

Evaluation Results and Weighting Approaches

Evaluation Categories and Measures

The corridor evaluation identified 24 potential measures to evaluate and score each corridor. During the evaluation process, three measures were removed. The

Figure 1 Evaluation Measures

ID	Measure	Details
Equity		
E.1	Equity Prioritization Score	Average area of need score for Census Block Groups within ½ mile walkshed of assumed stations
E.2	Density of community assets	Number of assets per square mile of area within ½ mile of assumed stations
E.3	Density of subsidized housing	Number of subsidized units per square mile of area within ½ mile of assumed stations
E.4	Improved access to low wage jobs for priority populations via transit	Comparative improvement in access to existing low-wage jobs per square mile within 45 minutes for priority populations within ½ mile of assumed stations, based on improved travel time and reduced waiting time with RapidRide implementation
E.5	Route resiliency	Weekday productivity in 2023 relative to weekday productivity in 2019 to determine corridors with more resilient ridership relative to amount of service provide; higher values suggest routes that provide essential travel
Environmental Sustainability		
ES.1	Forecast household and employment growth	Comparative change (2020 to 2050) of households and jobs within 1/2-mile of assumed stations per square mile
ES.2	Greenhouse gas (GHG) emissions reductions	Average trip lengths from Sound Transit model and ridership gains/growth used to calculate change in Vehicle Miles Traveled (VMT). Regional factors associated with GHG emitted per mile used to estimate reduction in GHG emissions
Service		
S.1	Existing speed relative to posted speed	Existing transit speed as a percent of the posted speed limit

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ID	Measure	Details
S.2	Existing on-time performance	Percent of trips that arrive late for each RapidRide candidate corridor's equivalent existing route(s)
S.3	Transit travel time savings	Percent decrease in total end to end roundtrip travel time compared to future baseline (no build)
S.4	Corridor transit travel speed	Comparison of average corridor transit travel speed to RapidRide standard <i>Removed from evaluation</i>
S.5	Impacts to general purpose travel time	Calculate estimated impacts to general purpose delay resulting from transit priority treatments
S.6	Benefits/impacts to other transit routes	Net number of daily transit vehicle trips on other routes that would benefit from the assumed capital improvements on a RapidRide corridor due to shared alignments
S.7	Future forecast ridership	Forecast future daily weekday ridership
S.8	Ridership gains	Change in daily weekday ridership in future forecast relative to future no build
S.9	Future forecast productivity	Weekday ridership per revenue hour
S.10	Change in systemwide ridership	Change in systemwide ridership in future forecast year relative to future no build
Capital Needs		
C.1	Total project capital cost	Total capital costs, excluding fleet
Implementation		
I.1	Risk of schedule delays	Risk of completion by 2035 <i>Removed from evaluation</i>
I.2	Future population and employment density	Future (2050) density of households and jobs within 1/2-mile of route alignment per square mile
I.3	Jurisdictional support for transit	Review local plans to determine supportive policies for non-motorized access to transit, transit priority investments (bus/BAT lane, TSP, queue jumps, etc.) and prioritizing transit over single-occupancy vehicles
I.4	Value of investment	Annualized capital cost plus net new annual operating cost, relative to the number of new annual riders
I.5	Funding competitiveness	Competitiveness of project based on FTA criteria <i>Removed from evaluation</i>
I.6	Operational efficiency	Annualized capital cost per new annual revenue hour

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Measure Details

Equity

Figure 2 E.1 | Equity Prioritization Score

Corridor	Route	Value	Score
1012	44	2.60	1
1993	40	2.84	1
3101+1028	B/271	3.38	2
1064A	36/49	3.39	2
1999	B/226	3.63	3
1049	150	3.71	4
1064B	36	3.75	4
1052	181	3.82	5
1056	165	4.05	5

Figure 3 E.2 | Density of Community Assets

Corridor	Route	Community Assets	Square Miles	Assets per Square Mile	Score
1052	181	83	6.74	12.32	1
1056	165	93	6.30	14.75	1
1999	B/226	134	7.09	18.90	2
1049	150	175	8.22	21.28	2
3101+1028	B/271	141	5.85	24.12	3
1012	44	127	4.38	28.97	4
1993	40	281	8.98	31.29	4
1064A	36/49	242	7.05	34.32	5
1064B	36	205	5.03	40.75	5

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Figure 4 E.3 | Density of Subsidized Housing

Corridor	Route	Subsidized Housing Units	Square Miles	Units per Square Mile	Score
1999	B/226	1,073	7.09	151.13	1
3101+1028	B/271	1,014	5.85	174.83	1
1012	44	970	4.38	220.45	2
1052	181	1,730	6.74	258.21	2
1056	165	2,519	6.30	399.84	3
1049	150	6,405	8.20	781.10	4
1064A	36/49	6,514	7.05	917.46	4
1993	40	8,400	8.98	933.33	5
1064B	36	7,961	5.03	1,592.20	5

Figure 5 E.5 | Access to Low Wage Jobs

Corridor	Route	Existing	Future	Net Change	Square Miles	Change per Square Mile	Score
1049	150	157,000	165,000	8,000	8.22	973	1
1052	181	23,000	32,000	9,000	6.74	1,336	1
1056	165	35,000	49,000	14,000	6.30	2,221	1
1993	40	334,000	468,000	134,000	8.98	14,919	2
1064A	36/49	482,000	602,000	120,000	7.05	17,019	3
1064B	36	477,000	567,000	90,000	5.03	17,891	3
1999	B/226	140,000	270,000	130,000	7.09	18,332	3
3101+1028	B/271	195,000	336,000	141,000	5.85	24,119	4
1012	44	462,000	574,000	112,000	4.38	25,551	5

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Figure 6 E.5 | Route Resiliency

Corridor	Route	Fall 2019 Productivity	Spring 2023 Productivity	2023 as % of 2019	Score
1993	40	38.5	25.0	65%	1
1012	44	49.2	31.9	65%	1
3101+1028	B/271	28.2	19.0	67%	1
1064A	36/49	37.7	26.1	69%	1
1999	B/226	31.9	22.3	70%	1
1064B	36	38.0	28.0	74%	2
1056	165	24.8	20.3	82%	3
1049	150	24.0	20.4	85%	4
1052	181	18.7	16.4	88%	5

Environmental Sustainability

Figure 7 ES.1 | Forecast Growth

Corridor	Route	2020 Households + Jobs	2050 Households + Jobs	Net Change	Square Miles	Change per Square Mile	Score
1052	181	30,000	62,000	32,000	6.74	4,750	1
1012	44	91,000	113,000	22,000	4.38	5,019	1
1999	B/226	105,000	147,000	42,000	7.09	5,923	2
1056	165	24,000	62,000	38,000	6.30	6,028	2
1064A	36/49	168,000	222,000	54,000	7.05	7,659	3
1049	150	307,000	441,000	134,000	8.22	16,295	4
3101+1028	B/271	118,000	217,000	99,000	5.85	16,935	4
1064B	36	265,000	360,000	95,000	5.03	18,885	5
1993	40	398,000	559,000	161,000	8.98	17,925	5

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Figure 8 ES.2 | Greenhouse gas (GHG) emissions reduction

Corridor	Route	No Build GHG Saved	Build GHG Saved	Net Change	Score
1064A	36/49	5.34	5.50	0.16	1
1999	B/226	1.62	1.95	0.32	1
1064B	36	3.10	3.63	0.53	1
1012	44	2.97	3.66	0.69	1
1993	40	3.03	4.09	1.05	2
3101+1028	B/271	4.41	6.80	2.39	3
1052	181	1.59	4.11	2.52	3
1056	165	2.05	5.24	3.19	4
1049	150	9.84	15.71	5.87	5

Service

Figure 9 S.1 | Existing speed relative to posted speed

Corridor	Route	Existing Speed	Average Posted Speed	Speed as Percent of Posted Speed	Score
1999	B/226	15.8	33.3	47%	1
3101+1028	B/271	18.7	40.0	47%	1
1064A	36/49	10.2	22.9	45%	2
1064B	36	10.3	25.0	41%	3
1052	181	14.6	35.2	41%	3
1049	150	17.6	42.0	42%	3
1993	40	9.4	25.9	36%	4
1056	165	13.6	36.7	37%	4
1012	44	8.3	24.9	33%	5

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Figure 10 S.2 | Existing on-time performance

Corridor	Route	Total Observations	Late Observations	Percent Late	Score
1999	B/226	205,871	25,219	12.2%	1
1064B	36	379,016	49,215	13.0%	1
1052	181	79,822	10,973	13.7%	2
1049	150	193,810	26,716	13.8%	2
3101+1028	B/271	315,317	45,925	14.6%	3
1064A	36/49	537,035	82,194	15.3%	3
1012	44	178,033	28,072	15.8%	3
1056	165	184,245	31,956	17.3%	4
1993	40	225,264	47,457	21.1%	5

Figure 11 S.3 | Transit travel time savings (roundtrip in minutes)

Corridor	Route	Future Baseline	Future Build	Change	Percent Change	Score
1999	B/226	102	87	-15	-14.8%	1
1064B	36	90	76	-13	-14.9%	1
1064A	36/49	130	109	-21	-16.5%	2
3101+1028	B/271	95	78	-17	-18.0%	3
1052	181	121	98	-23	-18.7%	3
1993	40	173	139	-34	-19.7%	4
1056	165	115	92	-23	-20.1%	4
1012	44	78	62	-16	-20.6%	4
1049	150	162	127	-35	-21.5%	5

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Figure 12 S.5 | Impacts to general purpose travel time

Corridor	Route	GP Delay Before	GP Delay After	GP Delay Change	GP Delay % Change	Score
1012	44	1,004.2	1,267.8	263.6	26%	1
1064B	36	507.2	601.8	94.6	19%	2
3101+1028	B/271	1,093.4	1,179.3	85.9	8%	3
1999	B/226	119.8	125.2	5.4	5%	3
1993	40	2,903.3	3,040.2	136.9	5%	3
1052	181	787.2	792.0	4.8	1%	4
1064A	36/49	1,325.5	1,310.4	-15.1	-1%	4
1049	150	1,982.7	1,852.5	-130.2	-7%	5
1056	165	1,026.1	936.0	-90.1	-9%	5

Figure 13 S.6 | Net benefits and impacts

Corridor	Route	Net Trip Impact/Benefit	Score
1064B	36	300	1
1049	150	600	1
1052	181	800	2
1999	B/226	1,100	2
1993	40	1,600	3
1064A	36/49	1,850	4
1056	165	2,050	4
3101+1028	B/271	2,050	4
1012	44	2,650	5

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Figure 14 S.7 | Future Build Ridership

Corridor	Route	Daily Ridership	Score
1999	B/226	3,800	1
1056	165	5,000	2
1052	181	5,400	2
1064B	36	8,100	3
3101+1028	B/271	8,100	3
1993	40	8,600	3
1012	44	10,300	4
1049	150	10,700	4
1064A	36/49	13,700	5

Figure 15 S.8 | Ridership gains

Corridor	Route	Future No Build Ridership	Future Build Ridership	Change	Score
1064A	36/49	13,300	13,700	400	1
1999	B/226	3,200	3,800	600	1
1064B	36	6,800	8,100	1,300	2
1012	44	8,400	10,300	1,900	3
1993	40	6,400	8,600	2,200	3
1056	165	2,000	5,000	3,000	4
3101+1028	B/271	4,900	8,100	3,200	4
1052	181	2,100	5,400	3,300	4
1049	150	6,700	10,700	4,000	5

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Figure 16 S.9 | Corridor productivity

Corridor	Route	Future Build Ridership	Revenue Hours	Riders per Revenue Hour	Score
1999	B/226	3,800	148	25.7	1
1993	40	8,600	250	34.4	2
1056	165	5,000	142	35.2	2
1052	181	5,400	152	35.5	2
1064B	36	8,100	196	41.3	2
1049	150	10,700	211	50.7	3
3101+1028	B/271	8,100	140	57.9	4
1064A	36/49	13,700	220	62.3	4
1012	44	10,300	136	75.7	5

Figure 17 S.10 | Change in Systemwide Ridership

Corridor	Route	Systemwide Ridership Change	Score
1064A	36/49	0	1
1999	B/226	500	2
1064B	36	600	2
1993	40	850	2
1012	44	950	2
3101+1028	B/271	1,750	3
1056	165	2,500	4
1052	181	2,850	5
1049	150	3,200	5

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Capital Cost

Figure 18 C.1 | Total project cost

Corridor	Route	Capital Cost	Score
1993	40	\$96,120,000	1
1056	165	\$89,240,000	1
1052	181	\$86,130,000	1
1999	B/226	\$76,050,000	2
3101+1028	B/271	\$59,140,000	3
1049	150	\$60,980,000	3
1064A	36/49	\$61,440,000	3
1012	44	\$43,090,000	4
1064B	36	\$34,290,000	5

Implementation

Figure 19 I.2 | Future population and employment density

Corridor	Route	2050 Household + Jobs per square mile	Score
1052	181	9,000	1
1056	165	10,000	1
1999	B/226	20,500	2
1012	44	26,000	2
1064A	36/49	31,500	3
3101+1028	B/271	37,000	3
1049	150	53,500	4
1064B	36	71,500	5
1993	40	62,500	5

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Figure 20 I.3 | Jurisdictional support for transit

Corridor	Route	Active transportation	Travel time savings	Prioritize transit over SOV	Score
1056	165	1.00	-	-	1.00
1052	181	1.00	1.00	-	2.00
3101+1028	B/271	0.60	0.80	1.20	2.60
1049	150	0.66	0.67	2.67	4.00
1012	44	1.00	2.00	2.00	5.00
1064A	36/49	1.00	2.00	2.00	5.00
1064B	36	1.00	2.00	2.00	5.00
1993	40	1.00	2.00	2.00	5.00
1999	B/226	1.00	2.00	2.00	5.00

Figure 21 I.4 | Value of investment

Corridor	Route	Annualized Capital Cost	Net New Annual Operating Cost	Annual Ridership Gain	Annualized Capital + Net New Operating Cost per New Annual Rider	Score
1999	B/226	\$3,802,500	\$1,226,790	192,280	\$26.16	1
1993	40	\$4,806,000	(\$1,020,938)	705,026	\$5.37	2
1056	165	\$4,462,000	\$3,004,230	961,399	\$7.77	2
1052	181	\$4,306,500	\$2,988,999	1,057,539	\$6.90	2
3101+1028	B/271	\$2,957,000	\$173,348	1,025,492	\$3.05	3
1049	150	\$3,049,000	\$1,475,428	1,281,865	\$3.53	3
1012	44	\$2,154,500	(\$1,646,851)	608,886	\$0.83	4
1064B	36	\$1,714,500	(\$1,773,457)	416,606	(\$0.14)	4
1064A	36/49	\$3,072,000	(\$7,003,472)	128,187	(\$30.67)	5

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Figure 22 I.6 | Operational efficiency

Corridor	Route	Annualized Capital Cost	New Annual Revenue Hours	Annualized Capital Cost per New Annual Revenue Hour	Score
3101+1028	B/271	\$2,957,000	1,159	\$2,551	1
1999	B/226	\$3,802,500	8,205	\$463	2
1052	181	\$4,306,500	19,991	\$215	3
1056	165	\$4,462,000	20,092	\$222	3
1049	150	\$3,049,000	9,868	\$309	3
1064A	36/49	\$3,072,000	-46,840	(\$66)	4
1064B	36	\$1,714,500	-11,861	(\$145)	4
1012	44	\$2,154,500	-11,014	(\$196)	4
1993	40	\$4,806,000	-6,828	(\$704)	5

Weighting Approaches

- **Equal Weights:** Applies an equal weight to each of the five evaluation categories. Since each category has a different number of measures, this means categories with more measures are treated equally alongside categories with fewer measures.
- **2x Equity 2x Sustainability:** Applies twice the weight for the equity category and twice the weight for the sustainability category relative to the other three categories.
- **4x Equity 2x Sustainability:** Applies four times the weight for equity and two for sustainability.
- **2x Equity 4x Sustainability:** Applies four times the weight for sustainability and two for equity.

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Final Scoring

Figure 23 Final Scoring by Weighting Approach

Corridor	Routes	Equal Weights	2x Equity 2x Sustainability	4x Equity 2x Sustainability	2x Equity 4x Sustainability
1064A	36 and 49	61	58	58	54
1064B	36	73	72	73	69
1993	40	59	59	58	62
1012	44	61	54	53	46
1049	150	71	72	69	76
1056	165	48	50	51	52
1052	181	43	45	47	44
1999	B Line and 226	38	37	38	36
3101+1028	B Line and 271	57	57	54	60

Final Tiering Recommendation

Figure 24 Final Scoring by Weighting Approach

Corridor	Routes	2x Equity 2x Sustainability	Tier
1064B	36	72	Tier 1
1049	150	72	Tier 1
1993	40	59	Tier 2
1064A	36 and 49	58	-
3101+1028	B Line and 271	57	Tier 2
1012	44	54	Tier 2
1056	165	50	Tier 3
1052	181	45	Tier 3
1999	B Line and 226	37	Tier 3