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Board of Directors
California High-Speed Rail
Authority
925 L Street, Suite 1425.
Sacramento, CA 95814

RE: Final Revised Programmatic EIR for Bay Area to Central Valley High
Speed Train Project

Dear Chairman Pringle and Board Members,

I am writing on behalf of the Town of Atherton, the City of Menlo Park, the Planning and Conservation League, the California Rail Foundation, and the Transportation Solutions Defense and Education Fund to comment on the Final Revised Programmatic Environmental Impact Report ("FRPEIR") for the Bay Area to Central Valley High Speed Train Project ("Project"). This letter follows up on my earlier comment letter on the Draft Revised Programmatic EIR ("DRPEIR").

Let me say to begin with that we appreciate the fact that the authority has not chosen, for the most part, to refuse to respond to comments submitted on the DRPEIR. In releasing the DRPEIR, the Authority cited CEQA Guidelines Section 15088.5 as authority for only responding to comments on those portions of the programmatic EIR that had been revised by the Authority. As my comment letter and other comments on the DRPEIR noted, under the current circumstances this Guidelines section conflicts with the decision of the California Supreme Court in *Laurel Heights Improvement Association v. Regents of the University of California* ("*Laurel Heights II*") (1993) 6 Cal.4th 1112. Needless to say, the decision of the California Supreme Court is controlling.

There are numerous examples throughout the Responses to Comments volume of the FRPEIR where comments have been submitted based on changed circumstances or new information that was not available during the prior environmental review process. To the extent the Authority has used CEQA Guidelines §15088.5 or the fact that an issue was not addressed in the Superior Court's judgment against the Authority as an excuse to not respond substantively to those comments, the Supreme Court's decision must take precedence and reliance on these excuses is misplaced.

Unfortunately, very little of the remainder of this letter can be complimentary. In preparing the DRPEIR, the Authority failed to address many issues that should have been raised by the Superior Court's decision requiring revision and recirculation. The failure to do so means that many impacts remain unacknowledged or have not been properly addressed. Further, the need to remain outside of the Union Pacific right-of-way should have caused the Authority to look at revising not only the Pacheco Pass alternatives, but the Altamont Pass alternatives as well. Instead, the Authority took an improperly crabbed approach to the Judge's writ and made only the minimum changes it thought it could get away with.

Doing so, however, fails to achieve CEQA's purpose of investigating both the project's potentially significant impacts and alternatives that might avoid some or all of those impacts. CEQA, as interpreted by the courts, requires that

an EIR examine both measures to mitigate a project's significant impacts and a reasonable range of alternatives that might feasibly avoid or lessen at least some of those impacts. Having acknowledged that the Union Pacific right-of-way would be unavailable, the Authority had a duty to reconsider the range of alternatives, discarding those which, due to their use of Union Pacific right-of-way, would be infeasible, and looking anew at whether there were other feasible alternatives available.

Instead of a range of alternatives, however, the DRPEIR limited its detailed examination of alternatives to one – an alignment that closely followed the previously-chosen preferred Pacheco alignment, but shifted over enough to avoid, for the most part, actually physically occupying the Union Pacific right-of-way¹. Authority staff may have felt they had successfully “pulled a fast one”, allowing them to quickly re-approve their favored Pacheco alignment. However, their “quickie” DRPEIR, and now FRPEIR, fails to meet CEQA's requirements. My clients suggest that at this point the best course of action for the Authority is to go back and “do it right:” revise and recirculate the DRPEIR so that it fully discloses and analyzes the project's significant impacts and revise the alternatives analysis to consider a reasonable range of feasible alternatives that might avoid at least some of the project's many significant impacts.

I should also note that my previous letter included a proposal for a new and substantially different Altamont Pass alternative alignment (the Setec Alternative) that did not use any significant portion of active Union Pacific right-of-way. While the Authority has purported to respond substantively to this proposal, review of this response indicates that, for the most part, it merely repeats the responses made in the prior 2008 FPEIR/EIS to other Altamont alternatives considered in that document. The FRPEIR fails to acknowledge and address the significant differences between the Setec Alternative and previously analyzed Altamont alternatives. These differences were not limited to merely avoiding Union Pacific right-of-way. The Setec Alternative had been professionally designed to minimize potential environmental impacts or allow for their mitigation. However, the Authority's response to this alternative ignored this fact and simply repeated verbatim the responses it had made to earlier, and quite different, alternatives. In short, the Authority failed to provide an adequate, reasoned good-faith response to the comment based on substantial evidence in the record. More detailed discussion of the Authority's responses is provided below.

Flaws in Ridership Modeling

In many ways the most fundamental flaw in the FRPEIR is a subject it adamantly tries to avoid dealing with: the flawed ridership/revenue modeling prepared for the original 2008 FPEIR/EIS. As has been laid out in numerous comments on the DRPEIR, the Authority failed to disclose the model it actually used to obtain the ridership and revenue figures contained in the prior FPEIR/EIS. While the administrative record for the 2008 FPEIR/EIS contains numerous reports on the modeling process, the model described in those reports turns out not to have been the model actually used to produce the ridership and revenue estimates included in the FPEIR/EIS. Instead, the model used was one that was not included in the administrative record before the Authority and,

¹ The Authority provided a perfunctory analysis of one Altamont alternative, where it applied the same strategy – a minor alignment shift out of the Union Pacific right-of-way – in a situation where that simplistic approach would obviously lead to unacceptable impacts.

indeed, was not revealed to the public² during the FPEIR/EIS process. Nonetheless, the Authority improperly relied upon it, and the ridership and revenue values it produced, in deciding that the preferred Pacheco Pass alignment alternative was the equal in ridership to the best Altamont alternative.

Subsequent to the certification of the prior FPEIR/EIS, and indeed subsequent to the Superior Court's decision invalidating that EIR and ordering reconsideration of the project decision, new information, specifically the model coefficients actually used to obtain the data included in that FPEIR/EIS, has become available. Now that this ridership model has been exposed to public view, its flaws and inadequacies have become evident. A modeling expert retained by one of my clients reviewed the model and pointed out numerous serious flaws in it. (FRPEIR, comment letter O012.) Ms. Elizabeth Alexis and her group, CAARD, also reviewed the model and found it unacceptable because of technical flaws. (FRPEIR, comment letter O009.) Perhaps most significantly, the University of California at Berkeley's nationally-known Institute for Transportation Studies reviewed the model in detail and concluded that it was "unreliable for policy analysis." (See attached copy of that report, including HSRA's comments and the ITS responses to those comments.) Nevertheless, the Authority's staff continues to insist that the use of this highly-flawed and biased model is justified based on the consultant's "professional judgment."

While an agency is entitled to rely on expert opinion even if other experts hold different opinions, an expert opinion only constitutes substantial evidence justifying reliance when it is itself based on substantial evidence in the record. "Professional judgment," if unsupported by evidence in the record, is not substantial evidence. The Authority's responses to comments, and its responses included in the UCB-ITS modeling critique, fail to provide any substantial evidence in the record before the Authority that supports its claim that its consultant's use of "professional judgment" was justified. Further, the fact that three different, independent, and reputable external reviews of the final model have all pointed out the same set of serious flaws ought to raise serious questions in your minds about the credibility of this model. Those questions need to be addressed forthrightly, rather than be swept under the rug under the guise of reliance on "professional judgment."

The Authority also attempts to explain away the various criticisms of the model in other ways, including responses such as asserting that, "It is unlikely that a single alignment alternative serving both San Jose and San Francisco via Altamont would generate anywhere close to the 20 million additional riders claimed by the commenter." The FRPEIR provides absolutely no evidence to support this assertion, nor for several other assertions, such as that changing frequency of service "would not change the conclusion that ridership for the Altamont Pass and Pacheco Pass alternatives is high and that ridership does not distinguish between the alternatives." In short, without having actually run modeling runs using the suggested alternative scenarios, the FRPEIR fails to demonstrate through substantial evidence in the record that the ridership model

² In its response to comments, the Authority claims that the model was available to the public through MTC. MTC is not the Authority, and the Authority has itself admitted that it did not have the model available to it as of January 2010, but had to have its coefficients and constants extracted by Cambridge Systematics. If the model was available to the public through MTC, it should have been a simple matter to obtain it, rather than having to ask Cambridge Systematics to spend hours of time reconstructing it. In short, the claims made in Mr. Morshed's memo are unsupported by any substantial evidence and inconsistent with the Authority's own statements and actions.

used to generate the figures in the FPEIR/EIS and in the Authority's 2009 business plan is not fatally flawed.

On the contrary, the HSRA consultant that created the main mode choice model, Mark Bradley, wrote that the "Inter-regional model software [that] is ... efficient enough to run a scenario within a few hours. ... In my experience, model systems such as this are complex enough that it is impossible to say how a specific model parameter or assumption influences the resulting forecasts without empirically changing the assumption or parameter and then assessing the change in the forecasts." (pp. 2 & 3, letter to HSRA, in response to ITS study.) Rather than rely on "professional judgment," my clients urge the Authority to take the time to actually do the modeling runs that were requested in Comment Letter O009. At a minimum, this would include running a network composed of the Altamont route to San Jose, which connects to the Caltrain route north to San Francisco, along with a sensitivity test that explores how the model would perform if the headway coefficient(s) was/were replaced by zeroes, and then recirculate the FRPEIR with the included results.

In a similar vein, the Authority's response to concerns about constraining the headway coefficient in the model was that, "The adjustment made to the headway coefficient was within the range of reasonable values presented to peer review during the model development process." Again, the Authority's response is not supported by any of the published reports on the peer review process, or any other evidence within the record now before the Authority's Board. The Authority staff's responses to all these comments are unfounded and fail to satisfy CEQA's mandate that responses to comments demonstrate good faith reasoned analysis based on substantial evidence in the record. While a general comment may only require an equally general response, where specific detailed comments have been submitted, they need to be responded to in similar detail, and the responses need to show that they are based on substantial evidence in the record. The Authority's responses to both the comments on the DRPEIR and the UCB-ITC critique of the Authority's final ridership model fail this test miserably.

The Authority, in its Response to Comments Document, also asserts that its ridership model is adequate because it is consistent with ridership figures from other high-speed rail systems in Europe and Japan. (FRPEIR at pp. 12-14 through 12-15.) The citations to other systems misrepresent that actual evidence, which the authority has not seen fit to include in the record. Attached hereto is an article that provides factual evidence, including citations, that rebuts the Authority's unsupported assertions about ridership data from other high-speed rail systems. This evidence also indicates that the results obtained using the Authority's final model are unrealistic and cannot be relied upon.

The Board needs to take a hard and careful look at its ridership modeling efforts. My clients would encourage the Board to carefully review the entire UCB-ITS study, as well as the other critiques that have been submitted. If the Board is unsure about what to believe, it should obtain an independent opinion from another unbiased source, such as, for example, one of the other transportation institutes within the UC system. It should NOT simply rely on the overnight rationalizations produced by Authority staff that will be presented on September 2nd. The important decision before the Board requires equally careful consideration and deliberation. Continuing to moving ahead at breakneck speed based on highly questionable ridership numbers would not speak well for the Board's exercise of judgment.

Defects in Response to Setec Alignment Alternative

My previous letter had attached to it a new alternative alignment (the "Setec Alternative"). As noted earlier, the Authority's responses to this alternative were defective in numerous ways. The following comments detail those defects.

The Authority's response dismisses the eastern segment of the Setec Alternative with the following: "Given the location for the Setec Alternative in the same general corridor as the SR-84/South of Livermore Alignment Alternative and its proximity to the same resources, it would appear that the Setec Alternative would have the same high potential impacts to the natural environment and to agricultural lands." The response fails to adequately distinguish between an Altamont alternative studied in the FPEIR and the Setec Alternative. The Setec Alternative avoided Niles Canyon precisely because of "high value aquatic resources." It also carefully identified how any remaining potential impacts can be adequately mitigated or avoided. It is therefore entirely irrelevant to recite the reasons why the previous Altamont alternative was rejected.

The Authority's response ignores the fact that the Setec Alternative avoids negative community impacts on Livermore and Pleasanton by avoiding the urbanized areas. Given the choice of running trains through developed versus undeveloped areas, it is obvious (and taken as a given in the Authority's routing of the Pacheco alignment alternatives through the areas east of Pacheco Pass) that use of undeveloped areas will have fewer community impacts. Impacts on the agricultural areas can be mitigated through the use of elevated structure that would avoid severance impacts and/or through the purchase of replacement agricultural easement lands. In fact, purchasing replacement lands could actually result in a stronger greenbelt for Livermore's southern border as well as retaining agricultural values for the area³. This mitigation would be similar to the mitigation proposed for the Grasslands Ecological Area, with the chief difference being that the mitigation would protect the viability of agriculture, rather than sensitive species, arguably a far easier goal to attain.

The Authority's response also points to the need to acquire a small portion of little-used UP right-of-way as a major flaw. The likelihood of UP selling this short segment of track, which has very little freight traffic on it, is much higher than the likelihood that UP would allow use of its major rights-of-way, or be satisfied with the resolution of the multiple issues of compatibility on the Caltrain corridor it raised (see comments below on UP issues in the Caltrain right-of-way)⁴. Especially given the programmatic nature of the analysis, this should not be considered a fatal flaw, but something to be explored and negotiated at the project level.

The FRPEIR states "This most probably requires the UPRR to sell the line and relinquish any freight operations along the line. It would leave no freight connection across Fremont from Niles Canyon to the Coast line for the UPRR." This response ignores the existence of the Warm Springs Subdivision. The response is also incorrect when it states that "The Exhibit C alignment assumes

³ It should be noted that there has been a continuing problem from the development of housing in unprotected agricultural areas, circumventing the intent of the agricultural preserve designations.

⁴ It should be noted that Union Pacific's predecessor, the Southern Pacific, negotiated the sale of the entire San Francisco to San Jose Caltrain corridor to the PJPA, while retaining its own freight usage rights.

a joint-use of the San Francisco PUC's South Bay Division right-of-way." That joint-use proposal was only one of three possible routes through Fremont identified by Setec.

The Authority, in its response, also argues: "The HST would still need to construct separate facilities in the corridor, as the Altamont Commuter Express, ACE, and Capitol Corridor trains are FRA-compliant trains, not compatible with HST operations." As the Authority is undoubtedly aware, the precedent that FRA created by granting a waiver to Caltrain to operate diesel locomotive-hauled trains mixed with HSR-compatible Electric Multiple Units is expected to be expanded to include HSTs, where they are operated at similar speeds. This would allow precisely the kind of shared use proposed by the Setec Alternative in the Fremont area.

The Authority's response also ignores significant differences between the three alternate routings through Fremont in the Setec Alternative, and between those and the Altamont alternatives analyzed in the 2008 FPEIR/EIS. Most specifically, the Setec Alternative's Centerville alternative uses a tunnel to avoid some of the most significant impacts identified for the Centerville Altamont alternative in the 2008 FEIR/EIS. The FRPEIR totally ignores this highly significant difference, as well as the fact that the Setec Alternative, unlike the prior alternative, only uses a small segment of little-used Union Pacific right-of-way.

Regarding the FRPEIR's response to the Setec Alternative's proposal for a new Bay Crossing, the response is incorrect where it states "Finally, we note that neither the comment nor the exhibits address the wildlife refuge crossing issues associated with a rail crossing at Dumbarton." On the contrary, Exhibit J to my comment letter concluded that "There is not enough information to make a scientifically sound determination of the biological and ecological values and the potential impacts that the project would have on those values." My clients fully expected the FRPEIR to contain a scientifically sound and evidence-based comparison of the biological and ecological values of the Don Edwards Wildlife Refuge and Grasslands Ecological Area, the degree they would be impacted by the Pacheco or Setec Alternative, and the potential to mitigate those impacts. Such a comparison is what is needed to make an informed selection between the Authority's proposed Pacheco Alternative and the Setec Alternative put forward by my clients.

The FRPEIR could have provided the HSRA with an opportunity – which it chose not to take advantage of – to compare the extensive wetlands mitigations proposed for its Pacheco alternative against an equivalently robust mitigation set for the Setec Alternative. For example, no explanation is provided of why a tunnel in the Dumbarton corridor could not be considered an adequate mitigation for the impacts on biological resources in the corridor.

The FRPEIR also failed to respond to the new information provided in Exhibit E to my comment letter on the DRPEIR by re-evaluating the cost and practicability of a new two-track Dumbarton rail bridge. Contrary to the 2008 FPEIR/EIS' high bridge estimate of \$1.67 billion (Appendix 4-A), the Setec Alternative states "From a European perspective, it seems inconceivable that such a simple and short bridge would be considered a financial or technical hurdle. There appear to be no significant design, engineering or seismic issues which would make the cost of this short bridge a prohibitive factor or fatal flaw." The response fails to document any actual shipping traffic that would necessitate a high bridge, nor the need to provide as wide a clear shipping channel as the 2008 FPEIR/EIS had prescribed.

The FRPEIR also asserts that HSR service across a new Dumbarton rail bridge would be incompatible with Caltrain's proposed Dumbarton service across the bridge, necessitating additional tracks. This assertion ignores the waiver granted to Caltrain by the FRA, which rendered this objection moot.

The Authority's response references the portion of the Setec Alternative using an area along U.S.-101 as having "major construction issues involving the construction of an aerial guideway adjacent to and above an active existing freeway facility while maintaining freeway traffic." Again, this confuses the Setec Alternative with an alternative rejected in the 2008 FPEIR that ran the entire length of U.S.-101 from San Francisco to San Jose. This proposal would involve construction adjacent to fifteen miles of U.S.-101, as opposed to the 2008 FPEIR proposal that involved fifty miles of construction in the U.S.-101 median. There are only 12 locations along the Setec route with existing overpasses or connector ramps, several of which have already been slated for reconstruction.

Further, the response unfairly implies that construction adjacent to the U.S.-101 right-of-way would be worse than the now-contemplated addition of two HSR tracks to the Caltrain corridor, which definitely have "major construction issues." Indeed, shifting tracks on an operating commuter railway would be far more disruptive than working alongside a freeway, where highway traffic would not be directly impacted. From this standpoint, the Setec US-101 Alternative would eliminate much of the Pacheco-Caltrain alternative's impact on public transit use--a significant environmental benefit.

Finally, the FRPEIR's response makes unsupported and inaccurate criticisms of the Setec Alternative's proposed route at SFO Airport and further north. The response creates and then attacks a straw-man by assuming that the Setec Alternative would necessarily involve "An elevated HST line above the Millbrae Avenue overcrossing and I-380 interchange [that] would intrude into the FAA airspace at the end of the SFO runways, which would be a potential fatal flaw to HST above the median of US-101 in the vicinity of SFO." Given the preliminary and conceptual nature of the Alternative, which is appropriate to a program-level analysis, the Setec Alternative does not specify how it would connect with, and around, SFO Airport. The Setec Alternative (unlike the U.S.-101 proposal in the 2008 FPEIR/EIS) does not propose construction in the median of the highway. Nor does it necessarily require passing above the Millbrae Avenue overcrossing or the I-380 interchange. What it does propose is a direct connection and station at SFO Airport to tie into the existing people mover at the airport. It specifically calls for connecting up with the Caltrain corridor north of the airport, and therefore would not require any additional tunneling in San Francisco, as it uses exactly the same routing into the City as is proposed for the Authority's Pacheco Alternative.

In short, as shown, the Setec Alternative is substantially different from and superior to the Altamont alternatives considered in the 2008 FPEIR/EIS. The clear benefits offered by the Setec Alternative over previous Altamont alternatives are: faster travel times, lower operating expenses due to a shorter route, the elimination of or reduction in negative impacts upon urbanized areas and public transit, the elimination of impacts on biological resources and the elimination of interference with Union Pacific. The Authority's response in the FRPEIR ignores all these benefits, leading to an unsupported conclusion.

Defects in Analysis of Train Splitting

Given the need to re-examine project alternatives on both Altamont and Pacheco alignments, my comment letter on the DRPEIR included additional new information on the feasibility of train splitting, based on current practices on European high-speed rail lines. The response in the FRPEIR seriously mischaracterizes European train-splitting practices. On at least three major HSR routes, the termini are the primary markets being served, while the split is done at an intermediate point with relatively unimportant ridership. This is similar to how in California, Sacramento, San Francisco and San Jose are the major northern destinations, at the ends of required branching. **100%** of the InterCityExpress (“ICE”) service from Berlin splits between the final destinations of Düsseldorf and Köln, the primary markets. The Thalys service from Paris splits at Brussels on the way to the primary markets, which are the termini Amsterdam and Köln. The TGV-Méditerranée service from Paris splits before reaching the primary markets of Marseilles and Montpellier, which are its termini.

The Authority’s responses about the length of time needed to couple/uncouple trainsets do not contradict Exhibit C. They merely claim that the time involved may be longer, without providing any evidence about how frequently such longer stops might occur, an essential element in determining the significance of such delays.

The FRPEIR admits that there is no justification for penalizing the Altamont routes in the ridership model by splitting the number of trips: “the California market demand is large enough for hourly non-stop double trainset trains, one to San Jose and the other to San Francisco.” Given this admission by the Authority, the inputs to the model need to be revised and the model re-run regardless of whether train-splitting is allowed. A two-destination route most certainly does not require train-splitting if market demand will support double trainset trains.

Traffic Analysis Deficiencies

The FRPEIR also violates CEQA by failing to disclose significant new impacts, or significantly increased impacts, brought about by the proposed changes in the new Pacheco Pass alignment alternative. Most of these changes are caused by the shift in the alignment eastward from the Union Pacific right-of-way, coupled to the need to shift and reconfigure the Monterey Highway to accommodate the revised HSR right-of-way.

Among the most obvious unidentified and unanalyzed impacts are those caused by the elimination of two lanes of the Monterey Highway. The DRPEIR did disclose that the loss of these lanes would lead to increased congestion on the Monterey Highway and identified that as a significant and unavoidable impact. However, careful review of the traffic analysis showed that the number of vehicles on that highway actually decreased after the lane reduction was implemented. Petitioners commented on this issue in their letter to the Authority.

The Authority’s response was to defer further analysis to the project level. (See Response to comment L003-151.) The response attempts to shift attention over to the projected mode shift from auto to high-speed rail along this U.S. 101 highway segment, but admits such an offset would be highly speculative.⁵ What

⁵ Given the major questions that have been raised about the Authority’s ridership modeling, the Authority’s estimation of the amount of mode shift from auto to high-speed rail on this travel segment is also highly suspect.

the Authority's response fails to address are the additional traffic increases on other roadways near the Monterey Highway, which were graphically displayed in my comment letter on behalf of my clients. (See, FRPEIR at p. 15-189 & 15-190.) These impacts are unlikely to be offset by a mode shift to high-speed rail, as, unlike Highway 101, these more local roads are not generally used for the type of long distance travel conducive to high-speed rail use. These significant impacts were neither disclosed nor analyzed in the RPEIR, and it is improper to defer such analysis to the project level environmental review when currently available evidence indicates a significant impact that cannot, with certainty, be mitigated.

The Authority also appears to point to San Jose's in-progress general plan update, which apparently may involve shifting city resources towards alternative transportation modes and accepting the consequent increase in traffic congestion within the city. Since those changes have yet to be adopted, the Authority cannot assume that they will be considered acceptable to San Jose's citizens and will be implemented. Nor can it assume that changes to San Jose's criteria for determining the significance of traffic impacts will be modified to accommodate a change in city transportation priorities. Even if such changes were to be adopted, it would not excuse the Authority from considering and analyzing the cumulative effect of impacts associated with its proposed lane reduction on the Monterey Highway in conjunction with changes initiated by the City of San Jose. The failure to do so would also be a violation of CEQA.

Aside from the problems with the Monterey Highway, the Proposed Pacheco Pass alignment also has other new unaddressed traffic impacts due to lane removals. These have only recently been disclosed through the Authority's release of the project level Supplemental Alternatives Analysis Reports (SAAR) for the project, which my clients bring to the Board's attention by this reference. Those reports identify the following lane removals [page number in the SAAR for the San Francisco to San Jose segment, as indicated]: Railroad Ave. 1 lane (SAAR 4-22), Pacific Blvd. 1-4 lanes (SAAR 4-27), Old Country Road 1-2 lanes (SAAR 4-30), Alma Street 1-2 lanes (SAAR 4-48, 4-51, 4-53), Central Expressway 1 lane (SAAR 4-61). All of these lane closures would be accompanied by traffic impacts that, in the absence of mitigation, are likely to be significant.

The FRPEIR argues that it need not address project-level impacts, even if they are disclosed prior to its certification. My clients beg to differ. While the Superior Court may have allowed the Authority to continue project-level analysis while the rewrite of the programmatic EIR occurred, that was not a *carte blanche* to ignore the Supreme Court's decision in *Laurel Heights II*. In that case, the Supreme Court decided that new information that disclosed significant new impacts, or significantly increased impacts, as well as where the prior EIR was so inadequate as to make it impossible to make comments on it, required recirculation. Here, the newly disclosed project-level information identifies new significant impacts. While a purely program-level analysis might not necessarily have disclosed these impacts, once they have been disclosed the agency cannot simply close its eyes and pretend they don't exist. The public deserves the right to know about these impacts, their significance, and what, if anything, can be done to mitigate or avoid them. They must be adequately addressed in the current Program EIR process.

Other Undisclosed Impacts

In addition to the traffic impacts, the FRPEIR also ignores other impacts from moving the HSR right-of-way eastward from the Union Pacific right-of-way south of San Jose. It is obvious that moving the HSR right-of-way eastward will move it closer to residences and businesses located east of the Monterey Highway. Less obvious, but equally true is that, because the Monterey Highway will itself have to be shifted eastward to accommodate the new HSR right-of-way, the highway itself will be moved closer to residences and businesses to its east. Among other things, this will increase the noise and vibration impacts on those residences and businesses, both from the HSR line and from the highway, not to mention from the construction work required to make the changes. These impacts are brushed aside in the FRPEIR⁶.

Yet it is a well established fact that when the distance between a noise source and a receptor is halved, the noise level is increased by approximately six decibels. (This fact can be verified by reference to any basic acoustics reference.) Especially when noise levels along the Monterey Highway are already high, a six decibel increase would need to be considered significant. Vibrational impacts are also likely to be significantly increased by the movement of the HSR and roadway rights-of-way closer to adjacent uses. While it may not be possible to accurately define the vibrational impacts in the absence of site-specific soil studies, their increase can be roughly estimated, and should have been part of the EIR's analysis.

Finally in this regard, moving the Monterey Highway closer to residences to its east will also increase the impact from air pollutants generated by traffic along that route. Of particular importance are particulate pollutants (PM₁₀ and PM_{2.5}) generated by diesel trucks. These are carcinogenic as well as causing respiratory illness. Because they are particulate, these pollutants' concentration are highly dependent on distance from the roadway. Bringing the roadway closer to residences and businesses to its east will significantly increase the concentration of these pollutants, with resulting adverse health impacts. (See 2008 EIR's discussion of air quality impacts.) It should be noted that the Bay Area is in nonattainment status for both PM₁₀ and PM_{2.5} state standards, as well as the PM_{2.5} federal standard.

Along similar lines, project-level analysis of the San Francisco to San Jose portion of the alignment has identified the need to expand the right-of-way needed for the HSR project beyond that currently available within the existing Caltrain right-of-way. As with the San Jose to Gilroy segment, this will bring the HSR tracks closer to adjoining uses, both residential and commercial. While the extent of widening may not be as large as for the San Jose to Gilroy segment, the decrease in distance could still result in significantly increase noise and vibrational impacts, depending on the extent of widening and the proximity of the uses. Again, a program-level analysis need not include a detailed site-specific analysis, but a generalized analysis should have been done and a determination made, based on that analysis, whether the impact would be significant. Instead, the FRPEIR simply brushes aside the potential impact without any supporting evidence.

⁶ The DRPEIR contains absolutely no analysis of noise impacts. The FRPEIR, in its responses to comments, states conclusorily that there will be no significant change in noise impacts, but provides absolutely no evidence to support this assertion. It certainly does not include the kind of analysis required by the FRA regulations cited in the EIR.

The changes in the HSR right-of-way in both the San Francisco to San Jose and San Jose to Gilroy segments also raise the potential for additional significant land use, property, and blight impacts. With the movement of both the HSR and Monterey Highway rights-of-way eastward south of San Jose, there will be the need to condemn additional land by eminent domain. This should have required a revision to the property impacts from moderate to high. Similarly, the need to expand beyond the Caltrain right-of-way in the San Francisco to San Jose segment should similarly have required changing the property impacts from moderate to high, especially given the very high price of land along the Peninsula. The additional project-level alternatives information that has been developed over the past year should also have been used to reevaluate the project's potential land use and blight-inducing impacts. While the previous program-level analysis had left the nature of the vertical alignment undefined, the project level work has now made it clear that tunneling has been ruled out for virtually all segments of the project. Instead, the project will be placed at ground level, on a berm, in an open trench, or on an elevated structure. In the former three cases, especially with the elimination of all grade crossings, the project will have an increased tendency to physically divide the existing community. This would be a significant land use impact and should have been discussed. Instead, it was again put off to the project level, even though there is now sufficient information available to know there would be an impact.

Similarly, placing the HSR tracks on an elevated structure would have a high potential to have a blight-inducing impact. It has been well established for over 100 years that elevated highways and railways tend to greatly reduce property values and create physical blight in the adjoining areas. Cases in point are located as close as San Francisco and Oakland, where the tearing down of the Embarcadero Freeway, the Central Skyway, and the Cypress Structure have rejuvenated the areas that had been literally overshadowed by them. Having decided to place parts of the HSR on elevated structures in urban areas, the EIR must address the blight that is almost sure to follow.

In addition to these issues, the need to separate the high-speed rail alignment from the Union Pacific right-of-way also raises potential issues about the continued ability of Union Pacific's freight line to service its customers. In the FRPEIR, the Authority notes that the Authority may need to take portions of Union Pacific property, and that such taking might interfere with Union Pacific's ability to service its customers⁷. The FRPEIR dismisses this concern by stating that it is an economic, not an environmental, issue. However, parcels of land next to the rail line that have their value because of their rail access will lose most if not all of their value if they lose that access. They would then fall into disuse and contribute to blight in the area. The EIR should have addressed this indirect environmental impact from the Authority's plans to use Union Pacific property.

Union Pacific's objections to the use of its right-of-way also raise the question of the safety of having the HSR right-of-way directly adjacent to the UP right-of-way, as well as very close to the right-of-way for the Monterey Highway. While everyone hopes that accidents such as freight car derailments and truck accidents don't happen, the fact is that they do. Earlier designs had shown crash walls in some (but not all) locations. As Union Pacific's comment letter points

⁷ In addition, even if these UP customers are able to switch their transport to trucks, the resultant increase in production of diesel exhaust pollutants would be a significant secondary impact that should have been considered in the EIR.

out, the current plans do not appear to include adequate provisions to address the risk of upset safety impacts involving auto, truck, or train accidents. The FRPEIR attempts to address this issue by assuring that the Authority will abide by all Federal Railroad Administration regulations governing train safety. Such regulations can include the requirements to include buffer zones to separate potentially conflicting uses, such as passenger and freight rights-of-way. However, the proposed alignment south of San Jose (and, for that matter the use of the Caltrain right-of-way between San Francisco and San Jose) includes no provision for such buffer zones.

FRA regulations are not so speculative that they cannot and should not be addressed at the programmatic level. The EIR should have identified proper safety precautions needed to comply with FRA safety regulations, and any secondary impacts that would be caused by such compliance. Primary among such impacts would be impacts related to requiring a buffer space between the UP right-of-way and the HSR right-of-way, and well as between the HSR right-of-way and the Monterey Highway right-of-way. These impacts should have been disclosed and analyzed in the EIR. In the absence of preliminary FRA proposals for buffer zone standards, compliance with the UP buffer zone standards should have been studied.

One additional issue is raised by the superior court's judgment ordering the Authority to address Union Pacific's unwillingness to share right-of-way with the Authority. It involves the Caltrain right-of-way between San Francisco and San Jose and the trackage agreement between the PCJPA and Union Pacific that gives Union Pacific vested rights along that right-of-way. The Authority asserts that, "Discussions are ongoing to explore how the HST system can be developed in a manner that meets the Authority's needs and respects UPRR's operations and rights." (FRPEIR at p.15-220.)

Among Union Pacific's operations and rights along the Caltrain corridor, in addition to being able to veto any intercity passenger service, is the right to continue its current operations unhindered. Both Caltrain and HSR propose to operate in the Caltrain right-of-way using electrically propelled trainsets, with the electricity supplied by an overhead pantograph. This will already force Union Pacific's freight operations into a late-night window (with unanalyzed potential noise impacts on nearby residents). In addition, however, one aspect of Union Pacific's current freight operations in the corridor is the ability to be carry oversized (i.e., extra-high) loads. The wires and supports for the proposed pantograph system, unless located at an extreme height, would interfere with such operations. It seems highly unlikely, therefore, that Union Pacific will be willing to agree to a HSR system, or for that matter a Caltrain electrification system, that would create such interference. Indeed, it would appear this makes the proposed HSR use of the Caltrain corridor infeasible.

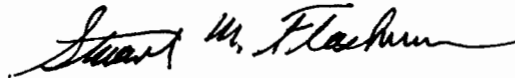
Finally, the Authority has now released last-minute proposed findings to support its proposed decision. The new findings are nearly identical to those the Authority made in approving the 2008 FPEIR/EIS. Like the previous findings, they are not supported by substantial evidence in the record because, like the previous findings, they make unsupportable assertions that are, in fact, contradicted by the evidence in the record. They also make the absurd assertion that all alternatives, other than the Authority's preferred alternative, are infeasible. As already noted, the FRPEIR's alternatives analysis is woefully deficient, and this finding only confirms that fact. Further, if all other alternatives are infeasible; for very much the same reasons, so is the Authority's preferred alternative. The Authority's findings only confirm the bias shown in the FRPEIR.

CONCLUSION

It appears that the Authority is well on its way to violating the Court's writ of mandate by not fully complying with CEQA before reconsidering approving a project alignment. That would be most unfortunate. My clients certainly understand that the Authority may feel pressured to approve the current FRPEIR because it must break ground by 2012 in order to retain federal funding. However, the desire to meet a deadline is not an excuse to ignore the law. Indeed, if the Authority continues forward on its current course, the most likely result will be that it will once again find itself embroiled in litigation and eventually end up, as before, on the short end of an adverse court ruling. That will require you to waste even more time by having to back up and try again.

It would be far better for the Board to stop, take a deep breath, and reconsider its current course of action. The Authority has already spent many months and hundreds of thousands of dollars of public money on legal battles instead of doing things right the first time. Does this Board really think it wise to follow Authority staff down that road again? CEQA can be a problem for a public agency that wants to do things "quick and dirty", but "quick and dirty" is rarely the best course. You would be well advised to take some time before giving a final approval to ensure you are, in fact, "doing it right."

Most sincerely,



Stuart M. Flashman

cc: Federal Railroad Administration
Sen. Lowenthal
Sen. Simitian

Gamed Traffic Data Endangers High-Speed Rail Project

by Richard F. Tolmach
 President, California Rail Foundation
 Revised February 26, 2010

Ridership claims of the California High-speed Rail Authority (HSRA) have strained the credulity of transportation industry observers for the past decade. However, until recently the public was unaware of any substantial problem with the data because supporting detail was largely hidden in technical supplements. Massive total figures were cited by the Authority, but breakdowns were not readily forthcoming. This changed recently because of legislative demands that the HSRA planning process become more transparent.

Mid-December publication of the 2009 High-Speed Rail Business Plan enlivened the ridership debate. For the first time in a number of years, HSRA disclosed specific projected inter-regional boardings by station. It provided some additional data not included in the 2008 Business Plan, although it did not go so far as to provide city-pair data, the ordinary metric of ridership analysis.

Changes from the prior Charles River Associates Independent Ridership Study, prepared for HSRA in January 2000 were extreme and very inconsistent.

The new figures from the Cambridge Systematics model prepared for the Bay Area's Metropolitan Transportation Commission (MTC) for the HSRA showed huge increases in San Francisco, Gilroy, Merced, Bakersfield, Palmdale, and Anaheim ridership on a diminished 14 station network. There were also precipitous and unexplained declines in Peninsula and Los Angeles boardings. (*figure at right*)

Gilroy and Bakersfield basically doubled while Merced rose by 895 percent from the Charles River Associates estimate. Palmdale and Anaheim, which were not even served by the 2000 network, suddenly became the 2 top Southern California stations for interregional (>100 mi.) ridership.

The details in the Business Plan led activists and politicians to become concerned, because the newly released boardings by station had immediately visible anomalies. In an attempt to understand the new numbers, CRF and the Peninsula Cities Consortium (PCC), representing Atherton, Burlingame, Belmont, Menlo Park and Palo Alto, constructed various comparisons of the data.

PCC produced a comparison with national Amtrak data showing that the HSRA projections for San Francisco, Anaheim, Los Angeles and Palmdale each exceeded current New York City Amtrak ridership.

CRF produced visual comparisons of HSRA's projected annual per capita interregional rides (*next page*) showing unbelievable growth in projections for Gilroy, Merced, and Anaheim. These analyses helped make the model problem obvious, but left unanswered the question of how model projections went so wrong.

Average Daily Inter-Regional Boardings			
	2000 Charles River Associates Full Network for 2020	2009 Business Plan Starter Network for 2035	Data Change 2000 to 2009
Sacramento	9,866	—	
Stockton	1,488	—	
Modesto	1,785	—	
SF Transbay Term.	10,730	20,600	+92%
Millbrae	1,760	900	-49%
Redwood	3,140	2,400	-24%
San Jose	6,843	4,700	-31%
Gilroy	2,063	3,800	+84%
Los Banos	212	—	
Merced	563	5,600	+895%
Fresno	3,406	4,700	+38%
Bakersfield	2,545	5,300	+108%
Palmdale	—	5,500	
Santa Clarita	3,118	—	
Sylmar	—	3,300	
Burbank	4,062	800	-80%
Los Angeles	12,324	3,800	-69%
E San Gabriel Val.	6,636	—	
Norwalk	—	3,000	
Anaheim	—	19,100	
Ontario	1,404	—	
Riverside	2,626	—	
Temecula	1,594	—	
Escondido	2,510	—	
Mira Mesa	1,255	—	
San Diego	7,457	—	

2000 Charles River Associates
 2020 Full Network Interregional Boardings
 Per Capita (Based on 2008 DOF Population)



2009 HSRA Business Plan
 2035 Starter Network Interregional Boardings
 Per Capita (Based on 2008 DOF Population)



New Plan and New Model

A diminished network, but increased ridership, including huge gains in per capita riders in unlikely cities.

The prior model had believable results in all markets except Gilroy. The new model fails the plausibility test because of its extreme results in Los Angeles, Burbank, Palmdale, Merced, Gilroy and Millbrae.

In January, Californians Advocating for Responsible Rail Design (CARRD), a Peninsula group with econometrics expertise, alerted CRF about problems in the sampling methods used in the surveys. These included using current California rail passengers for a disproportionate percentage of its sample in surveys to determine attitudes toward using high speed rail, which introduced obvious bias into the model.

However, sampling error could not explain other troubling data anomalies, such as the huge per capita ridership seen above in Merced, Gilroy, and Anaheim. To try to solve the riddle, CARRD asked for additional data including the final coefficients and constants used in the HSR Ridership and Revenue Model.

Ridership Mystery Solved

CARRD received the final coefficients and constants in late January from Deputy Director Jeff Barker of HSRA, along with a surprise—a transmittal memo from George Mazur of Cambridge Systematics. This transmittal places direct blame on MTC for withholding these documents from the public for the past 33 months: “The client, MTC, elected not to update the Task 5a report nor to include the final coefficients and constants in the final project report.” This is a remarkable assertion for Cambridge Systematics, assigning responsibility for what may be fraud.

The final coefficients and constants are substantially changed from those peer reviewed and published, and the revised elements were never seen by the peer review panel. Jeff Barker of HSRA said in his transmittal e-mail that “... this material as presented did not previously exist and significant amounts of subconsultant staff time went into preparing it.” Until CARRD received the material, no member of the public nor any oversight agency had seen the technical underpinnings of the final ridership model. Without peer-reviewed documentation that a model accurately replicates current travel behavior, it is useless as a predictor of future travel.

Doug Kimsey, the MTC’s planning director, was quoted February 7 in the Palo Alto Daily News confirming that there were unpublished changes to the model. “My understanding is that the modifications were minor enough they didn’t need to be peer reviewed. ... Minor modifications to the evaluation tool don’t necessarily have to be peer-reviewed.”

Is a 600 percent change minor?

One notable covert change made commute and business travel sensitivity to departure frequency 600 percent higher than the value reported to the peer group and the public. The peer-reviewed model assumed an extra 30 minutes between departures would cut traffic by the same amount as 5 extra minutes of travel time. The revised model apparently made that **50 extra minutes**. In the resulting model, frequency clearly trumps travel time.

This change appears designed to tip the scales toward rail, which has speed challenges due to route detours added since 2000, but plenty of frequency. Only 6 of 99 total San Francisco-Los Angeles trains each direction achieve HSRA's claimed 2 hour 40 minute travel time. 74 trains take 3 hours 13 minutes on average. The only way these 74 trains compete is that the model levies a substantial time penalty on the less-frequent air departures.

The size of the frequency sensitivity change reduces the obvious travel time advantages of air travel in distant markets such as Orange County and San Diego, and counteracts penalties for rail detours or transfers. The traffic increases at Anaheim, Merced, Gilroy and San Francisco seen on the prior page appear to be one result.

The disclosure also explains how Altamont's population and travel time advantages over the Pacheco Route were negated. Tweaked frequency sensitivity is a plausible explanation why the model showed ridiculously circuitous Sacramento-Chowchilla-San Francisco trains producing more revenues than direct Altamont trains.

The 600 percent change is not a minor distortion, and would undoubtedly have caused the peer review panel to reject the model. Proper coefficients are calculations with substantiating data. The new frequency coefficient lacks any supporting evidence, documentation, or even informal explanation. This lack of documentation makes it hard to accept that the changes are any sort of honest corrections.

"Sledgehammer" Adjustment Signals Tampering with Model Results

There are additional clear signs that the revised model is fatally flawed. Constants specific to air, high-speed rail and conventional rail are now very large relative to other parameters. This is a *de facto* admission that the model cannot accurately replicate passenger choice based on objective factors such as travel time and costs, so as one economist commented, "a sledgehammer is being used to bang them into place."

For travel demand specialists, use of large specific modal constants is an enormous red flag, because by their very nature they suggest bias and tampering. Models are supposed to work without big modal constants.

Because the peer review committee was kept in the dark and MTC published preliminary coefficients and constants which looked relatively reasonable, the gaming of the model workings was concealed from all. The true authorship of the numbers is an open question, but it appears that Cambridge Systematics wants to distance itself from all work that may have happened after April, 2007. Mazur's transmittal states that "There have been no changes to these model elements since April 2007." This raises more questions about authorship of the August 2007 revisions that lowered Altamont's traffic below Pacheco's, as well as subsequent changes.

Who is responsible for the several revisions since April 2007 is a matter of controversy. What is not controversial is that the final work is irrevocably flawed and needs to be redone from scratch.

Conclusions

Transportation modeling consultant, Norm Marshall of Smart Mobility based in Norwich, Vermont, is preparing additional conclusions but has stated to us:

"I conclude that the final coefficients and constants introduce unacceptable biases into the model, and that the model as presented in the January 29, 2010 memo is invalid for forecasting future HSR ridership and revenue."

Now that HSRA has disclosed its use of this invalid model, CRF finds the following significant implications:

1. Applications for Federal ARRA funding were based on questionable ridership estimates.
2. Each Program and Project Level EIR which relied upon findings of the model calls for facilities which may be unjustified. Some of the recent design augmentations are quite significant, such as 10 trains/hour capacity requirements at San Francisco Transbay Terminal and Los Angeles Union Station, and quadruple tracking of San Francisco-San Jose and Los Angeles-Anaheim segments requiring use of eminent domain.
3. Claims that the High-Speed Rail Authority's project will not require public subsidy are no longer credible.
4. Without valid ridership and fiscal projections, the hundreds of millions of dollars spent on engineering and EIRs may have been wasted.

A Compendium of Questionable Claims by the High Speed Rail Authority

by Richard F. Tolmach, President
California Rail Foundation

A statewide high-speed rail network is essential for California's future growth, but the High-Speed Rail Authority's planning and financial work presented to date is an uncertain basis for decisionmaking. The Authority is making broad claims derived from implicit assumptions and often-inaccessible data to influence the public about the merits of its project. Since the High-Speed Rail Authority apparently has refused to present a business plan documenting its financial case for its proposed route network, the California Rail Foundation offers the following independent analysis.

Ridership Claims

The High-speed Rail Authority frequently states in its promotional documents that its line will reach 117 million riders by 2030. This projection springs from outdated work and is not even applicable to the currently proposed project. By examining the basis for the HSRA's best-documented guess on ridership, the Cambridge Systematics paper done for MTC in 2007, one discovers the buried fact that the first stage ridership for 2030 between the Bay Area and Los Angeles via the Pacheco Route is projected to be about 25 million, 2 million of which is local Bay Area traffic. The vast majority of trips originally projected are on second or third phase extensions unlikely to be built by 2030, such as Los Angeles-Riverside-San Diego.

Is there a reasonable basis to believe that 25 million annual trips will be attracted to high-speed rail in 2030, assuming a service start by 2020? Historical precedents make even this figure doubtful.

The pattern of overpromising on rail megaprojects is unfortunately not new. Eurostar was projected to move 15.9 million passengers through the Chunnel its opening year, but carried only 2.9 million. By 2001, after six years of operation, Eurostar had reached 6.9 million annual passengers. By 2005, after ten years of operation, it was only 7.5 million, still less than half of the original first year projection.

HSRA has not made a convincing case for its 25 million figure, insofar as the Cambridge paper uses unreasonable assumptions about the diversion of air travelers to rail, which accounts for a healthy share of the sum. In its original assumptions, it apparently projected rail traffic by assuming there could be a 99 percent diversion of air travel of some 70,000 weekday trips. The subsequent "investment grade" ridership estimate assumed a 66 percent diversion to rail in the greater Bay Area-Los Angeles region air market. That proportion of market diversion from air lacks credibility for four reasons:

1. The rail facility will hardly penetrate close enough to upper income areas to affect the attraction of John Wayne Airport, Ontario International, or Los Angeles International. Similarly, in the Bay Area, there is no East Bay station to provide access as convenient as Oakland International Airport.
2. Air travel is trending downward, and only about 45,000 daily seats exist in the Bay Area-Los Angeles Basin market, so there are only about 13 million annual trips, assuming an 80% load factor.
3. A high percentage of air trips using California airports, perhaps as many as 40 percent, are connecting to transcontinental or international flights, and cannot easily be diverted to rail.
4. Earlier plans by the HSR Commission, predecessor to the Authority, had proposed intermodal air/rail stations, which would have allowed trains to be used as code-share segments substituting for air travel. They were dropped by Authority staff. The lack of focus on air markets and their needs was a major oversight by the Authority, since both the Florida and the Texas HSR projects were justified on the basis of diverted air traffic.

Even a 25 percent diversion of Bay Area-Los Angeles air traffic may be unduly optimistic, given the lack of transfer points and lack of rail access. Without a huge portion of the air market, though, the California High-Speed Rail Authority's financial justification of its project is dubious.

French Success Was Based on Existing Rail Traffic

France's TGV-Southeast and TGV-Atlantique were dependent upon strong pre-existing conventional rail traffic to achieve their nearly immediate ridership successes. On each of these corridors, traffic passed the 10 million mark within two years, because good SNCF service had already won much of the market.

Before a single high-speed train ran, SNCF already carried 12.2 million passengers annually in the South-east corridor and 17 million in the Atlantique corridor. Actual 10th year increases in traffic produced by the investment in high-speed rail were 5.3 million annual rides on TGV-SE and 6.7 million on TGV-Atlantique. Even with the huge head start of 70 percent legacy traffic, neither route achieved 25 million rides by the tenth year, despite higher population served than the California starter line.

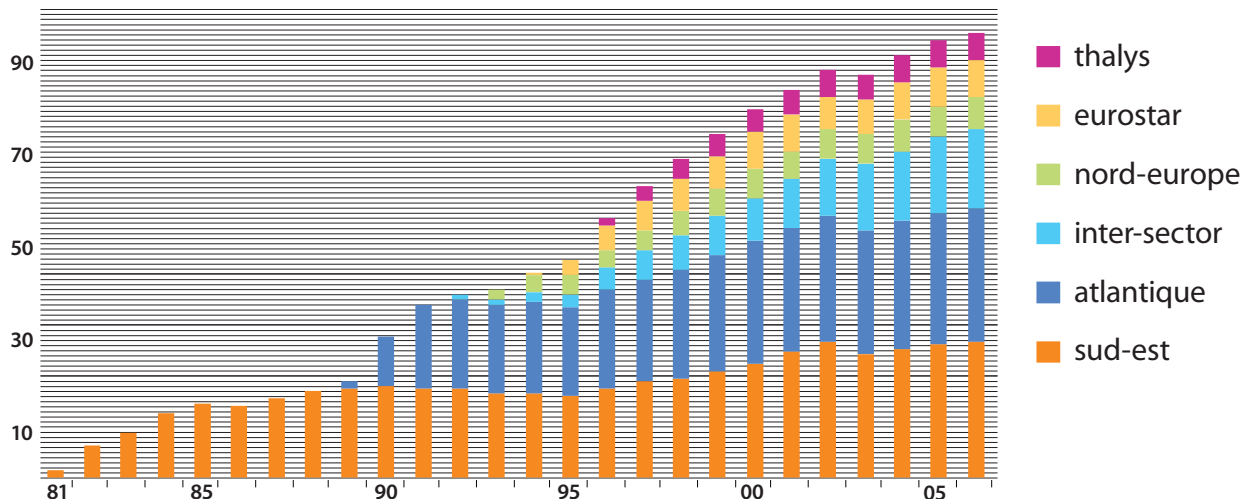
With one notable exception, all the European corridors cited in the chart below had major pre-existing conventional rail traffic. High-speed rail service in Europe has excelled where it replaced existing successful rail markets, but has not created vast new rail travel markets. The California project bears striking similarities to Eurostar, which had no substantial pre-existing rail market, was initiated as a political project, and began with managers unfamiliar with high speed rail economics and operation. Eurostar still has not reached its first year ridership projection after 15 years and tens of billions of dollars of extra investment.

2030 ridership projections for the California proposal are seriously out of synch with 10th year results on existing European systems. HSRA seems likely to see a performance shortfall similar to that of Eurostar.

Project Name	10th Year Market Population	10th Year Rides	10th Year Rides per capita	10th Year stations	Rides per station
TGV-Sud-est	17.1M	17.5M	1.06	48	379K
TGV-Atlantique	20.9M	22.9M	1.13	54	439K
TGV-Inter-sector	16.5M	9.6M	0.62	41	234K
TGV-Nord-Europa	13.5M	5.3M	0.39	12	441K
Eurostar (Int'l only)	20.8M	7.7M	0.34	7	1,100K
Thalys (Int'l only)	14.4M	5.6M	0.39	20	280K
California SF-Anaheim	17.5M	25.0M	1.43	14	1,786K

Sources: SNCF International graph 2007, Cambridge Systematics ridership report 2007 for HSRA data.

Annual Ridership on TGV and International HSR Services (Millions)



Source: SNCF International Proposal 2007

Profitability Claims

Authority representatives frequently repeat the claim that the line will produce annual profits of over \$1 billion. There is scant information available to substantiate that claim. A derivation from the claim of 117 million annual rides is implied by the fact that the profit claim is usually stated in the context of that ridership claim. The profit claim has the same degree of reliability that the 117 million rider claim does. If the Authority has made any assumptions on passengers, passenger-miles, yield or cost of operation to give the profit claim some substance, they have not been shared with the public.

Basic math indicates the profit claim cannot apply to a 25 million annual forecast for ridership of the starter line. One billion dollars of profit divided by 25 million riders would indicate \$40 profit per rider, a practical and political impossibility. Another problem is that the claim is always made without reference to year, which makes it impossible to analyze. In practice, every rail corridor starts with low ridership and low revenue and a few rail corridors eventually become profitable.

The California service will obviously start with a deficit in the hundreds of millions of dollars annually. The roughly 35 million annual train-miles of the starter network indicates an operating cost of a billion dollars or more. In a few years or a decade, under the best of circumstances, the line may come close to breaking even, but it cannot produce a profit unless substantially more than the 25 million riders projected by the model use the line. If, as on Eurostar, Thalys, AVE, Acela, or certain other new high-speed rail lines, the projection is never met, deficits will continue to be in the hundreds of millions of dollars annually.

There is no scenario in which the proposed California system can produce a billion dollars a year of profit without more riders. Any realistic hope that network extensions to San Diego or Sacramento could be funded with profits from a starter line died when the Pacheco and Palmdale alignments were chosen.

The Palmdale detour mileage alone raised the bar by at least \$120 million in annual operating costs, far more than the revenue the stop is estimated to produce. The resulting longer trip time results in significant harm to endpoint revenues. The Pacheco detour, which removed access to Northern San Joaquin Valley cities to instead pander to development interests in western Merced County and the lower Santa Clara Valley, had a similar negative effect. Revenue lost by the Pacheco detour from discarding 11 million annual north Valley trips averaging (for example) \$30 is \$330 million annually. By drawing its line to exclusively benefit San Jose and Gilroy and swerving to Palmdale for desert speculators, the Authority threw away nearly a half-billion dollars of annual benefit. Private investors potentially interested in high-speed rail are unimpressed by the sort of anti-economic design that happens when politics trump engineering.

Energy Efficiency Claims

According to the US Department of Energy's latest Transportation Energy Data Book published in 2006, Amtrak energy intensity was 2,709 British Thermal Units (BTUs) per passenger-mile, commercial airlines used 3,279 BTU per PM and automobiles used 3,549 BTUs per PM. The DOE figures are from calendar year 2005. Recent data from UIC (Union Internationale des Chemins de Fer) indicate that European electrified trains average 1,800 BTUs per PM, with almost all national figures in the range from 1,600 to 2,000.

The figure used by the Authority for high-speed rail is 1,200 BTUs per PM, a rather doubtful calculation derived from assuming a high load factor and an average of over 700 passengers per train. In practice, typical load factors are 50 to 60 percent and average train occupancy is rarely over 300. Recent work by British researchers for the Department for Transport raises questions about whether even the typical 1,800 BTUs per PM is appropriate for 220 mph trains. This is because energy consumption increases rapidly at higher speeds as aerodynamic resistance mounts. At 217 mph, the British estimate that the energy requirement per seat is double that at 125 mph.²

² Professor Kemp, Lancaster University, Environmental Impact of High Speed Rail (2004) for UK Department for Transport.

The Authority's often-repeated claim that "the high-speed trains needs [sic] only one-third that of an airplane and one-fifth of an automobile trip" depends upon its inaccurate 1,200 BTU for the train as well as additional questionable assumptions. Among these, the Authority has decided to compare its trains' performance in some cases against cars with solo drivers stuck in urban rush hour traffic.³

The Authority's claimed savings of 22 millions of barrels of oil per year by 2030 still appear in speeches and printed materials disseminated by advocates of the project, but this figure needs to be discounted by 90 percent or more because of the combined effect of:

- 1) the Authority's claim of 117 million passengers instead of 25 million,
- 2) the Authority's use of 1200 BTUs per PM on 220 mph rail instead of 3500 BTUs
- 3) the Authority's lack of acknowledgment that the currently proposed SF-LA train route via Mojave and Pacheco has significant inefficiency—at least 15 percent more route length compared to highway or air travel, as well as needless elevation gain, and
- 4) the Authority's use of 5700 BTUs per PM instead of 3500 BTUs for auto energy consumption.

Authority staff has already backtracked to reduce the claim to a reduction of 5.8 million barrels of oil in the Bay Area to Central Valley HST Final Program EIR/EIS Summary, but has not as yet corrected its web site or its public pronouncements. True savings are probably no more than 2 million barrels annually, and construction of the line, not included by the Authority in most summaries, will require over 20 million barrels by usual measures of energy equivalents of construction cost. By 2040, there may be some net energy savings, but hardly enough to justify expenditure of tens of billions of dollars to achieve.

Pollution and Greenhouse Gas Emissions Reduction Claims

The claims by the Authority on pollution savings are as contradictory and poorly substantiated as those it makes on energy savings. Authority publicity still predicts emissions savings of 17.6 billion pounds of CO₂ projected by 2030. However, the pollution and GHG claims in the Bay Area to Central Valley HST Final Program EIR/EIS Summary were revised downward by two-thirds this summer. They currently indicate a savings of 6.8 billion pounds of CO₂ emissions annually by 2030, as compared to the No Project Alternative. If real-world inputs are used the savings are dramatically lower.

The same four factors above noted on energy savings also would appear to have a negative impact upon GHG savings: the Authority's inflated passenger count, lowballed rail BTUs, long rail route, and highballed auto BTUs. The 2007 UK Department for Transport paper "Delivering a Sustainable Railway" disputed that HSR has GHG savings equivalent to conventional rail, noting the following :

Private cars	30% capacity	130 (gm per passenger km)
Air (300 mi)	70% capacity	170
Electric Rail	40% capacity	52
Eurostar HSR	40% capacity	85

The British paper reports that although Eurostar has a fraction of the intermediate stops consuming acceleration energy, aerodynamic drag at its top speed of 186 mph versus 125 mph results in a 63 percent increase in carbon emissions compared with conventional rail, even though top speeds increase by only 49 percent. Extrapolating to 220 mph using the same rate of increase, California high speed rail service would likely have carbon emissions of 118 gm per passenger km, an insignificant difference from private cars.

The Air Resources Board made a finding in its Carbon Action Plan that savings from high-speed rail would be 1 million metric tons of CO₂, or 2.2 billion pounds. This gives some indication of how much weight the Authority's assertions have with California air experts. The Authority has not put together a persuasive case for its 6.8 billion pound figure, and has apparently abandoned its claim of a 17.6 billion pound savings, although it remains in Authority publicity and campaign materials.

³ Bay Area to Central Valley HST Final Program EIR/EIS Summary, Table 3.5-5 Energy Consumption Based on PMT

Safety Claims

Judge Quentin Kopp, as part of his standard presentation on high-speed rail, makes the patently false claim that there has never been a high-speed rail fatality. As can be seen in the attached exchange regarding the carefully-parsed version of his claim he printed in the Sacramento Bee, he considers the over 100 fatalities in the Eschede, Germany ICE accident to not count, even though the train derailed at 125 mph on a grade-separated 4-track route specifically upgraded for high-speed trains. He then makes the further misleading claim that the overpass the train collided with was built in the “cold-war era” and inferior to standards that would be used in California.

The accident was caused by a broken wheel on the train, an accident which was repeated with no fatalities but catastrophic damage in July, 2008 at the Cologne station on an ICE-3 train of the newest type. Since that time it has emerged that there is controversy among experts whether the axle type should be allowed on any train, and German authorities have suggested that stresses on vulnerable middle-car axles be lessened by emptying water tanks and turning off eddy-current brake systems.

Broken-wheel accidents can happen as easily on high-speed track as conventional track, and are much more catastrophic at higher speeds. The main reason such accidents have not happened at 186 mph so far in Germany is that less than 25 percent of the network used by ICE trains currently operates at speeds over 125 mph. The security of German high-speed tracks is not perfect, as shown by the incident April 27, 2008 in which an ICE hit a flock of sheep and derailed in a tunnel near Fulda. Three passengers suffered broken bones, while another 20 received lesser injuries including bruises and cuts.

Derailments are not unique to Germany, and there have been at least three TGV derailments on high-speed lines in France — one caused by track subsidence, one by failure of a transmission assembly with parts impacting the track, and one by a flat wheel caused by a previous emergency stop. The fact that there were injuries but no fatalities in these incidents may have been helped by the relative rigidity of the articulations on TGV equipment, but gets down to a matter of luck. No trains were passing, and the derailed trains happened to avoid fouling the opposing track.

What Eschede and other lower-speed accidents should point out is that dangers are greatest in urbanized areas where there are many interactions with other trains and frequent grade separations with narrow openings for trains, especially in places where tracks are not well-isolated from each other. Kopp’s assertion that proposed California high-speed rail standards are higher than those at Eschede is not borne out by the evidence of the proposed cross-sections of the Peninsula and Los Angeles County high-speed routes (see attachment, p.3).

Contrary to Kopp’s claims, the tight placement of tracks (16.4 feet between track centerlines) required to shoehorn four tracks into the narrow Peninsula right-of-way is no better than Eschede. Current practice on new high-speed lines elsewhere is generally over 20 feet between centers because of aerodynamic effects when trains pass, and current engineering guidelines for new US rail construction recommend 25 feet, due to maintenance safety issues. The Authority is ignoring these practices and advocating tighter spacing than either European or American engineering guidelines recommend, apparently to evade the controversy of condemning additional right-of-way on the Peninsula. It is the Authority’s standards that are substandard, not those of the Germans or the French.

Excerpt from 6/22/08 Opinion in Sacramento Bee:

the system will be as safe as other worldwide high-speed rail systems, which haven't incurred a single operational fatality

**Judge Quentin Kopp,
Chairman, California High-Speed Rail Authority**

Not so fast with high-speed rail

6/24/08 Letter in Sacramento Bee

Re "Let's put state on fast track to the future," June 22:

Quentin Kopp, in his opinion article promoting a \$10 billion bond measure to fund the California High-Speed Rail Authority he chairs, so exaggerates benefits of rail that he harms his case.

Kopp wants us to believe high-speed rail systems haven't incurred a single operational fatality. Instead of trying to whitewash history, why can't he admit the truth? Railroads are a challenging safety environment, and accidents have happened. It is especially shameful that he is denying the existence of German high-speed rail fatalities on the 10th anniversary of the June 1998 train catastrophe at Eschede, Germany, in which 101 people died and another 88 were maimed, when an ICE high-speed train derailed at 125 miles per hour.

High-speed rail has been a safer mode than airlines or highways, but no magic protection exists against bad design decisions such as sharing rights-of-way with freight trains or building elevated tracks in earthquake zones. Kopp's unreliable statements on safety invite scrutiny of his other undocumented claims regarding alternate routes, energy savings, profitability and supposed fiscal safeguards in Assembly Bill 3034.

**Richard F. Tolmach, Sacramento
President, California Rail Foundation**

'98 train wreck misrepresented

7/07/08 Letter in Sacramento Bee

Re "Not so fast with high-speed rail," June 24:

Richard Tolmach, a long-time gadfly critic of the High-Speed Rail Authority's plans and employee of the Caltrans Division of Rail, is far off base, and disingenuous in implying that California will build its new high-speed line with any of the conventional rail features which caused the severity of the solitary ICE train accident in Germany a decade ago. Tolmach, under the guise of the "California Rail Foundation," knows better.

That accident occurred in 1998 at conventional rail speeds, on an historical rail line (not high-speed) rebuilt after World War II, at an overhead road bridge whose Cold War design put supports just 10 feet from the edge of the tracks. That design is nothing like the Japanese Shinkansen, Spanish AVE, French TGV, or current US rail engineering standards which will be used for California's electrified, fully grade-separated trains whisking passengers from Sacramento to San Diego in a matter of hours at speeds reaching 220 mph.

I stand by my statement that high-speed trains are the safest mode of transportation in the world. In fact, there has not been one fatality involving high-speed trains operating on modern infrastructure in 45 years of operation in Japan and Europe.

California's high-speed train system will improve existing rail operations by eliminating more than 500 rail crossings.

The public deserves accurate information before voting this November on a bond to bring high-speed trains to California; they are safe and reliable, conserve energy, reduce the need for foreign oil and benefit the environment.

**Judge Quentin Kopp,
Chairman, California High-Speed Rail Authority**

Correcting further misrepresentation by Judge Kopp

7/09/08 Response

Re: '98 train wreck misrepresented

It was actually my own statement that high-speed trains are safer than air or highways. Judge Kopp made the reckless and unsupportable claim that there has never been a single high-speed rail fatality. He apparently was quite aware he was being economical with the truth.

Judge Kopp now admits he knows all about the catastrophic Eschede, Germany crash exactly ten years ago, in which an ICE high-speed rail train derailed at 125 mph, killing 101 people and maiming another 88. However, for some reason he still won't concede that the accident was a high-speed rail accident.

Lawyerly circumlocutions aside, he should admit the truth. The ICE train was a high-speed train, traveling 125 mph on infrastructure specifically upgraded and fully grade-separated for the purpose of ICE service. The grade-separation at Eschede was in fact the cause of most of the fatalities.

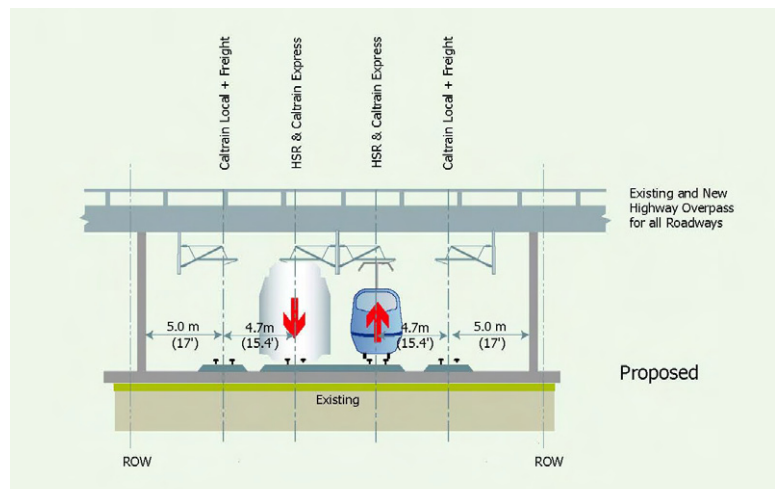
His claim that the overhead bridge struck by the train was a "Cold War design" is absolutely wrong. The bridge was a grade-separation built around 1990 as part of the 125 mph improvement of the rail line for ICE service. As can be seen in the photo at right, it is no historic structure.



Kopp may claim "that [German] design is nothing like the Japanese Shinkansen, Spanish AVE, French TGV, or current US rail engineering standards" but he has neither the experience nor knowledge of his own project to back that up. The California high-speed line will indeed use upgraded conventional facilities on narrow, constricted rights of way on the Peninsula, further south in the Santa Clara Valley and in the San Fernando Valley according to plans presented by the High Speed Rail Authority. Also, clearance dimensions at bridge abutments are not much better than the 13 feet from track centerline at Eschede.

Published plans of the High Speed Rail Authority claim 5.0 meters, or 16.4 feet, fairly close to the minimum allowed by California Public Utilities Commission general orders. **[17 feet in the drawing appears to be an HSRA math error]**

That extra three feet won't do much to protect passengers. An 80-foot long railcar that derailed diagonally off the right-of-way can easily strike a bridge 16.5 feet from track centerline. Kopp's statement that there will be 500 grade separations on the California network does not reassure given the dangers of each.



Caltrain Corridor bridge clearance cross-section from SF Bay-Central Valley FEIR Appendix 2E, Page 2-E-6

Another factor identified in the Eschede accident was a quadruple track layout mixing high-speed trains with slower services. This is exactly what Authority plans on its urban sections on the Peninsula, further south in the Santa Clara Valley and in the San Fernando Valley.

Frequent crossover switches are planned in these sections to maximize flexibility of service, but as a German commentator on Eschede remarked, it is "just this expedient [of crossovers] which served to contribute so much to the scale of the disaster." Without the crossover, the

ill-fated German train would have continued down one of the center tracks and would not have derailed off to the side, piling up accordion style on the bridge support.

Facing points on crossover switches are especially dangerous to high-speed trains, but the Authority plans to have dozens of them, because it is determined to share rights of way with high frequency commuter service operated by Caltrain and Metrolink.

In summary, the California plan appears to have an abundance of features that are more similar to the cramped, shared-use four-track infrastructure at Eschede than to well-designed facilities like TGV-Southeast or TGV-Est using new two-track rights of way. All the way from San Francisco to Gilroy, all the way from Palmdale to Los Angeles, all the way from Los Angeles to Anaheim, there appear to be significant potential conflicts with existing rail traffic that will raise costs and cause compromises to safety and efficiency. The chosen corridor routing maximizes required system mileage and maximizes conflicts.

It is unfortunate that California's high-speed rail project appears to be run by a posse of political operatives intent on a sales pitch for a bad project, instead of European and Japanese experts knowledgeable about high-speed rail and skilled in delivering a well-designed system at a fair price.

Richard F. Tolmach, Sacramento
President, California Rail Foundation

Memorandum

To: David Schonbrunn, TRANSDEF
From: Norm Marshall
Subject: Responses to Comments California High-Speed Rail FEIR
Date: August 30, 2010



I have reviewed selected portions of Volume 2: Responses to Comments - Bay Area to Central Valley HST Revised Final Program EIR. The response document fails to adequately address model flaws that I documented in my April 2010 comments¹ which make the model invalid.

The EIR response document states:

Comments from the second peer review panel meeting resulted in changes to different aspects of the interregional model – including constraining of coefficients - and to the forecast assumptions.” (p. 12-11)

As documented in my comments of April 2010, the report from the second peer review panel meeting includes no mention of constraining coefficients. Even more to the point, the report includes the statement:

Frequency is included in the mode choice models directly rather than the traditional wait times, calculated as half the headway, because frequency has a different impact on interregional travel than it does on urban travel. Wait times were estimated separately based [on] direction from the peer review panel:²

This contradicts the notion that the second peer review panel meeting instructed the modelers to constrain the frequency coefficient. The response language is vague, stating that 1) comments at the peer review committee resulted in model changes, and 2) that model changes including constraining coefficients. It is possible that the response has been written this way to imply that the peer review committee recommended constraining the coefficients when they did not, but only initiated some other changes that got implemented within the same overall process as constraining the coefficients.

The EIR responses state:

Model coefficients are constrained when estimation results are clearly unrealistic or when constraining provides more realistic results during the model calibration and sensitivity testing process. (p. 12-11 – 12-12)

As documented in my April 2010 memo, the coefficients for headway estimated from survey data of 0.21 and 0.24 are realistic and were published multiple times including in a peer-

¹ Marshall, Norm. Memorandum to David Schonbrunn, TRANSDEF, re “California High-speed Rail Model Coefficients Review, April 26, 2010.

² Cambridge Systematics, Inc. with Mark Bradley Research and consulting and SYSTRA Consulting, Inc. Bay Area/California High-Speed Rail Ridership and Revenue Forecasting Study: *Findings from Second Peer Review Panel Meeting: Final Report*, p. 4-14, July 2006.

reviewed journal article in 2010. So the estimated coefficients were not “clearly unrealistic.” If they had been, additional model estimation work would have been done. It is not possible that constraining the coefficients would produce “more realistic results” for high-speed rail as there is no actual ridership data to match. It also would have wrong to constrain the coefficients to better match air data. As documented in my April 2010 memo, the final air model includes many other invalid coefficients and would be invalid even without the headway constraint problem.

The EIR response concerning the headway constraint states:

1) Comments regarding the level of constraint have generally focused on the coefficient for service headway being constrained to be equal to the coefficient for in-vehicle travel time. 2) Comments have incorrectly related headway to the average wait time that results from service headways. 3) The headway coefficient is not a coefficient on average wait time. 4) The impact of average wait time for specific modes (air, conventional rail, and high speed rail) has been included in mode specific constants for those modes. 5) Instead, headway represents a convenience measure and should not be related to average wait time coefficients used in urban transportation modeling or other high speed rail models that use different model constructs. 6) Accordingly, the headway coefficient was constrained, and as a result reflects the unique case of high-speed trains that offer far more frequent interregional service than is currently available on conventional intercity rail services such as Amtrak. 7) The adjustment made to the headway coefficient was within the range of reasonable values presented to peer review during the model development process. (12-12)

This paragraph is some of the most incoherent model documentation I have ever read and it includes many errors. I have numbered the sentences to better highlight the different errors. Sentences 1-3 attribute the error made by the modelers to the commentators. The commentators do not think that the headway should be constrained to travel time. The commentators, including me, are pointing out that this is what the modelers did. Sentence 4 manages to include three separate errors: a) proper modeling includes no concept of an “average wait time” for a specific mode – instead time is modeled explicitly, b) wait times are not properly accounted for in mode-specific model constants, and c) the HSR model does not actually account for wait times in the mode-specific constants. Sentence 5 returns to the theme of sentences 1-3 agreeing with the commentators that the headway should not be constrained based on wait time.

Then sentence 6 remarkably does what the entire first part of the paragraph states should not be done: “Accordingly, the headway coefficient was constrained ...” based on wait time. The word “accordingly” is a total misrepresentation as it connects one idea with its opposite. The rest of the sentence also is wrong. The constrained coefficient applies across modes and not to “the unique case of high-speed trains.” Sentence 7 returns to the peer review process and rather than indicate that the headway constraint was recommended states only that it “was within the “reasonable values presented to peer review.” There is no documentation to support this assertion, while there is support that the estimated values were 0.21 and 0.24. This could simply mean that the peer review committee recognized that the theoretical range of possible values for the ratio range from 0.0 to 1.0 – but not that the final value of 1.0 was valid.

The reference to the Federal Transit Administration's New Starts process in the paragraph immediately preceding the one analyzed above is further evidence of confusion of the modelers. The New Starts modeling guidance pertains only to urban transit modeling which the response argues is irrelevant to high-speed rail modeling. I and the other commenters agree. It is inappropriate to use the New Starts process as a justification for constraining the headway coefficient, so this reference is extraneous and misleading.

The response document states:

Authority staff understand, however, that the model has been publicly available from MTC since the fall of 2007, when the model was delivered to MTC by Cambridge Systematics. The computer model itself was not included in the litigation record for the Town of Atherton case. We acknowledge receipt of Exhibit A to this letter, the report by Norman Marshall of Smart Mobility, Inc. We disagree that the changes to the model coefficients that occurred in the normal course of model calibration and validation constitute significant new information that triggers further revision and recirculation of the program EIR. (p. 15-207)

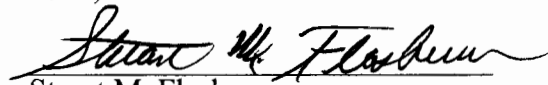
Documenting one model and applying a fundamentally different model violates the most basic standards of professional practice. The implication in the response document that the burden is on the public to discover a discrepancy between published documentation and the model applied is ludicrous.

I reiterate my April 2010 finding that "The mode-specific constants in the final model that were used to forecast ridership and revenue are invalid."

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VERIFICATION

I, Stuart Flashman, am the attorney for the petitioners and plaintiffs in the above petition and complaint, and I make this verification on their behalf and with their authorization. The petitioners and plaintiffs in the above petition and complaint are absent from Alameda County, where I have my offices. I have read the foregoing Petition and Complaint and am familiar with the matters alleged therein. I am informed and believe that the matters alleged therein are true and on that ground allege that the matters stated therein are true. I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this Verification was executed on October 2, 2010 at Oakland, California.


Stuart M. Flashman
Attorney for Petitioners and Plaintiffs