

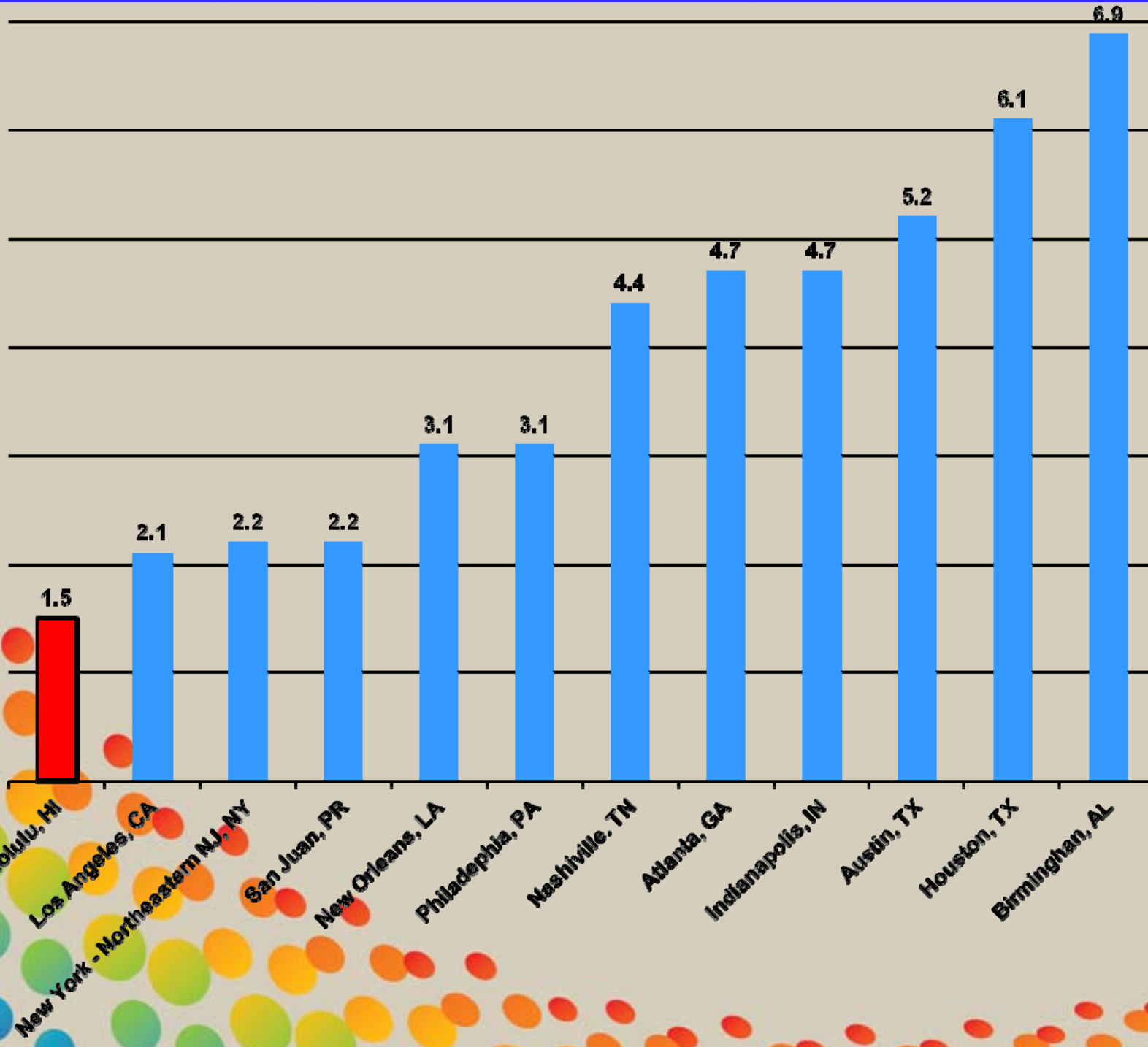
RAIL UPDATE & REAL SOLUTIONS

Panos D. Prevedouros, PhD
Civil Engineering, UH-Manoa
June 2011





MILES OF ROADWAY PER 1,000 PEOPLE



Crowded highways

The Capital Beltway has been ranked the third most congested freeway in the United States, based on data from 1.5 million GPS devices, mostly in freight trucks.

Weekly hours of congestion on worst bottleneck

Speed of worst bottleneck when congested

1. Hollywood Freeway, Los Angeles

77 hours

14 mph

2. Lunalilo Freeway, Honolulu

36 hours

16.4 mph

3. Capital Beltway

31 hours

21.2 mph

The Washington Post

January
21, 2010

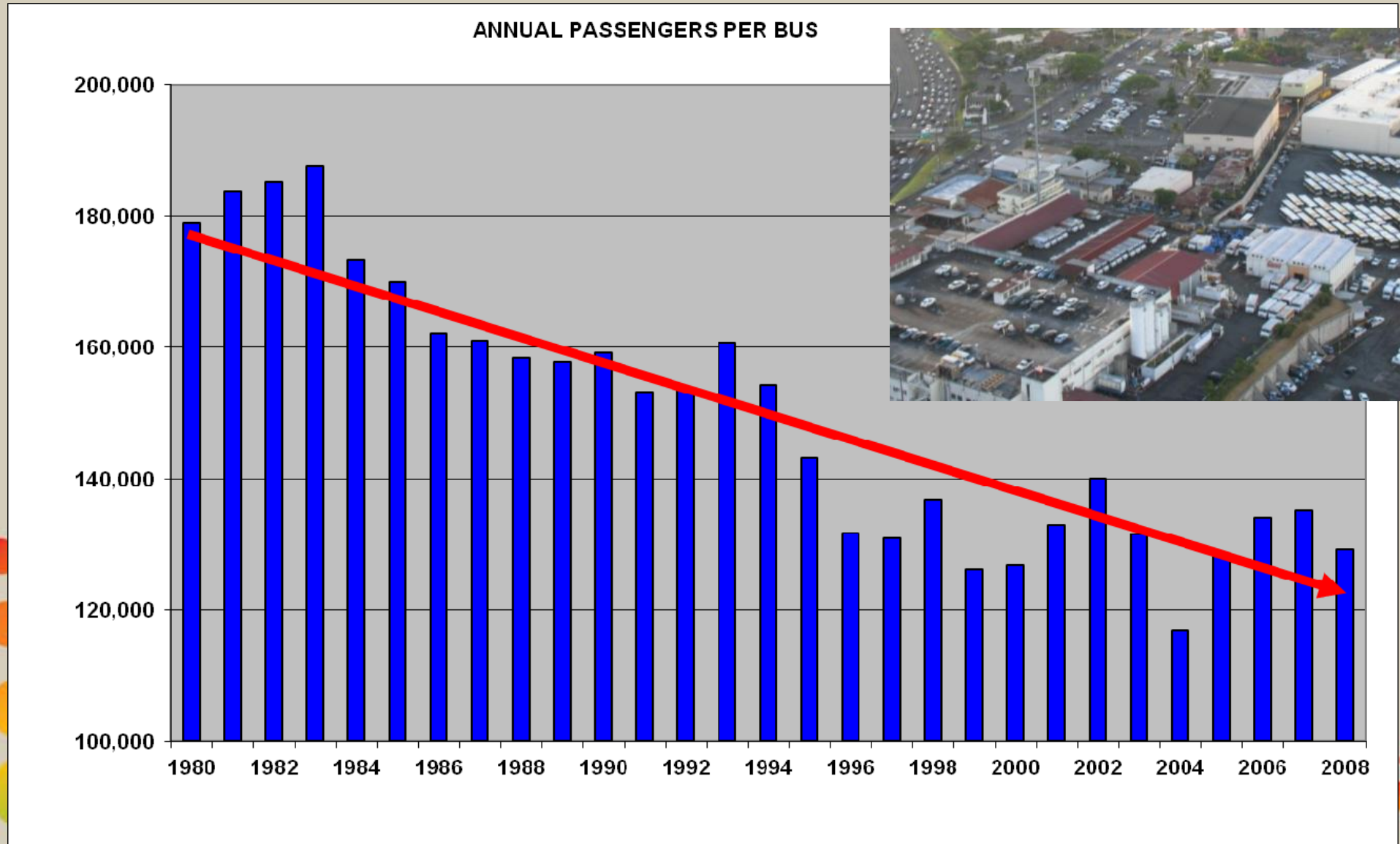
COMMUTER CHARACTERISTICS

- ❖ High Carpooling
- ❖ High Drop-off
- ❖ Multi-job Workers
- ❖ UH is commuter school
- ❖ Tourists: Rentals, Vans, Buses
- ❖ Business, Deliveries, Repairs
- ❖ Consistent Bus Rider Drop

Least
suitable
mobility
option?

Fixed
Guideway
Mass
Transit

The Unproductive The Bus



WHAT DID THE VOTERS APPROVE IN 2008?

2008

**Light Rail
Under \$5 B
Thru Salt Lake**

2010

**Heavy Rail
Over \$5 B
Thru Airport**

Honolulu: Ethics Civil Fines

212 of 212

YES	223,547	72.5%
NO	53,524	17.4%

Blank Votes:	31,294	10.1%
Over Votes:	78	0.0%

Honolulu: Impeachment Circuit Courts

212 of 212

YES	224,363	72.7%
NO	49,300	16.0%

Blank Votes:	34,692	11.2%
Over Votes:	88	0.0%

Honolulu: Dept. of Transportation Services Transit

212 of 212

YES	156,051	50.6%
NO	140,818	45.7%

Blank Votes:	11,456	3.7%
Over Votes:	118	0.0%

Tren Urbano (2004)



San Juan

Island

Heavy Rail

FTA

PB



Honolulu

Island

Heavy Rail

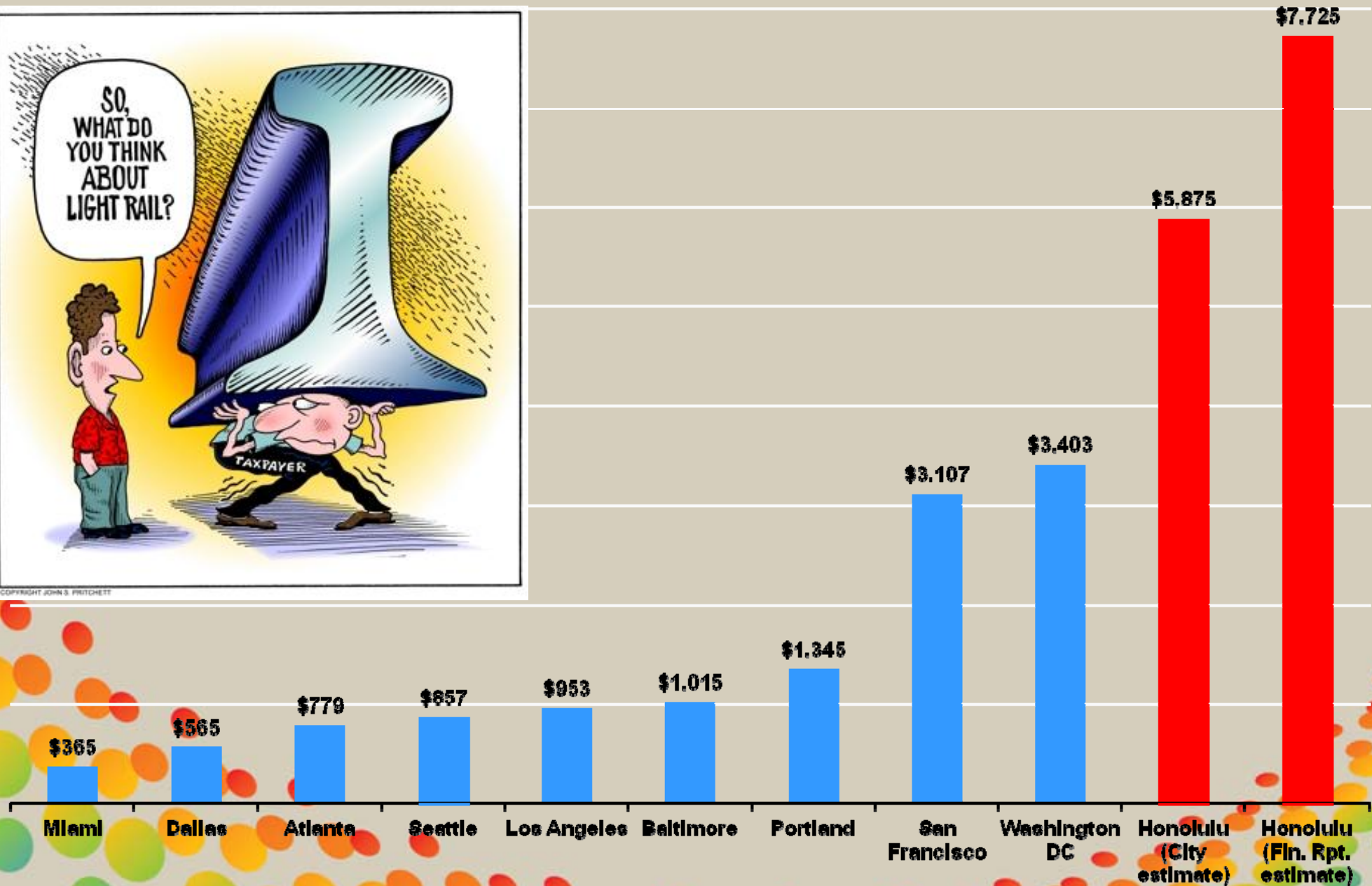
FTA

PB

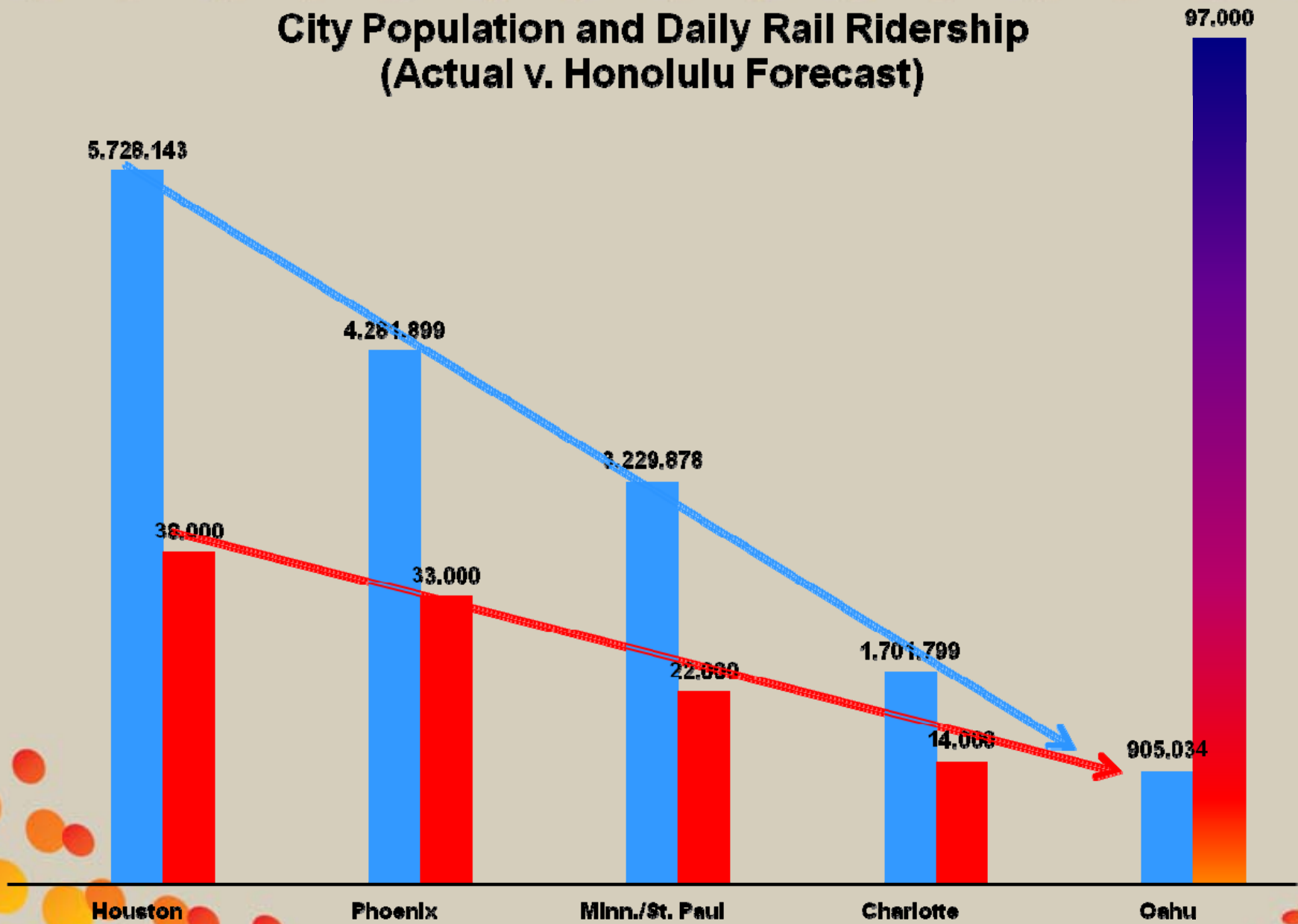
Tren Urbano

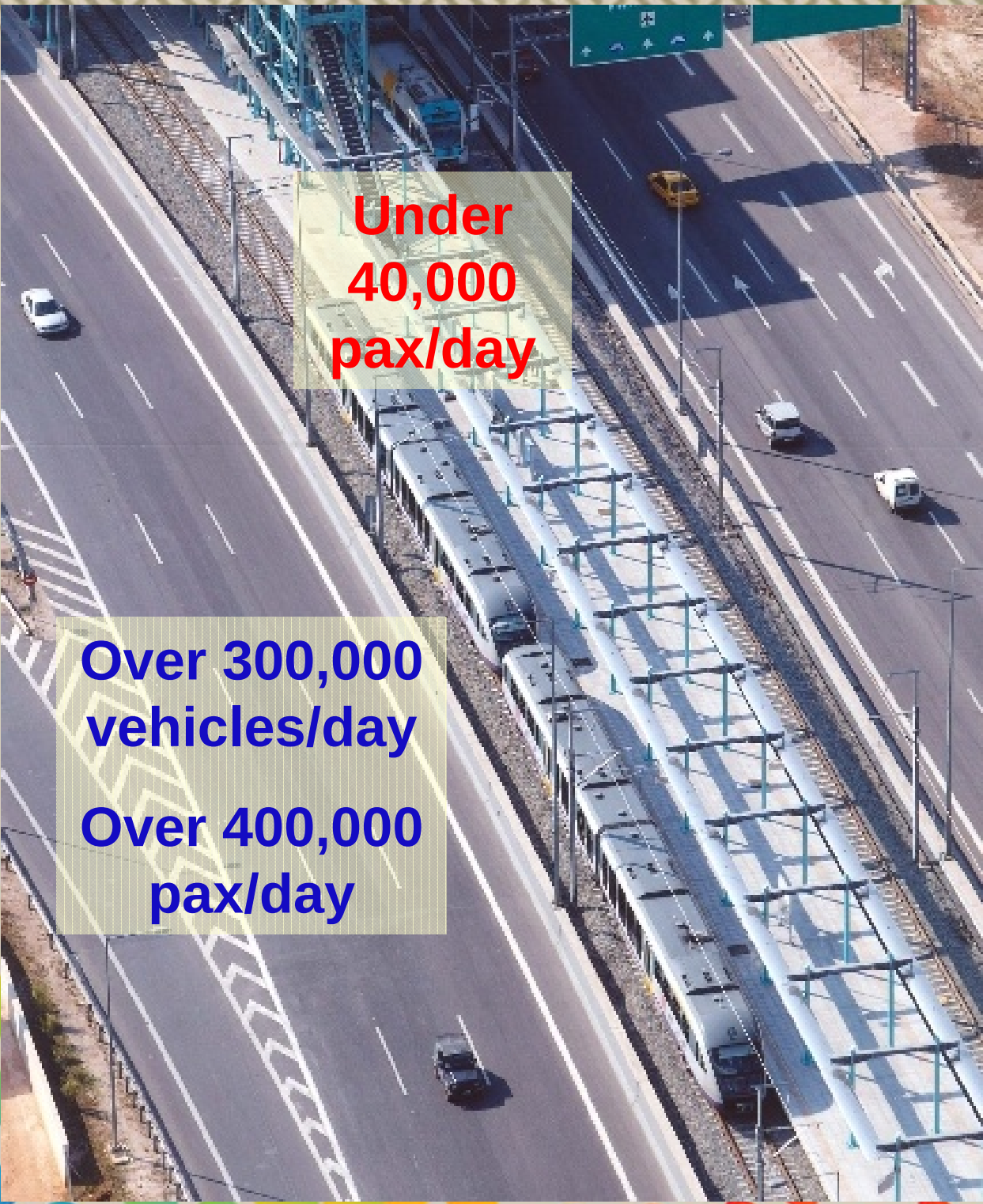
COST	RIDERSHIP
PB estimated cost of \$1.25 B	PB estimated 80,000 riders
FTA approved	FTA approved
Actual cost \$2.25 B	Actual riders Under 25,000

Construction Rail Cost Per Capita in 2006\$ (Actual v. Honolulu Projections)



City Population and Daily Rail Ridership (Actual v. Honolulu Forecast)





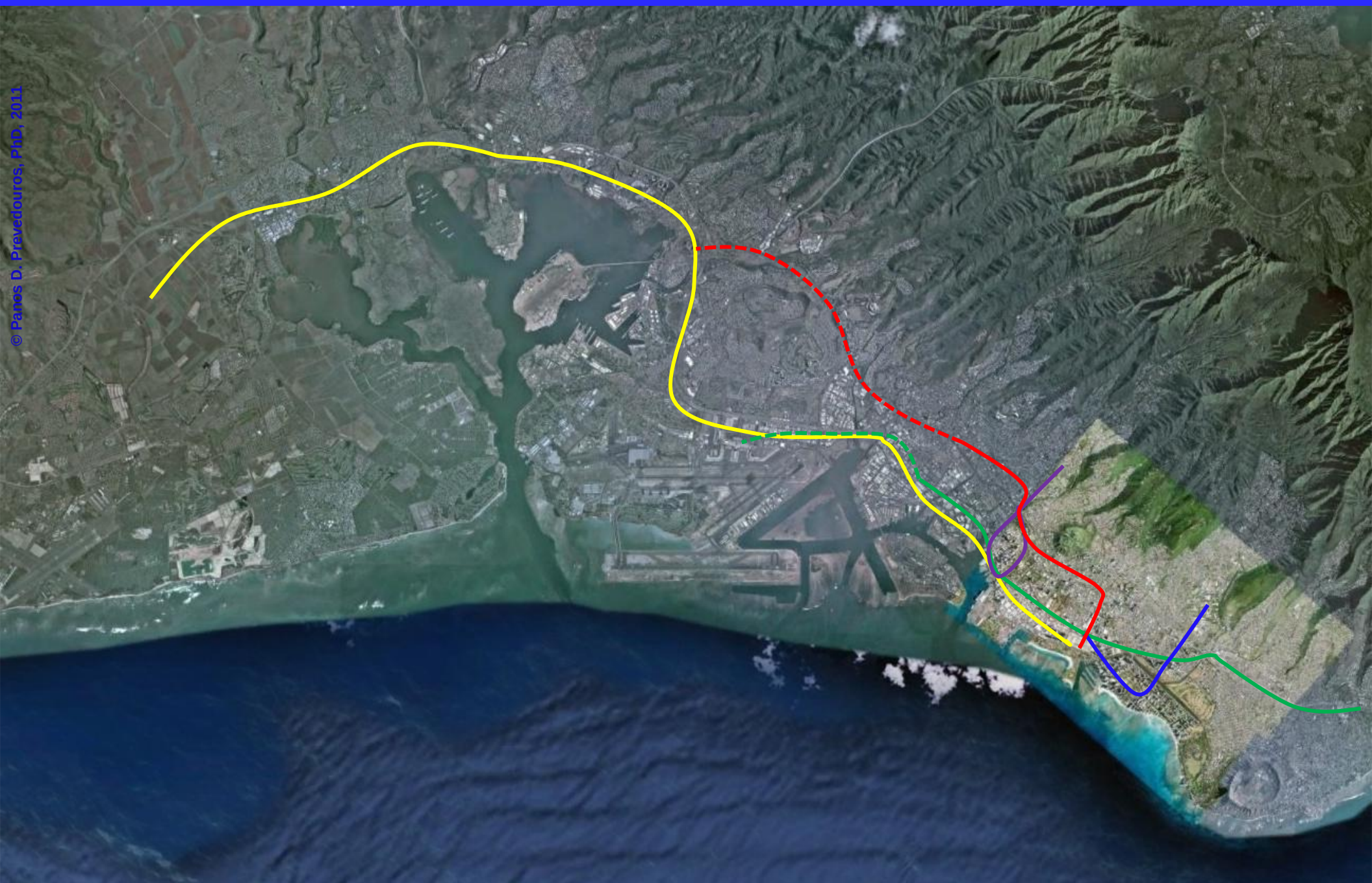
**Under
40,000
pax/day**

**Over 300,000
vehicles/day**

**Over 400,000
pax/day**

ATTICA TOLLWAY AND THE SUBURBAN RAILWAY

LONDON, PARIS, NYC, TOKYO ... HONOLULU?



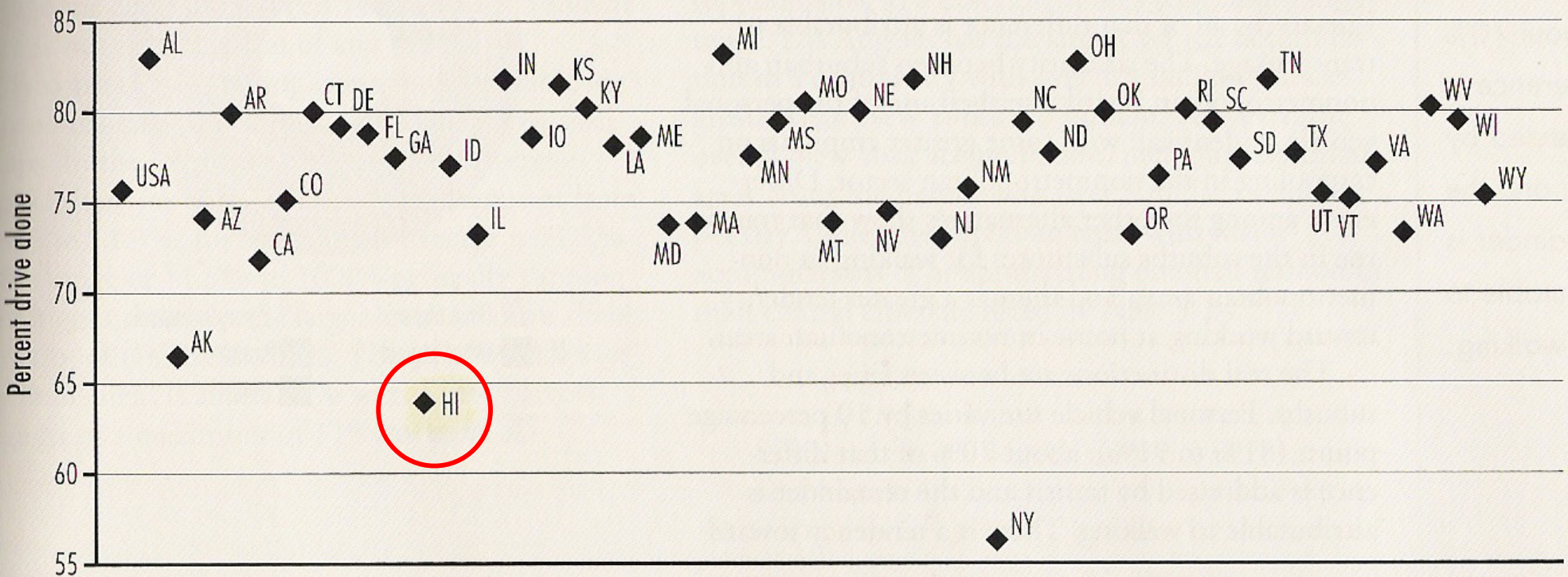
Urban rail usage in US = 2.01%

Public transit gets
20% of all federal,
state, regional and
local surface
transportation taxes to
serve less than 5% of
passenger trips and
none of the freight!



Smart transportation solutions builds on what people do: Express bus, van and carpools → **HOT lanes**

FIGURE 3-34 Drive Alone Shares by State, 2000



Note: States appear in alphabetical order.

POLICY GOAL → SUSTAINABILITY

Transit	5.6
Drive Alone	63.8
Carpool	21.2
Other	9.4

Rail

Transit	6.6
Drive Alone	63.0
Carpool	21.1
Other	9.3

HOT
BRT
TeleC
BikeW

Transit	7.0
Drive Alone	57.0
Carpool	25.0
Other	11.0

→ 50%

10 SOLUTIONS FOR 20 MINUTE COMMUTES

IMMEDIATE (1 to 6 years)

1. Pearl Harbor Ferry
2. Underpasses
3. Nimitz Viaduct
4. Traffic Signal Timing
5. In-town BRT
6. Middle St. merge

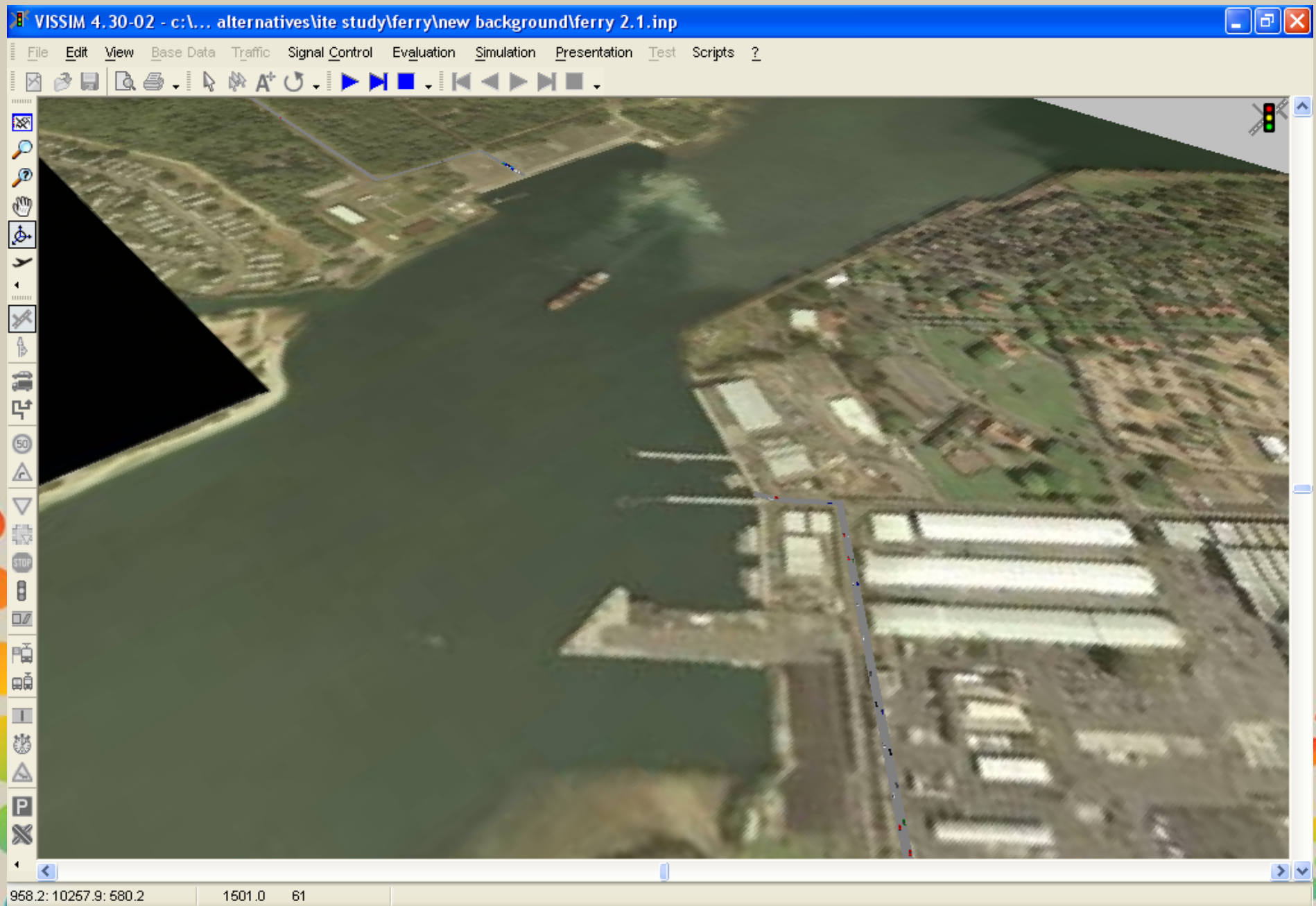
LONGER TERM (7 to 15 years)

1. 11 mi. HOT Lanes
2. Tunnel: UH to Pali
3. Complete Plan for ORL Light Rail
4. Tunnel from Iroquois Pt. to Lagoon Drive

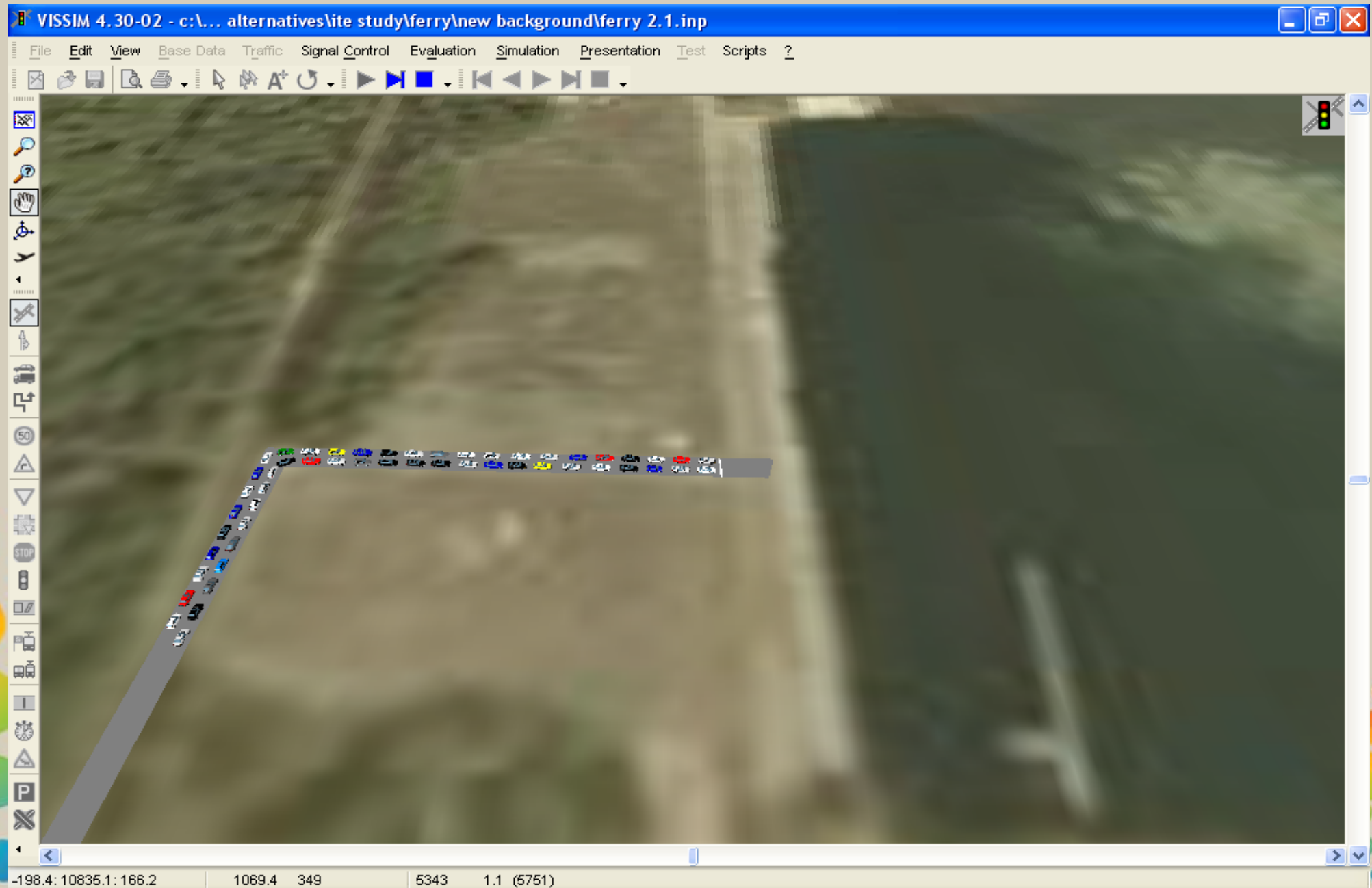


Blogger fix oahu!

EWA BEACH – LAGOON DRIVE (1 OF 3)



EWA BEACH – LAGOON DRIVE (2 OF 3)



EWA BEACH – LAGOON DRIVE (3 OF 3)



To Nimitz Hwy. or new Nimitz Viaduct (**toll**)
→ Ewa Beach to Aloha Tower in 20 min!

Low risk cut-and-cover tunnel to preserve airport operations and security

HOT LANES AND EXPRESS BUSES

- ❖ **Buses and Vanpools
Go Free!**
- ❖ **Cars Pay Toll to Use
HOT Lanes**
- ❖ **All Travel at 60 mph**

LEXUS LANES



EXPRESS BUS, AND VANPOOL ON REL



REL = Reversible Express Lanes

100 buses, 400 vanpools, 4000 cars = 12,000 people, seated

Rail: 20 x 300 = 6,000 people (crash load, $\frac{2}{3}$ standees)

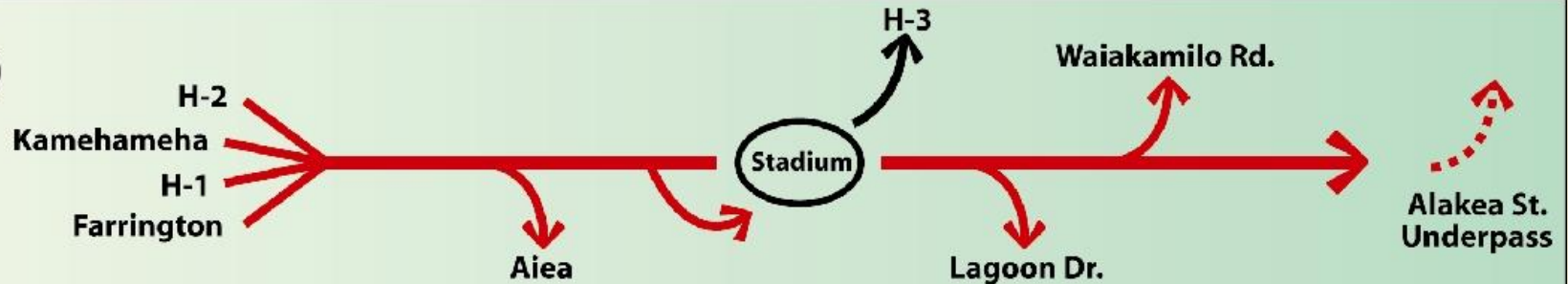


HOT LANES FOR HONOLULU

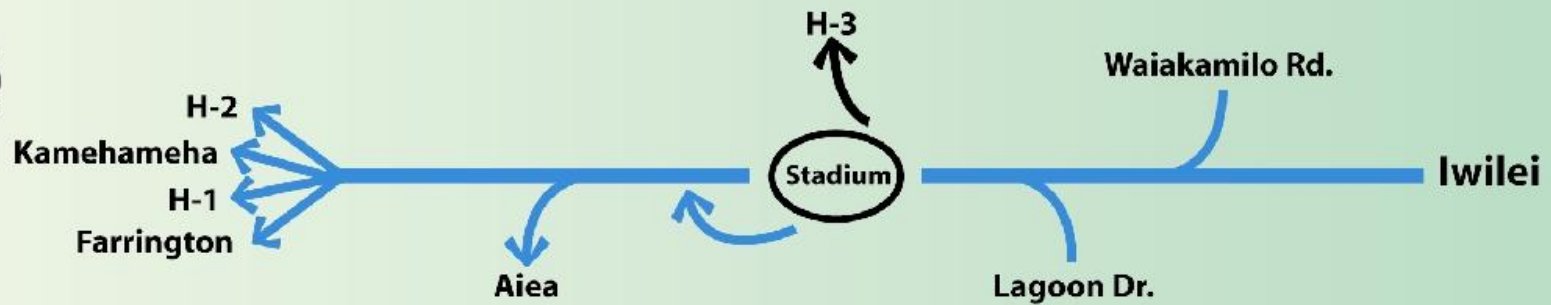


REVERSIBLE!

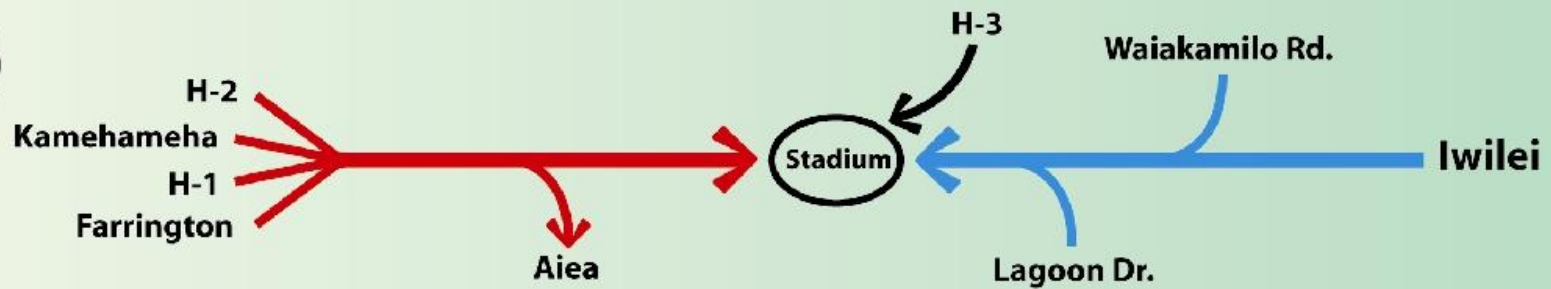
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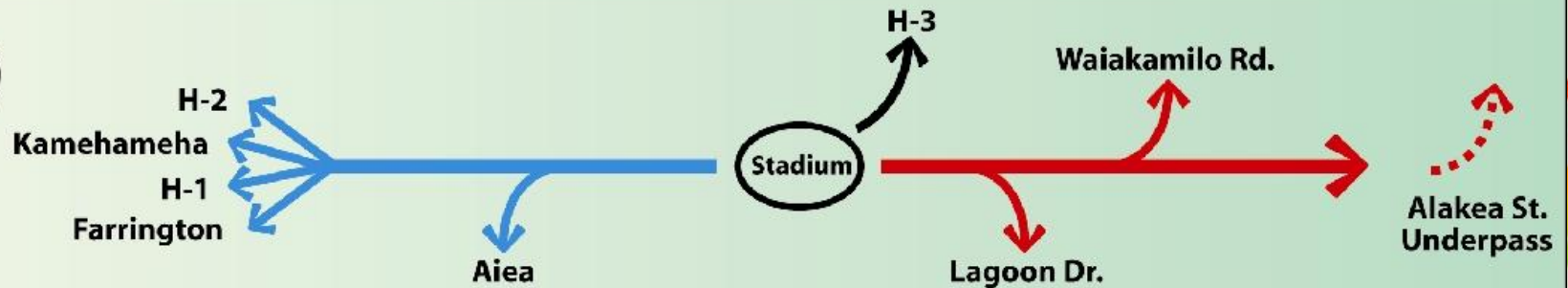
2



3



4



ALL ELEVATED ... CONVERTS TO DISASTER RELIEF BACKBONE



EXPRESS BUS CONNECTION TO HOTEL ST.



THERE IS PLENTY OF PARKING!



National Transportation Policy Project (NTPP)

Bipartisan Policy Center (2009)



TRANSPORTATION GOAL	PERFORMANCE METRIC		HOT LANES
Economic Growth	Access to jobs and labor	2	10
	Access to non-work activities	5	10
Energy and Environment	Petroleum consumption	3	10
	CO2 emissions	2	10
Safety	Fatalities and injuries per capita	7	10
	Fatalities and injuries per VMT	8	10
TOTAL SCORE	Equal Weights	27	60
	Safety First	32	60

THE FUTURE IS ELECTRIC

Rooftop Solar (PV):	14,098
Hawaii Tax Credit	-4,934
Federal Tax Credit	<u>-4,229</u>
PV Final Cost	\$4,934

- 20 year warranty
- Cut HECO bill in half
- Or power a **Leaf** for ~40 miles

Nissan Leaf :	32,500
Hawaii Tax Credit	-4,500
Federal Tax Credit	<u>-7,500</u>
Final Cost	\$20,500

- 20 year expected life
- 1 set brake pads, 2 sets tires
- Registration and insurance

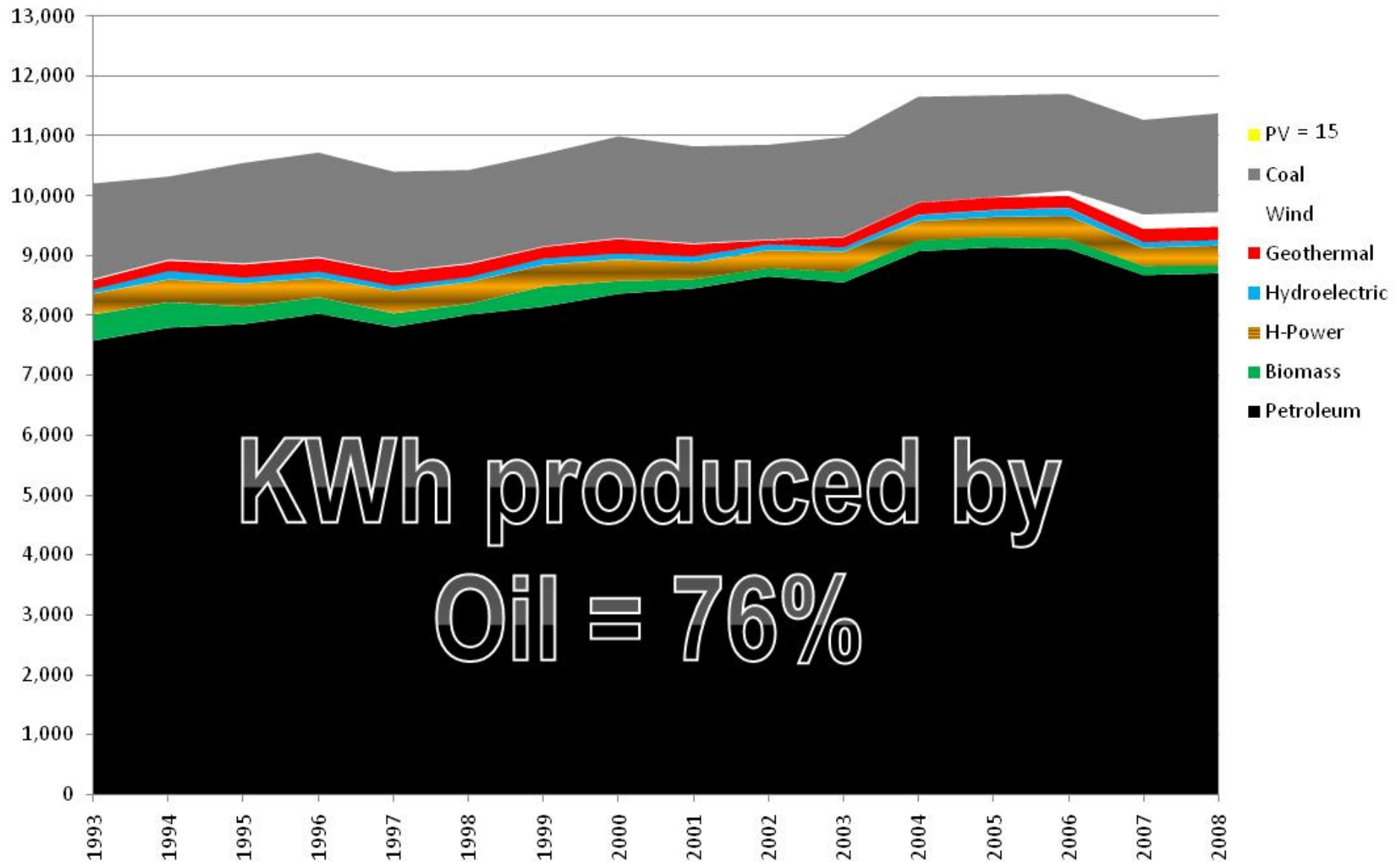
Lifetime compact I.C.E. car = \$5,000/yr

Lifetime compact electric car = \$2,500/yr

These are funded Federal and State policies!

WHERE WILL RAIL GET POWER FROM?

Hawaii's Energy History -- Million KWh



LET'S LOOK AT SOME COMPUTER SIMULATIONS!

1. **HOT Lanes in Kalihi**
2. **HOT Lanes by Hilo Hattie's**
3. **Underpass: Nimitz-Alakea**
4. **Underpass: Pali-Vineyard**
5. **BRT in Moiliili**

SMART, SENSIBLE TRANSPORTATION SOLUTIONS

HOT Lanes
Bus Rapid Transit
6 Underpasses
Pearl Harbor Ferry
Smart Traffic Lights
Bikeways

Total Cost Is One Half of Rail's

Taxes ↓ ♦ Economy ↑ ♦ Jobs ↑

MAHALO!

PANOS.PREVEDOUROS@GMAIL.COM