CALIFORNIA
High-Speed Rail Authority

UIC Peer Review - Response Matrix

2014 BUSINESS PLAN

Section 5: *Operations and Maintenance*

Finding #	Finding Detail	Page #	Potential Impact on Costs	Response
1	A lump-sum for marketing and advertisement for this new mode of transportation should be added as a specific effort to be made for the implementation of the project and during the 3 to 5 first years following its start-up by spending up to 10% of the total annual revenues. When the market is mature, this spending may be reduced to 2 to 4% of the total revenues depending on the competition context	Page 9	**Increase**	**Addressed.** The marketing costs are an attribute of the 2014model. We have constructed a "bottom up estimate" for HSR marketing based on consultations with marketing professionals. Our current calculations indicate this cost to be less than 2% of revenue, driven largely by the higher expected levels of revenue on the CHSRA line compared to most new European lines. The marketing costs are in line with expected totals from DOT IG.
2	Annual variable costs based on the ridership volume should be considered for distribution & sales depending on the expected distribution mix between the sales' channels: internet, at-stations, call center and travel agencies.	Page 9	**Increase**	**Addressed.** We have incorporated costs categories into the new model to account for various distribution outlets. These costs include costs for credit card sales and call centers and assume that there is no cost for travel agencies or at-station sales (besides credit card fees) and that the website would be cost neutral based on its ability to generate revenue from advertising that would offset the cost of upkeep. Input from the UIC was used to base the 2014 model assumptions.
3	All calculations have been made as the California HSR project is sales tax exempt. Should the California HSR project not be sales tax exempt, ridership forecasts should be revised as the modal choice should be based on the comparison of total travel costs (including sales tax) between the different transport alternatives and O&M costs have to take into account the amount of sales tax to be paid as a percentage of the farebox revenues (California has a base sales tax of 7.25%, and can total up to 9.75% with local sales tax included depending on the city in which the purchase is made).	Page 9	**Increase**	**Not Relevant/Applicable.** Transportation is considered a service and in the California tax environment, services do not carry sales taxes. The tax exempt status is the right assumption. Consultation with the Authority financial and legal advisors confirmed this assumption.
4	It has also been noted that European commercial practice offers financial compensation to HSR travelers for major train delays. Should the CHSRA decide to have such a commercial policy financial provisions should be added on the O&M costs	Page 10	**Increase**	**Not Relevant/Applicable.** The California System does not plan to adopt a fare guarantee at this time. This finding is based on European practices and needs to be considered in the context of a future private operator and all other issues related to this type of procurement. If such a policy is adopted as part of the commercial strategy for the system, the costs would be added to the model.
5	The level of contingency to be applied to the O&M costs that should be consistent with the level of contingency applied to the construction cost during this stage of design of the California HSR project	Page 10	**Increase**	**Addressed.** The current contingency on the capital costs is 21 percent (with 5 percent of that being unallocated and 16 percent allocated contingency). The O&M contingency in the 2014 model is based on guidance from the DOT IG and an analysis of risks associated with each model component. The total contingency is 26 percent (5 percent unallocated, 21 percent allocated). The slightly higher percentages of contingency in the O&M forecasts than the capital costs reflect the DOT IG guidance, an extra level of conservatism, and reflect the greater uncertainty in O&M costs relative to capital costs (which will be incurred sooner).
6	It is the Experts' opinion that there is no certainty that the operating plan is sized to carry all the demand by using this methodology. For example, a train having a 100% load factor at an averaged Friday will not have enough capacity to carry all the demand at a peak-period Friday -above the averaged Friday demand. This procedure may lead to an understatement of the O&M costs or to an overstatement of the revenues. As a consequence, seasonality of the traffic should be analyzed in a more detailed breakdown including the distribution pattern of ridership volumes at peak periods. Further refinement of the operating plan should take into account this aspect;	Page 10-11	**Increase**	**Not Relevant/Applicable.** This will be addressed with the second generation of ridership modeling which will include time-of-day ridership data. The current ridership model does not include seasonality factors in the forecasts (based on average day). A separate travel seasonality study has been commissioned by the Authority to inform on long distance seasonal travelling patterns and will be part of the service plan optimization. As time-of-day ridership data becomes available, future service plans will reflect this finding. As the O&M cost model is used to determine the cost of operating a particular service plan, the optimization of service plans will be reflected in the O&M cost results but does not impact O&M cost model assumptions.

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7	The O&M cost escalation factor for the overall operation period should be linked to the expected escalation costs of labor, energy and raw material. The assumption made regarding labor cost should be in accordance with the income growth assumption used for the ridership forecasts;	Page 11	**Increase or Decrease**	**Addressed.** Calculations of inflation are part of the financial model and are not currently used in the O&M model. There are adjustments for real cost inflation in the O&M model under some scenarios (for example the high scenario includes real inflation on wages) but nominal inflation is currently applied outside of the O&M model. However, if necessary, the model is capable of incorporating nominal inflation and that inflation could be broken out into various components (energy, labor, materials, etc.)
8	A productivity factor should be part of the O&M calculation process as it is obvious that increased performance would be delivered over years, and should offset partly or fully the cost escalation	Page 11	**Decrease**	**Addressed.** It was deemed optimistic to assume productivity increases in the O&M costs medium case forecasts and no productivity factor was applied. . However, the low scenario does assume reduced staffing needs for the system, in part taking into account efficiencies that could potentially be gained from a private operator.
9	Financial charges or leased costs have to be added on whether the future operator purchases/leases the rolling stock and other assets	Page 11	**No anticipated impact (costs would be transfers between parties)**	**Not Relevant/Applicable.** Costs for the purchase of rolling stock are included in the capital costs. As the procurement options for the operation of the system are still being developed, it is too soon to begin assuming financial/lease terms for the use of the rolling stock. It is very likely that the rolling stock will be procured before the operator given the lead-time involved. Once the procurement strategy is defined, we will be able to factor in these assumptions into the O&M model. However, after the purchase of the rolling stock, the financial transactions associated with it will be a transfer between the operator, the Authority, and perhaps another party but that will only impact the distribution of costs and revenues, not the total costs among all of the players so the overall cost is accurately accounted for in the model.
10	The “franchisee” may not undertake all the technical tasks and subcontract part of them. The contractors in charge of the operation and maintenance will receive a fee (or margin) to deliver the service and cover the technical risk	Page 11	**Decrease**	**Not Relevant/Applicable.** As the procurement options are yet to be defined, the O&M model is not currently assuming contracting or subcontracting arrangements. We are planning to continue to refine the O&M model as business model and procurement decisions are made, including more detailed analyses of functions that could be contracted to reduce costs.
11	A performance contract may be established between the CHSRA and the companies in charge of the O&M activities (based on a bonus/penalty contract) that will be an incentive to curb O&M costs	Page 11	**Decrease**	**Not Relevant/Applicable.** Similar to #9 and 10 above, the decisions on the business model and the contracting arrangements are yet to be decided and will be incorporated once made in the future costs forecasts.
12	The Experts agreed that the HSR infrastructure maintenance procedure and techniques are quite similar in the three countries they are originated from (France, Italy and Spain) resulting to a cost in the range of $190,000-$220,000 per mile for a commercial speed up to 300 kph (186 mph). The range of +/- 7% reflects potential differences in the design of the HSR (proportion of tunnels/bridges, slab or ballast track, etc.), the number of trains running the system and local weather conditions. Translating this range of infrastructure maintenance reference values into the U.S. high-speed rail project should require further expertise once the project design and the technology are fully determined. The Experts also recommend making a cost provision for speeds up to 350 kph (220 mph).	Page 12	**Increase**	**Addressed.** The California High Speed Rail system was designed and cost estimates were prepared for operations at 220 MPH. The additional cost for 220MPH operations are captured in the construction costs. All direct and variable costs related to speed of operations (energy consumption, vehicle maintenance, etc.) are included in the O&M model. However, there is also allocated contingency included in the cost estimate that is based, in part, on the potentially higher MOI costs for 220 MPH operation.
13	The Experts also recommend making a significant cost provision for speed up to 350 kph (220 mph) as preliminary findings are showing that the increase in equipment maintenance costs is above linearity when speed increases.	Page 12-13	**Increase**	**Addressed.** The California High Speed Rail system was designed and cost estimates were prepared for operations at 220 MPH. However, there is also allocated contingency included in the cost estimate that is based, in part, on the potentially higher MOE costs for 220 MPH operation.
14	The electricity consumption for train running at a 350 kph (220 mph) speed has to be increased by 10 to 30% (depending on the topography of the HSR line) in comparison with train running at a 300 kph (186 mph) speed.	Page 13	**Increase**	**Addressed.** The energy consumption model used to generate inputs on energy usage for the O&M model takes this into account and the outputs it produces are generally higher than international systems running at 186mph.

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15	O&M cost model sensitivity to passengers' demand was examined to determine if the model reacts to changes in these variables in a manner consistent with observed current practices in Europe. The model showed an elasticity of O&M costs to ridership levels of 0.6. This magnitude is considered too high and reflects a too low proportion of fixed costs.	Page 13	**Increase in early years, decrease in later years**	**Addressed.** The 2014 model has a significantly reduced elasticity to the ridership forecasts. The higher share of fixed costs in the 2014 model effectively reduces its elasticity to ridership as a much larger share of costs would remain static regardless of the number of riders on the system. However, the elasticity is not static between various time periods and tends to be higher when new phases are added than within phases (when increased ridership generally produces only increases in operating costs, commercial costs, and some MoE costs.)
16	The Review did not intend to check the justification of the planned timetable but only the consistency between the assumptions taken in the ridership forecast modeling process and the O&M costs model. However, current practices have shown in Europe that a too systematic timetable and/or a desire to carry the whole demand during peak-periods may lead to higher O&M costs	Page 13	**Decrease**	**Not Relevant/Applicable.** This will be addressed with the second generation of ridership modeling. As time-of-day ridership data becomes available, future service plans will be optimized and reflect this finding. As the O&M cost model is used to determine the cost of operating a particular service plan, the optimization of service plans will be reflected in the O&M cost results but not does impact O&M cost model assumptions.
17	The level of the ridership volume carried during the peak period compared to the level of demand carried during off-peak periods should be investigated in connection with a better knowledge of the ridership seasonality. Yield management techniques that are improving load factors during off-peak periods and increasing revenues during peak-period should be used	Page 13	**Decrease costs or increase revenue**	**Not Relevant/Applicable.** Further commercial planning will occur as the program progresses, which will be incorporated into the service planning and thus flow to the O&M cost model. As the O&M cost model is used to determine the cost of operating a particular service plan, the optimization of service plans will be reflected in the O&M cost results but not does impact O&M cost model assumptions.
18	It may not be optimized to have all trains running at 350 Km/h, particularly those trains with several intermediate stops. Very high speed is only needed on a long distance range and/or when high-speed rail is competing with air. All OD pairs and market segments do not have air competitors.	Page 13	**Decrease**	**Not Relevant/Applicable.** Further commercial planning will occur as the program progresses, which will be incorporated into the service planning and thus flow to the O&M cost model. As the O&M cost model is used to determine the cost of operating a particular service plan, the optimization of service plans will be reflected in the O&M cost results but not does impact O&M cost model assumptions.
19	The design of the project at the speed of proven technology (320 Km/h) or at lower speed should also be assessed in terms of ridership forecasts, capital costs and O&M costs.	Page 13	**Decrease**	**Not Relevant/Applicable.** The design of the project is driven by the design speed and travel time requirements established in Proposition 1A.