Honolulu Heavy Rail Is an Energy Black Hole ... & Parsons Brinkerhoff lied to reporters about it!

Energy and Honolulu rail is an angle that I did not have time to look at in detail, until last week when my students did some energy analysis of Honolulu's proposed rail. They discovered this June 2008 article by Sean Hao:

Rail's use of energy subject of debate in the Honolulu Advertiser
(http://the.honoluluadvertiser.com/article/2008/Jun/09/ln/hawaii806090353.html)

Of note is that the rail will consume about 20 MW of energy which is about 20% of the capacity of HECO's new palm oil fueled power plant. Unfortunately peak rail schedule coincides with peak demand for electricity around 6 PM, which means that rail will stress HECO's generators.

Now if you believe the city's numbers which are based on incredible ridership projections and substantial bus route eliminations, Table 4-21 of the Final EIS shows that the rail project will save 396 million British thermal units (BTU) of energy each day, or 144,540 million BTU per year. Hao correctly added that: "Any evaluation of the energy savings generated by rail also needs to consider the massive amount of energy required during construction.

For example, construction of the fixed guideway will require between 3.7 trillion and 4.9 trillion BTU of energy, according to Parsons Brinckerhoff." This quote reveals two startling facts:

First the unnamed Parsons Brinkerhoff source clearly lied to Hao by stating roughly half the amount of energy BTU required for the construction of the rail. The 2008 Draft EIS, Table 4-34 on page 4-159, shows that the rail's Airport alignment will require 7,480,000 MBTU. That's 7.5 trillion BTU, not 3.7 trillion BTU.

Second, dividing 7,480,000 by 144,540 gives 51.75. That's how many years it will take to make up the construction energy loss by the purported energy savings. But in 52 years rail will need multiple component replacements, repairs and refurbishments. So an energy black hole it is!

On the other hand, our 2008 simulation estimates using the DEIS traffic numbers show that rail is a net energy loser without even counting the huge energy consumption during construction. In comparison, a properly designed and operated HOT lane system will save energy (motor fuel and oil for electricity generation.)

Fuel Consumption for One Peak Hour (in US gallons)
Change from Base of ~97,000 gallons

ALTERNATIVE

Motor Fuel

Motor Fuel plus Diesel at HECO for Rail

Rail: 6.5% traffic reduction

-2.6%

-0.3%

Rail: 3.25% traffic reduction

-0.4%

1.9%

HOT Lanes and Four
Underpasses

-40.5%

-40.5%

And speaking of lies and lack of accountability, here is a fine quote from this 3-year old article: " The potential positive impact on the environment is a key benefit of the $3.7 billion elevated commuter rail line, said Honolulu Mayor Mufi Hannemann."

Now we know that the impact to the environment will be clearly negative and the cost has increased by $1 Billion. Let's keep this summary and look at it another 3 years from now... The Ewa-to-town corridor has been paralyzed by rail construction closures. Construction and rail car cost is expected to exceed $7 Billion, while Congress has rescinded $0.5 Billion of expected support.

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