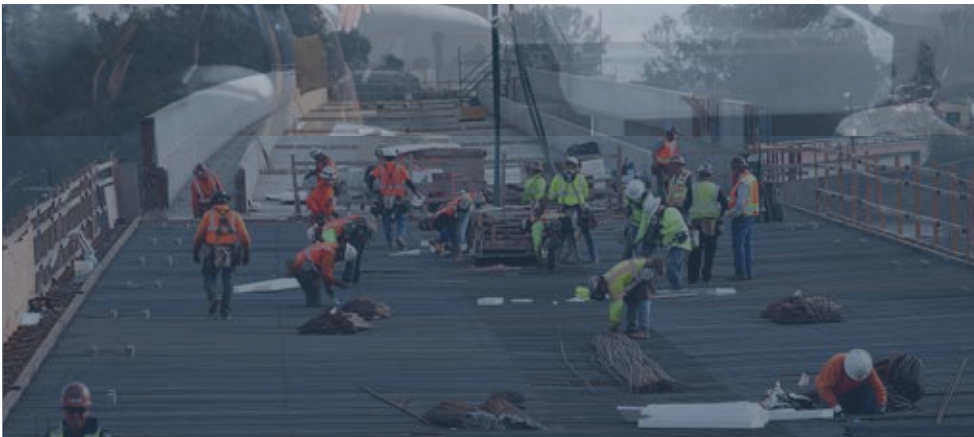


**DRAFT REVISED 2018 Business Plan: Technical Supporting Document**

# High, Medium and Low Cash Flow Analysis

June 1, 2018



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May 11<sup>th</sup>, 2018

Russell Fong  
California High-Speed Rail Authority  
770 L. Street, Suite 1100  
Sacramento, California 95814

Dear Mr. Fong:

**Contract #HSR15-92-1 (“Contract”)**

**Deliverable: Final 2018 Business Plan Cash Flows and Ancillary Revenues**

KPMG LLP is pleased to provide the following deliverables pursuant to our Contract:

- Final 2018 Business Plan Cash Flows – High, Medium, and Low Cash Flows
- Final 2018 Business Plan Ancillary Revenue Technical Documentation

The attached documents provide a description of the forecast cash flows from operation of the California high-speed rail system for the high, medium, and low ridership projections. The cash flow analysis presented in the attached document is based on assumptions related to revenues, operations and maintenance costs, and capital replacement costs provided by the California High-Speed Rail Authority (“Authority”) and its consultants.

The attached ancillary revenue technical documentation outlines the assumptions used to derive the ancillary revenue estimate for the high-speed rail system as approved by the Authority’s executive leadership; a value of four percent has been applied to farebox revenue forecasts provided by the Authority to calculate potential ancillary revenue proceeds. Previously in the 2016 Business Plan, the Authority determined ancillary revenues using a one percent estimate. Since then, the Authority has identified additional revenue opportunities for the system. Potential ancillary revenue sources evaluated include parking, retail, telecommunications, energy, sponsorships, and advertising, among other categories.

The attached deliverables have been developed pursuant to our Contract awarded in June 2016. We look forward to continuing to work with the California High-Speed Rail Authority on financial, commercial, and strategic initiatives as design and construction proceed on the program.

Sincerely yours,

Thierry Prate

*Attachments:*

- *Final 2018 Business Plan Cash Flows – High, Medium, and Low Cash Flows*
- *Final 2018 Business Plan Ancillary Revenue Technical Documentation*

**Final 2018 Business Plan**  
**High, Medium, Low Cash Flows**

## *High, Medium, Low Cash Flows – Final 2018 Business Plan*

This document provides a description of the forecast cash flows from the operation of the high-speed rail system for the high, medium, and low ridership projections. Two versions of the net operating cash flows for Phase 1 through 2060 are provided in this appendix. The first is in Year of Expenditure (“YOE”) dollars which includes escalation to the year that funds are collected or spent. The second version provides the cash flows in 2017 dollars which removes the effect of escalation from all values. These estimates illustrate the potential net cash flows that may be available from operating the project that can be applied to future development costs or future financing.

Net Operating Cash Flow after Capital Replacement is determined by calculating the Net Cash Flow from Operations (revenue less operations and maintenance costs (“O&M”). Revenues include those generated from high-speed rail passenger service (farebox revenue), feeder and connecting bus service, as well as ancillary revenues assumed to be four percent of total farebox collection (as discussed in the *Final 2018 Business Plan Ancillary Revenue Technical Documentation* below). Depreciation and amortization are non-cash items and are excluded from this calculation. To account for capital replacement needs, the projected annual expenditures for repairing and replacing capital assets over time, including trains, equipment, facilities, and rail infrastructure, are then deducted to arrive at Net Operating Cash Flow after Capital Replacement. This represents the net cash flow available to be used for capital purposes and is before consideration of any debt service or investment returns. Net Operating Cash Flow after Capital Replacement is the free cash flow available for capital financing purposes or other capital costs.

O&M and capital replacement cost forecasts were provided by the Authority’s technical consultants. Consistent with the methodology previously used in the 2016 Business Plan, assumed operator profit is included in the discount rates applied to Net Operating Cash Flow after Capital Replacement in the monetization analysis.

The Net Operating Cash Flow after Capital Replacement included herein are based on assumptions related to revenues, operating and maintenance costs, and capital replacement costs provided by the Authority’s technical consultants as described in the Final 2018 Business Plan. The estimates assume that Silicon Valley to Central Valley Line (San Francisco to Bakersfield) will start full-year operations in 2029, with Phase 1 (San Francisco to Anaheim) opening in 2033.

Escalation assumptions were provided by the Authority’s technical consultants and are as follows:

	2017	2018-2025	2026-2060
Revenues	Base Year	3.00%	3.00%
O&M	Base Year	3.00%	3.00%
Capital Replacement	Base Year	2.25%	3.00%

*Source: Final 2018 Business Plan Operations & Maintenance Model Documentation and Capital Cost Basis of Estimate Report*

**High, Medium, Low Cash Flows**  
**(Year of Expenditure \$)**

**Exhibit 1. Net Operating Cash Flow after Capital Replacement through Phase 1 (YOE dollars in millions) HIGH Case**

\$'MM YOE	Total Cash Flow through 2060	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Revenue	247,134	715	1,028	1,367	1,735	3,241	3,842	4,493	5,196	5,954	6,230
Less: O&M	(73,084)	(398)	(454)	(507)	(566)	(1,397)	(1,494)	(1,612)	(1,727)	(1,860)	(1,920)
Net Cash Flow from Operations	174,050	318	574	860	1,168	1,844	2,348	2,881	3,469	4,094	4,310
Less: Capital Replacement	(17,927)	-	-	-	-	-	-	-	-	(0)	(57)
Net Operating Cash Flow After Capital Replacement	156,123	318	574	860	1,168	1,844	2,348	2,881	3,469	4,094	4,253

**Exhibit 1. Net Operating Cash Flow after Capital Replacement through Phase 1 (YOE dollars in millions) HIGH Case (continued)**

\$'MM YOE	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049
Revenue	6,519	6,821	7,061	7,309	7,566	7,832	8,107	8,392	8,687	8,993	9,309
Less: O&M	(1,970)	(2,045)	(2,119)	(2,165)	(2,244)	(2,296)	(2,391)	(2,467)	(2,518)	(2,607)	(2,701)
Net Cash Flow from Operations	4,549	4,777	4,942	5,145	5,322	5,536	5,717	5,926	6,170	6,385	6,608
Less: Capital Replacement	(59)	(7)	(8)	(70)	(184)	(1,183)	(798)	(40)	(292)	(4,304)	(1,594)
Net Operating Cash Flow After Capital Replacement	4,490	4,769	4,935	5,075	5,139	4,353	4,919	5,886	5,877	2,081	5,014

**Exhibit 1. Net Operating Cash Flow after Capital Replacement through Phase 1 (YOE dollars in millions) HIGH Case (continued)**

\$'MM YOE	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
Revenue	9,636	9,975	10,325	10,688	11,064	11,453	11,856	12,272	12,704	13,150	13,612
Less: O&M	(2,761)	(2,862)	(2,928)	(3,043)	(3,146)	(3,212)	(3,326)	(3,446)	(3,524)	(3,633)	(3,745)
Net Cash Flow from Operations	6,875	7,113	7,397	7,645	7,918	8,241	8,529	8,826	9,180	9,517	9,867
Less: Capital Replacement	(1,075)	(766)	(173)	(200)	(255)	(121)	(106)	(1,178)	(1,816)	(1,841)	(1,800)
Net Operating Cash Flow After Capital Replacement	5,801	6,346	7,224	7,446	7,663	8,120	8,424	7,648	7,363	7,676	8,067

*Note: Numbers may not foot due to rounding*

**Exhibit 2. Net Operating Cash Flow after Capital Replacement through Phase 1 (YOE dollars in millions) MEDIUM Case**

\$'MM YOE	Total Cash Flow through 2060	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Revenue	176,469	505	725	965	1,224	2,304	2,736	3,204	3,708	4,253	4,450
Less: O&M	(66,787)	(363)	(415)	(463)	(517)	(1,277)	(1,365)	(1,473)	(1,578)	(1,699)	(1,755)
Net Cash Flow from Operations	109,682	141	311	501	706	1,027	1,371	1,730	2,130	2,554	2,696
Less: Capital Replacement	(16,460)	-	-	-	-	-	-	-	-	(0)	(52)
Net Operating Cash Flow After Capital Replacement	93,222	141	311	501	706	1,027	1,371	1,730	2,130	2,554	2,643

**Exhibit 2. Net Operating Cash Flow after Capital Replacement through Phase 1 (YOE dollars in millions) MEDIUM Case (continued)**

\$'MM YOE	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049
Revenue	4,657	4,873	5,044	5,221	5,405	5,595	5,792	5,995	6,206	6,424	6,650
Less: O&M	(1,800)	(1,869)	(1,936)	(1,978)	(2,051)	(2,098)	(2,185)	(2,254)	(2,301)	(2,383)	(2,468)
Net Cash Flow from Operations	2,857	3,004	3,108	3,243	3,354	3,497	3,607	3,741	3,905	4,041	4,181
Less: Capital Replacement	(54)	(7)	(7)	(64)	(169)	(1,087)	(732)	(37)	(268)	(3,952)	(1,463)
Net Operating Cash Flow After Capital Replacement	2,803	2,998	3,101	3,179	3,186	2,410	2,874	3,704	3,637	89	2,718

**Exhibit 2. Net Operating Cash Flow after Capital Replacement through Phase 1 (YOE dollars in millions) MEDIUM Case (continued)**

\$'MM YOE	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
Revenue	6,884	7,126	7,376	7,635	7,904	8,181	8,469	8,767	9,075	9,394	9,724
Less: O&M	(2,523)	(2,615)	(2,676)	(2,781)	(2,875)	(2,935)	(3,040)	(3,149)	(3,220)	(3,320)	(3,423)
Net Cash Flow from Operations	4,361	4,510	4,700	4,854	5,028	5,247	5,429	5,618	5,854	6,074	6,301
Less: Capital Replacement	(987)	(704)	(158)	(183)	(234)	(111)	(97)	(1,082)	(1,668)	(1,690)	(1,653)
Net Operating Cash Flow After Capital Replacement	3,374	3,806	4,541	4,671	4,794	5,135	5,332	4,536	4,187	4,383	4,648

*Note: Numbers may not foot due to rounding*



**Exhibit 3. Net Operating Cash Flow after Capital Replacement through Phase 1 (YOE dollars in millions) LOW Case**

\$'MM YOE	Total Cash Flow through 2060	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Revenue	149,209	408	586	780	989	1,917	2,290	2,694	3,130	3,601	3,769
Less: O&M	(64,014)	(348)	(397)	(444)	(495)	(1,224)	(1,309)	(1,412)	(1,512)	(1,629)	(1,682)
Net Cash Flow from Operations	85,195	60	189	336	494	693	981	1,282	1,618	1,973	2,087
Less: Capital Replacement	(14,930)	-	-	-	-	-	-	-	-	(0)	(47)
Net Operating Cash Flow After Capital Replacement	70,265	60	189	336	494	693	981	1,282	1,618	1,972	2,039

**Exhibit 3. Net Operating Cash Flow after Capital Replacement through Phase 1 (YOE dollars in millions) LOW Case (continued)**

\$'MM YOE	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049
Revenue	3,943	4,126	4,271	4,421	4,577	4,738	4,904	5,077	5,255	5,440	5,631
Less: O&M	(1,725)	(1,791)	(1,856)	(1,896)	(1,966)	(2,011)	(2,094)	(2,161)	(2,205)	(2,284)	(2,366)
Net Cash Flow from Operations	2,218	2,335	2,415	2,525	2,611	2,726	2,810	2,916	3,050	3,156	3,265
Less: Capital Replacement	(49)	(6)	(6)	(58)	(153)	(986)	(664)	(33)	(243)	(3,585)	(1,327)
Net Operating Cash Flow After Capital Replacement	2,169	2,329	2,409	2,467	2,458	1,741	2,146	2,882	2,806	(429)	1,937

**Exhibit 3. Net Operating Cash Flow after Capital Replacement through Phase 1 (YOE dollars in millions) LOW Case (continued)**

\$'MM YOE	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
Revenue	5,829	6,034	6,246	6,465	6,693	6,928	7,171	7,423	7,684	7,954	8,234
Less: O&M	(2,418)	(2,507)	(2,565)	(2,665)	(2,756)	(2,813)	(2,913)	(3,018)	(3,087)	(3,182)	(3,281)
Net Cash Flow from Operations	3,411	3,527	3,681	3,800	3,937	4,115	4,258	4,405	4,597	4,772	4,953
Less: Capital Replacement	(895)	(638)	(144)	(166)	(212)	(101)	(88)	(981)	(1,513)	(1,533)	(1,499)
Net Operating Cash Flow After Capital Replacement	2,516	2,889	3,537	3,634	3,724	4,014	4,170	3,424	3,085	3,239	3,454

*Note: Numbers may not foot due to rounding*

**High, Medium, Low Cash Flows**  
**(2017 \$)**

**Exhibit 4: Net Operating Cash Flow after Capital Replacement through Phase 1 (2017 dollars in millions) HIGH case**

\$'MM 2017	Total Cash Flow through 2060	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Revenue	99,542	502	700	904	1,113	2,019	2,325	2,639	2,963	3,297	3,349
Less: O&M	(30,024)	(279)	(309)	(335)	(363)	(871)	(904)	(947)	(985)	(1,030)	(1,032)
Net Cash Flow from Operations	69,518	223	391	568	750	1,149	1,421	1,692	1,978	2,267	2,317
Less: Capital Replacement	(6,849)	-	-	-	-	-	-	-	-	(0)	(32)
Net Operating Cash Flow After Capital Replacement	62,669	223	391	568	750	1,149	1,421	1,692	1,978	2,267	2,284

**Exhibit 4: Net Operating Cash Flow after Capital Replacement through Phase 1 (2017 dollars in millions) HIGH case (continued)**

\$'MM 2017	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049
Revenue	3,402	3,456	3,474	3,491	3,508	3,526	3,544	3,561	3,579	3,597	3,615
Less: O&M	(1,028)	(1,036)	(1,042)	(1,034)	(1,041)	(1,034)	(1,045)	(1,047)	(1,037)	(1,043)	(1,049)
Net Cash Flow from Operations	2,374	2,420	2,431	2,457	2,468	2,492	2,499	2,514	2,542	2,554	2,566
Less: Capital Replacement	(32)	(4)	(4)	(35)	(90)	(565)	(370)	(18)	(128)	(1,825)	(656)
Net Operating Cash Flow After Capital Replacement	2,342	2,416	2,427	2,422	2,378	1,927	2,129	2,496	2,414	729	1,910

**Exhibit 4: Net Operating Cash Flow after Capital Replacement through Phase 1 (2017 dollars in millions) HIGH case (continued)**

\$'MM 2017	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
Revenue	3,633	3,651	3,669	3,688	3,706	3,725	3,743	3,762	3,781	3,800	3,819
Less: O&M	(1,041)	(1,048)	(1,041)	(1,050)	(1,054)	(1,044)	(1,050)	(1,056)	(1,049)	(1,050)	(1,051)
Net Cash Flow from Operations	2,592	2,604	2,629	2,638	2,652	2,680	2,693	2,706	2,732	2,750	2,768
Less: Capital Replacement	(430)	(297)	(65)	(73)	(91)	(42)	(35)	(383)	(573)	(564)	(535)
Net Operating Cash Flow After Capital Replacement	2,163	2,306	2,564	2,565	2,562	2,639	2,658	2,323	2,159	2,186	2,233

*Note: Numbers may not foot due to rounding*

**Exhibit 5: Net Operating Cash Flow after Capital Replacement through Phase 1 (2017 dollars in millions) MEDIUM case**

\$'MM 2017	Total Cash Flow through 2060	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Revenue	71,062	354	494	638	786	1,436	1,655	1,882	2,115	2,355	2,392
Less: O&M	(27,437)	(255)	(282)	(306)	(332)	(796)	(826)	(865)	(900)	(941)	(943)
Net Cash Flow from Operations	43,625	99	212	331	453	640	829	1,016	1,215	1,414	1,449
Less: Capital Replacement	(6,288)	-	-	-	-	-	-	-	-	(0)	(30)
Net Operating Cash Flow After Capital Replacement	37,337	99	212	331	453	640	829	1,016	1,215	1,414	1,419

**Exhibit 5: Net Operating Cash Flow after Capital Replacement through Phase 1 (2017 dollars in millions) MEDIUM case (continued)**

\$'MM 2017	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049
Revenue	2,430	2,469	2,481	2,494	2,506	2,519	2,531	2,544	2,557	2,570	2,582
Less: O&M	(939)	(947)	(953)	(945)	(951)	(945)	(955)	(957)	(948)	(953)	(959)
Net Cash Flow from Operations	1,491	1,522	1,529	1,549	1,555	1,574	1,576	1,587	1,609	1,616	1,624
Less: Capital Replacement	(30)	(4)	(4)	(32)	(83)	(519)	(339)	(17)	(117)	(1,676)	(603)
Net Operating Cash Flow After Capital Replacement	1,461	1,519	1,525	1,517	1,472	1,056	1,237	1,571	1,492	(59)	1,021

**Exhibit 5: Net Operating Cash Flow after Capital Replacement through Phase 1 (2017 dollars in millions) MEDIUM case (continued)**

\$'MM 2017	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
Revenue	2,595	2,608	2,621	2,634	2,648	2,661	2,674	2,687	2,701	2,714	2,728
Less: O&M	(951)	(957)	(951)	(959)	(963)	(955)	(960)	(965)	(958)	(959)	(960)
Net Cash Flow from Operations	1,644	1,651	1,670	1,675	1,684	1,706	1,714	1,722	1,742	1,755	1,768
Less: Capital Replacement	(394)	(273)	(60)	(67)	(83)	(38)	(33)	(352)	(526)	(518)	(492)
Net Operating Cash Flow After Capital Replacement	1,250	1,378	1,611	1,608	1,601	1,668	1,682	1,371	1,216	1,237	1,276

*Note: Numbers may not foot due to rounding*

**Exhibit 6: Net Operating Cash Flow after Capital Replacement through Phase 1 (2017 dollars in millions) LOW case**

\$'MM 2017	Total Cash Flow through 2060	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Revenue	60,033	286	399	515	635	1,195	1,386	1,582	1,785	1,994	2,026
Less: O&M	(26,297)	(244)	(270)	(293)	(318)	(763)	(792)	(830)	(863)	(902)	(904)
Net Cash Flow from Operations	33,735	42	129	222	317	432	594	753	923	1,092	1,122
Less: Capital Replacement	(5,704)	-	-	-	-	-	-	-	-	(0)	(27)
Net Operating Cash Flow After Capital Replacement	28,032	42	129	222	317	432	594	753	923	1,092	1,095

**Exhibit 6: Net Operating Cash Flow after Capital Replacement through Phase 1 (2017 dollars in millions) LOW case (continued)**

\$'MM 2017	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049
Revenue	2,058	2,091	2,101	2,112	2,122	2,133	2,143	2,154	2,165	2,176	2,187
Less: O&M	(901)	(907)	(913)	(906)	(911)	(905)	(915)	(917)	(909)	(914)	(919)
Net Cash Flow from Operations	1,157	1,183	1,188	1,206	1,211	1,227	1,228	1,237	1,256	1,262	1,268
Less: Capital Replacement	(27)	(3)	(3)	(29)	(75)	(470)	(308)	(15)	(106)	(1,520)	(547)
Net Operating Cash Flow After Capital Replacement	1,130	1,180	1,185	1,177	1,136	757	920	1,222	1,150	(258)	721

**Exhibit 6: Net Operating Cash Flow after Capital Replacement through Phase 1 (2017 dollars in millions) LOW case (continued)**

\$'MM 2017	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
Revenue	2,198	2,209	2,220	2,231	2,242	2,253	2,264	2,276	2,287	2,299	2,310
Less: O&M	(912)	(918)	(912)	(920)	(923)	(915)	(920)	(925)	(919)	(920)	(920)
Net Cash Flow from Operations	1,286	1,291	1,308	1,311	1,319	1,338	1,344	1,350	1,368	1,379	1,390
Less: Capital Replacement	(358)	(248)	(54)	(61)	(75)	(35)	(30)	(319)	(477)	(470)	(446)
Net Operating Cash Flow After Capital Replacement	928	1,043	1,254	1,250	1,243	1,303	1,315	1,032	891	909	944

*Note: Numbers may not foot due to rounding*

**Final 2018 Business Plan**  
**Ancillary Revenue Technical Documentation**

## *Ancillary Revenue Technical Documentation – Final 2018 Business Plan*

### **Overview of Ancillary Revenues**

The Authority's business plans contemplate the potential for the high-speed rail system to generate revenues ancillary to farebox revenues that support the system's financial feasibility. These ancillary revenues (i.e. non-farebox operating revenues) are captured in the Final 2018 Business Plan as a percentage of farebox revenues.

### **Developing a List of Ancillary Revenue Opportunities**

The Authority regularly evaluates opportunities to pursue ancillary revenues. In prior business plans, the Authority included planning assumptions indicating ancillary revenues could range from one to four percent of farebox revenues. Since the publication of the 2016 Business Plan, the Authority has undertaken more extensive research and market analysis of potential ancillary revenue sources from the system's real property, rights of way, and ridership.

The methodology to calculate an ancillary revenue estimate for the Final 2018 Business Plan follows the guiding principles and values driving the Authority's advancement of the high-speed rail program. Ancillary revenue opportunities potentially available to the Authority were identified and screened. The screening process included:

- **Research into peer agencies and the airline industry**, which enabled the sourcing of creative commercial options, identification of a potential range of benefits, and identification of benchmarks from which estimates could be evaluated; and
- **An Authority review process** that identified and narrowed the field of available opportunities, as well as determined order of magnitude estimates for each opportunity.

### **Categorizing the Ancillary Revenues**

The Authority's ability to access and generate revenue from an ancillary revenue opportunity is dependent, in part, on the ease of implementation and alignment with its policies and regulatory environment.

The ancillary revenue opportunities were grouped into four stand-alone categories (i.e. Category 1, Category 2, Category 3, and Category 4), which correspond to their relative implementation profile. The revenue categories were defined as follows:

- **Category 1 – Line of Site Opportunities:** Category 1 ancillary revenues represent the most directly accessible revenue sources given their low complexity of implementation.
- **Category 2 – Joint Development/Partnership:** Category 2 ancillary revenues represent the next most accessible grouping. Each contemplates or materially is tied to a partnership with a public partner, developer or third-party to commercially develop station sites, right-of-way, and/or other Authority-owned parcels. Consequently, the feasibility of achieving revenue related to these sources hinges on the Authority to enter into commercial agreements.
- **Category 3 – Public Tools for Financing/Funding Development:** Category 3 ancillary revenues represent potential tools for financing and funding development at or within a certain radius of the station sites.
- **Category 4 – New Tax/Fee:** Category 4 ancillary revenues represent the least accessible set of options based on the relevant approvals required for a new tax or fee.

**Shortlisting and Benchmarking Revenue Opportunities for the Final 2018 Business Plan**

The Authority undertook a review of various ancillary revenue opportunities, and down-selected thirteen streams for inclusion in the Final 2018 Business Plan. Down-selection of these thirteen opportunities was informed by the opportunities’ ease of implementation, as well as a desire to arrive at a reasonable and conservative estimate for planning purposes. Opportunities potentially requiring legislative action and/or posing significant risk were excluded. For the purpose of estimating ancillary revenue to inform the Final 2018 Business Plan, the thirteen ancillary revenue opportunities outlined in Figure 1 were included.

For each of the ancillary revenue opportunities included in the Final 2018 Business Plan, the Authority analyzed peer agencies and comparable operators (both in the transit and airline sectors), as well as local market conditions, to establish a set of low, medium, and high order of magnitude benchmarks to estimate the ancillary revenue potential. Each of these benchmarks was applied against a base metric such as ridership, number of stations, or right of way. By way of example, transit agencies and airport advertising contracts were researched to determine a low, medium, and high benchmark for advertising revenue per passenger. These benchmarks were then applied against the system’s annual ridership forecasts provided by the Authority’s technical consultants. Each of the ancillary revenues were calculated on a net ancillary revenue basis, taking into account the costs of their pursuit. Revenue from each opportunity incorporated key timing parameters and drivers of project phases, including the timing of pre-operations, operations, and mature operations periods for the Silicon Valley to Central Valley Line and Phase 1 segments.

Category	Opportunity
1	Advertising: Billboard
1	Advertising: Station-level
1	Advertising: Rolling stock
1	Baggage Fees
1	Excess Land
1	Parking Fees
1	Retail: Station-level
1	Sponsorship: Station
1	Sponsorship: System
1	Telecommunications: Fiber*
1	Telecommunications: Towers
1	Web-based Advertising
<b>Twelve (12) Category 1 ancillary revenue opportunities</b>	

Category	Opportunity
2	Revenues from Ground Leases
<b>One (1) Category 2 ancillary revenue opportunity</b>	
Category	Opportunity
3	Not considered for inclusion in the 2018 Business Plan**
4	Not considered for inclusion in the 2018 Business Plan**
<b>Zero (0) Category 3 and 4 ancillary revenue opportunities</b>	

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\* While the Authority believes there is market support for the Telecommunications: Fiber revenue opportunity, it likely requires some changes to existing legislation or executive action for revenues to be realized by the Authority.

\*\* Category 3 and 4 opportunities are excluded from this analysis due to their uncertainty and the high degree of complexity associated with realizing such revenues.

Figure 1 - List of Ancillary Revenue Opportunities Evaluated for Final 2018 Business Plan



**Ancillary Revenue Analysis Results**

The analysis for the Final 2018 Business Plan estimates ancillary revenues available to the Authority assuming a delivery of the Silicon Valley to Central Valley Line segment (San Francisco to Bakersfield) in 2029, with the balance of Phase 1 delivered in 2033, and offers estimates in the form of revenues available and as a percentage of farebox revenue assuming high, medium, and low ridership as forecasted by the Authority’s technical consultants. The results of the analysis are presented as follows:

	Low Ridership (%)	Low Ridership (\$'MM 2017)	Medium Ridership (%)	Medium Ridership (\$'MM 2017)	High Ridership (%)	High Ridership (\$'MM 2017)
<b>Cumulative Farebox Revenues (\$'MM 2017)</b>	57,678		68,273		95,634	
<b>Low Cumulative Ancillary Revenue Benchmark</b>	1.2%	682	1.0%	696	0.7%	714
<b>Medium Cumulative Ancillary Revenue Benchmark</b>	4.2%	2,422	4.1%	2,805	3.4%	3,272
<b>High Cumulative Ancillary Revenue Benchmark</b>	7.3%	4,218	7.3%	4,970	6.2%	5,887

Figure 2 – Ancillary Revenue Benchmarks for Silicon Valley to Central Valley Line to Phase 1 System. Ancillary totals in table are raw model outputs used to derive a four percent estimate, and reflect opportunities through 2060 (inclusive of pre-operations, operations, and mature operations periods).

The analysis yielded a range of ancillary revenues from one to seven percent of farebox revenues. Based on these results, and consistent with the medium ancillary revenue benchmarks, **a flat four percent (4.00%) of farebox revenues will be applied as the ancillary revenue estimate** in each year of operations for the high, medium, and low ridership scenarios in the Final 2018 Business Plan.