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Seeking cost-effective ways to improve traffic congestion in Honolulu

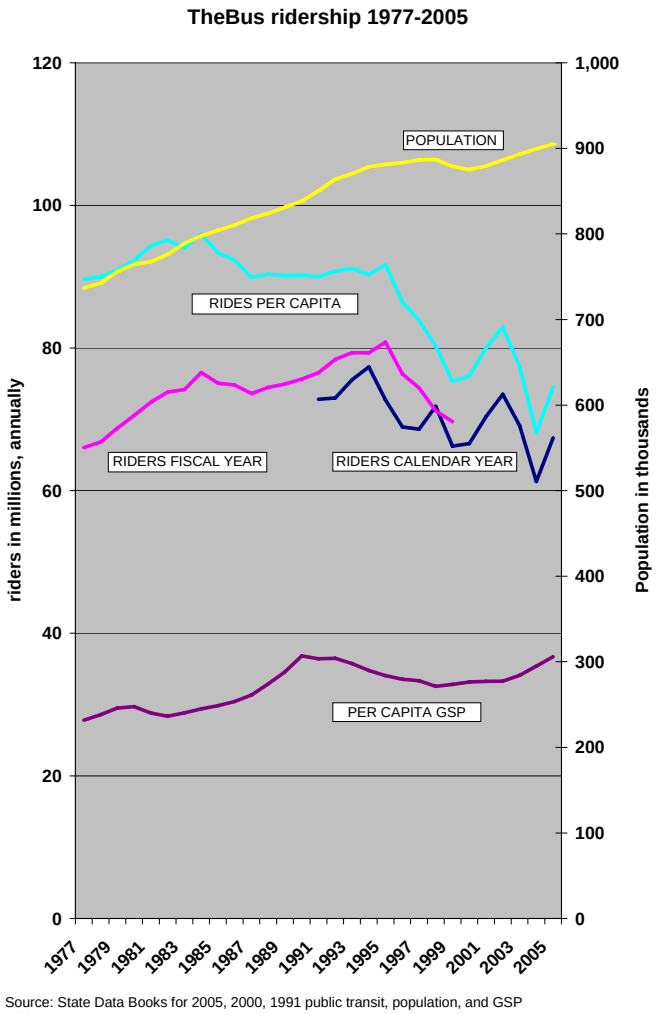
November 16, 2006.

The Alternatives Analysis ridership forecasts are flawed.

The ridership projection model used for the Alternatives Analysis (AA) is fundamentally flawed in that it assumes ridership will grow with population[i] whereas it clearly does not.

Since the No-Build forecast uses the same ridership model and the same demographic assumptions as that for rail transit ridership it is crucial that the No-Build model be as accurate as possible.

Parsons Brinckerhoff (PB) made the assumption in the 1992 rail transit FEIS that ridership would grow with population. At the time, the state's outside academic transportation consultants questioned that assumption. Among others, Dr. G. Scott Rutherford, Professor of Civil and Environmental Engineering at the University of Washington and Director of its Transportation Engineering Graduate Studies Program, commented:



Source: State Data Books for 2005, 2000, 1991 public transit, population, and GSP

"I question the factoring of the transit trip table on the basis of population and employment growth, mainly because over the last decade Honolulu has shown rapid growth in everything <u>but</u> transit ridership...This same pattern has been observed in many other U.S. cities."[ii]

As can be seen from the chart, if ridership had kept pace with population, the rides per capita (light blue line) would show a generally flat line and the ridership line (dark blue) would be growing in parallel with the population line (yellow).

It is obviously doing no such thing; rides per capita of population have declined from 96 in 1984 to 77 today — a 20 percent decline (light blue line, left scale).

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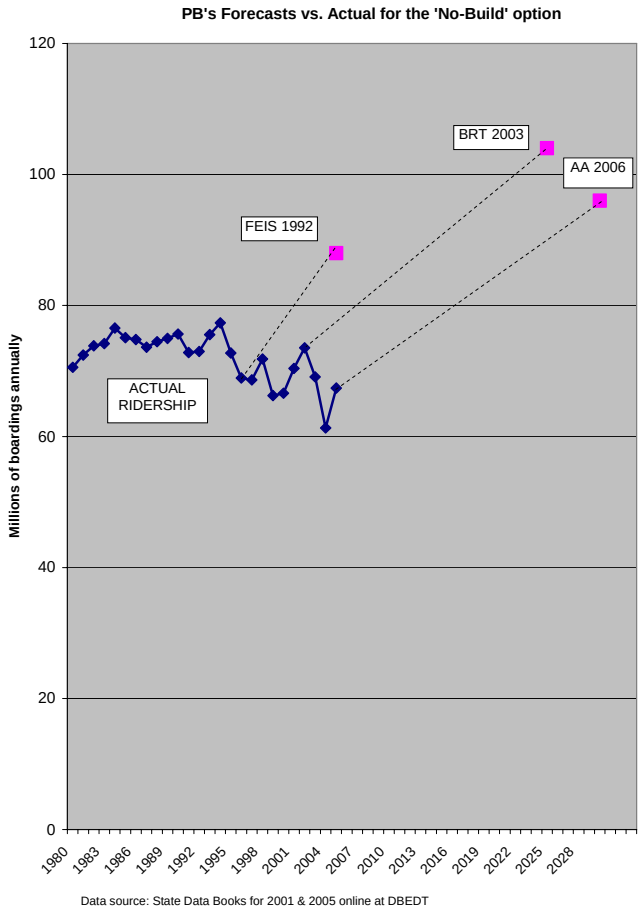
PB's No-Build forecasts can be seen in the chart below where their projections made in 1992 and 2003 are contrasted with actual City bus ridership. The dotted lines start at the year in which PB made the forecast and point to the forecast ridership for the target year.



Note that every forecast has shown a large increase while the actual ridership has continued to decline.

Despite the obvious fact that No-Build ridership did not grow with population in Honolulu, or elsewhere, in the ensuing years PB continued to use the same assumption in the 2003 BRT FEIS and, most recently, the AA.[iii]

Another way to check on the projected ridership is to compare changes in Honolulu's *projected* transit market share with the *actual* market share changes that have occurred in other metro areas.

The AA shows total ridership projections for rail transit from Kapolei to the University of Hawaii of 294,100 average daily trips, an increase of 65 percent from current levels of 178,400 (AA, table 3-3) against a projected population increase of 26.5 percent.[iv] That is a 30 percent increase in transit's market share over 25 years.

Compare that with the past 20 years of Census data, 1980-2000, showing that the only metro area with rail to show any increase at all in this percentage was San Diego where commuters using public transportation increased from 3.3 percent to 3.4 percent.[v]

All other metro areas with rail saw their percentage of commuters using public transit decline.[vi]

Another concern was raised by Professor Moshe Ben-Akiva of MIT. He said of PB's 1991 forecasts, "The major weakness that reoccurs at several phases of the ridership forecasting methodology is the absence of validation against local data."[vii]

To remedy this problem, and the others discussed earlier, PB should produce a model that can backcast the No-Build ridership from 1991, using actual demographic outcomes, to produce a reasonably accurate 'forecast' of what has actually occurred with the No-Build ridership over the past 15 years.

A backcast would be a suitable "validation against local data" that Ben-Akiva wanted. Armed with a model of this nature, our decision makers would have a ridership forecast they could trust. As it is right now, the forecast ridership in the AA for the various alternatives are obviously worthless.

Prepared by Cliff Slater

Endnotes

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[i] "As compared to year 2005, total systemwide daily person trips are projected to increase by about 27 percent for the No Build Alternative in 2030, keeping pace with the projected growth in population between 2005 and 2030.

[ii] "An Evaluation of the Honolulu Rapid Transit Development Project's Alternative Analysis and Draft Environmental Impact Statement." Hawaii Office of State Planning and University of Hawaii. May 1990. Excerpts available at: www.honolulutraffic.com/ospquote.pdf

[iii] AA, p. 3-6. "As compared to year 2005, total systemwide daily person trips are projected to increase by about 27 percent for the No Build Alternative in 2030, keeping pace with the projected growth in population between 2005 and 2030. Transit mode share for total daily trips as well as home-based work trips (Table 3-4) is expected to increase slightly over the current mode share."

[iv] 2005 State Data Book, Table 1.06 for 2005 population of 905,000 and Draft ORTP for population increase 240,000.

[v] FHWA spreadsheet: msacomparison.xls

[vi] FHWA spreadsheet: msacomparison.xls

[vii] Dr. Moshe Ben-Akiva, Turner Professor of Civil Engineering at MIT. He works closely with Nobel Prize winner, Professor Daniel L. McFadden on forecasting issues.