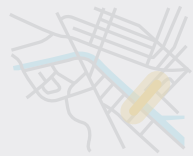


**New bridges require significant upfront capital cost with low ongoing maintenance cost, while other alternatives require more ongoing operations and maintenance cost.**

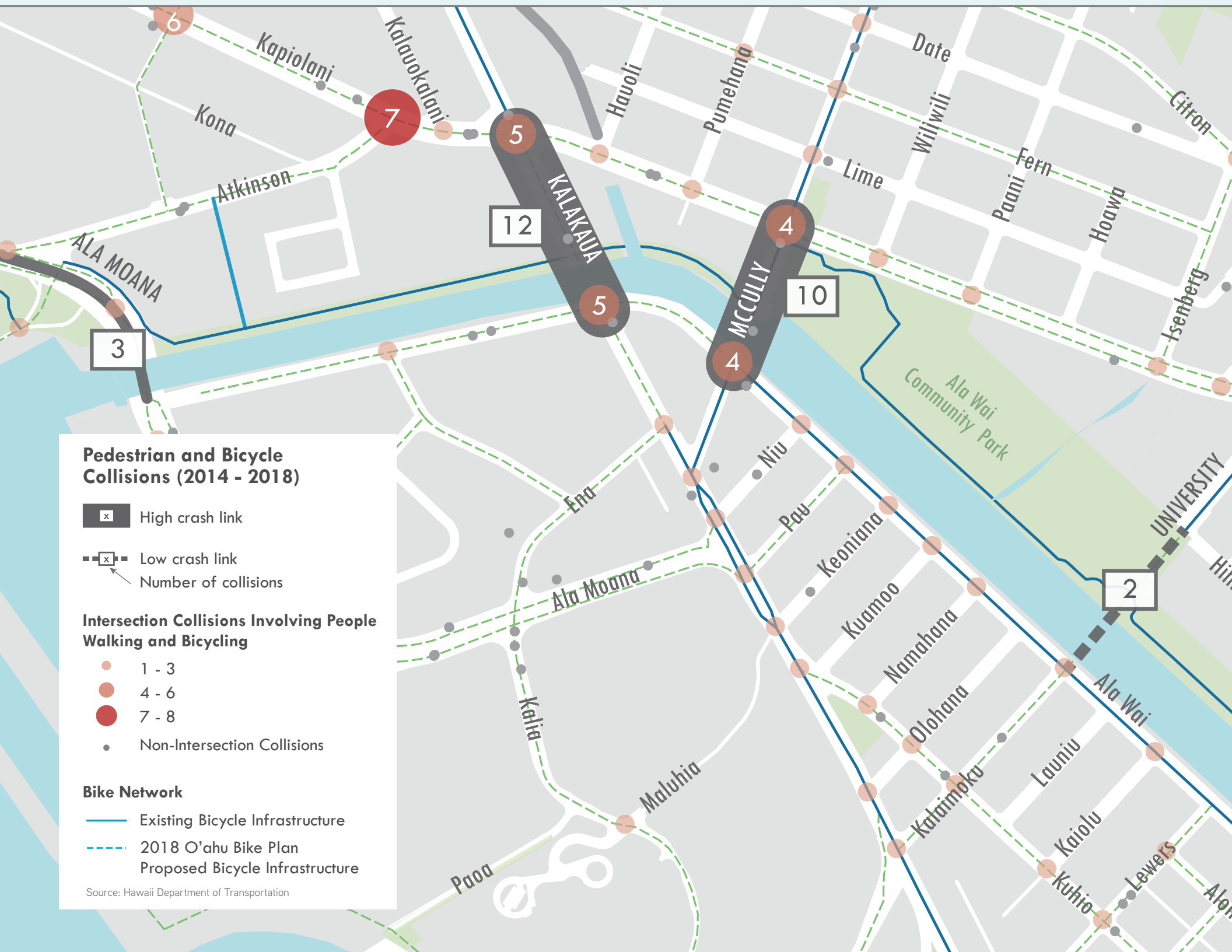
	NO BUILD	ALA MOANA	KALAKAUA	MCCULLY	UNIVERSITY	GOLF COURSE	AERIAL TRAM	AQUABUS	TUNNEL
CAPITAL COST									
OPERATIONAL COST									
DESIGN AND CONSTRUCTION TIME									
EASE OF IMPLEMENTATION/ CONSTRUCTABILITY									



ALTERNATIVES ANALYSIS







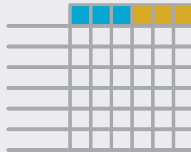


## TRAFFIC SAFETY

One way of understanding the potential for an alternative to provide a safe experience for all street users is to examine the history of reported crashes along all bridge approaches, including the closest intersection in the street network.

- Out of the 86 collisions in the project area occurring between 2014-2018, 30 collisions involved people walking and bicycling.
- Twelve collisions involving people walking or biking on the approach to the Kalakaua Avenue bridge were reported in the past five years.
- The McCully Street bridge and intersections on either side of the bridge have experienced 10 collisions involving people walking or biking in the past 5 years, despite having bike lanes.
- A new bridge in the vicinity of University Avenue will serve active transportation uses only, eliminating motor-vehicle involved collisions. In addition, the intersections that people would walk and bike through to get to the bridge had two reported collisions in the past five years.

**A new crossing in the vicinity of University Avenue provides a low-crash link and a connection for people walking and biking through areas with fewer collisions.**



ALTERNATIVES ANALYSIS



**IMPROVES SAFETY ALONG HIGH CRASH CORRIDORS**

**IMPROVES THE SAFETY AND COMFORT OF WALK OR BIKE TRIPS**

	NO BUILD	ALA MOANA	KALAKAUA	MCCULLY	UNIVERSITY	GOLF COURSE	AERIAL TRAM	AQUABUS	TUNNEL
IMPROVES SAFETY ALONG HIGH CRASH CORRIDORS	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
IMPROVES THE SAFETY AND COMFORT OF WALK OR BIKE TRIPS	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>

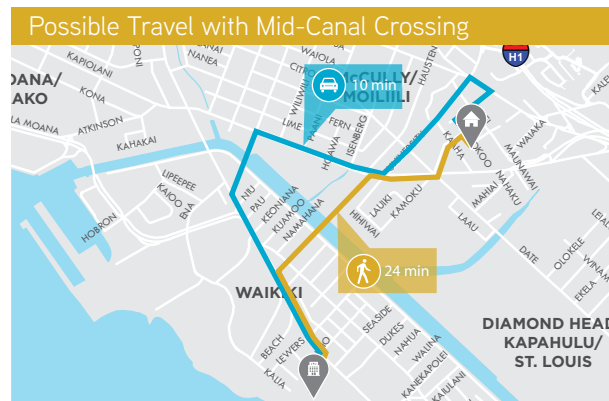




## TRAVEL TIME & CONVENIENCE

### COMPARISONS FOR TYPICAL RESIDENTS

**Lucy** lives in Moiliili on Nakookoo St and walks to work at the Sheraton in Waikiki

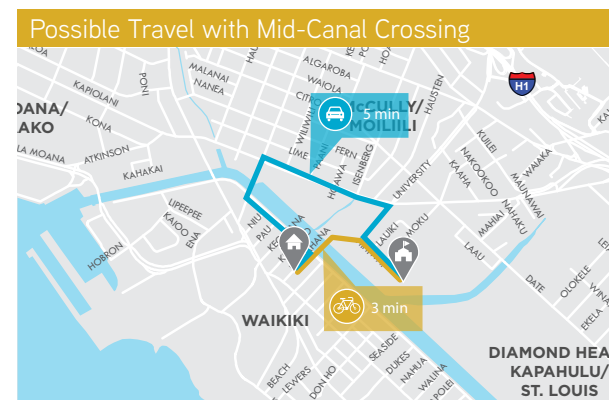
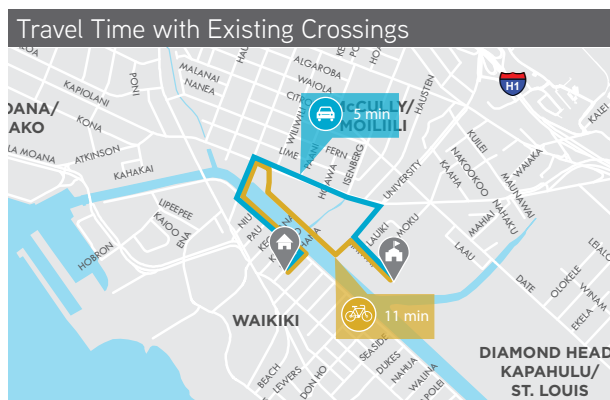


LUCY COULD SAVE:



9 min.

**Kainoa** lives on Namahana Street and bikes to school at Ala Wai Elementary

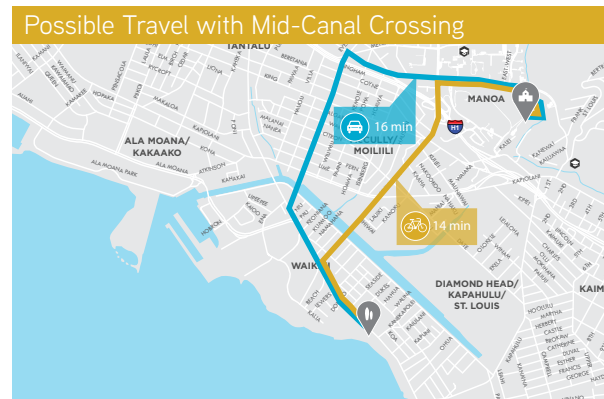


KAINOA COULD SAVE:



8 min.

**Peter** is a car-free UH student and wants to go surfing at Canoes in Waikiki



**PETER COULD SAVE:**



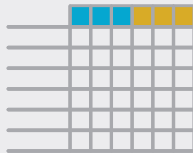
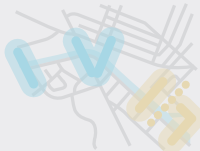
**7 min.**

**A crossing in the vicinity of University Avenue reduces travel times and as much as one mile out-of-direction travel for people walking and bicycling between Waikiki and McCully-Moiliili.**

REDUCES TRAVEL TIMES FOR PEOPLE WALKING

REDUCES TRAVEL TIMES FOR PEOPLE BICYCLING

	NO BUILD	ALA MOANA	KALAKAUA	MCCULLY	UNIVERSITY	GOLF COURSE	AERIAL TRAM	AQUABUS	TUNNEL
REDUCES TRAVEL TIMES FOR PEOPLE WALKING	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
REDUCES TRAVEL TIMES FOR PEOPLE BICYCLING	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>



ALTERNATIVES ANALYSIS





## SUSTAINABLE MOBILITY & PUBLIC HEALTH

- 87,000 people currently live in an area where they can easily walk or bike across the Ala Wai Canal to central Waikiki. A new mid-canal crossing would expand the walk and bikeshed allowing 9,000 more residents (96,000 total) the ability to walk or bike to central Waikiki from where they live within 20 minutes.
- Although improvements to existing bridges can achieve a low stress experience for people walking and bicycling, a bridge experience without motor vehicle traffic will be more safe, comfortable, and convenient, and induce a larger mode shift.

**A new canal crossing makes more places reachable in a 20-minute walk or bike ride from Waikiki, allowing more people to walk and bike for short trips.**



**9,000+**

**MORE PEOPLE WITH WALKING ACCESS TO WAIKIKI**



**9,000+**

**MORE PEOPLE WITH BIKING ACCESS TO WAIKIKI**

Source: 2016 American Community Survey 5-Year Estimates

	NO BUILD	ALA MOANA	KALAKAUA	MCCULLY	UNIVERSITY	GOLF COURSE	AERIAL TRAM	AQUABUS	TUNNEL
<b>INCREASES SUSTAINABLE TRANSPORTATION MODE SHARE</b>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
<b>ENCOURAGES PHYSICAL ACTIVITY</b>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

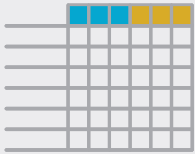




## AFFORDABLE ACCESS

- The additional residents and employees that could reach Waikiki by walking or biking with a new crossing include many kupuna, youth, and low-income individuals.
- A new crossing would enhance safe routes to school for Ala Wai and Jefferson Elementary students and eliminate as much as one mile of out-of-direction travel for students walking and bicycling to school.

**Kupuna, youth, and low-income residents would be best served by a new crossing.**



ALTERNATIVES ANALYSIS



A NEW CROSSING WOULD PROVIDE OPPORTUNITIES FOR MANY COMMUNITY MEMBERS...

**1,000**  
KUPUNA  
(65 AND OVER)

**1,000**  
YOUTH  
(18 AND UNDER)

**1,200**  
LOW-INCOME EMPLOYEES

Source: 2016 ACS 5-Year Estimates, and 2015 LEHD

	NO BUILD	ALA MOANA	KALAKAUA	MCCULLY	UNIVERSITY	GOLF COURSE	AERIAL TRAM	AQUABUS	TUNNEL
SERVES ELDERLY POPULATION	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
SERVES LOW-INCOME POPULATION AND EMPLOYEES	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>

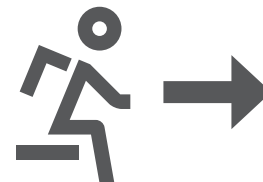




## IMPROVED NON-MOTORIZED EMERGENCY EVACUATION AND PUBLIC SAFETY

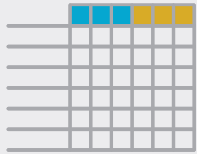
- A new crossing in the vicinity of University Avenue reduces evacuation time by foot and bicycle from Waikiki by 15 minutes for 20,000 people.
- One third of Waikiki residents surveyed could use a new crossing as the shortest path out of Waikiki in the event of an emergency.
- Nearly 70% of Waikiki employees surveyed would use a new crossing in the vicinity of University to evacuate.
- New crossings will increase the eyes on the street by adding between 1,300-4,300 daily bicycle and pedestrian trips.

**New crossings create direct routes to the Tsunami Evacuation Safe Zone and increase public safety.**



**15 MINUTES FOR 20,000 PEOPLE**

**A CROSSING IN THE VICINITY OF UNIVERSITY AVE WILL DECREASE EVACUATION TIMES FROM WAIKIKI BY...**



ALTERNATIVES ANALYSIS



IMPROVES TSUNAMI EVACUATION ROUTES AND TIMES

IMPROVES FOOT AND BIKE TRAFFIC TO INCREASE EYES ON THE STREET

NO BUILD

ALA MOANA

KALAKAUA

MCCULLY

UNIVERSITY

GOLF COURSE

AERIAL TRAM

AQUABUS

TUNNEL





# BRIDGE USE FORECASTS

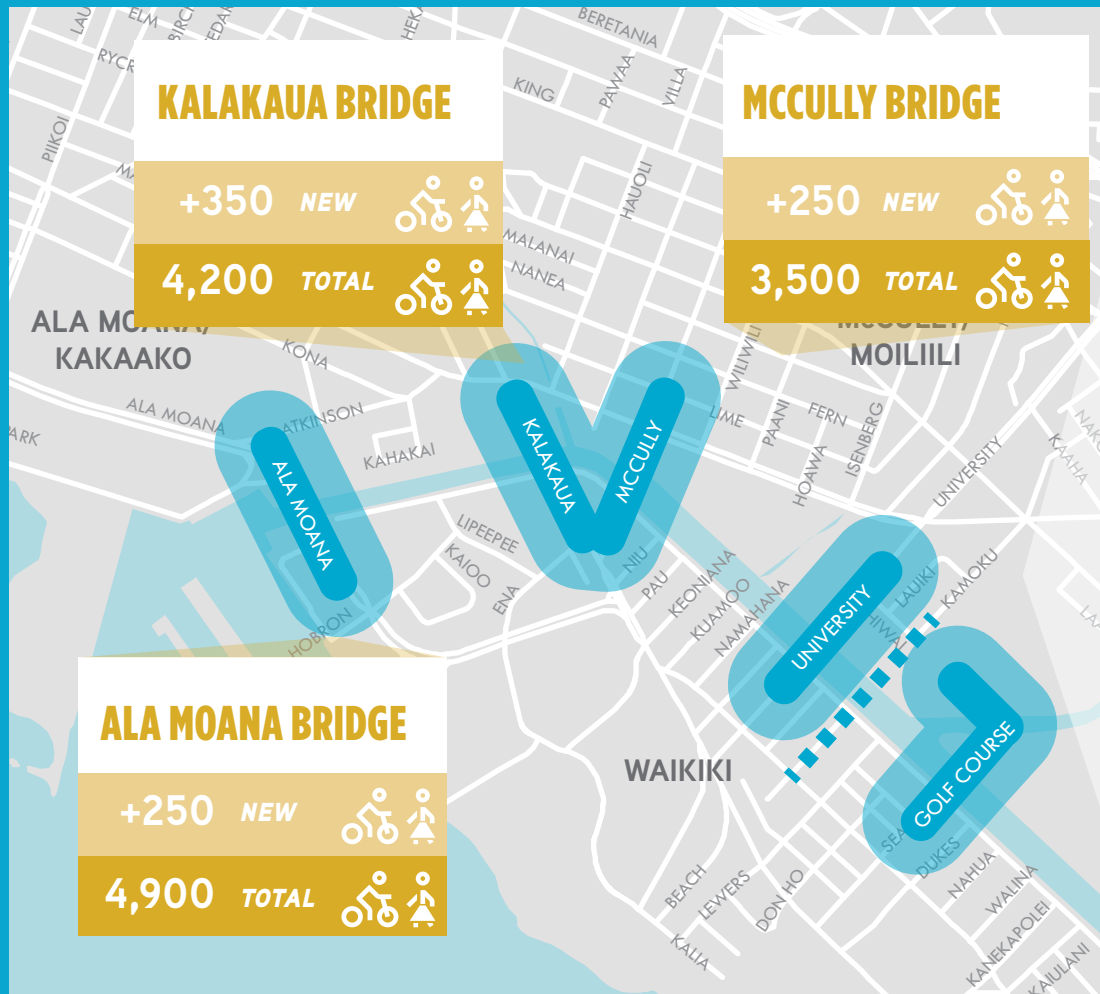
As part of the alternatives analysis, Ala Pono estimated how many people walking and bicycling would use each of the project alternatives. These forecasts were used to measure the number of additional eyes on the street as part of the **Improved Non-Motorized Emergency Evacuation and Public Safety** metric. Current travel volumes, mode split, and trip distance across the canal were inputs to the calculation of future trips. Travel volumes and mode split data were obtained through 24-hour traffic counts across the existing crossings. Trip distance was measured using AirSage anonymous origin-destination cell phone data.

The forecast calculations considered the level of influence that enhancements to the existing crossings and the creation of a new crossing would have on **MODE SHIFT** (shifting people's mode of travel) or **ROUTE SHIFT** (changing people's routes). A new crossing would encourage more travelers to shift their mode of travel than the alternatives proposing improvements to existing bridges, due to the complete separation from automobiles. Enhancing existing crossings can only improve the level of comfort and convenience for people walking and bicycling to a certain extent, as they will still be traveling through complicated and busy intersections and near automobile traffic along preexisting routes.

## KEY FINDINGS

- All the crossing alternatives would have a positive impact on a modal shift towards walking and bicycling across the Ala Wai Canal.
- A new crossing in the vicinity of University Avenue could attract between 1,300 and 4,300 people walking and biking daily. Between 100 and 1,500 of that total would be new users.
- Research shows people feel most comfortable walking and bicycling away from routes with heavy automobile traffic.

**A new crossing would encourage more travelers to shift their mode of travel than the improvements to existing bridges, due to the complete separation from automobiles.**

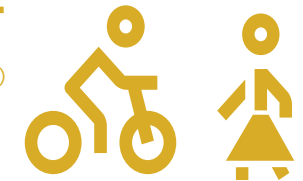


## ENHANCING EXISTING CROSSINGS

**NEW TRIPS** represent the estimated number of people that may shift their mode from car, motorcycle, or moped. **TOTAL TRIPS** represent all pedestrian and bicycle trips across the bridge, including the existing people who currently walk or bike.

## NEW BRIDGE FORECAST

(UNIVERSITY OR GOLF COURSE)



NEW TRIPS TOTAL TRIPS

**CONSERVATIVE SCENARIO**  
LOW MODE SHIFT &  
LOW ROUTE SHIFT

**+100 1,300**

**MODERATE SCENARIO**  
MODERATE MODE SHIFT &  
HIGH ROUTE SHIFT

**+750 3,600**

**OPTIMISTIC SCENARIO**  
HIGH MODE SHIFT &  
HIGH ROUTE SHIFT

**+1,500 4,300**

**NEW TRIPS** represent the number of people who currently drive or ride a motorcycle/moped\* that will shift their mode to walk or bike across a bridge.

**TOTAL TRIPS** represent all people that will shift their mode and existing people who walk or bike that will adjust their route to use the new crossing.

*\*Bus trips were not included in this analysis.*



## VIBRANT CANAL

- A new crossing is an opportunity to create a vibrant public space that is safe and active at all times of day with lighting, furnishings, plantings, vending, and programming.
- Bridge design elements have the potential to create a destination-quality tourist attraction.

New bridges are an opportunity to enhance the vibrancy of the canal with active, safe, destination-quality public spaces, as shown in these examples from around the world.

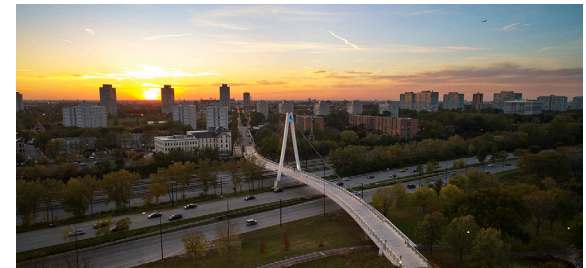
## LANDMARK DESTINATION



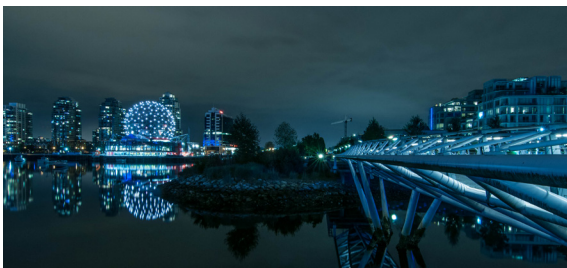
MILLENNIUM BRIDGE, LONDON, UNITED KINGDOM



PUENTE DE LA MUJER, SEVILLE, SPAIN



35TH STREET BRIDGE, CHICAGO, ILLINOIS



CANOE BRIDGE, VANCOUVER, CANADA



CONSTITUTION BRIDGE, VENICE, ITALY



35TH STREET BRIDGE, CHICAGO, ILLINOIS



# VIBRANT PUBLIC SPACE



INNER HARBOUR BRIDGE (KISSING BRIDGE), COPENHAGEN, DENMARK



MILLENNIUM BRIDGE, LONDON, UNITED KINGDOM



HELIX BRIDGE, SINGAPORE

# SAFE CROSSING



PUENTE DE LA MUJER, SEVILLE, SPAIN



MILLENNIUM BRIDGE, LONDON, UNITED KINGDOM



HELIX BRIDGE, SINGAPORE

CREATES A LANDMARK CHARACTER OR DESTINATION QUALITY

NO BUILD



ALA MOANA



KALAKAUA



MCCULLY



UNIVERSITY



GOLF COURSE



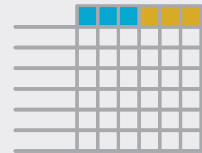
AERIAL TRAM



AQUABUS



TUNNEL



ALTERNATIVES ANALYSIS







# 7

## BRIDGE TYPE EVALUATION

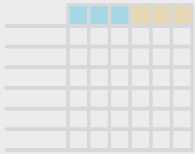
With a new crossing in the vicinity of University Avenue as the highest-scoring alternative, Ala Pono evaluated the types of bridges that could be built across the canal and meet the needs of the surrounding community. Ala Pono identified a range of bridge types from notable pedestrian and bicycle bridges implemented around the world as depicted on pages 61-62. This list of potential bridge types was narrowed down to five feasible bridge types based on site constraints and the need for a clear span crossing of the canal without structural support from piers in the water. A clear span avoids environmental and hydraulic flow impacts associated with adding structures into the canal, expedites permitting, and aligns with priorities voiced by stakeholders, including the USACE and members of the Ala Wai paddling community.

To assess these five bridge types, evaluation criteria were selected and weighted to assess the feasibility of delivering a project within the desired timeframe and budget. Public input was the second highest weighted evaluation criteria, after operations and maintenance, to ensure that the community's preferred bridge experience was integrated into the bridge type evaluation. Other criteria include cost, environmental impacts, constructability, and ability to manage access and delineate people by mode. The preliminary engineering phase will further study a range of bridge types and may recommend a different bridge type based on information not yet known during the time of the alternatives analysis.

### BRIDGE TYPES

#### ARCH

An arch bridge could span the Ala Wai Canal with a single arch without piers in the water, as depicted in the photo to the left. A network arch creates two arch planes leaning inward toward each other with crisscrossing hangers connecting down to the bridge deck. A bifurcated arch is comprised of a single arch rib with vertical hangers connecting down along the bridge deck centerline, which could naturally delineate different paths for walking and bicycling.



BRIDGE TYPE EVALUATION







### CABLE-STAYED

Cable-stayed bridges can be an expressive landmark. An asymmetric cable-stayed bridge could span the Ala Wai Canal in one dynamic gesture with the tower located on the mauka side due to limited space along Ala Wai Boulevard.



### TRUSS

Trusses are an efficient solution for canal crossings as all the structural support is above the bridge deck, creating an encompassing overhead structure and sense of enclosure.



### BEAM

Beam bridges can be very economical long spans achieving a transparent, low-profile crossing. However, to avoid piers in the water, a clear span beam bridge requires significant under-deck support and counterweights at either end of the bridge, which are impractical in the Ala Wai Canal context.



### TENSEGRITY

Tensegrity bridges use visually-interesting struts and tension elements above the bridge deck requiring significant backspans at each end of the bridge.



### SUSPENSION

Suspension bridges gain their support from cables connecting the bridge deck to tall towers, requiring deep anchors at either end of the bridge.

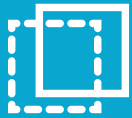


### DELTA FRAMES

Delta Frames blend arches, beams and trusses to create an interesting visual appearance with under-deck support requiring piers in the canal.

## COMMUNITY PREFERRED BRIDGE EXPERIENCE

During the Ala Pono Community Kickoff meetings (September 2018), the participants provided feedback on their preferred bridge experience considering a spectrum of bridge feeling and style characteristics.



### Expression: Transparent/Low Profile

The participants preferred a more subtle bridge with a sense of connection to surroundings and unimpeded views to natural features over a landmark bridge with a destination quality that draws attention to the bridge structure instead of views.



### Alignment: Straight

Participants desired a straight bridge alignment providing a direct path of travel across the canal as opposed to a curved or meandering alignment that could provide more visual interest or enhanced public space.



### Purpose: Utility

Participants expressed preference for a bridge that enhances walking and bicycling connections, a “through” space as opposed to a “stay” space that would prioritize space for people to pause or gather.



### Deck Material Type: Concrete/Wood

Participants desired a durable and economical material type that did not require significant maintenance. Utility of the material was more important than visual interest.



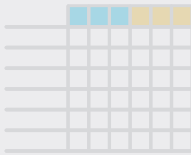
### Sense of Enclosure: Open Feel

Participants expressed a preference for an open feel and sense of connection to the surrounding landscape as opposed to a sense of enclosure with overhead bridge structure that could possibly provide shade and weather protection.



### Character: Modern

Participants expressed preference for modern or minimalist bridge character over traditional Hawaiian style.



BRIDGE TYPE EVALUATION



# BRIDGE TYPE MATRIX



EVALUATION IMPORTANCE / WEIGHT

OPERATIONS AND MAINTENANCE

PUBLIC PROCESS INPUT

PROJECT COST

ENVIRONMENTAL IMPACTS

STRUCTURAL

GEOTECHNICAL

CONSTRUCTABILITY

DELINEATION AND ACCESS

TOTAL SCORE



CONCRETE  
BEAM



STEEL ARCH -  
NETWORK



CONCRETE  
CABLE -  
STAYED



CONCRETE  
ARCH -  
BIFURCATED



STEEL  
LENTICULAR  
TRUSS



HIGH

MEDIUM

LOW



# The bridge types were narrowed to the three types that best fit the context of the Ala Wai Canal, community preference for bridge experience, and the need for a clear span crossing.

## KEY FINDINGS

With a distinct visual form that minimizes impacts to views at the University alignment, the bifurcated concrete arch bridge and cable-stayed concrete bridge types ranked highly through public input. In the event of additional information not available at the time of the alternatives analysis, the design team may choose to evaluate additional bridge types as part of the preliminary engineering phase. The beam bridge type is infeasible for implementation across the Ala Wai as it requires piers in the water. Based on these findings, Ala Pono further visualized the arch, cable-stayed and truss bridge types, as seen in the following pages.



### CONCRETE BEAM

#### Pros

- Achieves community desire for low-profile bridge
- Does not impede views

#### Cons

- Requires piers in the water to span the width of the canal
- Infeasible for implementation due to the goal of avoiding piers in the water



### STEEL ARCH - NETWORK

#### Pros

- Transparent, open bridge type aligned with the community's preferred bridge experience

#### Cons

- Steel presents considerable maintenance cost over the life of the bridge in the Hawaiian marine environment



### CONCRETE CABLE-STAYED

#### Pros

- Creates a sense of place and destination-quality landmark
- Structural delineation separates people bicycling and walking
- Sense of openness
- Maintains a clear span over canal (no piers in the water)

#### Cons

- Impacts specific views toward Diamond Head
- Geotechnical and structural considerations with cantilevered tower
- Steel tension rods would require specialized maintenance



### CONCRETE ARCH - BIFURCATED

#### Pros

- Maintains sense of openness
- Structural delineation separates people bicycling and walking
- Least amount of impact to view corridors while maintaining a clear span across canal (no piers in the water)
- Concrete is easy to maintain

#### Cons

- Potential impact on view corridors
- Potential temporary trestle needed across canal during construction
- Steel tension rods would require specialized maintenance



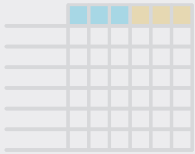
### STEEL LENTICULAR TRUSS

#### Pros

- Visually interesting overhead bridge structure
- Modern character
- Traditional bridge implementation
- Maintains a clear span over canal (no piers in the water)

#### Cons

- Impact on view corridors
- Sense of enclosure; disconnection from surrounding setting
- No structural separation for people walking and bicycling
- Steel is difficult to maintain in the Hawaiian marine environment



BRIDGE TYPE EVALUATION







# CONCRETE ARCH - BIFURCATED

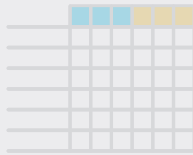
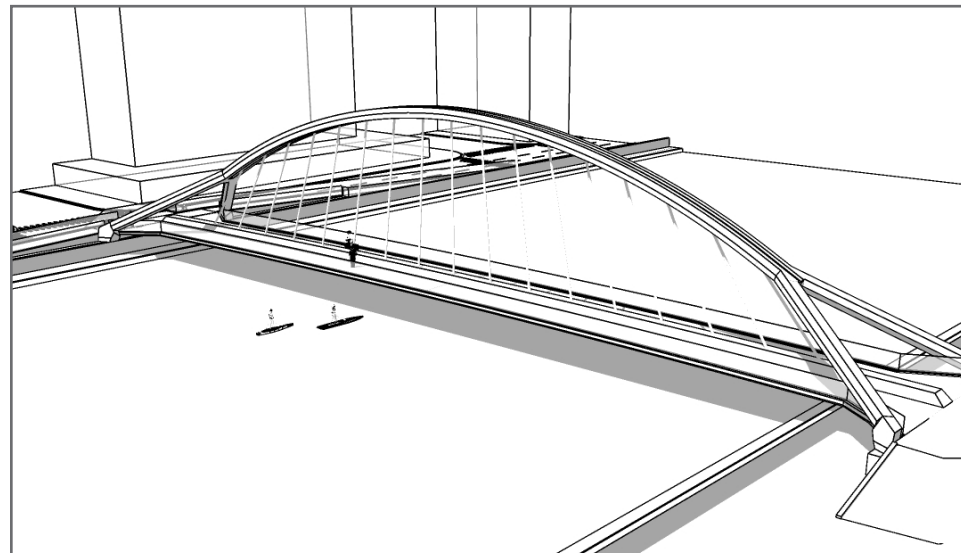
A bifurcated arch bridge would provide a sense of openness, while maintaining a clear span

## PROS

- Maintains sense of openness
- Structural delineation separates people bicycling and walking
- Least amount of impact to view corridors while maintaining a clear span across canal (no piers in the water)
- Concrete is easy to maintain

## CONS

- Potential impact on view corridors
- Potential temporary trestle needed across canal during construction
- Steel tension rods would require specialized maintenance



BRIDGE TYPE EVALUATION



OPERATIONS AND  
MAINTENANCE

PUBLIC PROCESS  
INPUT

PROJECT COST

ENVIRONMENTAL  
IMPACTS

STRUCTURAL

GEOTECHNICAL

CONSTRUCTABILITY

DELINEATION AND  
ACCESS







# CONCRETE CABLE-STAYED

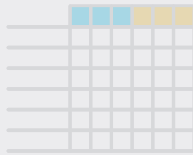
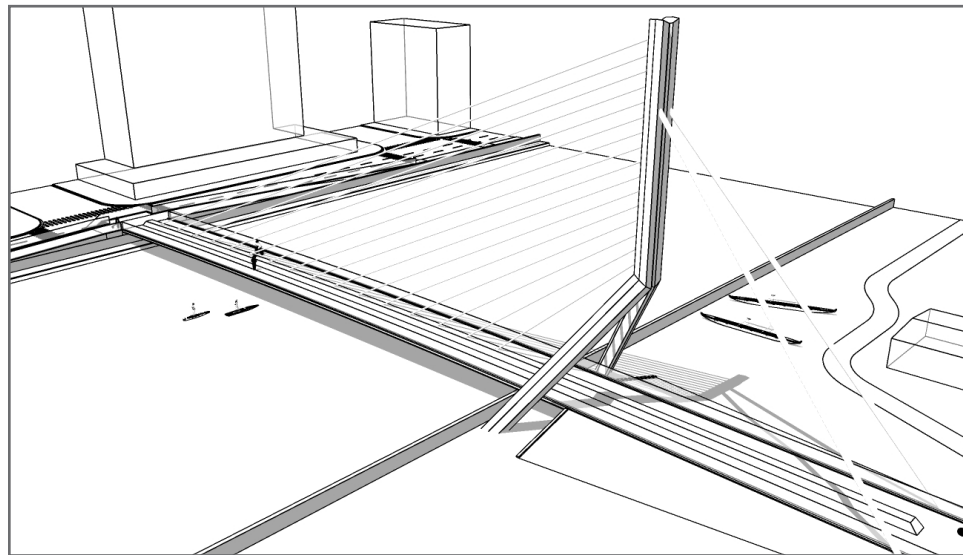
**A concrete cable-stayed bridge maintains a sense of openness while creating a visible landmark.**

## PROS

- Creates a sense of place and destination-quality landmark
- Structural delineation separates people bicycling and walking
- Sense of openness
- Maintains a clear span over canal (no piers in the water)

## CONS

- Impacts specific views toward Diamond Head
- Geotechnical and structural considerations with cantilevered tower
- Steel tension rods would require specialized maintenance



BRIDGE TYPE EVALUATION



OPERATIONS AND  
MAINTENANCE

PUBLIC PROCESS  
INPUT

PROJECT COST

ENVIRONMENTAL  
IMPACTS

STRUCTURAL

GEOTECHNICAL

CONSTRUCTABILITY

DELINEATION AND  
ACCESS









# STEEL LENTICULAR TRUSS

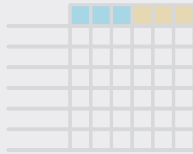
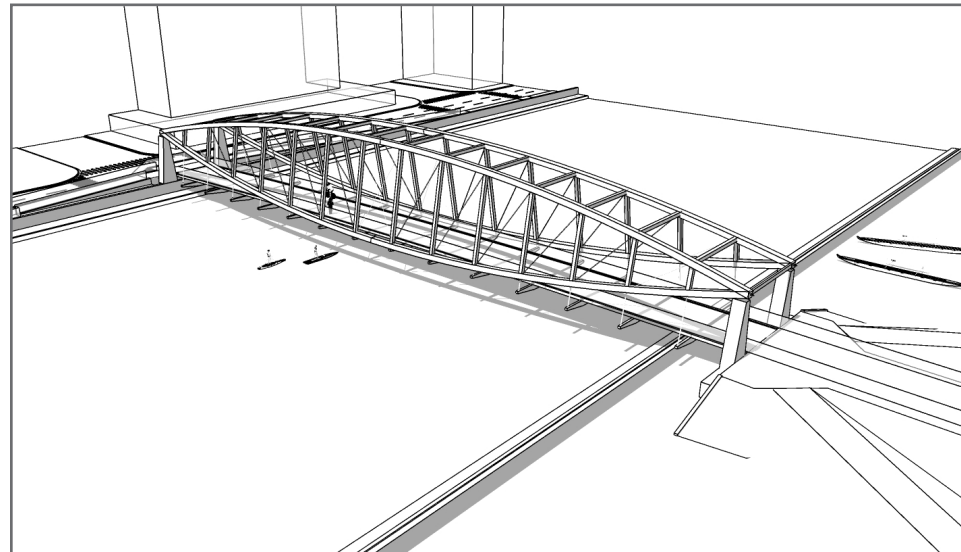
A steel lenticular truss bridge is visually interesting and implementable, but has a greater sense of enclosure.

## PROS

- Visually interesting overhead bridge structure
- Modern character
- Traditional bridge implementation
- Maintains a clear span over canal (no piers in the water)

## CONS

- Impact on view corridors
- Sense of enclosure; disconnection from surrounding setting
- No structural separation for people walking and bicycling
- Steel is difficult to maintain in the Hawaiian marine environment



BRIDGE TYPE EVALUATION



OPERATIONS AND  
MAINTENANCE

PUBLIC PROCESS  
INPUT

PROJECT COST

ENVIRONMENTAL  
IMPACTS

STRUCTURAL

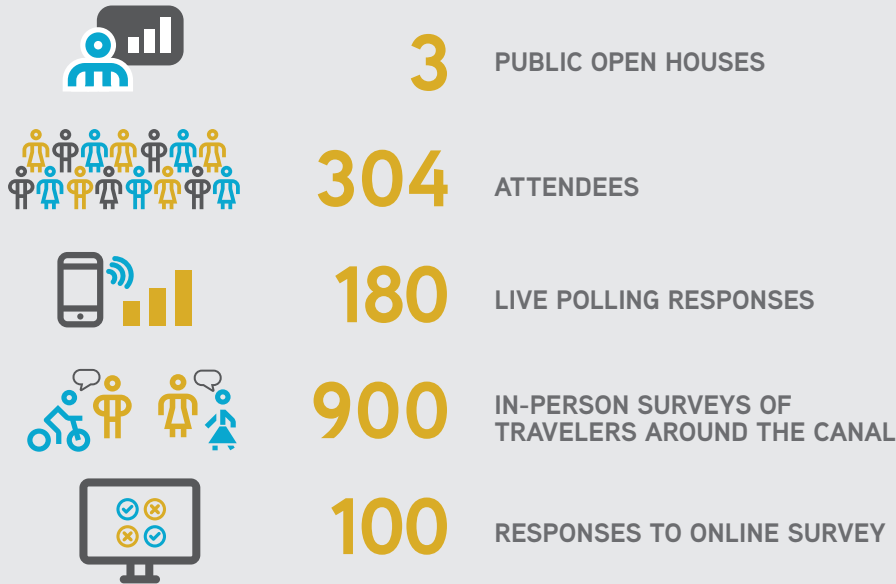
GEOTECHNICAL

CONSTRUCTABILITY

DELINEATION AND  
ACCESS



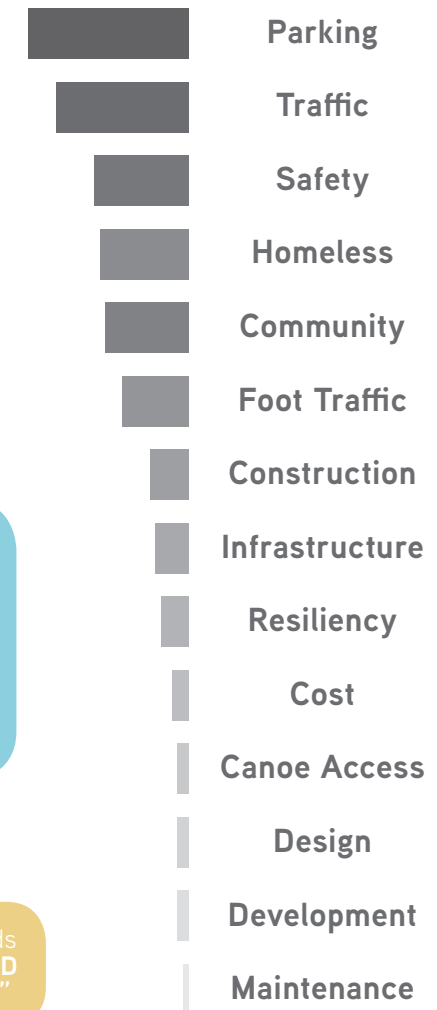
# OUTREACH SUMMARY



## What we heard from the public...



## Relative level of community concern



## Respondents want a crossing that...



Source: Open Houses and Online Survey

Source: Online Survey (191 responses)



# 8

## COMMUNITY & GOVERNMENT AGENCY ENGAGEMENT

Ala Pono set the course of engagement utilizing a suite of tools to encourage various levels of engagement, appropriate to each task within the alternatives analysis process.

Public engagement is a fundamental value. It is both expected and encouraged through adopted goals, objectives, and priorities for the State and carried forward by the City and County of Honolulu. The Engagement Plan for Ala Pono provided a statement of expectations for the planning process for all participants including: County and State agencies, federal interests, Oahu residents, businesspeople, visitors, and interested observers.

### MEANS OF GATHERING INPUT

The engagement “spectrum” developed by the International Association for Public Participation (IAP2) is a best practice to determine the type of public engagement anticipated for each step of the planning process.

- **Inform** the public of the project, the data collection, analysis, findings, and eventual concept designs.
- **Consult** with stakeholders who have specific relevant experience throughout the analysis, and in the consideration of best practices and their applicability to Oahu.
- **Involve** the public and interested stakeholders in considering the prioritization of issues and opportunities.
- **Collaborate** with stakeholders on recommendations for phasing improvements, and to bring conceptual designs forward.
- **Empower** stakeholders to carry implementation tasks forward and to enforce programs.





## IN THE NEIGHBORHOOD



### KEY FINDINGS

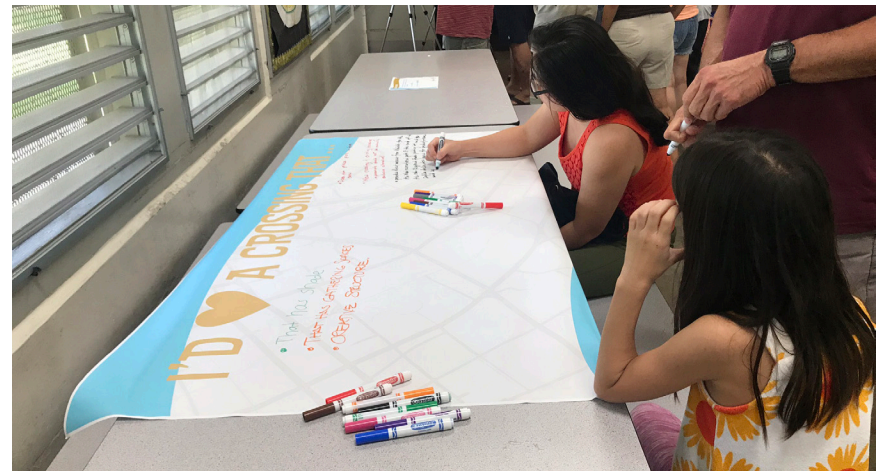
- 304 people participated in three public meetings.
- At the Community Kickoff, over half of respondents (152 of 203) preferred a new crossing over 'Enhancing Existing Crossings', 'No Change, or 'Other Alternatives'.
- While participants in the public kick-off meeting expressed a preference for a "low profile" bridge, at the report-back meeting, they responded most favorably to images of the bifurcated concrete arch over the more visually dynamic concrete cable-stayed.
- Individuals who expressed opposition to a new crossing often cited important on-going community issues and the concern that the crossing may exacerbate matters relating to:
  - » Parking demand, particularly on the mauka side of the canal in the blocks around 'Iolani School
  - » Homeless individuals in Ala Wai Park
  - » Crime
- Based on community feedback on the cultural elements to be emphasized in bridge design, Ahupua'a momona (abundance and nourishment) and kahawai ekolu (water and wealth), followed by paddling and taro fields ranked most highly.

## COMMUNITY KICKOFF MEETINGS – SEPTEMBER 2018

Two community “kick-off” meetings were held on Saturday, September 22, and Monday, September 24, 2018 to launch Ala Pono publicly and solicit community feedback. A weekend daytime and “workweek” evening were chosen to ensure that people with a diversity of schedules and life-commitments could attend and participate. Over 200 people attended the combined meetings (113 on Saturday and 112 on Monday night). The format of the meetings was the same: an hour-long presentation followed by an hour-long open house including the activities listed below.

- **Welcome and Introductory Presentation:** Sharing general information on Ala Pono, purpose and goals, background, existing conditions, funding, and data gathered to date.
- **Interactive Mobile Phone Polling:** During the introductory presentation, participants were asked where they lived, what modes of transportation they primarily use, how often they cross the Ala Wai Canal and if they favored a new crossing, or other alternative. Notable findings include:
  - » Although 128 of the 203 total respondents live in Waikiki, McCully, or Moiliili (the surrounding neighborhoods), almost half drive cars as their primary mode of transportation.
  - » 152 of the 214 respondents expressed preference for a new crossing rather than improvements to existing bridges or other alternatives.
- **Open House Activity Stations:** During the open house time, attendees were invited to visit any of the five activity stations to share ideas and opinions about the project goals, scope, and characteristics of potential crossing improvements.
  - » Bridge Experience: Participants ranked their preferred bridge experience in a variety of areas along a spectrum:
    - \* Expression - ‘Low Profile’ rather than ‘Iconic’
    - \* Purpose - ‘Utility’ rather than ‘Public Space’
    - \* Sense of Enclosure - ‘Openness’ rather than ‘Enclosed’
    - \* Alignment - ‘Straight’ rather than ‘Curved’
    - \* Material Type – Broad distribution of votes with concrete and wood materials preferred
    - \* Character - Contemporary bridge character rather than traditional

- » Preferred Bridge Width: To gain a sense of scale, participants stood in spaces of different widths with a Biki bike, surfboard and to-scale cut outs of people walking and bicycling. Participants then voted on preferred bridge widths. Widths between eighteen to twenty-two feet ranked most highly.
- » Bridge Features: Safety features such as lighting, railings, delineation of space for people walking and bicycling, and access management were deemed high priorities by the attendees.
- » “What’s your big idea?” and “I’d love a crossing that...” free writing activity stations.





## REPORT BACK AND NEXT STEPS MEETING – MARCH 2019

As the alternatives analysis neared completion, findings of the detailed evaluation and screening of alternatives described in Chapters 3, 4, and 5 were shared with the community at the ‘Report Back and Next Steps’ meeting on March 28, 2019. The highest-scoring alternative: a new crossing in the vicinity of University Avenue was announced. Input on bridge types, topics for further study, and strategies for addressing parking concerns and integrating cultural context into bridge design were key public input points. The meeting was held on the makai side of the canal, in Waikiki and about 80 people attended in person (the meeting was also broadcast on Facebook Live).

Some key findings from this meeting include:

- Bridge Type Evaluation: Participants voiced a clear preference for the concrete arch bridge type. This was closely followed by the concrete cable-stayed bridge type.
- Open-ended Comments: About half of the respondents to the open comment board expressed positivity and ideas for other potential community services or people that would benefit from a new crossing. The other half reiterated prior concerns regarding the potential impact of a new crossing on the neighborhood such as crime, transportation, parking, or other existing community issues, and questions about the methodology of the alternatives analysis or public outreach processes.
- Topics for Further Study: Input gathered at the ‘Future Project Phases and Upcoming Work’ activity station indicated a preference for urban design and landscape maintenance, followed by further project design visualization, renderings and physical model, and a parking study and demand management plan. Other suggestions for future studies and work included connections, wayfinding, entry/exit transitions to the future bridge for people walking and biking, crime, and homelessness.
- Cultural Context in Urban Design: Participants preferred emphasizing the theme, kahawai ekolu and the three streams of the Ala Wai watershed in the design of the new crossing followed by recreational/competitive paddling, and taro fields. Commenters expressed a strong preference for involvement of Hawaiian architects and engineers in the design process.













## IN THE STREETS

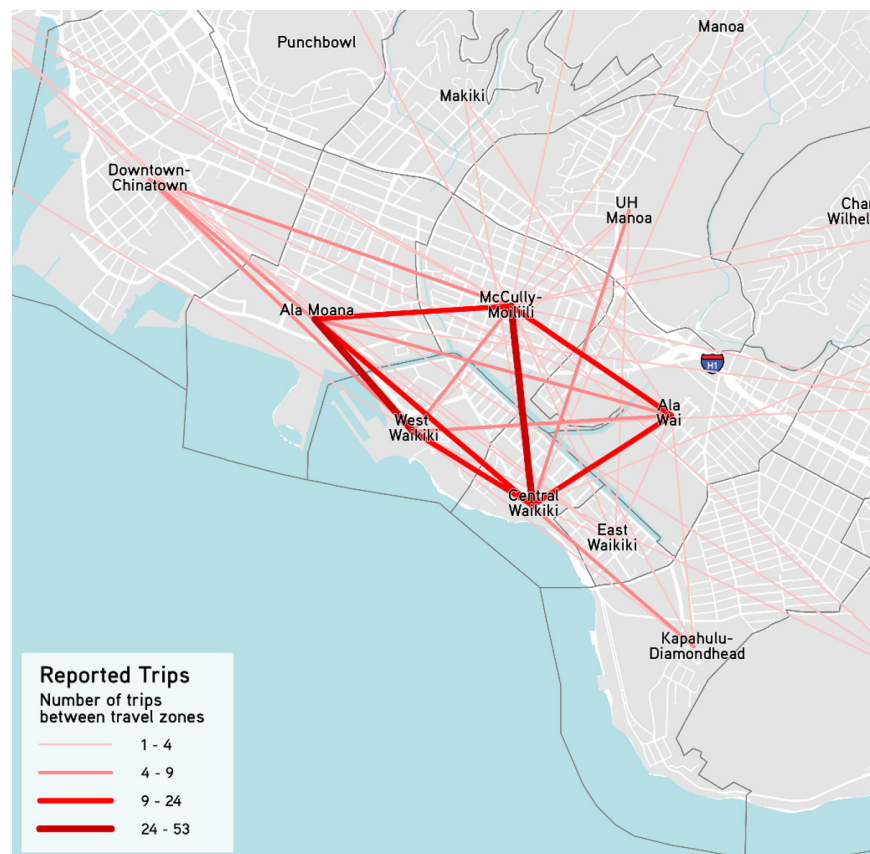
To obtain a sample of current travel behavior around and across the canal, as well as public opinion of the project alternatives, an intercept survey was distributed in person over one weekday and one weekend in September 2018. People walking and bicycling at various locations near the Ala Wai Canal were asked a series of short questions about their current trip, crossing alternative preference, home and work/school location, and select demographics. A total of 890 surveys were collected with this method.

### KEY FINDINGS

- The origins and destinations of those surveyed showed significant travel across the Ala Wai Canal between Waikiki and McCully-Moiliili, particularly Central Waikiki.
- Many survey respondents reported work commutes between Central Waikiki and the neighborhoods on the mauka side of the canal, as well as between Waikiki, Moiliili, and Downtown-Chinatown.
- Many respondents, regardless of home neighborhood, preferred a new bicycle and pedestrian crossing across the Ala Wai at University Avenue.

The intercept surveys informed the Public Opinion metric of the Alternatives Analysis, along with the results of the online surveys and feedback obtained through the project kick-off meeting.

### REPORTED TRAVEL IN STUDY AREA



Source: Intercept Survey (n = 358)





## AT SCHOOL

### UNIVERSITY OF HAWAII AT MANOA, URBAN AND REGIONAL PLANNING STUDENTS

The Fall 2018 “Site Planning” Class at University of Hawaii at Manoa, Department of Urban and Regional Planning used the Ala Pono project as a case study for their work. The students divided into teams to evaluate the Ala Pono alternative crossing locations and used data collection and site observations to develop a preferred location for a new crossing. The students also attended and participated in the September 22 and 24 community kick-off meetings to gain exposure to community engagement processes.

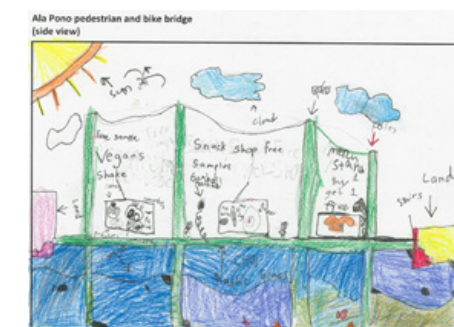
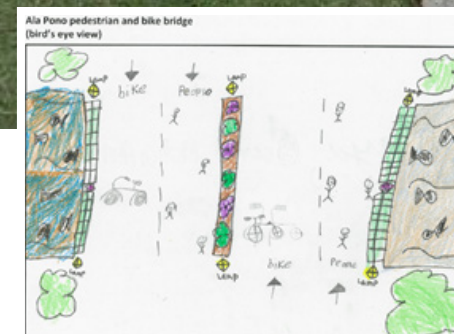






## JEFFERSON ELEMENTARY SCHOOL STUDENTS

Jefferson Elementary School, located along the Ala Wai Canal, discovered the Ala Pono project online and used the available material to help inform their spring semester STEM project focused on invisible forces and different types of bridges. The Ala Pono team accompanied the three third grade classes on a walking field trip and presented project information and participated in bridge design activities in the classroom. Students completed several mini projects around bridge design and connectivity, in addition to types of bridges and forces that act upon them. The third-grade students participated in the March 28 'Report Back and Next Steps' meeting where they shared drawings, activities, and lessons learned from their STEM project with meeting attendees. The collaboration with Jefferson Elementary School was a great opportunity to enhance collaboration with area residents, encourage education on civic processes, and gather creative ideas for bridge design from and for future generations.



## WITH THE AGENCIES

Chapter 343, HRS consultation was used to gather initial agency feedback for the alternatives analysis. Pre-consultation letters were sent to 220 agencies and elected officials, and 26 written responses were received. From those initial responses, the Ala Pono team was able to conduct follow up meetings or collect additional information for the alternatives analysis. One particularly important follow up meeting was with the State of Hawaii Department of Education planners and the Ala Wai Elementary school principal to discuss potential impacts to the school grounds and operations, hear concerns as well as learn of the school's recent experiences with construction activities in the area.

### KEY FINDINGS

- **220 agencies, organizations, and elected officials were mailed pre-consultation request for comments**
- **26 responses were received**
- **Agency pre-consultation responses led to a follow up meeting to better understand potential impacts to Ala Wai Elementary School**
- **Notable comments received include:**
  - » *Historic Hawaii Foundation:* Ala Wai Canal is a listed historic property on State Register and eligible for National Register. All work affecting walls, stairs, railings, bridges, or other character defining features of Ala Wai Canal should comply with Secretary of the Interiors Standards for treatment of Historic Properties.
  - » *State of Hawaii, Department of Land and Natural Resources, Land Division:* Any improvements on the Ala Wai Canal lands under the Land Board jurisdiction needs a land disposition from the Board.
  - » *State of Hawaii, Department of Education:*
    - \* Two ends of the Ala Wai Elementary School are in the project "Zone of Interest." Since the school is only 5.4 acres, we are concerned about any plans that consider reducing school use of its campus.
    - \* The school is troubled by poor drainage. HDOE will continue to explore options to alleviate flooding and carefully evaluate proposed improvements which may negatively impact the campus.
  - » *State of Hawaii, Office of Planning:* The proposed action should conform to the objectives and supporting policies of the Hawaii Coastal Zone Management Program and may be subject to a federal permit (Section 10, Rivers and Harbors Act and/or Section 404, Clean Water Act).

### AGENCY PRE-CONSULTATION: AGENCIES THAT SUBMITTED WRITTEN RESPONSES

State
Department of Accounting and General Services
DBEDT - Office of Planning
Department of Education
Department of Hawaiian Home Lands
Department of Land and Natural Resources
DLNR - Land Division
DLNR Commission on Water Resource Management
Department of Transportation
Federal
Federal Emergency Management Agency
Utilities
Hawaiian Electric Company, Inc.
Spectrum (Charter)
City and County of Honolulu
Department of Community Services
Department of Design and Construction
Department of Facility Maintenance
Department of Parks and Recreation
Board of Water Supply
Honolulu Fire Department
Department of Planning and Permitting
Honolulu Police Department
Department of Transportation Services
Elected Officials
Waikiki Neighborhood Board Representative
Schools
'Iolani
Ala Wai Elementary School
Businesses
HMSA Blue Zones Hawaii
Historic Hawaii Foundation



## ONLINE

Throughout the project, the Complete Streets website has been a main source of information about community engagement and project milestones, providing easy access to all meeting notes, summaries, photos, and feedback received. Notice and reminders of public meetings were published via social media on the Honolulu Complete Streets Facebook and Instagram pages, as well as via news releases from Mayor Caldwell's Office. Additionally, public meetings were broadcast via Facebook Live and gained 450 views from those unable to attend the meetings in person.

During September and October 2018, the Ala Pono online survey was distributed via social media and the Complete Streets website to gain feedback on travel patterns, crossing alternative preferences, and demographics. A total of 191 surveys were collected with this method.

### KEY FINDINGS

- **Travel Patterns:**
  - » The origins and destinations of those surveyed showed significant travel across the Ala Wai Canal between Waikiki and McCully-Moiliili, particularly Central Waikiki.
  - » People walking and bicycling represent the highest proportion of travelers who cross the canal several times a day.
- **Travel Preferences:**
  - » Travel time, safety, and convenience were the top priorities for respondents when making decisions about their travel.
  - » Unsafe traffic, lack of connections, and poor infrastructure were the major deterrents for people choosing to walk or bike for travel or leisure more often.
- **Preferred Alternative:**
  - » Many respondents, regardless of survey type and home neighborhood, preferred a new bicycle and pedestrian crossing across the Ala Wai in the vicinity of University Avenue.
  - » Opponents of a new crossing across the canal expressed concerns of increased traffic congestion, parking demand, and the safety and security associated with the homeless population accessing neighborhoods on the mauka side of the canal.

#### PEOPLE'S TOP TRAVEL PRIORITIES ARE...



TRAVEL TIME



SAFETY



CONVENIENCE

#### PEOPLE WHO WALK OR BIKE STRONGLY AGREE THAT THE EXISTING BRIDGES ARE...



UNSAFE























UNCOMFORTABLE



OUT OF THE WAY

Source: Online Survey (191 responses)



FUTURE PROJECT PHASES &	
What analysis is most important to you for further study?	
CATEGORY	PLACE YOUR STICK
 Parking Study and Effective Demand Management Plan	
 Urban Design and Landscape Maintenance Plan	
 Context Sensitive Lighting Plan	
 Further Public Engagement	
 Further Project Design Visualization, Renderings and Physical Model	
 Viewshed Impact Assessment	
 Further Environmental Assessment, Technical Studies and Permitting	
 Wayfinding Plan	
 Cultural and Historical Heritage Assessment	
 	

# 9

## IMPLEMENTATION & NEXT STEPS

Ala Pono's data-driven alternatives analysis and public feedback identified the approximate University Avenue alignment as the preferred alternative that best achieves the project's purpose to improve access for people traveling by foot or bicycle across the Ala Wai Canal.

With a new crossing in the vicinity of University Avenue, Ala Pono evaluated the types of bridges that most aligned with the community's preferred bridge experience based on feedback from community meetings. With a distinct visual form that minimizes impacts to views, the concrete arch bridge type emerged as the preferred alternative. Both the arch and cable-stayed bridge types were ranked highly by the public. Future project phases will analyze the feasibility of these and additional bridge types that may minimize visual impacts in the approximate University Avenue alignment.

### ANTICIPATED PROJECT TIMELINE

**SPRING  
2020**

Administrative Draft  
Environmental  
Assessment (DEA)



**FALL  
2020**

Public Review of  
Draft Environmental  
Assessment (DEA)



**WINTER  
2020/21**

Finding of No Significant  
Impact (FONSI)



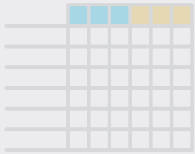
**SPRING  
2021**

Begin Final Design



**SUMMER  
2023**

Begin Construction  
Phase



IMPLEMENTATION & NEXT STEPS



## AREAS OF FUTURE STUDY

At the Report Back and Next Steps community meeting in March 2019, participants were asked, “What analysis is most important to you for further study?” Participants indicated a preference for urban design and landscape maintenance, followed by further project design visualization, renderings and physical model, and a parking study and demand management plan. Other suggestions for future studies and work included connections, wayfinding, entry/exit transitions to the future bridge for people walking and biking, crime, and homelessness.



**PARKING STUDY AND  
EFFECTIVE DEMAND  
MANAGEMENT PLAN**



**URBAN DESIGN  
AND LANDSCAPE  
MAINTENANCE PLAN**



**CONTEXT-SENSITIVE  
LIGHTING PLAN**



**FURTHER PUBLIC  
ENGAGEMENT**



**FURTHER PROJECT  
DESIGN VISUALIZATION,  
RENDERINGS AND  
PHYSICAL MODEL**



**VIEWSHED IMPACT  
ASSESSMENT**



**FURTHER  
ENVIRONMENTAL  
ASSESSMENT,  
TECHNICAL STUDIES  
AND PERMITTING**



**WAYFINDING PLAN**



**CULTURAL AND  
HISTORICAL HERITAGE  
ASSESSMENT**



**AHUPUA'A MOMONA  
(ABUNDANCE)**



**KAHAWAI 'EKOLU (WATER AND  
WEALTH)**



**ALA WĀWAE (PEOPLE AND TRAVEL  
FROM MAUKA TO MAKAI)**



**MEA LE'ALE'A (RECREATION)**

## CULTURAL CONTEXT

Meeting participants were asked, “What elements of local and cultural context could be used to inform bridge design?” Several images of the location’s historical and agricultural land use associated recreational activities, and other examples of cultural context were categorized into four broad cultural themes.

Participants preferred emphasizing the theme kahawai ekolu and the three streams of the Ala Wai watershed in the design of the new crossing followed by recreational/competitive paddling, and taro fields. Commenters expressed a strong preference for involvement of Hawaiian architects and engineers in the design process.

# PRELIMINARY ENGINEERING (PE-1): ENVIRONMENTAL PERMITTING, ENGINEERING DESIGN

The Ala Wai Alternative Analysis identified the highest-scoring, locally-preferred alternative that best meets the project's purpose and need. Following the Alternatives Analysis phase, the City and County will move into the Preliminary Engineering phase to refine the design of the locally preferred alternative. Environmental Assessment will occur during this project phase.

Key tasks in the PE-1 phase will include:

- Preliminary Environmental Permitting as required by the National Environmental Policy Act (NEPA) and Hawaii Environmental Policy Act (HRS 343)
- Topographic Surveys and Soils Engineering
- Archaeological and Historical Studies
- Subsurface Utility Location, Coordination, and Agreements
- Transportation Demand Management Plan, and Parking Study
- Multimodal Circulation Plan
- Plans, Specifications and Estimates: 30% and 60% Design Submittal and Review
- Landscape Maintenance Plan
- Urban Design Plan and viewshed analysis

## RESPONDING TO COMMUNITY FEEDBACK



The PE-1 project phase will include **project design visualization, renderings, and physical modelling** to help the community further understand the look, feel, and overall experience of the final bridge design. Renderings will depict the bridge from various angles, including on, below, above, and from the landings.



An integrated **urban design plan** will broadly address the public realm aesthetics of the bridge including the bridge approach area, seating, lookouts, railings, special lighting, public art and historic features, and delineation between people walking and bicycling, and access management. The urban design plan will also include **viewshed impact analysis**.

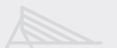
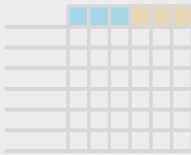


PE-1 will include an innovative **management plan for parking supply and demand**. The parking study and management plan will explore and provide recommendations for how to balance the needs of residents, workers, and students in the area with economic benefits of tourism and recreation in ways that further community and active transportation goals. A multimodal circulation plan will analyze ways to optimize connectivity and safety for people walking and bicycling on the new connection. **Pedestrian lighting** and eliminating walking barriers and creating connections to bicycle routes and paths will be prioritized.



In advance of construction, City agencies will develop operational agreements to address the **ongoing maintenance, security, and operations** of the bridge. Agreements will address, at minimum:

- Logistics for Ala Pono operations as a 24-hour facility, connecting through a park that closes nightly at 10pm
- Entity responsible for standard maintenance (frequency of sweeping, graffiti removal, etc.)
- Entity responsible for utility bills (e.g. lighting, emergency call box) associated with Ala Pono



IMPLEMENTATION & NEXT STEPS

