SERVICE CHARACTERISTICS

SINGLE-TRACK OPERATION

Q

We would like to discuss the implications of operating the system using a single guideway with passing sections in the event of an on-line disabled train and a clearer definition of the alignment used for the cost estimate.

A

To respond to this question, it is important to discuss a “disabled train” and the issues of recovery. The TRI system has few moving parts and none that are necessary for train motion. Each vehicle has eight independent levitation-propulsion assemblies. The operations and control system incorporates redundant systems. The train propulsion system is primarily in the guideway.

With the TRI system, there is an extremely low probability of the train becoming disabled in a track segment. It is more likely that the propulsion segment will become disabled. Even the propulsion segments are redundant, with separate winding on the two sides of the guideway. If enough systems fail and a train is not able to move under some type of normal propulsion, no train traffic will pass until the train can be field repaired. This is true of both single- or double-track systems. As in the case of a total-length double-track system, emergency evacuation procedures will be performed to evacuate passengers from the vehicle, if this proves to be necessary.

The proposed Berlin-Hamburg line used extensive single-track guideway in the planning stage. This keeps the initial cost to a minimum and maintains adequate headway. The single track for the California MAGLEV system is arranged to allow passing of trains at stations or at critical locations along the route for full speed operations.

The alignment developed for the Project Description detailed cost estimate was based on the alignment featured in the Environmental Assessment (EA). For the June 30, 2000, submission of the Project Description, the Optimal Alignment was presented. Subsequent analysis, reported to FRA in the Additional Information submitted on September 1, 2000, showed that an eight-station project adding San Bernardino and West Los Angeles stations and completing the line to March Inland Port (MIP) improved the financial performance of the project.

LINEHAUL TRAVEL TIMES

Q

The PD compares MAGLEV and auto linehaul travel times. Please provide an expanded comparison of average O/D travel time—including linehaul, A/E, terminal, and wait times—for MAGLEV, auto and Metrolink.

A

Some representative estimates for averages for each of these times have been made. Rounding to the nearest 5 minutes, it appears that 25 minutes is a representative average time that covers A/E, terminal and wait times for both MAGLEV and Metrolink in the peak for horizon year 2020. We have added this to the in-vehicle travel time for each of the modes and incorporated the result into the attached table. For peak period auto in the table, we have added 5 minutes to represent parking and egress time.

Maglev is very competitive with the auto, given Maglev's average operating speed of 100 miles per hour, even in the off-peak. For example, the off-peak travel time from March to LAX (90 miles) is 95 minutes. Maglev achieves this distance in 78 minutes.

Table 1 shows travel time comparisons for the 2020 horizon year.

Table 1—Travel Time Comparisons for 2020 Horizon Year (AM Peak Period)
(includes line haul, access/egress/terminal and wait times)

Fully Allocated MAGLEV Times (minutes)[1]						
From Station			To Station			
	LAX	Union Station	Industry	Ontario	Riverside	March
LAX	–	36	52	60	70	78
Union Station		–	39	47	57	66
Industry			–	31	42	50
Ontario				–	34	42
Riverside					–	32
March						–
Automobile Time (minutes), Peak Direction of Travel						
From Station			**To Station**			
	LAX	Union Station	Industry	Ontario	Riverside	March
LAX	–	46	70	88	117	138
Union Station		–	49	63	85	116
Industry			–	41	57	75
Ontario				–	42	57
Riverside					–	30
March						–
Fully Allocated Metrolink Commuter Rail Time (minutes)[1, 2]						
From Station			**To Station**			
	LAX	Union Station	Industry	Ontario	Riverside	March
LAX	–	N/A	N/A	N/A	N/A	N/A
Union Station		–	62	80	140	165
Industry			–	43	63	88
Ontario				–	45	70
Riverside					–	N/A
March						–

1 - 25 minutes is used as an average for access/egress/terminal and wait times for MAGLEV and Metrolink commuter rail
2 - Metrolink commuter rail does not serve LAX, West Los Angeles, or March Inland Port.

AUTO CONGESTION

Q

Clarify which auto congestion assumptions were used in the analysis. Also, please provide results of the sensitivity analysis that the PD states was carried out, showing modal shares with auto travel times varying between today's values and your projected future values.

A

Auto congestion assumptions that were used come from the regional transportation model, which has been rigorously calibrated and validated with overview from key regional transportation agencies.

Auto travel times for 2020 were based on forecast 2020 highway speeds according to the regional modeling process employed by SCAG. The regional process includes "feedback loops" in which the impacts of transportation facilities on congestion levels are reflected in the forecast travel speeds used for the trip distribution and mode choice modeling

The forecast levels of congestion for 2020 and the impact of that congestion on highway speeds on ridership levels were inferred using the example model spreadsheet. Table 2 shows the cross-elasticities for MAGLEV ridership changes with respect to changes in auto travel times. The cross-elasticities were calculated based upon the same example interchange used for the response to the question regarding how the model treats competition between MAGLEV and Metrolink, above. As can be seen in Table 2, MAGLEV ridership is elastic with respect to changes in auto travel time. However, transit ridership is equally elastic (the cross-elasticities calculated for transit with respect to changes in auto travel time were the same as the cross-elasticities for MAGLEV).

Table 2 – Cross-Elasticities for MAGLEV Ridership Changes With Respect to Changes in Auto Travel Times

Auto				MAGLEV				Transit			
Resulting % Implied				% Linear Log				% Linear Log			
Distance (miles)	Time (min)	Diff. from Base	Speed (mph)	Ridership	Diff. from Base	Arc Elasticity	Arc Elasticity	Ridership	Diff. from Base	Arc Elasticity	Arc Elasticity
High Income Travelers											
55.5	88.5	Base	37.6	403.7	Base			559.7	Base		
55.5	44.3	-50.0%	75.3	202.8	-49.8%	0.99	0.99	281.2	-49.8%	0.99	0.99
55.5	66.4	-25.0%	50.2	287.4	-28.8%	1.18	1.18	398.5	-28.8%	1.18	1.18
55.5	110.6	25.0%	30.1	560.3	38.8%	1.46	1.47	776.7	38.8%	1.46	1.47
55.5	132.8	50.0%	25.1	765.3	89.6%	1.55	1.58	1060.9	89.5%	1.55	1.58
Low Income Travelers											
55.5	88.5	Base	37.6	157.0	Base			1601.0	Base		
55.5	44.3	-50.0%	75.3	95.2	-39.4%	0.74	0.72	970.4	-38.4%	0.74	0.72
55.5	66.4	-25.0%	50.2	122.9	-21.7%	0.85	0.85	1252.7	-21.8%	0.85	0.85
55.5	110.6	25.0%	30.1	198.3	26.3%	1.05	1.05	2021.2	26.2%	1.04	1.04
55.5	132.8	50.0%	25.1	246.7	57.1%	1.11	1.11	2514.7	57.1%	1.11	1.11

LOAD FACTORS

Q

For the proposed MAGLEV system level-of-service, what are the average peak and off-peak load factors for each route segment and how many car trains does this assume? When fully loaded, what percentage of MAGLEV users is seated? For airport bound MAGLEV riders, is additional space provided for baggage

A

Assuming urban rail type seating of 60 to 65 seats per car with room for 50 to 60 Standees, the passenger capacity per train is assumed to range from 1,050 to 1,250. One car per train will have a baggage compartment for air passenger luggage. The PM Peak Hour was not modeled, but is assumed to generally be the mirror reverse of the AM Peak loading.

Peak Period Time Assumptions	Off-Peak Time Assumptions
5:30-9:30 AM and 3:30-6:30 PM	12 Hours Per Average Weekday

Link		AM Peak Period	Average Off-Peak Loads
MIP-RIV	EB	25% seats used, 0 standees	20% seats used, 0 standees
	WB	30% seats used, 0 standees	20% seats used, 0 standees
RIV-SBD	EB	25% seats used, 0 standees	25% seats used, 0 standees
	WB	40% seats used, 0 standees	25% seats used, 0 standees
SBD-ONT	EB	30% seats used, 0 standees	30% seats used, 0 standees
	WB	65% seats used, 0 standees	30% seats used, 0 standees
ONT-WCV	EB	35% seats used, 0 standees	40% seats used, 0 standees
	WB	100% seats, 10% standing space	40% seats used, 0 standees
WCV-UST	EB	40% seats used, 0 standees	45 % seats used, 0 standees
	WB	100% seats, 85% standing space	45% seats used, 0 standees
UST-WLA	EB	100% seats, 30% standing space	55% seats used, 0 standees
	WB	100% seats 75% standing space	55% seats used, 0 standees
WLA-LAX	EB	95% seats used, 0 standees	50% seats used, 0 standees
	WB	85% seats used, 0 standees	50% seats used, 0 standees