

A Less Expensive and Less Disruptive Bus Rapid Transit System for Honolulu

Panos D. Prevedouros¹, PhD

Introduction and Weaknesses of Current BRT Plan

The City's proposed BRT is a transportation plan that could enable the City to restructure, improve and augment its successful TheBus service. At this point, a final plan is not available but enough is known to form opinions about the proposed BRT system. As described in the August 2002 and March 2002 Environmental Impact Statements, the City's BRT plan removes capacity from the highway system and gives it to the transit system, instead of adding total system capacity to serve a growing population. Throughout this article I refer to the in-town BRT plan, a section of which is going toward implementation. The BRT from Iwilei to Kapolei and Central Oahu is a future endeavor. In my view, this long-haul system should have been the top priority because it would add capacity and provide some congestion relief on the central Oahu-to-downtown transportation system.

Based on my review of both Environmental Impact Statements, the City's in-town BRT can be expected to:

- (1) Cause a major disruption to commuting patterns by restricting the capacity on several vital arterial streets connecting East Honolulu and Waikiki to downtown.
- (2) Require expensive changes to streets including median-placed stations that will be very costly to reverse if the system fails to perform much better than TheBus.
- (3) Cause unfair competition by handicapping private transportation services between Waikiki and the Aloha Tower Marketplace (e.g., private transportation service providers have to compete with the BRT through the additional congestion caused by BRT's lane-taking.)

Alternative BRT Proposal Requirements

In this article I describe an alternative that would be much lower in cost and that would have a much less impact to traffic flow and street parking. The key to this alternative is the routing of the BRT away from two-way streets such as Kapiolani Blvd. and Ala Moana Blvd. and onto one-way streets such as King St. and Beretania St. while preserving the major objective of connecting downtown Honolulu with Waikiki and the UH.

Unlike the City's plan, this alternative plan does not require any median transit stops, does not eliminate any turn lanes, does not run opposite to traffic for any length, and it takes a minimum length of lanes away from traffic. A minor requirement of this alternative is that the BRT vehicles have doors on both sides (a common feature of light rail vehicles) so that it can process passengers from either side of the vehicle. A major requirement of this alternative is the addition of a bridge to Waikiki at the end of University Ave.

¹ Associate Professor of Transportation Engineering and Graduate Program Chairman, Department of Civil and Environmental Engineering, University of Hawaii at Manoa

Adding a bridge to Waikiki across the Ala Wai canal is not a new idea. There has been community opposition to it because a new two or four lane bridge to Waikiki will bring a lot of additional traffic (and increase noise and accident risk) in the neighborhood and park between the Iolani School and the Ala Wai Field. However, my BRT alternative calls for a one-lane limited access bridge which will serve pedestrians, BRT vehicles, and emergency response vehicles. With one BRT vehicle every 5 minutes per direction and, one or two dozen emergency vehicle crossings per hour, the bridge will be carrying fewer than 50 vehicles per hour on both directions. In contrast, a regular surface street lane can carry more than 1,000 vehicles per hour and many often do during peak periods.

The bridge will have one wide lane and possibly a wider bulb-out in the middle to facilitate opposing BRT or emergency vehicles. It will have wide pedestrian sidewalks with protective railings on both sides of the sidewalk. Vehicular access to the bridge will be controlled by gates that are lifted by BRT drivers with a remote control or by emergency vehicles using standard priority signal (signal preemption) that is currently available at many intersections on Oahu.

According to Census statistics, Waikiki had a de facto population of about 96,000 people in 1990 up from 64,000 in 1980. An additional bridge to/from Waikiki is long overdue. Presently, pedestrian access and evacuation of Waikiki can be done via Kapahulu Ave., McCully St. (bridge), Kalakaua Ave. (bridge) and Ala Moana Blvd. (bridge.) Tsunami and hurricane evacuation via the Ala Moana Ave. and Kalakaua Ave. bridges is not a desirable option because these are located inside the inundation zone. The proposed limited access bridge to Waikiki offers benefits such as:

- It will provide a much needed additional route to/from Waikiki for pedestrian traffic, as well as BRT vehicles and emergency vehicles.
- Emergency response to/from Waikiki will improve because University Ave. offers a faster access to the freeway than McCully St. or Kapahulu St.
- The bridge will provide much needed access capacity for the frequent special events that occur in Waikiki. Bus shuttle service via this bridge will facilitate both parking at the UH for attending evening and weekend special events in Waikiki, and attendance of academic and athletic events at the UH for visitors and residents of Waikiki
- The bridge will provide additional capacity for rapid evacuation in case of a natural disaster, security threat or other emergency that requires evacuation.

Routes of Alternative BRT

Assuming that the proposed bridge is available, the City's and my alternative BRT routes are compared below and illustrated in the two figures at the end of this article (the solid line represents the City's BRT routes, all of which are bi-directional outside Waikiki and downtown, and the dashed lines are my proposed alternative routes).

ROUTE 1 (round trip)

City's Waikiki route, starting on Bishop St. by Tamarind Square:

- Bishop-Halekauwila-South-Pohukaina-Kamani-Auahi-Queen-Ala Moana-Kalakaua-Kapahulu-Kuhio-Ala Moana-Queen-Auahi-Kamani-Pohukaina-South-Halekauwila-Alakea-Hotel-Bishop.

Alternative Waikiki route, starting on Bishop St. by Tamarind Square:

- Bishop-King-Isenberg-Kapiolani-University-Ala Wai-Olohana-Kalakaua-Kapahulu-Kuhio-Launiu-University-Date-Isenberg-Beretania-Bishop.

ROUTE 2 (round trip)

City's UH route, on Bishop St. by Tamarind Square:

- Bishop-King-Pensacola-Kapiolani-University-UH terminus-University-Kapiolani-Pensacola*-King*-Richards*-Hotel-Bishop. (* runs opposite to traffic)

Alternative UH route, starting on Bishop St. by Tamarind Square:

- Bishop-King-University-UH terminus-University-Beretania-Bishop.

According to my proposal, a BRT unit would depart every 3 minutes from downtown Honolulu during peak demand periods. Every three departures, two of the BRT units would head to Waikiki and one BRT unit would head to the UH. As a result of this, there will be a BRT unit every 3 minutes on King St. and Beretania St. Service to Waikiki will be available every 3 to 6 minutes and service to the UH will be available every 9 minutes. A transfer station by the Old Stadium park will facilitate transfers between the Waikiki and UH routes.

If demand studies prove it necessary, mini-circulator routes with regular or electric buses along Keeaumoku St. can transfer passengers between lower Makiki and the Ala Moana shopping center. The same can be done along Ward Ave. with stations at Thomas Square for transferring passengers to the condominium area mauka of the freeway, the Neal Blaisdel Center, the Victoria Ward shopping centers and the new UH medical complex in Kakaako.

Advantages of Alternative BRT

Compared to the City's plan, my proposed plan of routes has a number of advantages and benefits, such as:

- Minimized impact to traffic and to established commuting patterns.
- Avoids two critically congested intersections, Kapiolani Blvd. with Kalakaua Ave. and Ala Moana Blvd. with Atkinson Drive, both of which are affected by the City's BRT routes.
- Lower traffic accident risk because nowhere along its route does the BRT run in a direction opposite to traffic.
- Avoids jurisdictional issues by routing the BRT on city streets as opposed to routing it on a mix of state and city streets.
- Retains the portion of the City's BRT plan in Waikiki which enables the City to proceed with its mass transit service improvements in Waikiki.
- It does not preclude a future expansion to the Iwilei transit station and to Central Oahu.
- Regular TheBus service along Ala Moana Blvd. and Kapiolani Blvd. may continue largely unchanged.
- Foregoing BRT service along Ala Moana Blvd. provides an incentive for market-driven public-private partnerships for transportation services to retail, eating and entertainment attractions on the oceanfront corridor.
- Connects the UH and downtown Honolulu more efficiently. Instead of a 4.1 mile route through 24 traffic signals from the UH to Tamarind Square, the alternative route is 20% faster (less than 20 minutes) along a 3.4 mile route through 19 traffic signals. Not only will the alternative route be faster, but it will be able to provide the same frequency of service with six instead of seven BRT vehicles; a significant cost savings.
- The BRT routes on King St. and Beretania St. overlap with City Express! route B: This is a win-win situation for lane utilization, transfers and traffic signal priority for mass transit. If the BRT proves successful, the current route B may be replaced by the BRT and assigned to serve another corridor.
- Limits bus preemption (priority) at traffic signals along major east-west routes (namely King St. and Beretania St.) This is easier to accomplish, more efficient for the mass transit system and causes fewer disruptions to vehicular traffic. Signal pre-emption on intersecting directions is less efficient because priority vehicles compete for the green light. This has the potential to create frequent shifts from the synchronization plan resulting in longer queues which may cause gridlock at peak periods.

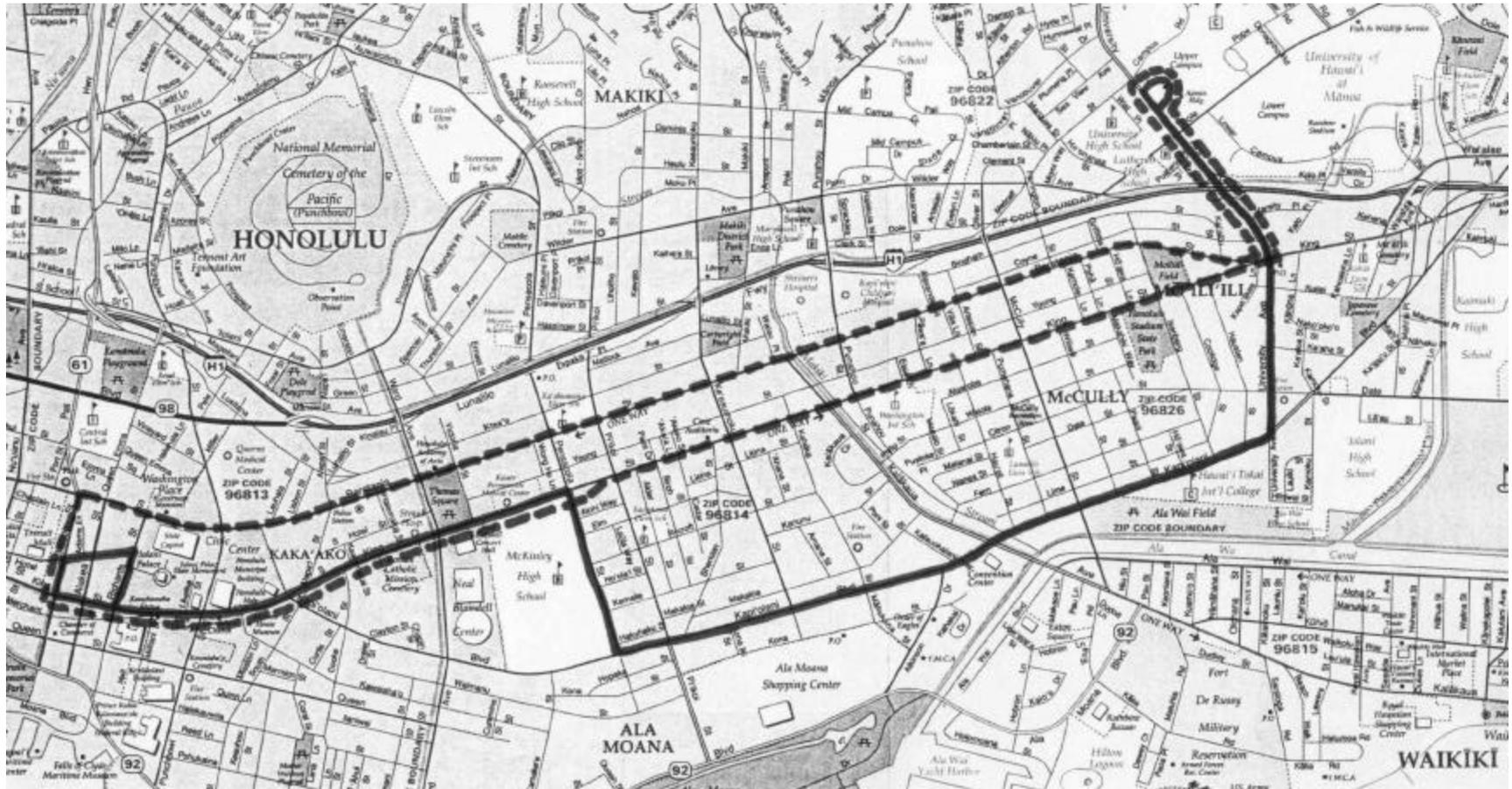
- Minimizes fiscal risk. If the BRT fails to perform better than TheBus, then, there are no lanes that were converted to stations or removed from traffic to re-convert to normal use. Also, the cost of the new University Ave. bridge to Waikiki may be justified on the pedestrian access, evacuation and emergency response benefits alone.

In conclusion, the BRT alternative described in this article has significant advantages over the City's in-town BRT plan, it does not disturb the City's future plans to expand it to Iwilei and west Oahu, and it can be realized soon after a light duty, aesthetically sensitive bridge across the Ala Wai canal is constructed as an extension of University Ave. The alternative plan allows the City to test the BRT concept, and if retention is unwarranted, to easily restore the roadways to their original condition. Its cost should be less than half of the amount that the City's plan is likely to cost.

Please send your comments to the author by e-mail at pdp@hawaii.edu or by fax to 956-5014. All comments will be compiled into a volume and will be delivered to the City Council and transportation officials in January 2003.



BRT Route 1: Downtown « Waikiki



BRT Route 2: Downtown « UH-Manoa