

Bumper to Bumper on the H-1: Comparing Leeward Oahu Traffic Alternatives

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Faced with the problem of increasing congestion on Oahu motorways, Mayor Mufi Hannemann and others have come out strongly in favor of a rail transit system. While rail is sometimes offered as the best solution for the island's traffic woes, a recent study by Professor Panos D. Prevedouros and the University of Hawaii Congestion Study Group (UHCS) *Transportation Alternatives Analysis for Mitigating Traffic Congestion between Leeward Oahu and Honolulu* shows that this is not the case.

The study used "detailed microsimulation to provide a fuller list of alternatives" to rail transit and offered "precise quantification of their effects on traffic congestion." The alternatives Dr. Prevedouros and the UHCS researched for potential effectiveness included new underpasses, high occupancy toll (HOT) lanes, and a tunnel under Pearl Harbor. They compared these alternatives to rail, and found rail to come up short in terms of costs and effectiveness.

COMPARISON OF SELECTED TRANSPORTATION ALTERNATIVES

		Rail	Toll Tunnel	HOT Lanes
COST	Capital Cost	\$5-6 billion	\$3-5 billion	\$900 million
	Tax burden per Oahu resident	\$5,523	\$1,381	\$442
	Property Tax Increase	40%	None	None
PERFORMANCE	Average Speed	25 mph	50 mph	60 mph
	Kapolei to Downtown	65 minutes	15 minutes	25 minutes
	Waikale to Waikiki travel time reduction	-6%	-15%	-34%
ENVIRONMENT	Carbon Footprint	Very high because roadways remain congested	Second lowest; resolves some congestion	Lowest because resolves congestion

What are the options?

Rail—A rail system would cost at least \$5 billion to build, and reduce drive times from the H-1/H-2 merge to Aloha Tower by 3 percent, a drop of 34 to 33. In contrast, simply installing free-flowing underpasses at four of Honolulu's busiest intersections would have a similar effect on travel times, but for only \$50 million— a 99 percent cost savings.

Tunnel—A bolder initiative would be the construction of a tunnel under the entrance of Pearl Harbor, which would cost \$3-5 billion. Using the tunnel, a commuter traveling from Ewa Beach to Downtown would find his drive time plunging from 65 minutes to 11 minutes. The resulting reduction of traffic on Ft. Weaver Road and H-1 would lead to drops in commute times from 65 to 40 minutes.

HOT Lanes—Another option would be implementing HOT lanes from the H-1/H-2 merge to downtown. Congestion on this route would drop 35 percent, with drive times falling from 34 to 22 minutes. As Dr. Prevedouros's study explains, "HOT expressways are primarily express high-occupancy-vehicle and public transit highways with the ability to zip traffic along at 60 miles per hour by applying a congestion-dependent toll for low occupancy vehicles so that the facility does not get inundated (and jammed) with an amount of traffic that exceeds the capacity of the facility."

Quick Ferry—Yet another alternative is a quick ferry service from Ewa to Downtown, which could reduce travel times to about 37 minutes, a 44 percent drop. While a ferry would provide substantial relief for travelers

along this route, it would not significantly impact overall congestion.

What about the environment?

Besides being expensive and inefficient, a rail system is the "worst global warmer" of the options, and would "likely worsen Oahu's dependency on oil." Referring to rail as "19th century polluting technology," the UHCS study notes, "Excluding New York City, transit averages 310 grams of carbon emissions per passenger mile, compared with 307 for the average 2006 model car and 147 grams for a Toyota Prius. Fuel efficiency trends clearly indicate that vehicles in 2030 will be largely non-polluting, whereas rail will still be drawing its power from today's fossil-fueled power plants." Many of the other alternative means of reducing traffic congestion "are more sustainable and have a smaller carbon footprint, that is, they are superior in terms of energy and pollution for the planet."

What's the answer?

Having determined that there are several cheaper, more practical solutions to Oahu's traffic troubles than an expensive and inefficient rail system, Dr. Prevedouros and the UHCS observe that the "reason that rail appears to be the solution is only because a handful of elected officials say so." After looking at the alternatives, they conclude: "A reversible HOT lane expressway from Waikale to Iwilei, combined with a handful of underpasses, traffic signal upgrades and optimization, and a Bus Rapid Transit that runs along King and Beretania Streets are the main ingredients to providing the solution to both congestion and mobility issues on Oahu at a cost that the local tax base can afford.

Source: *Transportation Alternatives Analysis for Mitigating Traffic Congestion between Leeward Oahu and Honolulu*, A Detailed Microsimulation Study Directed by Professor Panos D. Prevedouros with Participation of Undergraduate and Graduate Students Specializing in Transportation Studies, Honolulu, Hawaii, March 21, 2008. Available at: <http://www.eng.hawaii.edu/~panos/UHCS.pdf>.

This brief and a link to the original study can be found at
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