

## **Honolulu Traffic Congestion – Part 1: From Bumper-to-bumper to Zoom-zoom by Removing One Third of It for Less Than \$500 Million**

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Can we solve Honolulu's pervasive traffic problem? Yes! There are several specific projects that mitigate congestion that if one could magically install half of them overnight, Honolulu's congestion level would be so low that traffic congestion would be removed from people's list of worries. That would be a great thing for quality of life on Oahu and a booster to our tourism and the overall local economy.

Two 5-page white papers summarize these solutions. **Part 1** gives some background on congestion (did you know that some congestion is a good thing?) and presents low cost and shorter term traffic congestions solutions. Part 2 presents longer term, high cost traffic congestion solutions.

Here's how we get from bumper-to-bumper to zoom-zoom!

### **BACKGROUND ON TRAFFIC CONGESTION**

Some traffic congestion is a good thing. Too much traffic congestion is a bad thing. And excessive congestion is crippling to a local economy and quality of life.

Traffic congestion is an indication of the vitality of a city. Many cities in the rust-belt are almost devoid of congestion, but that's a result of abandonment and loss of vitality. Some congestion indicates that a city's supply of transportation infrastructure is adequate. No congestion indicates that a city's supply of transportation infrastructure is excessive.

All vibrant cities have some congestion which reflects the fact that at peak periods the supply of transportation capacity is less than the demand. This is normal for a few hours per day. A community should not over-invest in road and transit capacity because this removes funds from other important functions such road maintenance, water, sewer, sanitation, parks and other services.

For various reasons ranging from rapid growth of population to neglect of the infrastructure, traffic congestion and transit crowding can become excessive and last for several hours. This has occurred in Honolulu due to neglect and misguided policies. Modest population growth on Oahu and vast population shifts to the Ewa plains combined with no investment for bottleneck relief have created intolerable traffic congestion in Honolulu which experiences congestion levels comparable to very large metro areas worldwide.

Honolulu has a traffic problem, not a transit problem. While congestion is like constipation and requires laxatives, Honolulu's traffic-doctors-in-charge are prescribing expensive pain killers.

Here is a list of 14 projects or initiatives that cost less than \$300 Million to the Oahu taxpayer.

### **SMALL AND SHORT TERM PROJECTS**

**Traffic signal optimization** is making traffic lights work to accommodate traffic patterns as they change minute by minute. Traffic signal systems range from bare bones, to basic high tech, to advanced self-learning, real-time, adaptive systems. Honolulu has a low level advanced signal system thanks to our tendency to spend a lot on equipment and then do little with it. A lot of the necessary electronics are there. What's missing is the optimizing core (such as Los Angeles' ATIS computer software) and a half dozen dedicated traffic and electrical engineers to setup, run and supervise the system. The added investment needed is about \$1 Million per year.

**Clear accidents faster**, manage accident scenes more efficiently and use intelligent transportation systems (ITS) to manage major disruptions to the traffic flow. There is a lot of room in improving Incident Management in Honolulu. This is a field that is well developed on the mainland but it is quite primitive and ad hoc here. HPD, HFD, EMS, City DTS and State DOT need to develop a coordinated incident management program and the joint Traffic Management Center must offer this functionality. The added investment needed is about \$1 Million per year.

**UH schedule** for all Oahu campuses for faculty and students can change to a start time of 9 AM. In this way a lot of UH-related traffic and transit load switches clearly off of the traditional peak periods. UH can stay open later in the day and offer more classes at times that are convenient for workers. Additional thought may be given to converting from a "Monday-Wednesday-Friday (MWF) and Tuesday-Thursday (TuTh)" schedule to a "MW and TuTh" schedule thus eliminating UH-related traffic on Fridays. Friday could be used for seminars, graduate courses, graduate examinations, and other specialized instruction. A course scheduling analysis is needed to check whether a condensed class schedule is feasible at UH-Manoa due to limited classroom space.

**Compressed work week or 4x10 work schedule** for some city, state and federal departments can reduce traffic loads by 20%. Such schedules already exist on Oahu but are too few to make a difference. Instead of restrictions, incentives should be given for the adoption of 4 day, 10 hour per week work schedules. 4x10 work schedules are particularly welcome to parents of young children. This is a no-cost action.

**Employee parking cash out** is extra salary in return for no parking stall. EPA's 2007 report Implementing Commuter Benefits recommended "cash in lieu of free parking worth at least \$30 per month" as an incentive to switch from car-and-park to carpooling, bus, etc. Today a more

reasonable amount for Honolulu would be about \$100; it would be higher in Waikiki and downtown where an employee could receive \$1,000 more per year and no parking.

A 1992 California law requires businesses with at least 50 employees to offer a parking cash-out option if they subsidize parking. There is a well document assessment of eight SoCal firms ranging in size from 120 to 300 employees, with a combined total of 1,694 employees, and price of parking ranging from \$36 to \$165 per month. With the cash-out programs implemented, the average share of solo commute drivers decreased from 76% to 63%, carpooling increased from 14% to 23%, and transit ridership increased from 6% to 9. In some cases, a stall vacated by a \$100 cash-out can be rented for well over \$100 thus resulting in a net profit.

**Telecommuting** is the fastest growing mode in the nation and for the first time in the 2000 Census the US had more telecommuters than rail riders. Since then telecommuters doubled. Telecommuting is an equalizer for maternity, that is, working mothers do not fall behind in their career, and a suitable option for handicapped workers. City and State resolutions supporting telecommuting and the creation of a telecommuting outreach program can go a long way in enabling government and private agencies to take advantage of this option. In most cases telecommuting is a win-win-win option: Less traffic, less office space needed, and more flexibility for the telecommuting worker. A three staff member, \$500,000 per year outreach operation for four years can go a long way in establishing strong telecommuting habits and policies on Oahu. It can be outsourced to a qualified consultant. One day of telecommuting per week for just 10% of the workers will remove 2% of the peak hour traffic.

**Express buses** and subscription buses from Kapolei, Mililani, Wahiawa, and Waianae, with limited stops, to downtown, Ala Moana, Waikiki, UH would provide a fast origin-destination commute which can entice drivers to leave their car at home. Today's Express Bus C from Kapolei to downtown has a shorter travel time than the projected time for the rail. It would be even faster if BOS is used; see below.

The largest "penalty" in mass transit systems is transfers due to their built-in time loss and inconvenience. Point-to-point express buses reduce or eliminate transfers.



**Bus on Shoulders (BOS)** programs increase the speed and reliability of transit service in congested corridors. BOS are operational on over 290 miles of freeways and arterials in Minneapolis alone.

According to the US DOT, this is a low-cost and quickly implemented solution that does not require costly expansion of highways. Virginia, Maryland, Washington, New Jersey, Georgia, Delaware, Florida, California, Canada (Vancouver, Toronto, and Ottawa),

Ireland and New Zealand have BOS programs. One shoulder lane is in operation on H-1 Freeway by Pearl City.



**N. King Street widening** from Middle Street to Dillingham Boulevard to a standard width of 6 lanes is needed. Currently this 1.8 mile long segment has many lane drops that choke its flow. Most of its length is 6 lanes wide but there are 5 and 4 lane “chockers” which can be widened. Once it is done as a uniform 6-lane artery, contraflow 4 lanes to town from 5 AM to 9 AM with a dedicated bus lane for buses running on the shoulder of Moanalua Freeway for a speedy Pearl City-Aiea-Kalihi-downtown commute. N. King Street reverts to 2 traffic lanes per direction and a parking lane after 9 AM. This is a no-cost option. The truck and crew that contra-flows Kapiolani Boulevard can do the N. King Street contra-flow first and remove it last in the morning.

**Contraflow along Dillingham Boulevard.** The morning N. King Street contra-flow can be complemented with an afternoon contra-flow on Dillingham Boulevard for speedy access to airport viaduct and beyond. With traffic simulation tools I estimated a capacity gain from 1,450 vehicles per hour now to 2,150 vehicles per hour with the conversion of the median lane into a contra-flow lane along Dillingham Boulevard between 3 PM and 6 PM on weekdays. This is a no-cost option. The crew that contra-flows Kapiolani Boulevard can do the Dillingham Boulevard contra-flow first and remove it last in the evening.

**Four underpasses in urban Honolulu.** Introducing free-flowing underpasses in four of Honolulu’s busiest intersections would deliver a substantial reduction in traffic congestion. The Kapiolani/Kalakaua, Vineyard/Pali , Vineyard/Punchbowl, Kapiolani/Date/Kamoku intersections can benefit tremendously by partial grade separation by having one lane per direction operate as an underpass. To minimize size, cost and construction impact, these will be low clearance underpasses able to serve vehicles no taller than a standard city bus. Taller vehicles can use the remaining surface lanes. The total cost varies between \$50 Million and \$100 Million.

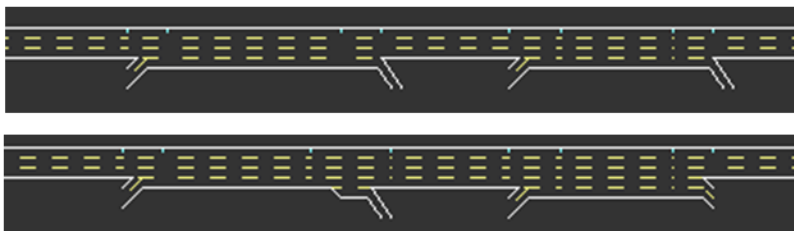
**Improve the operation of the Castle junction** with a grade separation for the two Kaneohe-bound left turn lanes on Pali Highway using a one lane (cut and cover) underpass or a less recommended visually intrusive overpass. This will improve intersection capacity by over 30%.

An underpass would also reduce delays at the Castle Hospital intersection with a one lane Kailua-bound underpass. The total cost for both underpasses should be under \$100 Million.

**PM Contra-flow** (Zipper Lane). This project designed by my research team at UH in collaboration with the state DOT was in the works but then the recession delayed it. The state DOT website notes that “by adding a 6.2-mile contra-flow lane starting at the Radford Drive overpass and ending at the Waiawa Interchange (H-1, H-2 Freeway merge) the PM Contra-flow Lane is expected to increase westbound capacity by about 17% during the afternoon rush hour commute.” The cost is about \$150 Million and is eligible for federal cost sharing.



**Widened Middle Street Merge.** This project designed by my research team at UH in collaboration with the state DOT was in the works but then the recession delayed it. The state DOT website notes that “this project would increase traffic capacity through Middle Street merge and Vineyard Boulevard by adding a fourth continuous lane, eliminating the need to merge. The additional lane would also add a second exit lane to the Vineyard Street off-ramp. ... The cost for this project is estimated at \$100 million with 80% of the project funded federally, and the remaining 20% state-funded. An environmental assessment is expected to be completed by August of 2010.” See figure below.



**Computer representation of widened Middle Street merge.**

All the projects above will cost under \$500 Million in total and less than \$300 Million in local funds. This is less than 10% of the rail’s cost to the local taxpayers. They will relieve at least 33% instead of rail’s 3% of traffic congestion along Honolulu’s primary corridor. In addition to these, there are a number of long-term large projects to put Oahu on a solid mobility path to 2050 and beyond. Look for the large traffic projects article next week.