

# The Future of Rail on Oahu: Plan A, B, or C?

By Randall W. Roth<sup>1</sup>

I was one of the plaintiffs in a federal lawsuit to stop rail. Although that ended five years ago, it might make some people wonder if I have a bias against public transportation, or perhaps just rail. I do not.

I happen to believe quite strongly in the importance of public transportation that is clean, dependable, affordable, convenient, and safe. I particularly enjoy riding on commuter rail lines, and go out of my way to do so when in large cities. For several years in the 1970s I used Denver's bus system every day, as did my wife Susie. In fact, she and I first met on Denver's bus #6.

Tonight, I will explain why rail's future on Oahu is uncertain, and describe the City's options. But first, a bit of history about prior efforts to build rail on this island:

Frank Fasi tried several times, and in 1992 came close to making it happen.<sup>2</sup> The Federal Transit Administration had agreed to provide nearly one-third of the \$2 billion estimated cost.<sup>3</sup> But things fell apart when a 5-4 majority of City Council members refused to raise taxes needed to fund it.<sup>4</sup> Fasi avoided the term *heavy* rail, but that's how rail experts would have described his proposed system.<sup>5</sup> When describing a rail system, the terms heavy and light are not primarily about weight. Light rail systems operate in or across city streets, while heavy rail systems run overhead or below ground, powered by a third rail.<sup>6</sup>

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<sup>1</sup> This talk was initially delivered to members of the Social Science Association on December 5, 2016, but it has been updated since then. The latest version is at <http://randallroth.com/files/Rail%20Speech.pdf>. Contact and other information about the author can be found at <https://www.law.hawaii.edu/personnel/roth/randall>. Regarding the Social Science Association, see <http://www.bizjournals.com/pacific/print-edition/2012/06/01/leaders-gather-to-share-their-cultural.html>.

<sup>2</sup> See, e.g., Honolulu Rapid Transit Development Program, Conceptual Definition of Alternatives, Honolulu Department of Transportation Services, Nov. 6, 1987, available at [http://www.honolulutraffic.com/Admin\\_Record/Administrative\\_Record\\_rev\\_2.28.12/Administrative\\_Record\\_Volumes\\_1-11/Vol005\\_AR00085212/0001\\_AR00085212/AR00085811.pdf](http://www.honolulutraffic.com/Admin_Record/Administrative_Record_rev_2.28.12/Administrative_Record_Volumes_1-11/Vol005_AR00085212/0001_AR00085212/AR00085811.pdf).

<sup>3</sup> Fasi's 1992 rail line would have run from Waiiau to the current site of the Convention Center. The idea was to expand the route as money became available. In 1980 he had talked about building a line from Aloha Stadium to Hawaii Kai. He proposed other routes from time to time. See, e.g., Wallace Turner, Honolulu's Mayor Ends Proposal For Rail Line In Downtown Area, New York Times, June 28, 1981, available at <http://www.nytimes.com/1981/06/28/us/honolulu-s-mayor-ends-proposal-for-rail-line-in-downtown-area.html>.

<sup>4</sup> They defeated a half-percent increase in general excise taxes needed to pay for rail. See Gordon Pang, Putting a dollar figure on a rail line, Honolulu Star-Bulletin, Dec. 17, 1998, at <http://archives.starbulletin.com/98/12/17/news/story3.html>.

<sup>5</sup> See Definition: Heavy Rail, American Public Transportation Association ("Heavy rail refers to traditional high platform subway and elevated rapid transit lines"), at <http://www.heritagetrolley.org/defHeavyRail.htm>; Also, at least one local journalist, who happens to be a fellow Social Science Association member, correctly referred to Fasi's proposed system as heavy rail, see Jerry Burris, Rail transit has history of failure, Honolulu Advertiser, April 23, 2008, at <http://the.honoluluadvertiser.com/article/2008/Apr/23/In/hawaii804230400.html>.

<sup>6</sup> See <http://www.honolulutraffic.com/LightHeavyRail.pdf>.

Fasi's successor, Jeremy Harris, expressed some interest in heavy rail, but turned his attention to light rail, which the governor at that time, Ben Cayetano, endorsed. Cayetano explained to reporters that his opposition to rail on Oahu applied only to heavy rail.<sup>7</sup>

Harris's light-rail proposal eventually morphed into bus rapid transit, which is like light rail but uses rubber tires on pavement rather than steel wheels on steel rails. One of Cayetano's last official acts as governor was to approve an Environmental Impact Statement that rated bus rapid transit as superior to rail – for Honolulu.<sup>8</sup>

Mufi Hannemann made abrupt changes immediately after succeeding Harris.<sup>9</sup> The just-declared superior alternative for Honolulu, bus rapid transit, did not even make the list of finalists: Hannemann's alternatives analysis considered three versions of elevated, steel-on-steel rail, each of which fit into a new category called metro-light.<sup>10</sup> Like heavy rail, metro-light runs overhead or underground. But like light rail, metro-light has less carrying capacity than does a traditional heavy rail system. One mainland commentator has described metro-light as "a hybrid form of rail that [combines] the cost disadvantages of heavy rail with the capacity limits of light rail."<sup>11</sup>

City officials sometimes mischaracterized Hannemann's proposed metro-light system as light rail, which might have caused some citizens to picture something less expensive, less noisy, and less imposing than Hannemann had in mind.<sup>12</sup> Hannemann said a 34-mile system from Kapolei to Ala Moana Center, Manoa, and Waikiki could be built for \$3.0 billion, which would have been a shockingly high number for a traditional light rail system, but absurdly low for the elevated system he was proposing.<sup>13</sup>

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<sup>7</sup> Gordon Pang, Putting a dollar figure on a rail line, Honolulu Star-Bulletin, Dec. 17, 1998 ("Cayetano, to the surprise of some, endorses Harris' plan, saying he was against previous plans for heavy rail. 'A light rail proposal is another matter,' he said. 'I've never opposed that because I think that makes a little more sense economically.'"), at <http://archives.starbulletin.com/98/12/17/news/story3.html>.

<sup>8</sup> Available at [http://www.honolulutraffic.com/feis\\_Vol\\_1\\_complete.pdf](http://www.honolulutraffic.com/feis_Vol_1_complete.pdf).

<sup>9</sup> Although BRT had been rated superior to rail in the 2003 EIS prepared by Parsons Brinkerhoff during the Harris administration, BRT was not even considered in the EIS prepared by Parsons Brinkerhoff during the Hannemann administration. That's right, it went from being the most attractive alternative to one that was not good enough to be considered a few years later ... despite use of the same consultant.

<sup>10</sup> The City Director of Transportation, Wayne Yoshioka, would sometimes use the term light-metro rail in a way that led others to think he was talking about light rail. See, e.g., Randy Roth Clobbers Wayne Yoshioka, Hawaii Free Press, Aug. 8, 2012, available at

[http://www.hawaiifreepress.com/ArticlesMain/tabid/56/articleType/ArticleView/articleId/7409/Video-Randy-Roth-Clobbers-Wayne-Yoshioka.aspx?utm\\_source=August+12%2C+2012+News+From+Hawaii+Free+Press&utm\\_campaign=August+12+2012+Email&utm\\_medium=email](http://www.hawaiifreepress.com/ArticlesMain/tabid/56/articleType/ArticleView/articleId/7409/Video-Randy-Roth-Clobbers-Wayne-Yoshioka.aspx?utm_source=August+12%2C+2012+News+From+Hawaii+Free+Press&utm_campaign=August+12+2012+Email&utm_medium=email).

<sup>11</sup> Randal O'Toole, The Worst of Both, June 3, 2014, Policy Analysis #750, available at

[http://object.cato.org/sites/cato.org/files/pubs/pdf/pa750\\_web.pdf](http://object.cato.org/sites/cato.org/files/pubs/pdf/pa750_web.pdf)

<sup>12</sup> See <http://www.honolulutraffic.com/LightHeavyRail.pdf>; Also see How Does Commuter Rail Differ From Light Rail, at [http://www.trainweb.org/kenrail/Rail\\_mode\\_defined.html](http://www.trainweb.org/kenrail/Rail_mode_defined.html).

<sup>13</sup> See [http://randallroth.com/files/\\$3B%20Cost.png](http://randallroth.com/files/$3B%20Cost.png). Hannemann had earlier said \$2.7 billion, which has been noted by others since then, but I have not been able to find any contemporaneous news coverage; see, e.g., <http://www.newgeography.com/content/005156-live-honolulu-hart-rail-a-megaproject-failure-making>.



The estimate grew with the passage of time, and by 2012, the official estimate for a scaled back rail system was \$5.2 billion. That’s the year of the Full Funding Grant Agreement in which the FTA agreed to provide \$1.55 billion to the City, in installments, and the City agreed to build a 20-mile, 21-station, elevated rail line, running from East Kapolei to Ala Moana Center.

To pay for rail, the Legislature and City Council approved a temporary 0.5% excise surtax (i.e., over and above the permanent 4% general excise tax) that was supposed to expire in 2022. But because the City’s cost estimate continued to grow, the legislature had to extend the expiration date.<sup>14</sup>

In 2015, Mayor Caldwell assured legislators and taxpayers that the City was finally in control of costs, and that a five-year extension to 2027 would be enough for the City to complete the project, as planned.<sup>15</sup> Caldwell continued to provide assurances until mid-2016, when the project’s oversight contractor made public that the project was at least five years behind schedule and could never be completed without at least several billion dollars in additional

<sup>14</sup> Gordon Pang, Mayor signs 5-year extension of tax surtax for rail project, Honolulu Star-Advertiser, Feb. 1, 2016, at <http://www.staradvertiser.com/2016/02/01/breaking-news/mayor-signs-5-year-extension-of-tax-surtax-for-rail-project/>.

<sup>15</sup> The extension was expected to generate an additional \$1.2 billion, which would be more than enough since the cost estimate at that time--\$6.0 billion—was only \$0.8 billion over the estimate at the time of the Full Funding Grant Agreement. See this video of Mayor Caldwell’s assurances: <https://www.youtube.com/watch?v=BTYoRRfZ26o>. Earlier assurances are cringe-worthy when viewed with the clarity hindsight provides: See, e.g., Don Horner’s 6-minute presentation on the cost of rail construction at <https://vimeo.com/9369308>.

funding.<sup>16</sup> This prompted the FTA to stop making payments to the City and to raise the possibility of someday demanding a return of all the payments previously made.<sup>17</sup>

The City immediately raised its baseline cost estimate to \$8.1 billion, and increased the upper-bound number to \$10.8 billion. The upper-bound number is an amount that supposedly has no more than a 10% chance of ever being reached. The FTA gave the City time to lobby the legislature for the needed funding.<sup>18</sup> The 2017 session ended without a bill, but the legislature agreed to hold a special session in late August to try to reach agreement on a funding bill.<sup>19</sup>

The City's recovery plan<sup>20</sup> lays out what it<sup>21</sup> calls Plan A, which is to finish construction, as planned, without cutting any corners. The City acknowledges the possibility of having to pursue what it calls Plan B:

"Plan B" is the build-to-budget option, describing the process the City will undertake to deliver a transit system with seeming independent utility within the Project's existing budget. Plan B necessitates the City to defer stations, defer other Project components, and only construct the alignment as far as the Downtown Station. Plan B consists of the design and construction of an 18-mile grade separated fixed rail system from a terminus at East Kapolei Station in the west towards an eastern terminus at Downtown Station, near the Aloha Tower.<sup>22</sup>

The City's Plan B is by its own admission unworkable. According to the City, "there are simply no funds ... to make the Plan B option viable."<sup>23</sup> In other words, the City is telling FTA that Plan A is the only workable option ... yet in the next breath it says it's \$3 billion short of the money needed for Plan A. Meanwhile, the Chairman of the University of Hawaii's Department of

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<sup>16</sup> See, e.g., Mileka Lincoln, HART Chair: New \$8.1B projection for rail project could lead to shortened route, Hawaii News Now, May 16, 2016, at <http://www.hawaiinewsnow.com/story/31988947/hart-chair-says-estimates-raising-costs-to-81-billion-may-led-to-shortened-rail-route>.

<sup>17</sup> The FTA also "cautions the City to refrain from any procurements or other actions that would foreclose viable options for maximizing Project benefits or prejudice FTA's decision on a Recovery Plan."

<sup>18</sup> Available at <http://hartdocs.honolulu.gov/docushare/dsweb/Get/Document-19327/20160930-hart-interim-plan.pdf>.

<sup>19</sup> Rick Daysog, Rail deal collapses as House, Senate disagree on how to fund it, Hawaii News Now, May 2, 2017, at <http://www.hawaiinewsnow.com/story/35321339/new-rail-deal-slashes-hotel-tax-increase>; Lawmakers apologize after session ends with no rail deal; no talks set, May 4, 2017; Cathy Bussewitz, Mayors Ask to Extend Hawaii Legislative Session to Fund Rail, U.S. News, May 3, 2017, at <https://www.usnews.com/news/best-states/hawaii/articles/2017-05-03/hawaii-lawmakers-disagree-on-funding-for-rail>; Marcel Honore, Ige rejects 4 mayors' request to extend legislative session to deal with rail, Honolulu Star-Advertiser, May 3, 2017, at <http://www.staradvertiser.com/2017/05/03/breaking-news/four-mayors-ask-ige-to-extend-legislative-session-to-deal-with-rail/>.

<sup>20</sup> HART Recovery Plan at <http://www.honolulutransit.org/media-center/news/498-hart-recovery-plan>.

<sup>21</sup> For simplicity sake in this speech, I am treating the City and HART as one organization. There are important differences between the two, but the points I'm making tonight are unaffected by my decision to refer to them as one organization.

<sup>22</sup> Page 65 of HART Recovery Plan at <http://www.honolulutransit.org/media-center/news/498-hart-recovery-plan>.

<sup>23</sup> See <http://hartdocs.honolulu.gov/docushare/dsweb/Get/Document-20510/20170428-hart-recovery-plan.pdf>.

Environmental and Civil Engineering, Panos Prevedouros, thinks the city is at least \$6 billion short, and that the exact amount of the City's shortfall is not currently knowable.

The point for now is that the City has offered up only Plan A; its Plan B is a non-starter by its own admission. To have a viable Plan B for comparison purposes, I will assume that the City would produce an operating rail system, but to stay within budget it would have to end at Middle Street.

I also will be referring to a Plan C in my remarks tonight—it boils down to pulling the plug on rail.

My overarching message tonight is that the decisionmakers<sup>24</sup> should determine why costs have skyrocketed and also engage in forward-looking cost-benefit analysis *before* deciding which plan—A, B, or C—makes the most sense.<sup>25</sup> By forward-looking, I'm suggesting that the decisionmakers avoid falling prey to the sunk-cost fallacy—i.e., thinking that the City has already spent too much, to stop now.<sup>26</sup>

Such cost-benefit analysis would logically begin with decisionmakers addressing certain basic questions, such as:

- How much more money would it take to pursue Plan A?
- What benefits would derive from Plan A, that would not otherwise be achievable?
- Who would provide the additional funding, and at what costs (e.g., political, economic, environmental)?

As mentioned, the City raised its baseline cost estimate to \$8.1 billion in mid-2016. Since then, it has upped that number to \$9.5 billion.<sup>27</sup> Mayor Caldwell later suggested that the number be rounded up to \$10 billion.<sup>28</sup> He has stressed that this number includes some financing costs, as though those don't count as much as do the direct costs of construction. Caldwell's latest number is approximately \$7 billion more than the amount of money already sunk into the

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<sup>24</sup> When I refer to the decision-makers tonight, I'll be referring primarily to the legislature and city council, because they hold the purse strings. If the City is to pursue Plan A, it will only be because the legislature or city council agreed to raise the additional tax revenue needed to finish rail as originally envisioned.

<sup>25</sup> See Prevedouros, Roth & Slater, Rail project audit needs to be comprehensive, independent, Honolulu Star-Advertiser, Aug. 24, 2017, at <http://www.staradvertiser.com/2017/08/24/editorial/island-voices/rail-project-audit-needs-to-be-comprehensive-independent/>.

<sup>26</sup> See Johnson, Honolulu's Runaway Rail Project and the Fallacy of Sunk Costs, Civil Beat, June 20, 2016, at <http://www.civilbeat.org/2016/06/honolulus-runaway-rail-project-and-the-fallacy-of-sunk-costs/>.

<sup>27</sup> See [http://randallroth.com/files/Cost%20could%20reach%20\\$9.5B.jpg](http://randallroth.com/files/Cost%20could%20reach%20$9.5B.jpg); see also Gina Mangieri, HART tells feds cost of rail could hit \$9.5 billion, KHON TV News, Dec. 2, 2016, at <http://khon2.com/2016/12/02/city-says-cost-of-rail-could-hit-9-5-billion/>.

<sup>28</sup> Rick Daysog, After much debate lawmakers reach deal on funding for rail project, Hawaii News Now, April 28, 2017, at <http://www.hawaiinewsnow.com/story/35280732/house-issues-counter-proposal-to-fund-honolulu-rail-project>.

project, and \$3 billion more than the total amount of revenue that the half-percent rail surtax is expected to generate before expiring in 2027. The city's upper-bound estimate is still \$10.8 billion,<sup>29</sup> and there are reasons to question it. For example, the upper-bound number less than three years ago was only \$7.6 billion.<sup>30</sup> As mentioned above, Professor Prevedouros thinks the City's latest estimate is at least \$3 billion too low.

Even if one were to ignore the entire cost overrun, the per-capita cost of Honolulu's rail system would still be dramatically higher than that of any other city.<sup>31</sup> Part of the reason is the high cost of building elevated rail on Oahu, particularly from Chinatown to Ala Moana Center. The rest of the explanation is our relatively low population: No city the size of Honolulu has ever tried to build a rail system. The next smallest metropolitan area has a population four times larger than Honolulu's.

I occasionally encounter a rail supporter who seems to think that the per-capita cost is a meaningless number. Some of them have expressed confidence that the City of Honolulu can afford to build and operate an elevated rail line, regardless of what the final cost might be.

But if there's no per-capita cost beyond which heavy rail ceases to make sense, why not put the entire system underground? That's totally doable from an engineering standpoint.<sup>32</sup> And if per-capita costs are irrelevant, why in the name of equity aren't rail supporters demanding elevated rail systems for the neighbor islands? The answer is that per-capita cost does matter.

In addition to direct and indirect construction costs, the decisionmakers need to consider the inevitable *non*-construction costs of rail. The City has acknowledged that the annual cost of operating and providing current maintenance on a Plan A rail line would cost \$130 million each

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<sup>29</sup> And that's just to reach Ala Moana. Imagine for a moment what will happen if rail reaches Ala Moana and it turns out that the City's projections for ridership are as inaccurate as they have been for construction costs. Rail supporters would argue that the City had to add spurs to Manoa and Waikiki, to avoid wasting all the money already spent. No city has resisted that; ironically, it's been easier in cities with exceptionally poor ridership results.

<sup>30</sup> See Star-Advertiser article at <https://www.pressreader.com/usa/honolulu-star-advertiser/20160819/281487865758849>: The August 2014 FTA risk assessment put rail's "upper-bound" price tag—the most that rail could cost—at just under \$7.6 billion.

<sup>31</sup> See generally, Panos Prevedouros, Live From Honolulu: HART Rail, A Megaproject Failure in the Making, Jan. 27, 2016, at <http://www.newgeography.com/content/005156-live-honolulu-hart-rail-a-megaproject-failure-making>; Adam Nagourney, Hawaii Struggles to Keep Rail Project From Becoming a Boondoggle, New York Times, Mar. 20, 2016, at [http://www.nytimes.com/2016/03/21/us/hawaii-struggles-to-keep-rail-project-from-becoming-a-boondoggle.html?\\_r=0](http://www.nytimes.com/2016/03/21/us/hawaii-struggles-to-keep-rail-project-from-becoming-a-boondoggle.html?_r=0); see also <http://honolulutraffic.com/JTW9000B.pdf> and <http://honolulutraffic.com/honjtw.htm>; <http://www.civilbeat.org/2016/01/10-billion-the-ultimate-price-tag-for-honolulu-rail/>; and [http://www.honolulutraffic.com/Handout\\_110213\\_H.pdf](http://www.honolulutraffic.com/Handout_110213_H.pdf).

<sup>32</sup> Tunnels from Dillingham through the downtown area were considered at the time of the EIS but rejected because they would have added another \$1 billion to the price tag, according to the EIS.

year, expressed in current dollars.<sup>33</sup> Others, even rail supporters, have cited higher numbers.<sup>34</sup> Regardless of the exact amount, the City has not yet said from where that money would come.

The City has also said nothing about the inevitable refurbishment and replacement costs. Experience elsewhere shows that steel-on-steel rail systems start experiencing such costs almost from day one, and that major refurbishment is required every decade or so. There currently is an eye-popping backlog of such costs across the country.<sup>35</sup> And although most transit trips in the U.S. are by bus, 75% of the backlog pertains to rail.<sup>36</sup> It's gotten so bad that the FTA now strongly recommends that cities not build or expand rail systems unless they contribute annually to a sinking fund, dedicated to keeping their rail system safe and reliable.

Based on the rate of deterioration being experienced with rail systems elsewhere, the minimum annual contribution to the sinking fund here would need to be \$100 million.<sup>37</sup> And anyone who thinks our rail system would hold up better than steel-on-steel systems have fared elsewhere, recall that Aloha Stadium was made with "non-rusting" steel ... that quickly rusted.<sup>38</sup>

If you are keeping track, that's \$100+ million for operations and day-to-day maintenance, and another \$100+ million for the sinking fund, to ensure a safe and reliable rail line with the passage of time. So, the City will need \$200+ million each year, over and above whatever construction ends up costing, and it has not yet said where any of it would come from. Hopefully our decisionmakers will ask themselves, what would be the consequences of building Plan A rail if the City cannot find the extra \$200+ million each year once construction has ended?

Goodness knows, there are many rail cities where the answer to such a question is playing out before people's eyes. A recent Washington Post article called the Washington D.C.'s Metro system "dysfunctional," and proceeded to describe some of the obvious problems, including

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<sup>33</sup> See Cayetano ad asks Trump to halt federal rail funds, Honolulu Star-Advertiser, Apr. 22, 2017; also see Table 3-2, page 27, Final Financial Plan for Full Funding Grant Agreement, available at <https://lntvkhon.files.wordpress.com/2016/12/hrtp-ffga-draft-financial-plan-december-2016-final-version.pdf>.

<sup>34</sup> See, e.g., Daniel Niepow, Honolulu leaders aim to curb cost overruns, promote benefits of city's first passenger-rail system, Progressive Railroading, February, 2016, at [http://www.progressiverailroading.com/passenger\\_rail/article/Honolulu-leaders-aim-to-curb-cost-overruns-promote-benefits-of-citys-first-passenger-rail-system--47243](http://www.progressiverailroading.com/passenger_rail/article/Honolulu-leaders-aim-to-curb-cost-overruns-promote-benefits-of-citys-first-passenger-rail-system--47243).

<sup>35</sup> <http://randallroth.com/files/Administrator%20Peter%20Rogoff%20Remarks%20at%20the%20Boston%20Reserve%20Bank%20updated%20to%20March%202016.pdf>.

<sup>36</sup> See <https://www.transit.dot.gov/about/speeches/administrator-peter-remarks-boston-reserve-bank-next-stop-national-summit-future>.

<sup>37</sup> See generally Prevedouros, Slater & Roth, What Do We Do About The Honolulu Rail Project? Civil Beat, Oct. 3, 2016, at <http://www.civilbeat.org/2016/10/what-do-we-do-now-about-the-honolulu-rail-project/>; also see <https://www.transit.dot.gov/about/speeches/administrator-peter-remarks-boston-reserve-bank-next-stop-national-summit-future> and [http://www.honolulutraffic.com/Admin\\_Record/Administrative\\_Record\\_rev\\_2.28.12/Administrative\\_Record\\_Volumes\\_1-11/Vol010\\_AR00138146/0001\\_AR00138146/AR00140569.pdf](http://www.honolulutraffic.com/Admin_Record/Administrative_Record_rev_2.28.12/Administrative_Record_Volumes_1-11/Vol010_AR00138146/0001_AR00138146/AR00140569.pdf).

<sup>38</sup> Craig Gima, Stadium corrosion crates a \$129M safety concern, Honolulu Star-Bulletin, Jan. 27, 2006 at <http://archives.starbulletin.com/2006/01/27/news/story03.html>; see also The "Aloha Stadium Problem," Hawaii Reporter, Feb. 6, 2003.

dirty rail cars, unpredictably long waits on overloaded platforms, 10-minute stops in pitch-dark between subway stations for no apparent reason, lines closed for emergency maintenance, and on one occasion an unannounced day-long closing of the *entire* system.<sup>39</sup> That last one was for emergency safety inspections following an electrical malfunction that caused serious injury to 70 riders, one of whom died.

I occasionally hear people say that rail needs to extend beyond Ala Moana Center, at least to Manoa, and probably to Waikiki, too. Given the costs described above, some would consider it nonsense to talk about adding spurs. But no city has built a rail line and then not added spurs sometime later. Ironically, a major selling point for doing so has been low ridership on the initial line—that is, so much money has already been spent on the main line, that it only makes sense to spend a bit more, so that the system can work properly.<sup>40</sup>

If it feels like the City may be past a point of no return after spending \$3 billion, just imagine how difficult it would be to just say no after spending \$13 billion!

Rail would cost more than just money, and some of the non-monetary costs could indirectly add to the monetary costs. For example, it's been written that our state's most valuable and fragile economic asset is its natural beauty, upon which Hawaii's tourism economy relies.<sup>41</sup> If so, perhaps economy-conscious decisionmakers should take an extra-close look at the aesthetics of rail. The Outdoor Circle has described elevated rail as a "scar" on the face of our beautiful island. At its best, rail adds nothing to our Hawaiian sense of place.<sup>42</sup>

The local branch of the American Institute of Architects was so taken aback by elevated rail's ugliness that they created renderings that they believe are more accurate than what the City has provided to the public.<sup>43</sup> Most audiences audibly gasp when shown these as part of a PowerPoint presentation.

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<sup>39</sup> Nicholas Fandos, Washington Faces Breakdowns and Paralysis, and That's Just the Metro, Washington Post, Nov. 7, 2016, p. A10.

<sup>40</sup> See generally, Before-and-After Studies of New Starts Projects, Report to Congress, Dec. 2013, at [https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FY2013\\_Before\\_and\\_After\\_Studies\\_Report\\_to\\_Congress\\_Final.pdf](https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FY2013_Before_and_After_Studies_Report_to_Congress_Final.pdf); also see Laura Nelson and Dan Weikel, Billions spent, but fewer people are using public transportation in Southern California, Los Angeles Times, Jan. 27, 2016, at <http://www.latimes.com/local/california/la-me-ridership-slump-20160127-story.html>; and Joe Linton, What Factors Are Causing Metro's Declining Ridership? Los Angeles Times, Jan. 29, 2016, at <http://la.streetsblog.org/2016/01/29/what-factors-are-causing-metros-declining-ridership-what-next/>.

<sup>41</sup> Ctr. for Bio-Ethical Reform, Inc. v. City & County of Honolulu, 345 F. Supp. 2d 1123.

<sup>42</sup> See Peter Apo, What does sense of place mean to you? At <http://www.moolelo.com/Sense-of-Place.pdf>.

<sup>43</sup> The renderings can be viewed at <http://randallroth.com/files/Rail%20Renderings%20-%20Before%20and%20After.pdf>; Also see the AIA's Position on Light Rail for Honolulu, at <http://www.aiahonolulu.org/?434>.



The City of Honolulu has also played down the fact that steel-on-steel, elevated systems make uniquely irritating sounds, particularly as the cars accelerate and decelerate from 0 to 60 and back to 0 between stations. The so-called ambient sound issue has been a sore spot in every city with an elevated rail system. The decisionmakers need to add this to their cost-benefit analysis.

I also hope that our decisionmakers will seriously consider rail's impact on burial sites and historical structures, before deciding among Plans A, B, and C. In my opinion, the City has exhibited a cavalier attitude about these issues, never doing more than the absolute minimum required by law, and sometimes significantly less. The FTA expressed similar concerns with respect to burials.<sup>44</sup>

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<sup>44</sup> We now know that FTA officials noted in inter-office email that the City had put itself in a "pickle" by setting unrealistic start dates for construction, and starting construction "without authority despite warnings that it would create an ineligibility for the project." FTA officials also commented in email on the City's "lousy practices of public manipulation," willingness to "deceive with no remorse," use of "inaccurate statements," and its culture of "never enough time to do it right, but lots of time to do it over." See, e.g., [http://www.honolulutraffic.com/Admin\\_Record/Administrative\\_Record\\_rev\\_2.28.12/Administrative\\_Record\\_Volumes\\_1-11/](http://www.honolulutraffic.com/Admin_Record/Administrative_Record_rev_2.28.12/Administrative_Record_Volumes_1-11/), [http://www.honolulutraffic.com/Admin\\_Record/Administrative\\_Record\\_rev\\_2.28.12/Administrative\\_Record\\_Volumes\\_1-11/Vol010\\_AR00138146/0003\\_AR00146569/AR00150124.pdf](http://www.honolulutraffic.com/Admin_Record/Administrative_Record_rev_2.28.12/Administrative_Record_Volumes_1-11/Vol010_AR00138146/0003_AR00146569/AR00150124.pdf), and [http://www.honolulutraffic.com/Admin\\_Record/Administrative\\_Record\\_rev\\_2.28.12/Administrative\\_Record\\_Volumes\\_1-11/Vol010\\_AR00138146/0003\\_AR00146569/AR00150121.pdf](http://www.honolulutraffic.com/Admin_Record/Administrative_Record_rev_2.28.12/Administrative_Record_Volumes_1-11/Vol010_AR00138146/0003_AR00146569/AR00150121.pdf).

Due to time constraints, I need to shift gears now and talk a bit about the putative benefits of having a Plan A rail system. Eventually I'll say a few things about cost-benefit analysis for Plan B and Plan C, too.

When I've asked people what they consider the primary reason for rail on Oahu, most have cited the need to reduce traffic congestion. Each time, it's been clear that they were talking about a reduction in the *existing* level of traffic congestion. This is understandable because Mayor Hannemann—and later mayors Carlisle and Caldwell—reinforced that misconception repeatedly. Hannemann, for example, described the public as “tired of being stuck in traffic,” and “wanting action, and wanting it now.”<sup>45</sup> The take-home message was that traffic congestion has become intolerable for commuters on the west side, and that the City is finally going to *do* something about it.<sup>46</sup>

A Honolulu Advertiser/Ward Research poll, taken a few months before the 2008 ballot referendum on rail, asked people if Oahu needed rail to reduce traffic—which at least implied that rail *would* reduce the existing level of traffic congestion. Three out of four responded in the affirmative.<sup>47</sup> Two years later, the City's Director of Transportation acknowledged publicly, “... traffic congestion will be worse in the future with rail than what it is today...”<sup>48</sup> Anyone who was surprised by that, shouldn't have been. Reduced traffic congestion was not even included on the list of rail's stated purposes in its Environmental Impact Statement.<sup>49</sup>

The City claims on the HART website that elevated rail will reduce traffic congestion by as much as it is reduced when the schools are not in session.<sup>50</sup> That's sounds great ... but it isn't. Here's the trick: The City is comparing the level of congestion expected in 2030 if rail is built, to the level of congestion expected in 2030 if the City does nothing to alleviate traffic congestion, but instead of stating that traffic is projected to be 21 percent worse than today if we do build rail,

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<sup>45</sup> Mayor Hannemann's 2008 State of the City Address, “I've said time and time again that traffic congestion is the most significant challenge to our quality of life ... the fixed guideway presented the most effective means of relieving traffic congestion and accommodating the anticipated growth in West and Central Oahu... The bottom line is the people of Oahu are tired of studies and being stuck in traffic. They want action and they want it now.” Available at <http://www.hawaiinewsnow.com/story/7906671/mayor-mufi-hannemanns-state-of-the-city-speech>.

<sup>46</sup> See Misrepresentations outside of the Draft EIS at [http://www.honolulutraffic.com/DEIS\\_Comments8\\_VII.pdf](http://www.honolulutraffic.com/DEIS_Comments8_VII.pdf).

<sup>47</sup> Three months prior to the rail vote, 73 percent of Oahu residents agreed with the statement, “We need a light rail system in order to reduce traffic congestion and commute times along H-1.” Ward Research, Hawaii Poll, July 2008, question at [http://www.honolulutraffic.com/HADV\\_poll\\_p9.pdf](http://www.honolulutraffic.com/HADV_poll_p9.pdf).

<sup>48</sup> [http://www.honolulutraffic.com/City\\_Response\\_DEIS\\_comments.pdf](http://www.honolulutraffic.com/City_Response_DEIS_comments.pdf) pp. 24 & 25. See also p. 1252 in Appendix A of the Final EIS at <http://www.honolulutraffic.com/FinalEIS/AppendixA.pdf>. The full quote is:

“You are correct in pointing out that traffic congestion will be worse in the future with rail than what it is today without rail, and that is supported by the data included in the Final EIS. In fact, projections suggest that traffic conditions will be worse in 2030 under any circumstances. ... The comparison that is key to the Project is that rail will improve conditions compared to what they would be if the Project is not built.”

<sup>49</sup> See [http://www.honolulutraffic.com/FEIS\\_Purpose\\_Need.pdf](http://www.honolulutraffic.com/FEIS_Purpose_Need.pdf); “[T]he purpose of the Project is to provide an alternative to the use of congested highways for many travelers.” See also, The congestion discussion is over; it IS going to be far worse with rail, at [http://honolulutraffic.com/Congestion\\_2.pdf](http://honolulutraffic.com/Congestion_2.pdf).

<sup>50</sup> From the HART website: “Rail will eliminate an estimated 40,000 car trips from our congested streets and highways. If you know what traffic is like when UH and private schools are out for the summer, you have an idea of the difference rail will make.” Available at <http://www.honolulutransit.org/inform/rail-facts?catid=6>.

the City implies that today’s level of traffic congestion will improve if we build rail. Besides, it’s totally unfair to compare rail’s project impact to doing nothing to reduce traffic congestion. Nobody I know thinks the City should do nothing about traffic congestion. High profile rail critics like Ben Cayetano, Cliff Slater, and Panos Prevedouros have all expressed strong support for bold action designed to reduce the existing level of traffic congestion.

**The following table 3-12 is from the Final Environmental Impact Statement:**

**Table 3-12** Islandwide Daily Trips by Mode—Existing Conditions, No Build Alternative, and Project

Trips by Mode	2007 Existing Conditions		2030 No Build Alternative		2030 Project	
	Daily Trips by Mode	Percentage of Total Daily Trips	Daily Trips by Mode	Percentage of Total Daily Trips	Daily Trips by Mode	Percentage of Total Daily Trips
Residents	Base		+23%		+21%	
Automobile—private	2,291,800	82.1%	2,815,800	81.5%	2,767,600	80.1%
Transit	166,400	6.0%	205,400	5.9%	255,500	7.4%
Bicycle and walk	333,000	11.9%	432,800	12.5%	431,700	12.5%
<b>Total Daily Trips by Residents</b>	<b>2,791,200</b>	<b>100%</b>	<b>3,454,000</b>	<b>100%</b>	<b>3,454,800</b>	<b>100%</b>

Panos has laid out a series of strategies for significantly reducing the *current* level of traffic congestion. These include installing flyovers and bypasses in chokepoint areas like the Middle Street merge; adding new contra-flow and bus-on-shoulder options; adding new traffic lanes to existing roads; and expanding Honolulu’s bus system, such as by increasing the number of express buses that go where commuters want to go ... rather than eliminate most of them, as is part of the current rail plan.<sup>51</sup> These strategies are doable from an engineering standpoint, and that all of them could all be accomplished for less than half the money the City would save by selecting Plan C instead of Plan A, according to Panos.

Even the 2% difference (compared to doing nothing) relies on the City’s rail ridership projection of 116,300 riders daily. Data from other cities with rail suggest this estimate is wildly optimistic.<sup>52</sup>

Many people in Honolulu probably just assume that the addition of a rail option to the current public transportation system would invariably increase the percentage of public transportation users on Oahu. In most of the rail regions, however, per-capita transit ridership *declined* when rail was added.<sup>53</sup> Consider these excerpts from a Daily Beast article:

<sup>51</sup> See <http://fixoahu.blogspot.com/>.

<sup>52</sup> Cliff Slater and Randall Roth, The Impending Honolulu Rail Ridership Debacle, Civil Beat, Feb. 13, 2017, at <http://www.civilbeat.org/2017/02/the-impending-honolulu-rail-ridership-debacle/>.

<sup>53</sup> See, e.g., Yonah Freemark, Have U.S. Light Rail Systems Been Worth the Investment? The Atlantic, Apr. 10, 2014 (“Despite modest success, most systems have neither increased mass transit commute share nor the vitality of city centers”) at <http://www.citylab.com/commute/2014/04/have-us-light-rail-systems-been-worth->

“Since 1990, Los Angeles has opened seven new urban metro and light-rail lines ... [yet bus and rail combined ridership is now] at least 15 percent below 1985 levels, when there was only bus service and when Los Angeles County had about 20 percent fewer people. No surprise, then, that according to a recent USC study, the new lines have done little or nothing to lessen the area’s infamous congestion.

“In Houston, 3.2 of residents commuted to work in 2000, before the city’s \$1.5 billion new light-rail system opened. In 2015, the share of commuters had dropped by a third, to 2.2 percent.

“With the opening of MARTA in 1979, Atlanta built the third largest new metro system (fully grade separated rail) in the United States. Since then, transit share has plummeted—from 6.8 percent in 1980 to 3.1 percent in 2015, 40 percent below the average national transit market share. Traffic congestion more than doubled over the same time span.

“Even urban planning model Portland, which opened its MAX light rail system in 1986, has seen its transit market share drop from 7.9 percent in 1980 to 6.9 percent in 2015, only modestly above the national transit-riding average.

“But the award for the country’s most absurd project should go to the Honolulu elevated rail line. In a metropolitan area of barely a million people, the attempt to build a 20-mile elevated train has increased in cost from \$5 billion to an estimated \$10 to \$13 billion, with the feds chipping in \$1.6 billion.”<sup>54</sup>

On Oahu, the percentage of commuters using public transit has trended downward since the 1980s. Even the number of transit commuters has remained the same, despite large increases in the island’s general and work-force populations. The peak year for the number of public transit users on Oahu was 1984.<sup>55</sup> The percentage currently commuting by bus is 6.0%. If the City’s optimistic ridership projects were to come true (an assumption I question, below), the percentage would increase to 7.4%.<sup>56</sup> If ridership is significantly lower, as independent experts have predicted, post-rail transit ridership could end up being lower than the pre-rail rate, just as has happened in most rail cities.

Those who think the bus-plus-rail rate must always be higher than the rate prior to the addition of rail, are perhaps assuming rail would not adversely affect the existing bus system. But if a

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[investment/8838/](#); see also, Randy O’Toole, Defining Success: The Case against Rail Transit, Mar. 24, 2010, Table 2, available at [http://www.honolulutraffic.com/OTooles\\_Case\\_Against\\_Rail.pdf](http://www.honolulutraffic.com/OTooles_Case_Against_Rail.pdf).

<sup>54</sup> Joel Kotkin & Wendell Cox, Will Donald Trump Expose America’s Great Mass Transit Hoax? The Daily Beast, Aug. 11, 2017, at <http://www.thedailybeast.com/will-donald-trump-expose-americas-great-mass-transit-hoax>.

<sup>55</sup> See, e.g., <http://www.honolulutraffic.com/sec18updateTo05.pdf>, <https://data.hawaii.gov/Transportation-Facilities/Table-18-25-PUBLIC-TRANSIT-FOR-OAHU-1993-TO-2012/wzks-x2br/data>, and

<http://www.honolulutraffic.com/marketshare.htm>. There have been large increases in the number and percentage of commuters who rely on ride sharing or telecommuting.

<sup>56</sup> See Table 3-12 of the Final Environmental Impact Statement for Rail on Oahu, available at [http://www.honolulutraffic.com/FinalEIS/Chapter\\_3.pdf](http://www.honolulutraffic.com/FinalEIS/Chapter_3.pdf).

Plan A rail system gets built, many of the people who currently are commuting by bus will find themselves worse off. For example, virtually all the 34 express buses, which currently take commuters directly to where they want to go, will be turned into “feeders,” that go no further than the nearest train station. There also is the issue of there not being enough money to maintain a high-quality bus system once the City starts to incur unavoidable post-construction costs, as described above.

“This planning really starts to fall apart when the cost overruns on construction, and then the costs of operations are higher than expected, so the next step is to increase fares – which reduces ridership – and cut bus service (after all, some of the former bus trips are now on rail, plus there are fewer bus riders overall).

Also, when there is a shift from a bus system to a rail system, parts of the bus system get shifted from line haul to feeder/distributor, which makes it slower and less convenient for the pre-existing bus passengers who aren’t taking rail.... A very unfortunate example of how this works is Los Angeles. While rail ridership is up (over \$16 billion for rail construction for what has been completed, far more for what is now in progress), and more rail lines are being built and planned, total ridership is down. In fact, for 44 consecutive months, monthly ridership is down compared to the same month the previous year—by an average of over 70,000 daily passengers—and there is no sign that it is going to stop.... [T]otal transit utilization per capita in SoCal, measured by linked transit trips per capita, is down about one-third.<sup>57</sup>

Based on their interview of Roger Morton, who heads up TheBus, KHON News recently reported that bus ridership on Oahu has dropped precipitously: “It’s gone from a steady slip to a steep drop recently, a range of as much as 10 percent, or more than 1 million fewer rides a month, compared to a couple years prior.”<sup>58</sup>

Several of the other touted benefits of a Plan A rail system are equally suspect. For example, Mayor Hannemann predicted that rail would create 10,000 jobs during each year of construction. The actual count has been slightly more than one-tenth of the promised number, and even that may overstate rail’s net impact on local jobs. The University of Hawaii’s Economics Research Organization (UHERO) pointed out the silliness of this claim: “Proceeding with inefficient projects typically shrinks the economy, reduces its growth rate, and decreases employment.”<sup>59</sup> When the jobs lost because of higher business taxes are also considered, the net impact is a negative 1,000 jobs each year, per these local economists.

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<sup>57</sup> Email from Thomas A. Rubin, Aug. 19, 2017, available from author.

<sup>58</sup> Gina Mangieri, “Could recent plunge in public transportation ridership spell trouble for rail?” KHON2 News, Aug. 23, 2017, at <http://khon2.com/2017/08/23/could-recent-plunge-in-public-transportation-ridership-spell-trouble-for-rail/>.

<sup>59</sup> Honolulu Rail Transit: Do the Benefits Justify the Costs? The Economic Research Organization at the University of Hawaii, Feb. 4, 2011, available at [http://www.uhero.hawaii.edu/assets/UHERO\\_Brief\\_Rail.pdf](http://www.uhero.hawaii.edu/assets/UHERO_Brief_Rail.pdf).

The City claims that rail would save energy. But data from the U.S. Department of Transportation indicate that rail on Oahu would consume twice as much per-passenger-mile energy than does our existing bus system. Rail's per-passenger-mile energy use would even be slightly higher than the current per-passenger energy use of those commuters on Oahu who drive to work, alone in their cars.<sup>60</sup>

To portray rail as an energy saver, the City had to assume that our rail system will consume energy on a par with the national average for heavy rail systems. The problem with that assumption is that the national average is heavily skewed by the data from New York City where an off-the-charts ridership levels makes it way more efficient than other places.

If it seems counterintuitive that rail would use more energy per-passenger-mile on Oahu than does a single person in an average car, recall that rail is scheduled to run 20 hours a day but will be busy only during rush hour. Rail cars will be virtually empty many of the 20 hours they are constantly running.

The promised benefits of Transit Oriented Development (TOD) are more difficult to gauge. The basic idea of TOD is that a reliable transit line will catalyze development around the access points. Of course, that will happen only if there are enough people who want to live close to rail stations and businesses that want to locate there.

First, TOD does not require rail, much less elevated rail. What's needed is access to public transit that is dependable, affordable, convenient, and safe. Unlike traffic congestion, access is not a problem in Honolulu.

Second, train stations elsewhere tend to be noisy and relatively high-crime areas. Getting people to live next to them has not been an easy sell, at least not without large government subsidies to the developers. Two Berkeley professors, who happened to be rail supporters, studied BART's impact on development around the stations. To their surprise, it turned out that business and housing developed more in areas of the transportation districts not served by BART, than in those that were.<sup>61</sup>

Just about everyone agrees that developing housing near BART stations [was] a good idea. In practice, it has always been a tough sell. ... Notwithstanding thirty

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<sup>60</sup> See, e.g., Table 2.12 of the Transportation Energy Data Book, Edition 30, Office of Energy Efficiency and Renewable Energy, U.S. Department of Energy, June 2011, at [http://www.honolulutraffic.com/Pages14-18\\_Ed\\_30\\_Ch\\_2.pdf](http://www.honolulutraffic.com/Pages14-18_Ed_30_Ch_2.pdf); also see summary chart at [http://www.honolulutraffic.com/rail\\_energy\\_use.pdf](http://www.honolulutraffic.com/rail_energy_use.pdf).

<sup>61</sup> [Cervero & Landis, Twenty Years of BART: Land Use and Development Impacts](#), 1997 ("Contrary to expectations, we found that population has grown faster away from BART than near it. The Metropolitan Transportation Commission divides the nine-county San Francisco Bay Area into 34 transportation planning superdistricts. In the twenty years since BART opened, population grew 35.2 percent in the 25 superdistricts not served by BART and only 17.1 percent in the nine BART-served superdistricts."), available at <http://www.uctc.net>.

years of demolition and construction, most near-BART housing is what it was and where it was two decades ago<sup>62</sup>.

Finally, if rail is supposed to have developers on Oahu eager to build living and commercial units in and around the rail stations, why have no such plans been announced or incorporated into the design of any of the 21 stations?<sup>63</sup>

The City originally projected an average of 116,300 riders on weekdays. While the actual number cannot be known ahead of time, there are reasons to question this projection. Panos Prevedouros has pointed out that “no modern light rail in the US, even in cities five times bigger than Honolulu, carries more than 38,000.”<sup>64</sup> Recall that metro-light rail systems have a capacity more like light than heavy rail.<sup>65</sup> Actual ridership on relatively recent rail projects around the country has been 59.1% less than was predicted, on average.<sup>66</sup> The table below shows actual ridership for all U.S. rail cities of less than four million population, followed by an outlier: Honolulu’s rail ridership projection:

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<sup>62</sup> Ibid.

<sup>63</sup> See generally, Gene Park, If they build it, will developers come? Honolulu Star-Advertiser, Feb. 20, 2011 (“interest in development so far has been minimal”), at <http://www.staradvertiser.com/2011/02/20/hawaii-news/if-they-build-it-will-developers-come/>.

<sup>64</sup> See Fix Oahu, at <http://fixoahu.blogspot.com/> and Fighting Boondoggles at <http://www4.eng.hawaii.edu/~panos/PDP.ADC2013.pdf>; See also, Kawaguchi, Honolulu Rail—pie in the sky estimates on number of riders, Feb. 12, 2010 (“Even in Houston, where the population is 5 times higher, and the traffic far worse, only 381,000 people ride the rail system”), at <http://www.alohatony.com/blog/honolulu-rail-pie-in-the-sky-estimates-on-number-of-riders1.html>.

<sup>65</sup> See also, Kevin Dayton, Rail costs low-balled, consultant says ... and ridership forecasts are too high, Honolulu Star-Advertiser, Jan. 14, 2012, at [http://www.honolulutraffic.com/SA\\_Rail\\_costs\\_011412.pdf](http://www.honolulutraffic.com/SA_Rail_costs_011412.pdf).

<sup>66</sup> See Table 7: Predicted and Actual Ridership – Forecast vs. Most Recent Actual, listed by current vs. AA/DEIS, at [http://www.honolulutraffic.com/Table\\_7\\_FTA\\_ridership\\_forecast.pdf](http://www.honolulutraffic.com/Table_7_FTA_ridership_forecast.pdf); Also see Don Pickrell, A desire named streetcar: fantasy and fact in rail transit planning, Mar. 22, 1992, at <http://www.honolulutraffic.com/PickrellDesire.pdf>.

City	Population (millions)	Daily rides as of 2015	Miles of rail	Rides per mile	Riders per million pop.
Seattle	3.7	41,000	20.4	2,010	11,081
Minneapolis	3.5	71,400	21.8	3,275	20,400
San Diego	3.3	123,300	53.5	2,305	37,364
Denver	2.8	76,600	48.0	1,630	27,357
St. Louis	2.8	47,600	46.0	1,035	17,000
San Juan	2.6	32,800	10.7	3,065	12,615
Charlotte	2.4	16,700	9.6	1,740	6,958
Portland	2.4	122,900	60.0	2,048	51,208
Pittsburgh	2.4	22,281	26.2	850	9,284
Sacramento	2.3	45,300	42.9	1,056	19,696
San Jose	2.0	33,400	42.2	791	16,700
New Orleans	1.3	22,900	22.3	1,027	17,615
Salt Lake City	1.2	67,300	44.8	1,502	56,083
Buffalo	1.1	17,100	6.4	2,672	15,545
Honolulu	1.0	116,300	20.7	5,618	116,300

The Final EIS forecasts for Honolulu rail and San Juan (which is the only other elevated rail system to be built in recent years) are remarkably similar: 116,300 and 114,492 daily riders respectively. Actual ridership for San Juan turned out to be only 27,567 daily, which was 76 percent less than what had been projected.<sup>67</sup> San Juan’s combined bus and rail ridership declined from 32.6 million the year before rail opened to 26.4 million two years after, and it never recovered.<sup>68</sup> Parsons Brinckerhoff who prepared the Honolulu ridership projection also prepared San Juan’s.

Much of what I have said about a Plan A rail system would also apply to any Plan B option. All that Plan B has going for it is, one, it would not require additional funding;<sup>69</sup> two, it would leave a smaller scar on the face of Oahu; and three, it would avoid the engineering challenges and business disruption between the termination point and Ala Moana Center.

Rail supporters tend not to like Plan B because it would probably get significantly fewer riders than would a Plan A rail line. Our Social Science Association colleague, Fudge Matsuda, has written that stopping the route at Middle Street would “cripple rail.”<sup>70</sup> Ironically, rail opponents also criticize Plan B ... because it would cost at least \$3 billion more than has already been spent, and accomplish little. They would rather see the money spent on a Plan C, which might include use of the existing guideway as part of an affordable and effective bus rapid transit

<sup>67</sup> See [http://www.honolulutraffic.com/NSPA\\_2008\\_Final.pdf](http://www.honolulutraffic.com/NSPA_2008_Final.pdf).

<sup>68</sup> See [http://www.honolulutraffic.com/San\\_Juan\\_riders.pdf](http://www.honolulutraffic.com/San_Juan_riders.pdf).

<sup>69</sup> Mayor Caldwell briefly supported stopping at Middle Street, at least for now, but quickly changed his tune again: <http://www.civilbeat.org/2016/06/hopelessly-over-budget-rail-should-stop-at-middle-street-mayor-says/>.

<sup>70</sup> Fujio Matsuda, Building rail from Kapolei to Manoa meets intention of Oahu General Plan, Honolulu Star-Advertiser, May 29, 2016, at <http://www.staradvertiser.com/2016/05/29/editorial/building-rail-from-kapolei-to-manoa-meets-intention-of-oahu-general-plan/>.

system that, together with other congestion-reducing strategies mentioned above, would provide much-needed relief for transit users and others as well.<sup>71</sup>

Like most rail critics, I prefer Plan B to Plan A. But the least unattractive of the available options is Plan C. In other words, many of us have backed into our support for Plan C, somewhat like many people reportedly backed into their eventual choice for president last year. Sometimes there simply isn't an attractive option.

In any event, our decisionmakers should attempt to figure out what's gone wrong thus far. Making mistakes can be bad, but repeatedly making the exact-same mistakes would be inexcusable. So, for example, why have costs increased so dramatically, quickly, and (seemingly) unexpectedly?

Some people have blamed those of us who sued the City. If they are right, then it's possible that the City and its contractors knew what they were doing, and would have produced a good outcome, had I and others not sued. To understand why I don't believe that is true, it helps to remind ourselves that there were two lawsuits that attempted to stop rail. The one in federal court briefly affected the City's ability to buy land in the downtown segment, but had absolutely no impact on rail construction or construction bidding.<sup>72</sup> The City eventually acknowledged that this lawsuit increased rail costs by less than one-tenth of one percent.<sup>73</sup>

The other lawsuit was brought in state court by Paulette Kaleikini, because the City had started construction without first conducting an archaeological study, as is required by law. A unanimous state Supreme Court ordered construction stopped until the City completed the study ... and that took 13 months, during which time the construction market tightened noticeably. But blaming Ms. Kaleikini for that 13-month delay would be comparable to blaming an innocent victim for seeking a restraining order against the guilty party.<sup>74</sup> The lesson from that debacle is the City and its contractors either did not know the applicable law, or simply ignored it in a rush to get construction beyond the proverbial point of no return.

While the federal lawsuit did not stop rail, it gave the plaintiffs access to FTA's internal email.<sup>75</sup> Inter-office chitchat referred to the City's "lousy practices of public manipulation," use of "inaccurate statements," culture of "never [having] enough time to do it right, but lots of time to do it over," and the observation that the City had put

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<sup>71</sup> See generally, Prevedouros drawings at <http://fixoahu.blogspot.com/2016/06/making-most-of-rail-fiasco.html>.

<sup>72</sup> See, e.g., <http://randallroth.com/files/Rail%20Appeal.pdf>.

<sup>73</sup> See, e.g., <http://randallroth.com/files/Cost%20of%20Litigation%20and%20Delays.png>.

<sup>74</sup> We now know that FTA officials noted in inter-office email that the City had put itself in a "pickle" by setting unrealistic start dates for construction, and starting construction "without authority despite warnings that it would create an ineligibility for the project." FTA officials also commented in email on the City's "lousy practices of public manipulation," willingness to "deceive with no remorse," use of "inaccurate statements," and its culture of "never enough time to do it right, but lots of time to do it over."

<sup>75</sup> See, e.g., [http://www.honolulutraffic.com/Admin\\_Record/Administrative\\_Record\\_rev\\_2.28.12/Administrative\\_Record\\_Volumes\\_1-11/](http://www.honolulutraffic.com/Admin_Record/Administrative_Record_rev_2.28.12/Administrative_Record_Volumes_1-11/).

itself in a “pickle” by setting unrealistic start dates for construction, and concern about the City’s “casual treatment of burials.”<sup>76</sup>

At various times, the City has blamed skyrocketing costs on construction-cost escalations, but construction-cost inflation in the last six years has been less on Oahu than the City’s consultant, Parsons Brinkerhoff, forecast in the Final EIS.<sup>77</sup>

**Exhibit 1: HHCTCP-Specific Cost Escalation Forecast (Table)**

Fiscal Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<b>Labor</b>	4.2%	3.7%	4.1%	4.6%	5.0%	4.0%	4.0%	4.0%	4.0%	5.0%	4.0%
<b>Steel</b>	7.9%	-8.5%	3.9%	6.0%	6.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
<b>Concrete</b>	5.0%	3.0%	4.5%	6.0%	5.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
<b>Other Materials</b>	4.1%	1.9%	1.8%	3.5%	4.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%
<b>ROW</b>	-5.8%	-6.8%	-2.8%	1.2%	3.7%	4.2%	4.0%	4.0%	4.0%	4.0%	4.0%
<b>Construction Equipment</b>	4.2%	1.8%	2.2%	3.5%	3.5%	2.9%	3.1%	3.2%	3.2%	3.1%	3.1%
<b>Vehicles</b>	4.2%	1.8%	2.2%	3.0%	3.0%	2.9%	3.1%	3.2%	3.2%	3.1%	3.1%
<b>Professional Services</b>	1.2%	1.5%	2.0%	2.3%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%

<sup>76</sup> See Prevedouros, Slater & Roth, How to make the best of Honolulu’s rail fiasco, Honolulu Star-Advertiser, June 29, 2016, at <http://www.staradvertiser.com/2016/06/29/editorial/island-voices/how-to-make-the-best-of-honolulus-rail-fiasco/>; See also, [http://www.honolulutraffic.com/Admin\\_Record/Administrative\\_Record\\_rev\\_2.28.12/Administrative\\_Record\\_Volumes\\_1-11/Vol010\\_AR00138146/0003\\_AR00146569/AR00150124.pdf](http://www.honolulutraffic.com/Admin_Record/Administrative_Record_rev_2.28.12/Administrative_Record_Volumes_1-11/Vol010_AR00138146/0003_AR00146569/AR00150124.pdf), See [http://www.honolulutraffic.com/Admin\\_Record/Administrative\\_Record\\_rev\\_2.28.12/Administrative\\_Record\\_Volumes\\_1-11/](http://www.honolulutraffic.com/Admin_Record/Administrative_Record_rev_2.28.12/Administrative_Record_Volumes_1-11/), and [http://www.honolulutraffic.com/Admin\\_Record/Administrative\\_Record\\_rev\\_2.28.12/Administrative\\_Record\\_Volumes\\_1-11/Vol010\\_AR00138146/0003\\_AR00146569/AR00150121.pdf](http://www.honolulutraffic.com/Admin_Record/Administrative_Record_rev_2.28.12/Administrative_Record_Volumes_1-11/Vol010_AR00138146/0003_AR00146569/AR00150121.pdf).

<sup>77</sup> See <http://hartdocs.honolulu.gov/docushare/dsweb/Get/Document-219/AR00041623.pdf> and [files.hawaii.gov/dbedt/economic/data\\_reports/qser/construction-tables.xls](files.hawaii.gov/dbedt/economic/data_reports/qser/construction-tables.xls).

**Table E-7. HONOLULU CONSTRUCTION COST INDEX:  
HIGH-RISE BUILDING**

<i>Year</i>	<i>First Quarter</i>	<i>Second Quarter</i>	<i>Third Quarter</i>	<i>Fourth Quarter</i>	<i>Annual Average</i>
Index Numbers January 1992 = 100					
2009	201.5	199.9	202.8	205.6	202.5
2010	202.3	199.8	202.8	202.8	201.9
2011	205.6	205.2	207.7	208.3	206.7
2012	212.2	211.8	214.0	214.6	213.1
2013	219.4	222.1	226.0	228.4	224.0
2014	233.0	236.1	242.7	245.3	239.3
2015	250.4	245.8	252.4	254.6	250.8
2016	254.8	250.0	257.0	255.9	254.4
2017	256.9	253.0	(NA)	Year-to-Date	254.9
Percentage Change from the Same Period in Previous Year					
2009	2.8	1.6	2.3	0.1	1.7
2010	0.4	-0.1	0.0	-1.4	-0.3
2011	1.6	2.7	2.4	2.7	2.4
2012	3.2	3.2	3.1	3.0	3.1
2013	3.4	4.9	5.6	6.5	5.1
2014	6.2	6.3	7.4	7.4	6.8
2015	7.5	4.1	4.0	3.8	4.8
2016	1.8	1.7	1.8	0.5	1.4
2017	0.8	1.2	(NA)	Year-to-Date	1.0

First Hawaiian Bank has discontinued the update of this index. The Hawaii State Department of Business, Economic Development & Tourism has compiled preliminary estimates beginning with the 1997 fourth quarter and is reviewing the index with the expectation of continuing it.

Source: First Hawaiian Bank and Hawaii State Department of Business, Economic Development & Tourism.

I'll say a few more things about competency in a minute or two, but first an observation about honesty: I'm sometimes asked if I think the City knew ahead of time that rail would cost far more than it had estimated; that there would be far fewer jobs than it had projected; or that ridership is not likely to be nearly as high as the projected number.

I believe the City knew, or should have known, that actual costs would be much higher than projected. Consider, for example, a report commissioned by Gov. Lingle.<sup>78</sup> A highly-regarded team of world experts, known as the Infrastructure Management Group, double-checked the City's cost estimate, which at that time was just over \$5 billion. This independent group came up with much higher numbers, including a baseline estimate of \$7.8 billion, and an upper-bound number was \$10.9 billion. The City immediately trashed the report, calling the estimates ridiculous. But now, more

<sup>78</sup> Analysis and Evaluation of the City and County of Honolulu's proposed High Capacity Rail Transit Project, Dec. 2, 2010, at [http://www.honolulutraffic.com/Final\\_Report\\_Honolulu\\_Rail\\_Transit\\_Financial\\_Plan.pdf](http://www.honolulutraffic.com/Final_Report_Honolulu_Rail_Transit_Financial_Plan.pdf).

than six years later, the City's latest estimates are virtually identical to those of the independent group.

In its report to Gov. Lingle, the group described "extreme difficulty in being able to obtain information from the City, and its consultants, both [of which were] unique in our collective experience, and [a serious hindrance to] our ability to perform the project." And added this:

"A multi-billion-dollar transportation improvement project, particularly one that is proposed to be operated in, and funded by, an urbanized area that is far smaller than the norm for such projects, should have its financial plan developed with methodologies that incorporate the highest professional and technical standards and techniques. As we demonstrate [in this report], the financial planning and modeling process for [this] Project fails this 'best practices' test in many ways."

Earlier this year, an independent financial audit found that the City had "failed to perform qualitative analysis" and had relied on "insufficient cost-control."<sup>79</sup> The City's response was to call the audit "a joke," and kept doing what it had been doing.

The City's failures thus far may reflect more than negligence or incompetence. Many studies have addressed what experts call strategic misrepresentation. It's defined as the planned, systematic understatement of costs and overstatement of benefits, done to increase the chances of having a large construction project approved. As defined, strategic misrepresentation stems more from dishonesty than it does incompetence.

Consider a more colorful description of strategic misrepresentation, from the former Speaker of the California State Assembly and Mayor of San Francisco, Willie Brown:

In the world of civic projects, the first budget is really just a down payment. If people knew the real cost from the start, nothing would ever be approved. The idea is to get going. Start digging a hole and make it so big, there's no alternative to coming up with the money to fill it in.<sup>80</sup>

I'm not sure what would be worse: HART and City officials were surprised by the dramatic increase in costs, failure to produce 10,000 jobs annually, being five years behind schedule, etc., etc., *or* they knew all along but kept it from the public until rail would be too far along to stop. From a practical standpoint, it might be better if the many problems stem more from dishonesty than incompetence. Imagine the impact on the decisionmakers' risk-analysis if they were to conclude that the folks in charge of building rail on Oahu don't know what the hell they're doing.

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<sup>79</sup> <http://randallroth.com/files/Financial%20Train%20Wreck%202016.jpg>.

<sup>80</sup> This appeared August 12, 2013, on page A15 in the U.S. edition of The Wall Street Journal.

More specifically, consider the unexpected need to replace 165,000 shims even before train cars started rolling.<sup>81</sup> And the surprise discovery that the guideway was being built too close to existing power lines. A complete list of such screw-ups would be too long for this speech, but the point is simple: Our decisionmakers need to ask themselves if these were mostly just bad luck, or evidence of incompetence.<sup>82</sup> If the latter, that makes Plan A, or even Plan B, a lot riskier than either would otherwise be.

The decisionmakers need also to consider the turnover at virtually every position of significance, including HART's Executive Director, board members, chair, and vice-chair; the City's Director of Transportation, the primary contractor, Kiewit, and primary consultants, Parsons Brinkerhoff and InfraConsult. Is there any reason to expect more from the replacements than we got from the ones that are now long gone?

I liked the last permanent CEO, Dan Grabauskas, on a personal level. I appreciated his willingness to engage in a public forum with Panos and me,<sup>83</sup> and I appreciated his later off-the-record comments about deeply flawed decisions by his predecessors.<sup>84</sup> But Dan had never built a rail line, and his experiences were more those of a politician than an engineer or contractor. He was learning how to build rail on the job, and was being overseen by a HART board made up of people with zero experience building rail.

Shortly after Grabauskas was effectively fired, Mayor Caldwell gave a talk in which he said the City had learned an important lesson: It had learned that the person it puts in charge of building rail should be someone who has built a rail system before now.<sup>85</sup> Duh.

I don't mean to be unkind, but it's troubling that such a simple concept was somehow lost on our leaders for years, and that they had to find themselves hopelessly over budget and behind schedule before learning something that would strike most people as little more than common sense.

Chances of the FTA or private developers providing a significant portion of the money needed for a Plan A rail system are virtually zero. That leaves Hawaii's taxpayers.

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<sup>81</sup> Marcel Honore, Cracks exposed in rail materials, Honolulu Star-Advertiser, Sept. 29, 2016, at <https://www.pressreader.com/usa/honolulu-star-advertiser/20160929/281479275905373>.

<sup>82</sup> See <http://khon2.com/2016/10/17/hart-board-chair-wants-all-rail-shims-replaced-due-to-extensive-cracking/>.

<sup>83</sup> See <http://randallroth.com/files/Rail%20Panel%20with%20Grabauskas%20Lui-Kwan%20Panos%20and%20Roth%204-9-2013.MP3>.

<sup>84</sup> To access the audio recording of the public forum, go to <http://randallroth.com/files/Rail%20Panel%20with%20Grabauskas%20Lui-Kwan%20Panos%20and%20Roth%204-9-2013.MP3>.

<sup>85</sup> See <http://randallroth.com/files/Mayor%20Caldwell%20re%20replacing%20Grabauskas%20with%20someone%20who%20knows%20how%20to%20build%20rail.mp4>.

Mayor Carlisle laughed at the suggestion that an additional half penny at the cash register could be burdensome to anyone. Evidently Peter doesn't understand that that general excise tax is notoriously regressive — that is, disproportionately burdensome to people with relatively low incomes. The concept of regressivity is not simple, but anyone who contends that Hawaii's general excise tax is not regressive, or that a regressive tax is not disproportionately burdensome to people with relatively low incomes, is simply wrong. What I have said about regressivity are facts, not opinions.

Many people don't understand that Hawaii's general excise tax is a tax on the sellers of just about everything in this state, including groceries, services, and business-to-business transactions. In that narrow sense, it's a business tax and isn't paid by the buyers of those goods and services. Consumers in Hawaii are often aware of only the portion that is shifted to them at the point of sale. A much larger portion of this business tax is invisible to consumers, but is borne by them anyway because it gets baked into the final price of all goods and services in Hawaii.

This hidden portion of the excise tax burden is surprisingly large for several reasons, including that taxes paid on business-to-business transactions pyramid. A national expert wrote in the first "Price of Paradise" book that it would take a sales tax rate of up to 16 percent to replace the revenue generated by the 4 percent excise tax at that time. Because of subsequent changes in the taxation of business-to-business transactions, the current equivalent rate is a bit more than 11 percent. The point is that Hawaii's general excise tax is quite different from conventional sales tax systems, which is why the above-mentioned expert cautioned that comparing a conventional sales tax to Hawaii's general excise tax is like comparing a firecracker to a hand grenade.

The 0.5% rail surtax currently raises about \$250 million each year. Only about 15 percent of that amount is paid directly by tourists.<sup>86</sup> The remaining 85 percent averages out to \$212 per man, woman and child on Oahu, which the Tax Foundation of Hawaii describes as slightly more than \$1,000 each year from an average family of five.

The City has called this number a "myth," based on the fallacious assumption that consumers bear the burden of the rail surtax only when it is identified at the point of a purchase. That reflects either ignorance or an effort to give people a misimpression of what rail is costing the taxpayers of Oahu.

It would take a 29% across-the-board increase in property taxes to raise the same amount raised by the 0.5% excise surtax. The latter is more burdensome on low-income people, but the amounts raised would be identical.

Any tax that extracts some quarter-billion dollars from residents each year (as does the current rail surtax), creates a quarter-billion-dollar burden. Yes, some of the excise tax is "exported"

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<sup>86</sup> <http://www.tfhawaii.org/wordpress/>.

(i.e., some of it directly; almost as much indirectly) to non-residents, mainly tourists, but the export rate for property taxes is at least as high as it is for excise taxes, according to studies done for the State Tax Review Commission. The bottom line is that the portion borne by residents averages out to roughly \$200 per year, per person—or \$1,000 for an average family of five, as described by the Tax Foundation. That’s just for construction. Don’t forget about the cost of operating the system and a sinking fund to ensure that the system is always clean, safe, and reliable.

What do you think the vote would be if an informed electorate was asked if they thought a Plan A rail system is important enough that an average family of five should be forced to contribute \$1,000 each year for the foreseeable future, just for construction; and up to \$1,000 each year to maintain and state of good repair?

As you mull that one over, keep in mind that an informed electorate would understand that traffic congestion in the future with rail will be worse than it is today ... and that the money saved by shutting down rail could be used on proven strategies for reducing the current level of traffic congestion.

The last time rail was on a ballot, the City was telling the public that two-thirds of its cost would be paid by the federal government and tourists. That was incredibly misleading then; now is dead wrong.

I suppose there’s a reason why mayors and council members keep saying that half a penny more at the cash register is relatively painless, but then act as though a 29% property tax increase would be very painful. Either one exacts the same from residents, and the excise tax is particularly burdensome to low-income residents. Even the homeless pay it!

Why not just honestly say: Here’s what Plan A would cost the public, directly or indirectly, and here’s how much of that would be borne, on average, by each man, woman, and child on Oahu?

If the decisionmakers select Plan C, there’s still time to convert the guideway to bus rapid transit use. Importantly, no stations have yet to be built, and the guideway has not yet passed Aloha Stadium, where there’s plenty room for on-off ramps.

Perhaps the feds would go along with that. Even if they did not, there would be compelling reasons for not returning a penny of the federal money received thus far. Chris Christie took that position a few years ago, in New Jersey, and eventually settled with the feds by agreeing to return one-third of what they had previously provided. But in that case, there wasn’t even a hint of impropriety on the FTA’s part. Here we’ve got their own emails in which they see that the City had acted dishonestly and incompetently, yet the FTA did nothing about it.<sup>87</sup> The FTA

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<sup>87</sup> We now know that FTA officials noted in inter-office email that the City had put itself in a “pickle” by setting unrealistic start dates for construction, and starting construction “without authority despite warnings that it would create an ineligibility for the project.” FTA officials also commented in email on the City’s “lousy practices of public

has a legal responsibility to provide oversight. Its silence in this matter equates to complicity. They have what the law refers to as “dirty hands.”

Finally, our decisionmakers need to consider the possibility that rail will become obsolete, perhaps even before it is completed.<sup>88</sup> Many experts are predicting that the future of public transportation, indeed any kind of transportation, will soon be revolutionized by the likes of Uber, Apple, Tesla, Google, and other companies known for innovation and disruption. A recent report predicts major transportation disruption: “95% of U.S. car miles will be traveled in self-driving, electric, shared vehicles by 2030.”<sup>89</sup> In other words, self-driving, on-demand vehicles will replace individual car ownership and render conventional transit lines obsolete far sooner than anyone thought possible just a few years ago.<sup>90</sup>

When Susie and I visit our oldest and youngest sons, both of whom live in Silicon Valley, we see Google’s driverless cars out on the streets and highways. They don’t even have a steering wheel or foot pedals. It seems kind of scary to me, but Panos tells me that those vehicles already have vision and reflexes better than mine. For example, when the light turns green, an average human needs 1 to 3 seconds to react. A driverless car needs three-tenths of a second.

Aha, you say. But what if someone from the side doesn’t stop, just because his light has turned red? According to Panos, driverless cars are particularly adept at detecting and responding to potential collisions. That’s why they will be able to tailgate on the highway without increased risk of collision.

Combine driverless cars with the Uber concept, and you have a powerful recipe for a different way of living. If a driverless car can be at my doorstep in minutes, or less, and appear again

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manipulation,” willingness to “deceive with no remorse,” use of “inaccurate statements,” and its culture of “never enough time to do it right, but lots of time to do it over.” See [http://www.honolulutraffic.com/Admin\\_Record/Administrative\\_Record\\_rev\\_2.28.12/Administrative\\_Record\\_Volumes\\_1-11/](http://www.honolulutraffic.com/Admin_Record/Administrative_Record_rev_2.28.12/Administrative_Record_Volumes_1-11/), [http://www.honolulutraffic.com/Admin\\_Record/Administrative\\_Record\\_rev\\_2.28.12/Administrative\\_Record\\_Volumes\\_1-11/Vol010\\_AR00138146/0003\\_AR00146569/AR00150124.pdf](http://www.honolulutraffic.com/Admin_Record/Administrative_Record_rev_2.28.12/Administrative_Record_Volumes_1-11/Vol010_AR00138146/0003_AR00146569/AR00150124.pdf), and [http://www.honolulutraffic.com/Admin\\_Record/Administrative\\_Record\\_rev\\_2.28.12/Administrative\\_Record\\_Volumes\\_1-11/Vol010\\_AR00138146/0003\\_AR00146569/AR00150121.pdf](http://www.honolulutraffic.com/Admin_Record/Administrative_Record_rev_2.28.12/Administrative_Record_Volumes_1-11/Vol010_AR00138146/0003_AR00146569/AR00150121.pdf).

<sup>88</sup> Cliff Slater and Randall Roth, Honolulu Rail is Too Much, Too Late, Civil Beat, March 9, 2017, at <http://www.civilbeat.org/2017/03/honolulu-rail-is-too-much-too-late/>.

<sup>89</sup> See <https://www.rethinkx.com/press-release/2017/5/3/new-report-due-to-major-transportation-disruption-95-of-us-car-miles-will-be-traveled-in-self-driving-electric-shared-vehicles-by-2030>. Entire report available at [https://static1.squarespace.com/static/585c3439be65942f022bbf9b/t/591a2e4be6f2e1c13df930c5/1494888038959/RethinkX+Report\\_051517.pdf](https://static1.squarespace.com/static/585c3439be65942f022bbf9b/t/591a2e4be6f2e1c13df930c5/1494888038959/RethinkX+Report_051517.pdf).

<sup>90</sup> Marco della Cava, “Self-driving electric vehicles to make car ownership vanish,” USA Today, May 4, 2017, at <https://www.usatoday.com/story/tech/news/2017/05/04/self-driving-electric-vehicles-make-car-ownership-vanish/101204980/>; Nafeez Ahmed, “The Robot Revolution Will Take Your Car, Your Mom’s Car, and All the Oil in 13 Years: A new report says self-driving electric vehicle fleets are poised to replace individual cars sooner than we think,” Motherboard, May 4, 2017, at [https://motherboard.vice.com/en\\_us/article/qkpgq7/the-robot-revolution-will-take-your-car-your-moms-car-and-all-the-oil-in-13-years](https://motherboard.vice.com/en_us/article/qkpgq7/the-robot-revolution-will-take-your-car-your-moms-car-and-all-the-oil-in-13-years); Tony Seba, “Clean Disruption of Energy & Transportation: The industrial age of energy and transportation will be over by 2030 ... maybe before,” at <https://tonyseba.com/portfolio-item/clean-disruption-of-energy-transportation/>.

when I'm ready to return home, or to go someplace else, why would I continue to put up with the expense of owning a car (or second car) that is used only a small percentage of the time? And don't forget the humbug of finding and paying for a place to park it when I'm not actually using it.

Up to 75% of the cost of a cab, goes to the driver. It just makes sense that a driverless vehicle that is constantly in use, except while being serviced, would bring down the cost of getting from here to there rather dramatically.

The December issue of Business Insider predicts that by the year 2026, 10% of all cars in the U.S. will be driverless, and more trips will be made using car-sharing programs than privately-owned cars.<sup>91</sup> Construction on a Plan A rail system would not even be completed by then.

Some of you may be skeptical. Maybe you still treasure your corded phone and use maps that fold up when you're finished figuring out how to get from here to there. All I'm suggesting is that decisionmakers factor the possibility of obsolescence into their choice of a plan A, B, or C.

I'll close with a quote from FTA Administrator Peter Rogoff, from his speech about choosing between rail and bus rapid transit:<sup>92</sup>

These [are] moral decisions about who we serve with scarce resources.... The solutions ... are not about engineering. ... They are about the necessity to tell truth to power. They are about the guts to say "no" when everyone around the table wants you to say yes....

Mahalo for your attention. I welcome your questions and comments.<sup>93</sup>

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<sup>91</sup> Cadie Thompson, 21 technology tipping points we will reach by 2030, Business Insider: Tech Insider, Dec. 1, 2016, at <http://www.businessinsider.com/technology-tipping-points-we-will-reach-by-2030-2016-11/#90-of-the-population-will-have-unlimited-and-free-data-storage-by-2018-1>; also RethinkX: Disruption, Implications and Choices, Rethinking Transportation 2020-2030, at [https://static1.squarespace.com/static/585c3439be65942f022bbf9b/t/591a2e4be6f2e1c13df930c5/1494888038959/RethinkX+Report\\_051517.pdf](https://static1.squarespace.com/static/585c3439be65942f022bbf9b/t/591a2e4be6f2e1c13df930c5/1494888038959/RethinkX+Report_051517.pdf).

<sup>92</sup><http://randallroth.com/files/Administrator%20Peter%20Rogoff%20Remarks%20at%20the%20Boston%20Reserve%20Bank%20updated%20to%20March%202016.pdf>.

<sup>93</sup> Here's a sampling of my commentary on rail over the years: Prevedouros, Roth & Slater, Rail project audit needs to be comprehensive, independent, Honolulu Star-Advertiser, Aug. 24, 2017, at <http://www.staradvertiser.com/2017/08/24/editorial/island-voices/rail-project-audit-needs-to-be-comprehensive-independent/>; [Honolulu Rails Is Too Much, Too Late, Civil Beat, March 9, 2017 \(with Slater\)](#), Civil Beat, March 9, 2017; [The Impending Honolulu Rail Ridership Debacle](#), Civil Beat, Feb. 13, 2017 (with Slater); [Still time to turn rail woe into bus way](#), Honolulu Star-Advertiser, Dec. 25, 2016; [What to do about the Honolulu Rail Project](#), Civil Beat, Oct. 3, 2016 (with Slater and Prevedouros); [We Should Not Pay a Penny To The Federal Transit Administration](#), Civil Beat, Oct. 10, 2016 (with Slater and Prevedouros); [It's not too late to make right call on rail](#), Honolulu Star-Advertiser, Sept. 18, [How to make the best of Honolulu's rail fiasco \(link is external\)](#), Honolulu, Star-Advertiser, June 29, 2016 (with Slater and Prevedouros); [How the City Misled the Public on Elevated Heavy Rail \(link is external\)](#), Honolulu Star-Advertiser, Aug. 21, 2011, p. F1 (with Walter Heen, Benjamin Cayetano, and Cliff Slater); [Managed lanes would be superior to elevated rail \(link is external\)](#), PACIFIC BUSINESS NEWS, June 22, 2012 (with

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John Brizdle); [Job Numbers Don't Add Up \(link is external\)](#), HONOLULU STAR-ADVERTISER, Oct. 20, 2011 (with Walter Heen, Benjamin Cayetano, and Cliff Slater); [Rail Robbery \(link is external\)](#), HONOLULU WEEKLY, June 20, 2012 (with Walter Heen and Cliff Slater); [City Rail Project is Fundamentally Flawed \(link is external\)](#), HAWAII REPORTER, Mar. 27, 2012 (with Walter Heen and Cliff Slater); [It's not too late to make right call on rail](#), Honolulu Star-Advertiser, Sept. 18, 2016 (with Panos Prevedouros); [What To Do About The Honolulu Rail Project](#), Civil Beat, Oct. 3, 2016 (with Panos Prevedouros and Cliff Slater); [Politics in Hawaii: Is Something Broken? \(link is external\)](#), HONOLULU MAGAZINE, Vol. ILII, No. 11, p. 46 (2008). For links to talks I've given about rail, see [Roth on Rail](#). Also see [May 22, 2017 Think Tech Hawaii Interview](#) and [Jan. 6, 2017 Interview on per-capita costs](#). See also, [Randy Roth Clobbers Wayne Yoshioka](#), Hawaii Free Press, Aug. 8, 2012.