Appendix H

Transportation Analysis Methodology Memorandum

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MEMORANDUM

Date: September 2, 2021 Project #: 24827

To: Alisa Shen, Principal Planner – City of Berkeley

From: Amanda Leahy, AICP; Grace Carsky; and Laurence Lewis, AICP/LEED AP – Kittelson

Project: Ashby and North Berkeley BART Station Area Zoning and EIR

Subject: Transportation Analysis Methodology Memorandum

INTRODUCTION

Planning is underway to re-imagine the Ashby and North Berkeley BART stations to include housing, open space, and community amenities. Both sites are owned by the San Francisco Bay Area Rapid Transit District (BART).

In September 2018, Governor Jerry Brown signed Assembly Bill 2923,[1] state legislation that affects zoning requirements on existing BART-owned property within 1/2 mile of stations in Alameda, Contra Costa, and San Francisco Counties. Cities and counties have until July 1, 2022 to rezone BART's property to conform with the standards established in AB 2923. The current zoning at the Ashby and North Berkeley BART stations does not comply with AB 2923, so the City of Berkeley must develop new zoning for these stations. The City of Berkeley is working with BART to develop zoning and site planning parameters for the station areas that reflect a shared community vision. After the zoning is complete, BART, as the property owner, will choose the developer and oversee construction of any projects at their stations.

The City and BART have agreed upon a Memorandum of Understanding (MOU)[2] that establishes a framework for development of the Ashby and North Berkeley BART stations, including a community advisory process and other community engagement; milestones and a timeline to develop zoning that complies with AB 2923; solicitation of developer(s); and further studies/planning for the two station areas. The first phase of planning for the Ashby and North Berkeley BART station areas will ultimately result in new

1 Assembly Bill 2923. https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB2923. Accessed August 19, 2020.

2 Memorandum of Understanding. https://www.cityofberkeley.info/Clerk/City_Council/2019/12_Dec/Documents/2019-12-10_Item_31_Approval_of_a_Memorandum.aspx. Accessed August 19, 2020.

zoning language added to the Berkeley Municipal Code. Development of new zoning will also require environmental review and the preparation of an Environmental Impact Report (EIR).

Kittelson & Associates, Inc. (Kittelson) prepared this memorandum to summarize the approach to the transportation analysis for the traffic and transportation section of the EIR. The transportation analysis identifies environmental effects of the proposed development program and selected alternatives for the Ashby and North Berkeley BART station sites using the environmental checklist form set forth in Appendix G of the CEQA Guidelines and thresholds and guidance established by the City of Berkeley in the City of Berkeley VMT Criteria and Thresholds (June 2020) and Transportation Impact Report Guidelines (September 2005) documents.[3] The following transportation topics are addressed in this memorandum:

- Project description
- Project travel demand
- BART ridership and station access
- Vehicle miles traveled analysis
- Parking assessment
- Transportation demand management (TDM)

PROJECT DESCRIPTION

For purposes of a more conservative transportation analysis from a travel demand standpoint, Kittelson assumed a reasonable maximum building potential within the proposed zoning and development envelope, which takes into account the AB 2923 requirements, state and local land use regulations, neighborhood considerations and other constraints of the sites. The proposed development at each site is summarized below and described further in the Project Description Chapter of the EIR.

Ashby BART Station Site. The Ashby BART Station site (Assessor's Parcel Numbers 053-1597-39-04) encompasses the entire triangular block bounded by Ashby Avenue to the north, Adeline Street to the east and south, and Martin Luther King Jr. Way to the west. The site is currently located in the Adeline Corridor Commercial (C-AC) zoning district and would be rezoned as part of the Residential BART Mixed-Use District (R-BMU) with this project. The proposed project would construct 1,200 residential dwelling units and up to 100,000 square feet of community space.

North Berkeley BART Station. The North Berkeley BART Station site (Assessor's Parcel Numbers 058-2147-18-05) encompasses the entire block bounded by Virginia Street to the north, Delaware Street to the south, Sacramento Street to the east, and Acton Street to the west. The site is currently located in the Unclassified (U) zoning district with auxiliary lots located within the Single Family Residential (R-1) and Restricted Multiple-family Residential (R2-A) zoning districts. The site would be rezoned as part of the R-BMU District

[3] The City is currently, as of October 15, 2021, in the process of updating the City of Berkeley Guidelines for Development of Traffic Impact Reports (published in September 2005).

with this project. The proposed project would construct 1,200 residential dwelling units and up to 50,000 square feet of community space.

PROJECT ANALYSIS APPROACH AND METHODOLOGIES

Project Travel Demand

The trip generation estimates were developed based on the vehicle trip rates provided in the Institute of Transportation Engineer's (ITE) Trip Generation Manual (10th Edition) with adjustments using methods consistent with the City's Guidelines. The Guidelines identifies potential trip generation adjustment factors to apply to the ITE trip generation to calculate the number of person trips generated by the project for each mode. Adjustment factors include trip credits for existing uses on the project site, internal trip capture to account for surrounding land use mix, and mode share adjustments to account for available transportation options. These adjustment factors and their application are described in this section. Detailed travel demand calculations are included as Attachment A.

Trip Generation Rates

Trip generation rates were chosen for a variety of potential land uses that could be developed as residential and community uses at the Ashby and North Berkeley BART station sites, based on surrounding land uses and community uses typically seen in mixed-use developments. The trip generation rates include residents, employees, and visitors and are presented in Table 1.

Table 1: ITE Trip Generation Rates

Land Use	ITE Land Use Code	Trips per Dwelling Unit or 1,000 Square Feet			
		Weekday Daily Rate	AM Peak Hour Rate	PM Peak Hour Rate	Saturday Midday Rate
Residential					
Residential – Apartment	220	7.32	0.46	0.56	0.70
Residential - Senior Adult Housing (Attached)	252	3.70	0.20	0.26	0.33
Recreational					
Health/Fitness Club	492	--	1.31	3.45	--
Institutional					
Daycare Center	565	47.62	11.00	11.12	1.7
Office					
General Office	710	9.47	1.16	1.15	0.53
Small Office Building	712	16.19	1.92	2.45	--
Medical-Dental Office Building	720	34.80	2.78	3.46	3.1
US Post Office	732	103.94	8.28	11.21	5.33
Retail					
Apparel Store	876	66.4	1.00	4.12	--
Convenience Market	851	762.28	62.54	49.11	79.12

Land Use	ITE Land Use Code	Trips per Dwelling Unit or 1,000 Square Feet			
		Weekday Daily Rate	AM Peak Hour Rate	PM Peak Hour Rate	Saturday Midday Rate
Pharmacy/Drugstore w/o Drive-Through	880	90.08	2.94	8.51	--
Services					
Quality Sit-Down Restaurant	931	83.84	0.73	7.80	10.68
Composite Restaurant	932	112.18	9.94	9.77	11.19
Coffee/Donut Shop w/o Drive-Through	936	--	101.14	36.31	--
Bread/Donut/Bagel Shop w/o DT	939	--	70.54	28.00	--

Source: Kittelson & Associates, Inc. 2020. ITE Manual, 10th Edition.
Notes: DU = Dwelling Units; SF = Square Feet; '--' means there are no rates for the time period.

Project Person Trip Generation Estimates

Project Land Use Program Assumptions

Kittelson estimated the travel demand generated by the proposed developments for weekday daily and weekday AM and PM peak hours. The specific tenants and use of the non-residential community space proposed at the Ashby and North Berkeley BART station sites are uncertain at this time. In order to provide a reasonable estimate of the travel demand potential associated with the community uses, and to allow for flexibility in selection of future tenants, the travel demand analysis presented in this memo was calculated as follows:

- **Ashby BART Station site.** A total of 100,000 square feet of community space is proposed. Half of that space, or 50,000 square feet, is assumed to be a Health/Fitness Club[4], and the remaining 50,000 square feet is split equally among the following five land uses: Small Office Building, Convenience Market, Composite Restaurant, Bagel/Coffee Shop, and Daycare.
- **North Berkeley BART Station site.** The 25,000 square feet of community land use is split equally among the following five land uses: Small Office Building, Convenience Market, Composite Restaurant, Bagel/Coffee Shop, and Daycare.

These land uses represent a range of travel demand characteristics and are land uses that could reasonably be developed at the Ashby and North Berkeley BART station sites. While the weekend flea market at the Ashby BART station site is anticipated to continue, the trip generation analysis is focused on weekday AM and PM peak periods of travel and does not evaluate temporary events or weekend travel.

[4] The 50,000 square foot Health/Fitness Club (ITE Code 492) represents the potential Ashby Recreation and Community Housing project of the Bay Area Outreach and Recreation Program and the East Bay Supportive Housing Collaborative. According to the project sponsor's letter to the Planning Commission in response to the Notice of Preparation on November 30, 2020, the size of the recreational facility is currently contemplated at around 50,000 square feet. The size of the residential component of the project is uncertain. However, given the trip generation rates for non-residential uses are typically higher than those for residential uses, the land use mix assumed for the remaining community uses would generate more trips than the residential component and the analysis could be considered to provide a conservative estimate of travel demand associated with the future development. The sponsor's letter was accessed on December 29, 2020 and can be found online: https://www.cityofberkeley.info/uploadedFiles/Planning_and_Development/Level_3_-_Commissions/Commission_for_Planning/2020-12-20_PC_Supplemental%20Communications%20Packet%201.pdf.

Project Person-Trip Generation

Table 2 presents the person-trips that would occur inside the project site (internal trips) and person-trips that would begin or end outside of the project site (external trips) based on the maximum potential development scenario for each site and assuming the allocation of non-residential community uses described in the Project Land Use Program Assumptions section. Consistent with the City's Guidelines, Kittelson applied trip generation adjustment factors to the ITE trip generation to convert ITE vehicle-trips to person-trips. Person-trip generation estimates (internal and external) for the proposed project scenarios are estimated using the ITE trip generation rates in Table 1 and inflating them by a factor of 1.18 to adjust from vehicle to person trips.[5]

Table 2: Unadjusted Person Trip Generation Estimates

Land Use	Size/Unit	Daily	Weekday AM			Weekday PM		
			In	Out	Total	In	Out	Total
Ashby BART Station Site								
Residential	1,200 DU	10,365	150	501	651	500	293	793
Community Uses	**100,000 SF**	**20,582**	**1,168**	**1,110**	**2,278**	**767**	**719**	**1,486**
Health/Fitness Club	50,000 SF	1,405	39	38	77	116	88	204
Small Office Building	10,000 SF	191	19	4	23	9	20	29
Convenience Market	10,000 SF	8995	369	369	738	295	284	579
Composite Restaurant	10,000 SF	1324	64	53	117	71	44	115
Coffee/Donut Shop	10,000 SF	8,105	608	585	1193	214	214	428
Daycare	10,000 SF	562	69	61	130	62	69	131
Total	**--**	***30,947***	***1,318***	***1,611***	***2,929***	***1,267***	***1,012***	***2,279***
North Berkeley BART Station Site								
Residential	1,200 DU	10,365	150	501	651	500	293	793
Community Uses	**25,000 SF**	**9,591**	**564**	**537**	**1,101**	**326**	**316**	**642**
Small Office Building	5,000 SF	96	9	2	11	4	10	14
Convenience Market	5,000 SF	4,497	185	184	369	148	142	290
Composite Restaurant	5,000 SF	662	32	27	59	36	22	58
Coffee/Donut Shop	5,000 SF	4,055	304	293	597	107	107	214
Daycare	5,000 SF	281	34	31	65	31	35	66
Total	**--**	***19,956***	***714***	***1,038***	***1,752***	***826***	***609***	***1,435***

Source: Kittelson & Associates, Inc. 2020. ITE Manual, 10th Edition.
Notes: DU = Dwelling Units; SF = Square Feet; In = inbound to the project site; Out = outbound away from the project site; Total includes both internal and external person-trips; Inbound trips have been rounded up and outbound trips calculated as the difference of the total trips and inbound trips; Trip generation estimates assume equal square footage across all community land uses. The ITE Trip Generation Manual does not provide a daily rate for Health/Fitness Club or Coffee/Donut Shop land uses. The daily trips for these uses were calculated by multiplying the average of the AM and PM peak hour trips by 10.

As shown in Table 2, the proposed development at the Ashby BART station site is expected to generate approximately 30,947 net new weekday daily person trips, including 2,929 person trips (1,318 inbound, 1,611 outbound) during the weekday AM peak hour and 2,279 person trips (1,267 inbound, 1,012 outbound)

[5] Person trips are calculated as vehicle trip generation rates * 1.18. This is consistent with the multimodal trip generation adjustment factor from the West Berkeley Circulation Master Plan and City of Oakland Transportation Impact Study Guidelines.

during the weekday PM peak hour. The proposed development at the North Berkeley BART Station site is expected to generate approximately 19,956 net new weekday daily person trips, including 1,752 person trips (714 inbound, 1,038 outbound) during the weekday AM peak hour and 1,435 person trips (826 inbound, 609 outbound) during the weekday PM peak hour.

Trip Credits for Existing Uses

Both sites are currently occupied by surface parking. For purposes of a more conservative transportation analysis from a travel demand standpoint, Kittelson did not apply trip credits for the existing surface parking lot when calculating the net new trips generated by the developments. Trip credits are typically applied to account for existing land uses that would be replaced by a proposed development. Because the proposed project would replace surface parking and would not replace an active land use, it is assumed that these vehicle trips would remain as part of the background traffic on the surrounding street network.

Land Use Mix and Internal Trip Capture

Internal trip capture is the portion of trips generated by a mixed-use development that both begin and end within the development. These "internal" trips account for a portion of the total development's trip generation without using the external transportation network. As a result, mixed-use development creates less demand on the external transportation network than single-use developments generating the same number of trips. The City's Guidelines does not provide a specific methodology to assess the number of trips that could remain within a mixed-use project site.

Given that the proposed developments would allow for a mix of different integrated, complementary, and interacting land uses such as residential, retail, restaurant, and daycare uses, the future developments are anticipated to result in some level of internal trip capture.

Therefore, Kittelson made the appropriate refinements to the standard travel demand analysis approach to account for the project size and land use mix, which would be expected to have more than the typical proportion of project trips internal to the site than would be assumed using ITE rates. To better estimate the trip-making patterns of the proposed developments, Kittelson developed a modified trip generation model specific to each project site. The internal trip capture rates were determined using ITE's Improved Estimation of Internal Trip Capture for Mixed-Use Development and Alternative Approaches to Estimating Internal Traffic Capture of Mixed-Use Projects.[6]

Internalization is dependent on the quantity and mix of uses as well as the levels of activity they generate at various times of day. As a result, the internalization percentage is different for each scenario and time period. Given the future tenants of the community space are unknown, and so as not to overestimate the internal trip capture potential of the proposed developments, Kittelson assumed a less diverse mix of uses for the non-residential community uses than was assumed for the trip generation estimates. Specifically,

[6] ITE Journal. 2010 and 2011. Improved Estimation of Internal Trip Capture for Mixed-Use Development and Alternative Approaches to Estimating Internal Traffic Capture of Mixed-Use Projects.

Kittelson assumed an equal square footage of Small Office, Convenience Market, and Composite Restaurant.

The methodology accounts for trips internal to the proposed development that would still occur but would not be made by automobile or transit and would instead remain within walking distance of the project site and would occur by walking, bicycling, and linked trips. The following steps were used to develop the internal trip capture rates:

- Determine the total number of person-trips generated during the weekday AM and weekday PM peak hour periods by each individual land use (see Table 1 and Table 2).
- Use unconstrained internal capture percentages to estimate the number of potential internal trips between each pair of land uses. Apply the internal capture rate to each individual land use within the origin and destination categories based on ITE data.
- Balance the number of trips generated at both ends of each interacting pair of origin and destination land uses.

As explained in the step-by-step process, the internal trip capture rates used in the analysis are constrained by the need for the number of trips generated by the producer uses to match the number of trips received by the attractor uses. Using the unconstrained internal trip capture rates as an initial point of analysis, the site-specific internal trip capture rates were identified through a balancing process. The weekday AM peak hour and PM peak hour internal and external person-trip generation estimates for the Ashby and North Berkeley BART station sites are shown in Table 3. Internal trip capture calculations are included as Attachment B.

Table 3: Person Trip Generation Estimates – Internal and External

Site / Trip Type	Person Trip Estimates			
	Weekday AM Peak Hour		Weekday PM Peak Hour	
	Number	Proportion	Number	Proportion
Ashby BART Station Site				
External	2,665	91%	1,755	77%
Internal	264	9%	524	23%
Total (Internal and External)	***2,929***	***100%***	***2,279***	***100%***
North Berkeley BART Station Site				
External	1,629	93%	1,220	85%
Internal	123	7%	215	15%
Total (Internal and External)	***1,752***	***100%***	***1,435***	***100%***

Source: Kittelson & Associates, Inc. 2021; ITE Journal 2010 and 2011.
Notes: Trip generation estimates assume equal square footage across the small office, convenience market, and composite restaurant. A low internalization trip rate was chosen for conservative estimates. Internal trips have been rounded and external trips calculated as the difference of the total trips and internal trips.

As shown in Table 3, the Ashby and North Berkeley developments are estimated to result in an internal trip capture rate of 9 percent (264 person-trips) and 7 percent (123 person-trips), respectively during the

weekday AM peak hour. During the weekday PM peak hour, the Ashby and North Berkeley developments are estimated to result in an internal trip capture rate of 23 percent (524 person-trips) and 15 percent (215 person-trips), respectively.

Transportation Options and Mode Share

Given the proximity of the project sites to a variety of land uses within walking distance[7], multiple high frequency transit routes, casual carpool, dedicated bicycle facilities, and the availability of rideshare service, Kittelson applied a modal split adjustment to the external person trip generation estimates to account for carpool, transit, walk, bike, and taxi/transportation network company (e.g., Uber, Lyft) trips. Mode share was estimated based on data available from the United States Census for the project's census tracts.[8,9] Due to data limitations, Kittelson used residential mode split for residential and non-residential uses and applied to all analysis time periods. Kittelson reviewed data from the Bay Area Travel Survey (2000) and mode share included in the West Berkeley Circulation Master Plan Trip Generation Model (2009). However, given the changes in land use development, transportation options, and travel behavior that have occurred over the past 10 to 20 years, the more recent data from the US Census was determined to be more relevant for use in the analysis. Table 4 summarizes mode share for external trips and Table 5 summarizes project travel demand by mode.

Table 4: Mode Share for External Trips

Mode	Mode Share for External Trips	
	Ashby BART Station Site	North Berkeley BART Station Site
Auto	37.7%	36.4%
Transit	34.7%	33.7%
Walk	7.7%	7.9%
Bike	12.0%	10.3%
Other (Carpooling)	7.9%	11.7%
Total	***100%***	***100%***

Source: Kittelson & Associates, Inc. 2021; US Census ACS Five-Year Estimates (2014-2018)
Note: Means of Transportation to Work by Place of Work census data was used for the mode share for the project census tract. Data was dropped if place of work was out of state. The mode "working from home" was dropped from the analysis, as no external trips are expected to be made via this mode share.

[7] The Ashby site has a WalkScore of 96 "Walker's Paradise" and the North Berkeley site has a WalkScore of 86 "Very Walkable". WalkScore.com. Accessed October 23, 2020.
[8] US Census American Community Survey (ACS) Five-Year Estimates (2014-2018), the current dataset, were referenced for this analysis. The Ashby BART Station is located within Census Tract 4239.01 and the North Berkeley BART Station is located within Census Tract 4222.
[9] In Census Tract 4239.01 (Ashby BART), 62% of residents work within Alameda County and 38% of residents work outside Alameda County. In Census Tract 4222 (North Berkeley BART), 59% of residents work within Alameda County and 40% of residents work outside of Alameda County.

Table 5: Project Travel Demand – Project External Person-Trips by Mode[10]

Mode	Weekday AM Peak Hour			Weekday PM Peak Hour		
	In	Out	Total	In	Out	Total
Ashby BART Station Site						
Auto[1]	452	553	1,005	368	294	662
Transit	416	509	925	339	270	609
Walk	92	113	205	75	60	135
Bike	144	176	320	117	94	211
Other	95	116	211	77	62	139
Project External Person-Trips[1]	**1,199**	**1,467**	**2,666**	**976**	**780**	**1,756**
Project External Vehicle-Trips[2]	*367*	*450*	*817*	*299*	*239*	*538*
North Berkeley BART Station Site						
Auto[1]	242	351	593	256	188	444
Transit	224	325	549	237	174	411
Walk	52	77	129	55	41	96
Bike	68	100	168	72	54	126
Other	78	113	191	82	61	143
Project External Person-Trips[1]	**664**	**966**	**1,630**	**702**	**518**	**1,220**
Project External Vehicle-Trips[2]	*189*	*274*	*463*	*200*	*147*	*347*

Source: Kittelson & Associates, Inc. 2021
Notes: "Other" mode includes carpooling. Total external trips may not add up to totals in Table 4 due to rounding.
1 The project person auto-trip estimates shown in this table are not directly comparable to the ITE Vehicle-Trip Generation estimates shown in Table 1. Project person-trip estimates are calculated by factoring ITE vehicle-trips by a multiple of 1.18 to convert vehicle-trips to person-trips (this factor is consistent with the factor applied in the West Berkeley Circulation Master Plan) and then converts back to trips by mode using mode share adjustment rates derived from US Census.
2 Project external vehicle-trips are calculated as auto person-trips multiplied by the average vehicle occupancy. The average vehicle occupancy for Ashby (census tract 4239.01) is 1.23 and the average vehicle occupancy for North Berkeley (census tract 4222) is 1.28.

The mode share data shown in Table 4 reflects the mode share characteristics for the project's census tracts (tract 4239.01 for Ashby and tract 4222 for North Berkeley), which is based on United States Census American Community Survey Means of Transportation to Work information. Project person-trip estimates shown in Table 5 are calculated using the person-trip estimates in Table 2 and converts back to trips by mode using adjustment rates derived from US Census data.

BART Ridership and Station Access

Kittelson prepared a ridership and station access analysis for the Ashby and North Berkeley BART stations, reflecting existing (year 2019) a.m. and p.m. weekday peak hour conditions that includes the additional development from the proposed projects and other reasonably foreseeable land use projects in the vicinity of the stations. Kittelson utilized the following data and references, which were provided by BART staff:

[10] Estimated external project trips are in addition to the existing trips from the on-site parking.

- Existing (Year 2019) average hourly entries/exits for both stations
- Station access mode share data for both stations from the 2008 and 2015 Station Profile Survey
- BART Transit-Oriented Development Access Model
- Parking inventory data (updated July 1, 2020) for both stations
- Parking occupancy data within ¼-mile around the North Berkeley BART station

The outcome of this analysis is an estimate of weekday a.m. and p.m. peak hour person trips by mode to and from the BART stations. Kittelson will present this BART ridership and station access information within the discussion of existing baseline conditions. Kittelson will also use this data to estimate BART parking demand and support analysis of the BART parking policy alternative.

BART Ridership

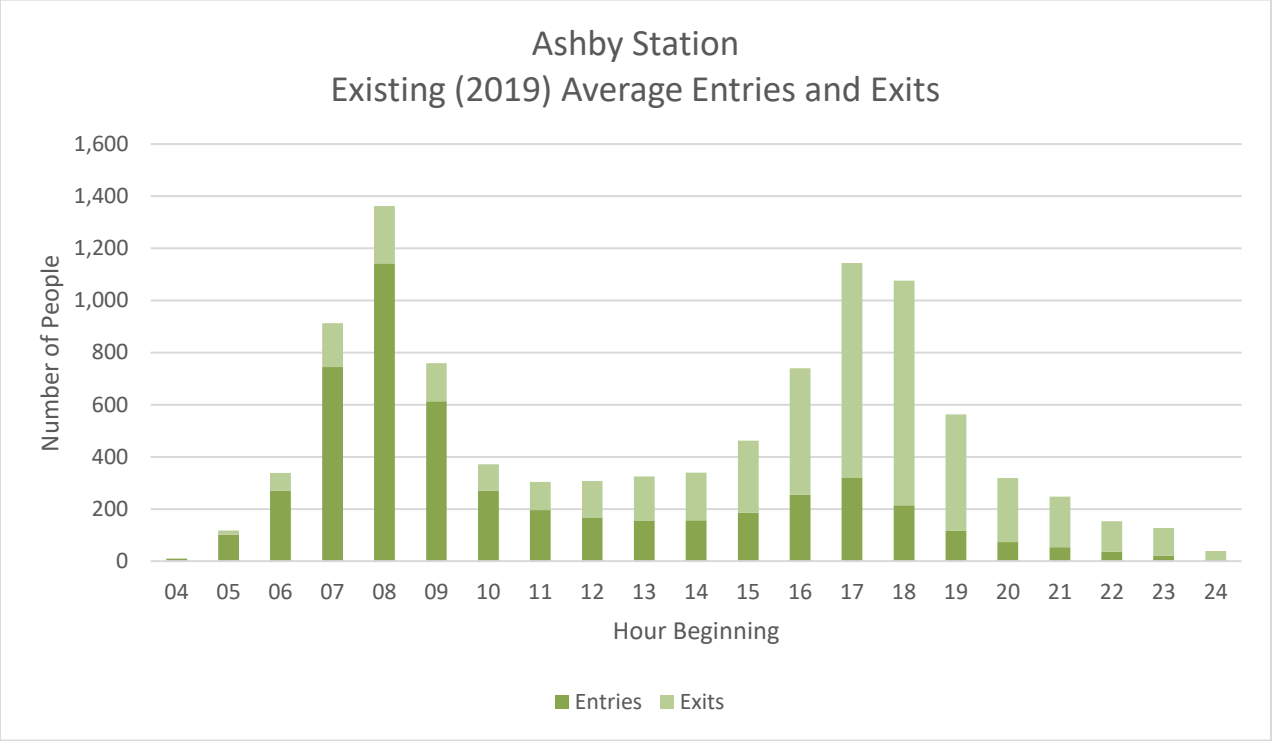
BART staff provided Kittelson with the hourly average number of entries and exits for each station in 2019. This data is summarized in Table 6 and shown in Exhibit 1.

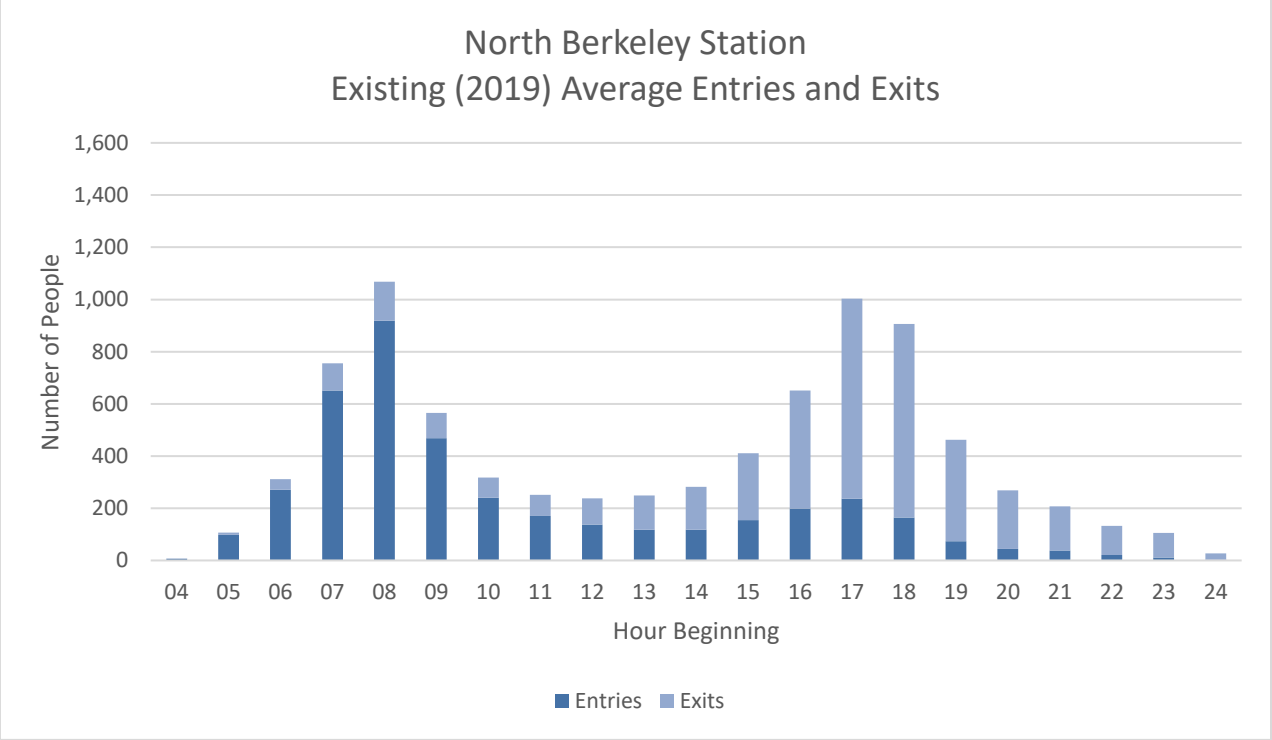
Table 6: Existing (Year 2019) Hourly Average BART Station Entries and Exits

	Existing (Year 2019) Ridership					
	Ashby BART Station			North Berkeley BART Station		
Hour Beginning	Entries	Exits	Total	Entries	Exits	Total
4 AM	9	1	11	6	0	7
5 AM	101	16	117	98	9	107
6 AM	271	68	339	272	40	311
7 AM	745	169	913	651	105	756
8 AM	1,143	219	1,362	919	149	1,068
9 AM	613	146	759	468	97	566
10 AM	270	102	372	241	77	318
11 AM	195	108	304	171	80	251
12 PM	168	140	308	137	101	238
1 PM	154	171	325	118	131	249
2 PM	156	183	339	117	165	283
3 PM	187	276	463	155	255	410
4 PM	254	486	740	199	452	651
5 PM	321	823	1,144	237	766	1,004
6 PM	214	862	1,076	164	742	906
7 PM	117	445	562	74	388	462
8 PM	73	245	318	45	224	269
9 PM	53	194	247	39	168	207
10 PM	37	116	153	21	111	133
11 PM	20	107	127	12	94	106
12 AM	4	34	38	3	24	27
1 AM	0	10	10	0	10	10
Total	5,105	4,921	10,026	4,147	4,190	8,337

Source: BART, 2020.

Exhibit 1: Existing (2019) Station Entries and Exits





As shown in Table 6 and Exhibit 1, the peak hour of station usage (total entries and exits) occurred between 8 and 9 a.m. and coincided with the peak hour of station entries for both stations. The peak hour of station exits occurred between 5 and 6 p.m. at North Berkeley and between 6 and 7 p.m. at Ashby. On average in 2019, there were around 10,030 station entries and exits at Ashby and 8,340 station entries and exits at North Berkeley over the course of a single day. At Ashby, approximately 14 percent (1,360 riders) entered or exited during the weekday a.m. peak hour and 11 percent (1,080 riders) entered or exited during the weekday p.m. peak hour. At Berkeley, approximately 13 percent (1,070 riders) entered or exited during the weekday a.m. peak hour and 11 percent (1,000 riders) entered or exited during the weekday p.m. peak hour.

BART Station Access

BART staff provided Kittelson with the results of empirical surveys conducted at both stations as part of the 2015 Station Profile Study[11]. Travel mode to the station for home and non-home origins and all entries is summarized in Table 7. Using this data, Kittelson estimated existing (2019) station entries by mode, as shown in Table 8. Additionally, Kittelson extrapolated the station entry by mode data to station exits to estimate the trips by mode for all people accessing the stations, as shown in Table 9.

Table 7: 2015 Station Profile Study Mode Share

Mode	Mode Share of Station Entries					
	Ashby BART Station			North Berkeley BART Station		
	Home	Non-Home	Total	Home	Non-Home	Total
Walk	59%	62%	60%	46%	57%	48%
Bike	11%	13%	12%	12%	14%	13%
Transit	2%	3%	2%	1%	3%	1%
Drop Off	10%	18%	12%	16%	20%	17%
Drive and Park	18%	4%	13%	25%	6%	20%
Total	**100%**	**100%**	**99%**	**100%**	**100%**	**99%**

Source: BART, 2020.
Notes: Numbers may not sum to 100 due to rounding.

Table 8: Existing (2019) Station Entries by Mode

Mode[1]	Existing (2019) Station Entries by Mode					
	Ashby BART Station			North Berkeley BART Station		
	Home[2]	Non-Home[2]	Total	Home[2]	Non-Home[2]	Total
Daily						
Walk	2,042	1,019	3,061	1,370	666	2,036
Bike	381	214	594	357	164	521
Transit	69	49	119	30	35	65
Drop Off	346	294	642	476	234	710
Drive and Park	623	66	689	745	70	815
Total	**3,461**	**1,644**	**5,105**	**2,978**	**1,169**	**4,147**
AM Peak Hour[3]						

[11] BART. 2015 Station Profile Study. Online: https://www.bart.gov/about/reports/profile.

Mode[1]	Existing (2019) Station Entries by Mode					
	Ashby BART Station			North Berkeley BART Station		
	Home[2]	Non-Home[2]	Total	Home[2]	Non-Home[2]	Total
Walk	545	272	817	353	171	524
Bike	102	57	159	92	42	134
Transit	18	13	32	8	9	17
Drop Off	92	79	171	123	60	183
Drive and Park	166	18	184	192	18	210
Total	**923**	**439**	**1,362**	**767**	**301**	**1,068**
PM Peak Hour[4]						
Walk	431	215	645	332	161	493
Bike	80	45	125	87	40	126
Transit	15	10	25	7	8	16
Drop Off	73	62	135	115	57	172
Drive and Park	131	14	145	180	17	197
Total	**730**	**346**	**1,076**	**721**	**283**	**1,004**

Source: BART, 2019 Average Daily Ridership and 2015 Station Profile Study.

Notes: Mode share from Table 7 was applied to station entries. Numbers may not sum to exact ridership values due to rounding.

[1] The Existing (2019) Station Entries by Mode are calculated by applying the station entry mode share from the 2015 Station Profile Study (see Table 8) to calculate mode share of station entries for all time periods.

[2] The estimates apply the home/non-home origin split from the 2015 Station Profile Study to the 2019 Average Daily Ridership to calculate the 2019 home/non-home origin trips. At Ashby station, 68% of trips were home-based and 32% were non-home based. At North Berkeley station, 72% of trips were home-based and 28% were non-home based.

[3] According to the 2019 Average Daily Ridership data, the weekday a.m. peak hour occurs between 8 and 9 a.m. for both stations.

[4] According to the 2019 Average Daily Ridership data, the weekday p.m. peak hour occurs between 6 and 7 p.m. at Ashby and between 5 and 6 p.m. at North Berkeley.

Table 9: Existing (2019) Station Access by Mode

Mode[1]	Existing (2019) Station Access by Mode					
	Ashby BART Station			North Berkeley BART Station		
	Entries[2]	Exits	Total	Entries[2]	Exits	Total
Daily						
Walk	3,061	3,002	6,063	2,036	2,053	4,089
Bike	594	591	1,185	521	545	1,066
Transit	119	98	217	65	42	107
Drop Off	642	591	1,233	710	712	1,422
Drive and Park	689	640	1,329	815	838	1,653
Total	**5,105**	**4,922**	**10,027**	**4,147**	**4,190**	**8,337**
AM Peak Hour[3]						
Walk	817	134	951	524	74	598
Bike	159	26	185	134	19	153
Transit	32	4	36	17	1	18
Drop Off	171	26	197	183	25	208
Drive and Park	184	29	213	210	30	240
Total	**1,362**	**219**	**1,581**	**1,068**	**149**	**1,217**
PM Peak Hour[4]						
Walk	645	526	1,171	493	376	869
Bike	125	103	228	126	100	226
Transit	25	17	42	16	8	24
Drop Off	135	103	238	172	130	302
Drive and Park	145	112	257	197	153	350

Mode[1]	Existing (2019) Station Access by Mode					
	Ashby BART Station			North Berkeley BART Station		
	Entries[2]	Exits	Total	Entries[2]	Exits	Total
Total	**1,076**	**861**	**1,937**	**1,004**	**767**	**1,771**

Source: BART, 2019 Average Daily Ridership and 2015 Station Profile Study.

Notes: Mode share from Table 7 was applied to station entries. Numbers may not sum to exact ridership values due to rounding.

[1] The Existing (2019) Station Entries by Mode are calculated by applying the station entry mode share from the 2015 Station Profile Study (see Table 8) to calculate mode share of station entries for all time periods.

[2] The estimates apply the home/non-home origin split from the 2015 Station Profile Study to the 2019 Average Daily Ridership to calculate the 2019 home/non-home origin trips. At Ashby station, 68% of trips were home-based and 32% were non-home based. At North Berkeley station, 72% of trips were home-based and 28% were non-home based.

[3] According to the 2019 Average Daily Ridership data, the weekday a.m. peak hour occurs between 8 and 9 a.m. for both stations.

[4] According to the 2019 Average Daily Ridership data, the weekday p.m. peak hour occurs between 6 and 7 p.m. at Ashby and between 5 and 6 p.m. at North Berkeley.

Ashby BART Station

As shown in Table 7, 60% of people traveling to the station walk, and a similar proportion of people (12% to 13%) drive and park, get dropped off, or bike and the remaining 2% take transit. The proportion of people walking, biking, and taking transit to the station is approximately the same regardless of their home or non-home origin. According to the 2015 Station Profile Study, approximately 70% of people driving and parking parked within the BART lot, 5% parked in a non-BART lot, and 20% parked on street. The remaining 5% of people driving and parking did not provide a parking location.

In 2008, approximately 21 percent of passengers from all origins (home- and non-home based) accessed the Ashby BART station by car. This represents an approximately 38 percent reduction in drive and park mode share over the eight-year period (2008 to 2015), or almost six percent reduction per year.

North Berkeley BART Station

As shown in Table 7, almost 50% of people traveling to the station walk, 20% get dropped off, 17% drive and park, 13% bike and the remaining 1% take transit. The proportion of people walking, biking, and taking transit to the station is approximately the same regardless of their home or non-home origin. According to the 2015 Station Profile Study, approximately 77% of people driving and parking parked within the BART lot, 9% parked in a non-BART lot, and 14% parked on street.

In 2008, approximately 21 percent of passengers from all origins (home- and non-home based) accessed the North Berkeley BART station by car. This represents an approximately 46 percent reduction in drive and park mode share over the eight-year period (2008 to 2015), or around seven percent per year.

Trip Distribution and Assignment

Kittelson determined the directional distribution of vehicle trips generated by the future developments based on a review of travel patterns within the study area obtained the Alameda Countywide Model at the stations and nearby intersections. Based on these trip distribution patterns, Kittelson assigned the vehicle trips generated by the future developments to regional roadway segments of significance. Kittelson

calculated project added traffic volumes to roadway segments at the Ashby BART and North Berkeley BART station sites for the weekday AM and PM peak hours.

The trip distribution is presented in tabular form. Resulting project-added traffic volumes will be used as inputs to the air quality, greenhouse gas and noise analyses, if needed.

Vehicle Miles Traveled Analysis

Kittelson conducted a vehicle miles traveled (VMT) analysis consistent with the City of Berkeley's VMT Criteria and Thresholds (June 29, 2020). In the City of Berkeley, land use projects that meet at least one of the established screening criteria are presumed to cause a less-than-significant VMT impact and would not require further VMT analysis for CEQA. The proposed developments would meet the Transit Priority Area screening criteria and would therefore be exempt from further VMT analysis.

VMT Screening Criteria

- **Projects in Transit Priority Areas (TPA):** Projects located within a ½-mile walkshed around major transit stops (i.e., the BART stations and the Amtrak station) or within a ¼-mile walkshed around high quality transit corridors. This TPA screening would not apply if the project has any of the following characteristics:
    - Has a Floor Area Ratio (FAR) of less than 0.75 for office uses; or
    - Includes more than 200,000 square feet of office or commercial space; or
    - Includes more parking supply than the project's estimated demand; or
    - Is inconsistent with the City's General Plan, an applicable Specific Plan, or an applicable Sustainable Communities Strategy (as determined by the City, with input from MTC); or
    - Replaces affordable residential units with market-rate residential units; or
    - Has project-specific or location-specific information that indicates that the project will generate significant levels of VMT.
- **Low-Income Housing:** Low-income housing units typically generate less VMT than market-rate units of similar sizes and can contribute to improving jobs-housing balance. As such, projects that contain 100% restricted units affordable to Low-Income Households and Very Low-Income Households, as defined in Berkeley Municipal Code 22.20.065, are presumed not to require transportation VMT analysis for CEQA, as long as the projects do not include more parking supply than the project's estimated demand.
- **Small Projects:** Projects defined as generating 836 daily VMT or less. Based on recent data from the California Household Travel Survey, this level of VMT would equate to 20 units of residential use or up to 10,000 square feet of non-residential use.
- **Locally Serving Public Facility:** Locally serving public facilities generally encompass government, civic, cultural, health, and infrastructure uses which contribute to and support community needs and mostly generate trips within the local area. Locally serving public facilities include, but are not limited to, public schools, passive parks (parks designed for use in an informal way and typically less developed), libraries, community centers, police stations, fire stations, and public utilities.

- **Projects in Low VMT Areas:** Projects that are located in low-VMT areas and that have characteristics similar to other uses already located in those areas can be presumed to generate VMT at similar rates. The low-VMT areas in Berkeley are defined based on the results of the Alameda County Transportation Commission (CTC) model.
    - Residential projects will be screened out if located in an area that has household VMT per capita that is 15% lower than the baseline regional average.
    - Office and industrial projects will be screened out if located in an area that has home-work VMT per worker that is 15% lower than the baseline regional average.

Each component of a mixed-use project is considered separately; therefore, each of the project's individual land uses were compared to the screening criteria with considerations for internal capture between uses. It is possible for some of the mixed-use project's land uses to be screened out and some to require further analysis.

Cumulative Conditions

The cumulative conditions assessment evaluates the long-term impacts of the project in combination with cumulative projects. The cumulative conditions analysis for transportation topics other than VMT uses a list-based approach. The specific land use development and transportation network changes considered in the cumulative conditions analysis were provided by Rincon, City, and BART staff. The discussion of cumulative transportation impacts assesses the degree to which the proposed developments would affect the transportation network in conjunction with overall citywide growth and other cumulative projects. Given uncertainty around future BART service, it is speculative to quantify BART ridership and station access based on available information. Therefore, Kittelson provides a qualitative assessment of the cumulative analysis for the EIR.

Parking Assessment

California Senate Bill (SB) 743 amended CEQA by adding California Public Resources Code (PRC) section 21099 regarding the analysis of parking impacts for certain urban infill projects in transit priority areas. [12] PRC section 21099(d), effective January 1, 2014, provides that "… parking impacts of a residential, mixed-use residential, or employment center project on an infill site located within a transit priority area shall not be considered significant impacts on the environment." Accordingly, parking is no longer to be considered in determining if a project has the potential to result in significant environmental effects for projects that meet all three criteria established in the statute.

The proposed project meets all of the criteria, and thus the transportation impact analysis does not consider the adequacy of parking in determining the significance of project impacts under CEQA.

[12] A "transit priority area" is defined as an area within 0.5 mile of an existing or planned major transit stop. A "major transit stop" is defined in California Public Resources Code section 21064.3 as a rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.

However, the City and BART acknowledge that parking conditions may be of interest to the public and a parking assessment may be useful to support development of the proposed project and alternatives. As a result, the EIR will include a BART Parking Policy alternative to analyze the impacts of various parking supply scenarios. Kittelson will prepare a parking assessment to evaluate the parking supply and estimated parking demand generated by the developments as well as BART patrons. The assessment will address local parking policies (e.g., residential parking permits, parking enforcement, parking time limits) and land uses (e.g., parking demand generators), both of which would influence potential for secondary environmental impacts due to parking shortages.[13] The following sections outline our proposed approach and assumptions for this analysis.

Vehicle Parking Demand Estimates

To complete evaluation of the proposed project or alternatives, Kittelson developed parking demand estimates for the proposed project using the rates provided in the Institute of Transportation Engineers' (ITE) *Parking Generation Manual, 4th Edition* (2010) rates for "Mid-Rise Apartment" (Land Use 221). A rate is not available for "Apartment" (Land Use Code 220) that is used in the trip generation estimates and the "Mid-Rise Apartment" (Land Use Code 221) is the best-fit for the parking estimates based on the number of dwelling units and number of surveyed uses. For commercial land uses, similar to the approach used to develop the trip generation estimates, the rates for Small Office (Land Use Code 712), Convenience Market (Land Use Code 851), and Composite Restaurant (Land Use Code 932) were used to estimate parking demand.

Similar to the way ITE overestimates trip generation, the *Parking Generation Manual* rates overestimate the parking demand generated by development in a dense, urban, mixed use environment, such as Berkeley. To account for this, Kittelson applied a reduction factor of 64 percent and 66 percent at the Ashby and North Berkeley sites, respectively, based on the comparison of the ITE vehicle trip generation to the project vehicle trip generation estimates, which accounts for expected internal trip capture and use of non-auto modes. Table 10 provides both unadjusted and adjusted ITE parking generation rates for the residential and commercial land uses. Parking demand calculations are included as Attachment C. Table 11 presents the estimated vehicle parking demand for the proposed project using the adjusted ITE parking generation rates.

[13] Cruising Technical Memorandum, WSA, May 22, 2007. https://www.cityofberkeley.info/uploadedFiles/Public_Works/Level_3_-_Transportation/Cruising%20Tech%20Memo_0522071.pdf. Accessed December 29, 2020.

Table 10. ITE Parking Demand Rates

Land Use	Size/Unit	Unadjusted ITE Parking Demand Rate Percentile			Adjusted ITE Parking Demand Rate Percentile		
		33rd	50th	85th	33rd	50th	85th
Ashby BART Station Site							
Residential	1,200 DU	1.13	1.31	1.47	0.41	0.47	0.53
Community Uses	**100 KSF**						
Health Club	50 KSF	3.93	4.73	8.87	1.42	1.71	3.21
Small Office Building	16.67 KSF	2.12	2.56	4.17	0.77	0.93	1.51
Convenience Market	16.67 KSF	--	5.44	--	--	1.97	--
Composite Restaurant	16.67 KSF	6.39	9.44	17.4	2.31	3.41	6.29
North Berkeley BART Station Site							
Residential	1,200 DU	1.13	1.31	1.47	0.38	0.44	0.49
Community Uses	**25 KSF**						
Small Office Building	8.33 KSF	2.12	2.56	4.17	0.71	0.86	1.40
Convenience Market	8.33 KSF	--	5.44	--	--	1.82	--
Composite Restaurant	8.33 KSF	6.39	9.44	17.4	2.14	3.16	5.83

Source: Kittelson & Associates, Inc., 2021; ITE Parking Generation Manual, 4th Edition, 2010
Notes: DU – dwelling unit (residential uses); KSF – thousand square feet (non-residential uses); "—" indicates value not available. There are only two samples for Convenience Market parking demand rates, therefore there are no 33rd or 85th percentile rates. The 50th percentile parking space demand is included in the total number of spaces calculated for the 33rd and 85th percentile demand.

Table 11. Project Vehicle Parking Demand

Location / Land Use	Vehicle Parking Demand (spaces)		
	33rd	50th	85th
Ashby BART Station Site			
Residential	490	568	638
Non-Residential Community Uses	156	191	324
Total Vehicle Parking Spaces	**646**	**760**	**962**
North Berkeley BART Station Site			
Residential	455	527	591
Non-Residential Community Uses	40	49	76
Total Vehicle Parking Spaces	**494**	**576**	**667**

Source: Kittelson & Associates, Inc., 2021; ITE Parking Generation Manual, 4th Edition, 2010

BART

Kittelson will utilize the BART ridership and station access data to estimate vehicle parking demand generated by BART riders. As shown in Table 9, 213 people drive and park at Ashby BART Station during the AM peak hour and 257 people drive and park during the PM peak hour under existing (2019) conditions. A total of 240 people drive and park at the North Berkeley BART Station during the AM peak hour and 350 people drive and park during the PM peak hour under existing (2019) conditions.

Kittelson will compare the proposed vehicle parking supply against the estimated demand to identify potential for parking demand to exceed supply throughout the day.

Secondary Environmental Impacts Assessment

Kittelson will qualitatively evaluate the effect of a parking supply reduction on the surrounding street network, including: increases in vehicle miles traveled as a result of vehicle circling/cruising; increases in potential for conflicts between people driving, walking, biking, and transit as a result of double-parking and circling/cruising; and increases in traffic congestion that may inhibit emergency vehicle access. Mitigation measures will be developed (e.g., adjusting local parking policies and improving alternatives to automobile parking to reduce the demand for parking) for any secondary environmental impacts identified. As discussed in the following section, the project would be required to implement a transportation demand management (TDM) program, which would reduce vehicle travel and reduce the potential for secondary environmental impacts related to parking.

Transportation Demand Management

The proposed project is required to comply with BART's Transit Oriented Development Transportation Demand Management Program[14] (TDM program) and the City of Berkeley TDM program, which applies to development on all BART-owned land and land within Berkeley city limits, respectively.

BART's TDM program assigns points to TDM strategies so that each point represents approximately a one percent reduction in VMT based on empirical data. The TDM program sets a minimum TDM point target of 20 points for all land uses, except in documented cases of economic infeasibility or where a project is complying with an equivalent program. Additionally, each land use has a required strategy that is counted towards its point total. All developments that include parking will be required to implement parking management strategies. Parking strategies are required as part of the larger TDM package because studies show they have the biggest impact on VMT reduction. These required strategies are consistent with the residential parking permit context that currently exists around most BART stations, along with paid parking at BART station lots and on some streets around BART stations adjacent to commercial districts.

Kittelson assumed that the developments would meet the TDM program requirements. However, for purposes of a more conservative analysis, Kittelson did not apply adjustment factors to the estimated trip generation or parking demand related to TDM program implementation.

[14] BART. August 2020. Transit Oriented Development Transportation Demand Management Program. Online: https://www.bart.gov/sites/default/files/docs/TransportationDemandManagementProgram_20200820_boardmailout.pdf. Accessed October 21, 2020.

Attachment A Trip Generation Calculations

Land Use Scenario - Assume equal split of community uses among five non-residential land uses

Person Trip Estimates

Land Use	Size/Unit	Daily	Weekday AM Peak Hour			Weekday PM Peak Hour			Saturday
			In	Out	Total	In	Out	Total	
Ashby									
Residential	1200	10365	150	501	651	500	293	793	991
Health-Fitness	50000	0	39	38	77	116	88	204	0
Small Office Building	10000	191	19	4	23	9	20	29	0
Convenience Market	10000	8995	369	369	738	295	284	579	934
Composite Restaurant	10000	1324	64	53	117	71	44	115	132
Bagel/Coffee Shop	10000	0	608	585	1193	214	214	428	0
Daycare	10000	562	69	61	130	62	69	131	20
Total		***21437***	***1318***	***1611***	***2929***	***1267***	***1012***	***2279***	***2077***
North Berkeley									
Residential	1200	10365	150	501	651	500	293	793	991
Small Office Building	5000	96	9	2	11	4	10	14	0
Convenience Market	5000	4497	185	184	369	148	142	290	467
Composite Restaurant	5000	662	32	27	59	36	22	58	66
Bagel/Coffee Shop	5000	0	304	293	597	107	107	214	0
Daycare	5000	281	34	31	65	31	35	66	10
Total		***15901***	***714***	***1038***	***1752***	***826***	***609***	***1435***	***1534***

Internal/Exteral Trips

Site / Trip Type	Person Trip Estimates			
	Weekday AM Peak Hour		Weekday PM Peak Hour	
	Number	Proportion	Number	Proportion
Ashby				
External	2,665	91%	1,755	77%
Internal	264	9%	524	23%
Total (Internal and External)	***2,929***	***100%***	***2,279***	***100%***
North Berkeley				
External	1,629	93%	1,220	85%
Internal	123	7%	215	15%
Total (Internal and External)	***1,752***	***100%***	***1,435***	***100%***

Mode Share

Mode	Mode Share for External Trips
Ashby	
Auto	37.70%
Transit	34.70%
Walk	7.70%
Bike	12.00%
Other (Carpooling)	7.90%
Total	100.00%
North Berkeley	
Auto	36.40%
Transit	33.70%
Walk	7.90%
Bike	10.30%
Other (Carpooling)	11.70%
Total	100.00%

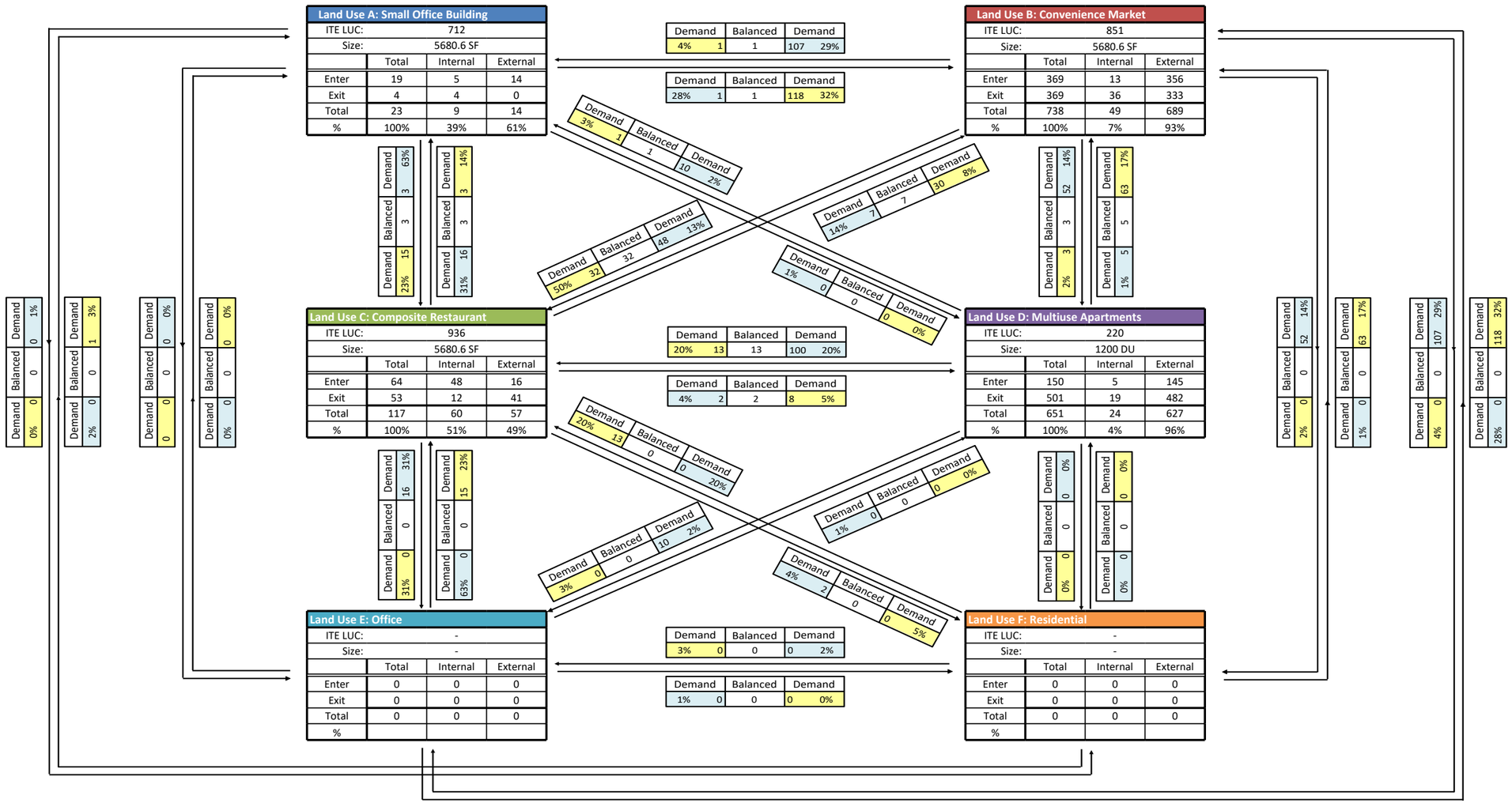
Person Trips by Mode

Mode	Daily	Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
Ashby							
Auto	8082	452	553	1005	368	294	662
Transit	7439	416	509	925	339	270	609
Walk	1651	92	113	205	75	60	135
Bike	2572	144	176	320	117	94	211
Other	1694	95	116	211	77	62	139
Project Pers	**21438**	**1199**	**1467**	**2666**	**976**	**780**	**1756**
Project Vehicle-Trips		*367*	*450*	*817*	*299*	*239*	*538*
North Berkeley							
Auto[1]	5727	242	351	593	256	188	444
Transit	5302	224	325	549	237	174	411
Walk	1243	52	77	129	55	41	96
Bike	1620	68	100	168	72	54	126
Other	1841	78	113	191	82	61	143
Project Pers	**15733**	**664**	**966**	**1630**	**702**	**518**	**1220**
Project Vehicle-Trips		*189*	*274*	*463*	*200*	*147*	*347*

Attachment B Internal Trip Capture Calculations

Multi-Use Internal Capture

Project Number:	24827
Project Name	City of Berkeley Ashby/North Berke
Scenario:	Ashby AM Peak - Scenario 2



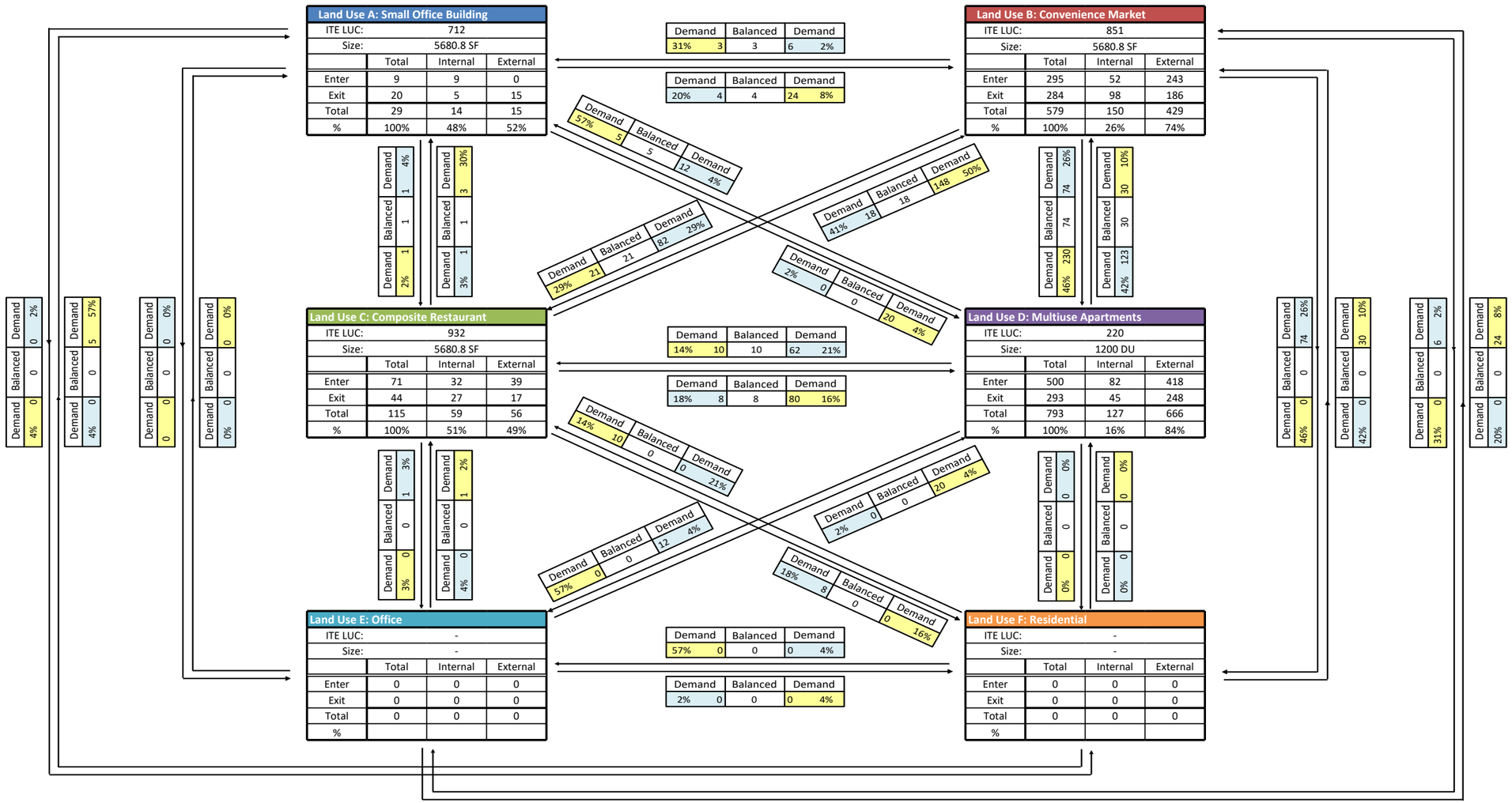
Internal and External Trip Summary

Origin Land Use		Total		Internal		External	
		Enter	Exit	Enter	Exit	Enter	Exit
A	Small Office Building	19	4	5	4	14	0
B	Convenience Market	369	369	13	36	356	333
C	Composite Restaurant	64	53	48	12	16	41
D	Multiuse Apartments	150	501	5	19	145	482
E	Office	0	0	0	0	0	0
F	Residential	0	0	0	0	0	0

Internal Capture	9.29%

Multi-Use Internal Capture

Project Number:	24827
Project Name	City of Berkeley Ashby/North Berke
Scenario:	Ashby PM Peak - Scenario 2



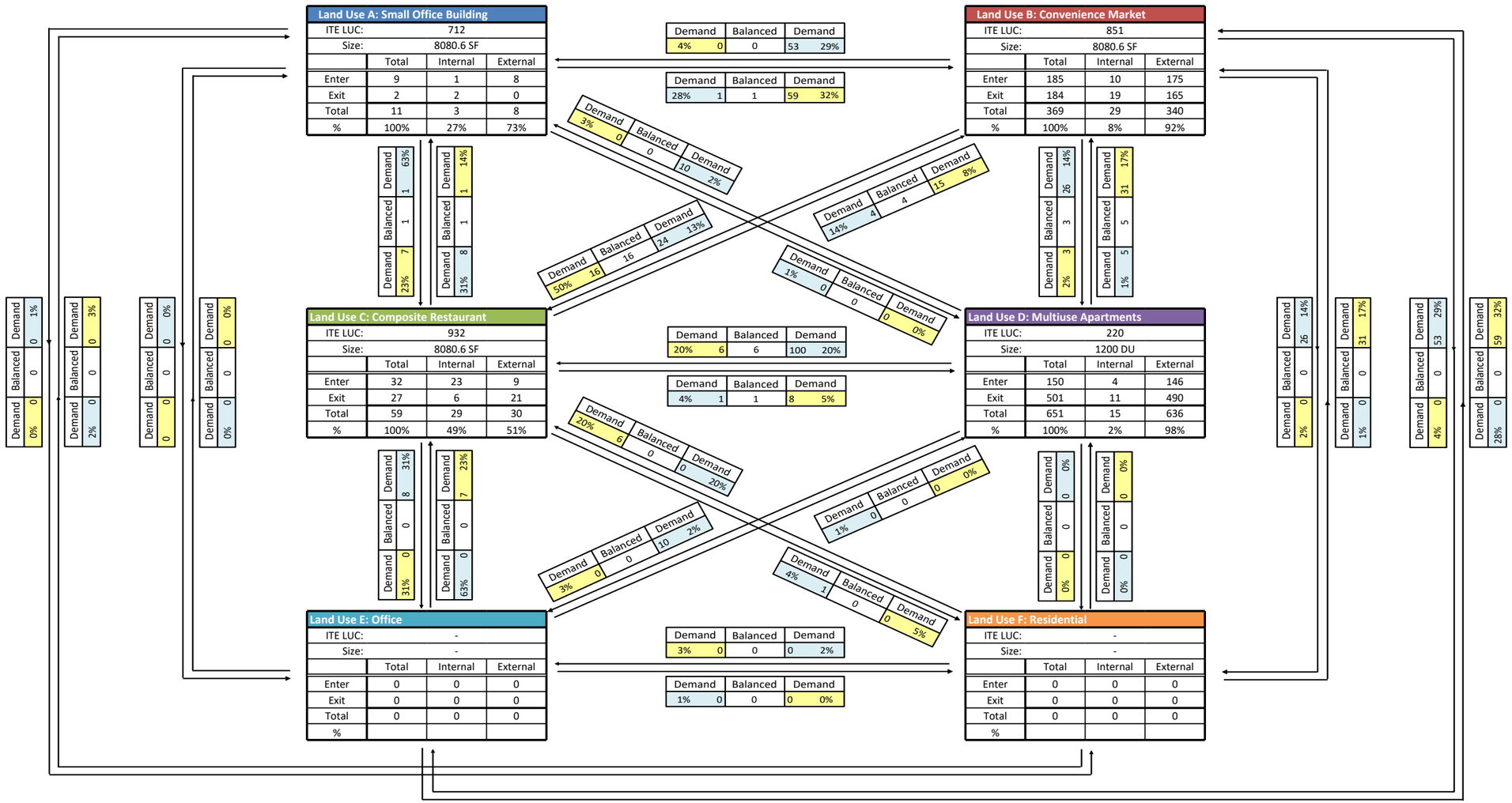
Internal and External Trip Summary

Origin Land Use		Total		Internal		External	
		Enter	Exit	Enter	Exit	Enter	Exit
A	Small Office Building	9	20	9	5	0	15
B	Convenience Market	295	284	52	98	243	186
C	Composite Restaurant	71	44	32	27	39	17
D	Multiuse Apartments	500	293	82	45	418	248
E	Office	0	0	0	0	0	0
F	Residential	0	0	0	0	0	0

Internal Capture	23.09%

Multi-Use Internal Capture

Project Number:	24827
Project Name	City of Berkeley Ashby/North Berke
Scenario:	North Berkeley AM Peak - Scenario



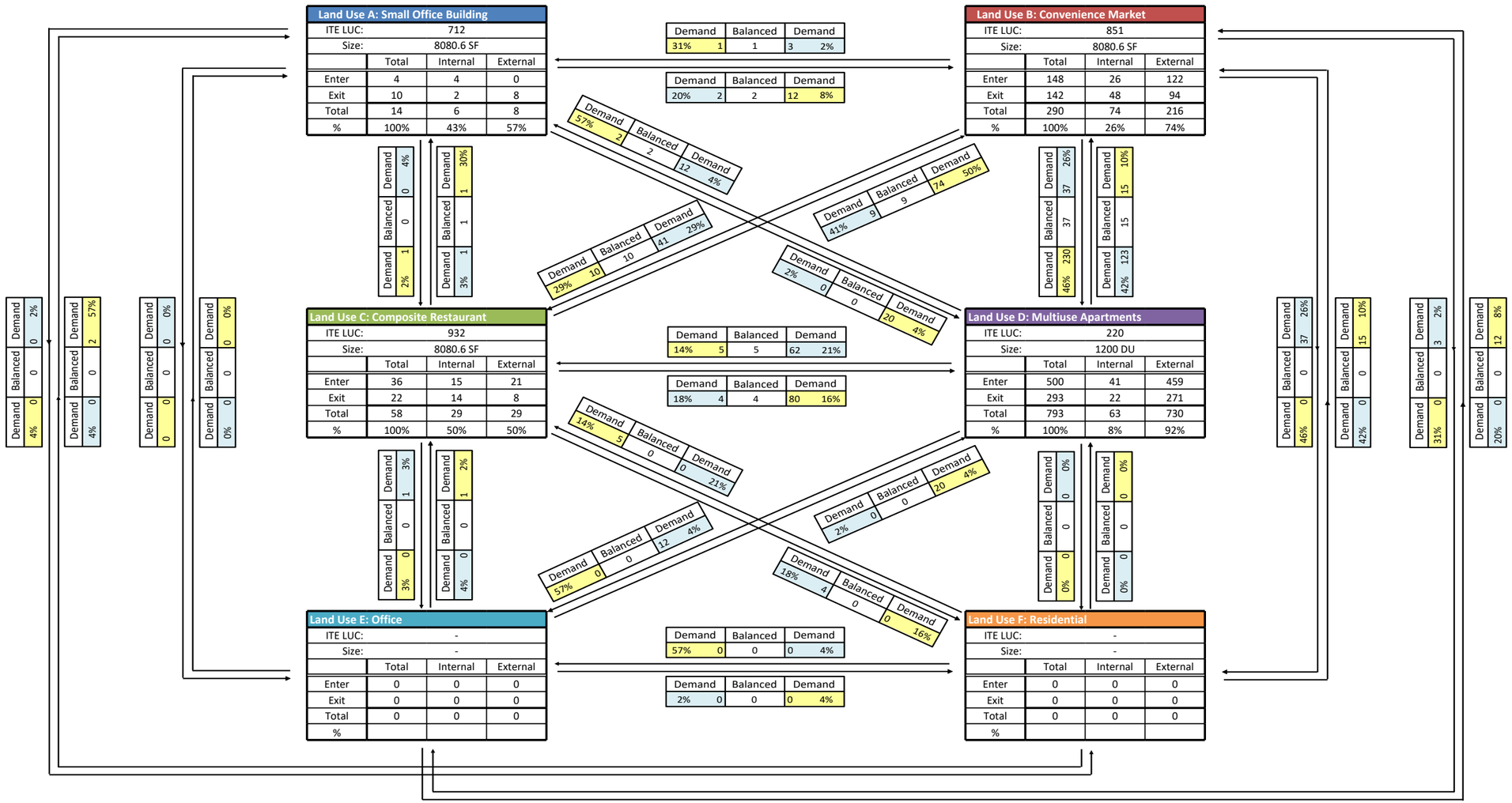
Internal and External Trip Summary

Origin Land Use		Total		Internal		External	
		Enter	Exit	Enter	Exit	Enter	Exit
A	Small Office Building	9	2	1	2	8	0
B	Convenience Market	185	184	10	19	175	165
C	Composite Restaurant	32	27	23	6	9	21
D	Multiuse Apartments	150	501	4	11	146	490
E	Office	0	0	0	0	0	0
F	Residential	0	0	0	0	0	0

Internal Capture	6.97%

Multi-Use Internal Capture

Project Number:	24827
Project Name	City of Berkeley Ashby/North Berke
Scenario:	North Berkeley PM Peak - Scenario



Internal and External Trip Summary

Origin Land Use		Total		Internal		External	
		Enter	Exit	Enter	Exit	Enter	Exit
A	Small Office Building	4	10	4	2	0	8
B	Convenience Market	148	142	26	48	122	94
C	Composite Restaurant	36	22	15	14	21	8
D	Multiuse Apartments	500	293	41	22	459	271
E	Office	0	0	0	0	0	0
F	Residential	0	0	0	0	0	0

Internal Capture	14.89%

Attachment C Parking Demand Calculations

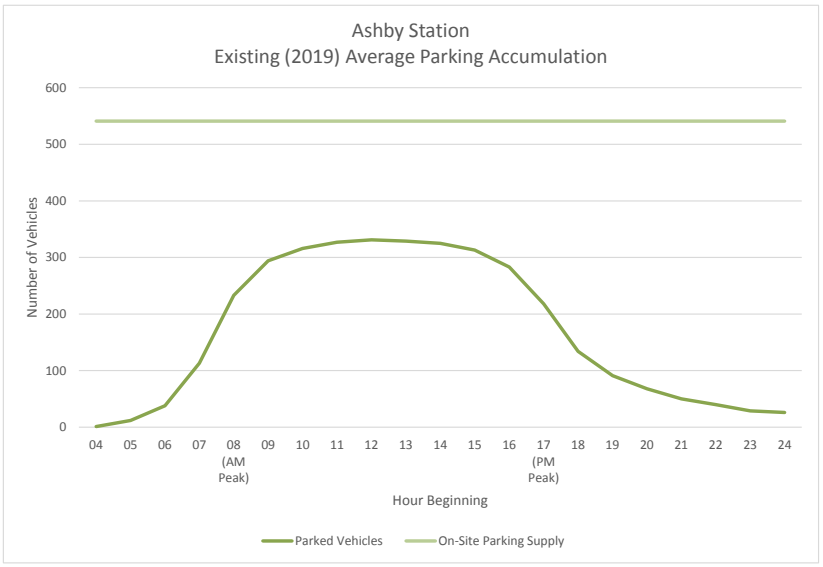
Ashby and North Berkeley BART Stations

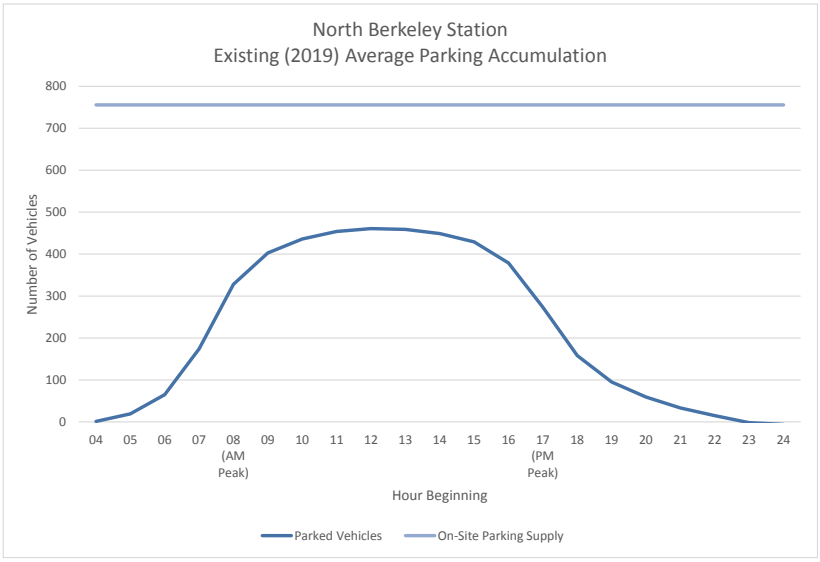
Vehicle Parking Demand and Accumulation Analysis

	Existing (2019) Vehicle Parking Demand and Accumulation (2019 ridership, 2015 mode share, existing parking supply)											
	Ashby			North Berkeley			Ashby			North Berkeley		
Hour Beginning	Inbound	Outbound	Total	Inbound	Outbound	Total	Parking Accumulation	Parking Surplus/Deficit	Percent Surplus/Deficit	Parking Accumulation	Parking Surplus/Deficit	Percent Surplus/Deficit
04	1	0	1	1	0	1	1	540	54000%	1	755	75500%
05	13	2	15	20	2	22	12	529	4408%	19	737	3879%
06	35	9	44	54	8	62	38	503	1324%	65	691	1063%
07	97	22	119	130	21	151	113	428	379%	174	582	334%
08 (AM Peak)	149	29	178	184	30	214	233	308	132%	328	428	130%
09	80	19	99	94	19	113	294	247	84%	403	353	88%
10	35	13	48	48	15	63	316	225	71%	436	320	73%
11	25	14	39	34	16	50	327	214	65%	454	302	67%
12	22	18	40	27	20	47	331	210	63%	461	295	64%
13	20	22	42	24	26	50	329	212	64%	459	297	65%
14	20	24	44	23	33	56	325	216	66%	449	307	68%
15	24	36	60	31	51	82	313	228	73%	429	327	76%
16	33	63	96	40	90	130	283	258	91%	379	377	99%
17 (PM Peak)	42	107	149	47	153	200	218	323	148%	273	483	177%
18	28	112	140	33	148	181	134	407	304%	158	598	378%
19	15	58	73	15	78	93	91	450	495%	95	661	696%
20	9	32	41	9	45	54	68	473	696%	59	697	1181%
21	7	25	32	8	34	42	50	491	982%	33	723	2191%
22	5	15	20	4	22	26	40	501	1253%	15	741	4940%
23	3	14	17	2	19	21	29	512	1766%	-2	758	-37900%
24	1	4	5	1	5	6	26	515	1981%	-6	762	-12700%
1	0	1	1	0	2	2	25	516	2064%	-8	764	-9550%
Total	**664**	**639**	**1,303**	**829**	**837**	**1,666**	**3,596**	**8,306**	**705**	**4,674**	**11,958**	**309**

Source: BART Average Hourly 2019 Station Entries and Exits. BART Station Profile Study, 2008 and 2015. Kittelson, 2021.

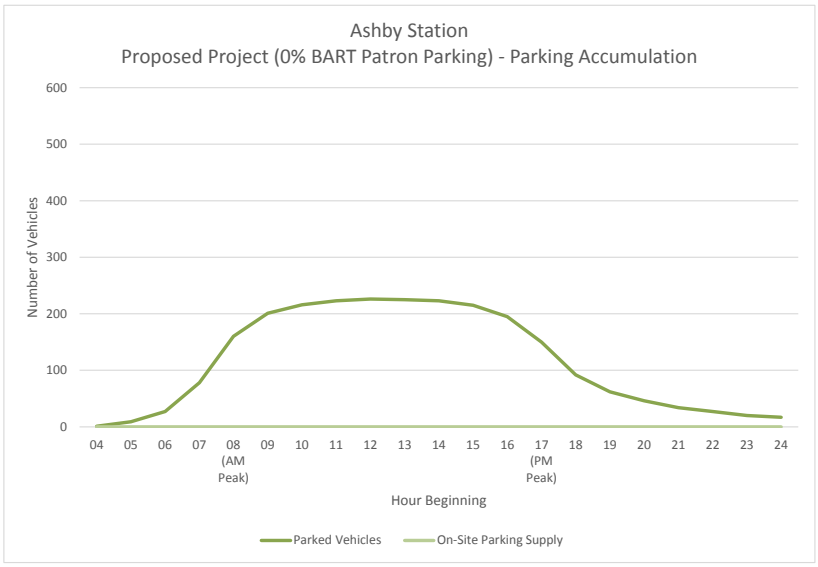
Notes: Blue shaded cells indicate peak hour of demand during the AM and PM periods.

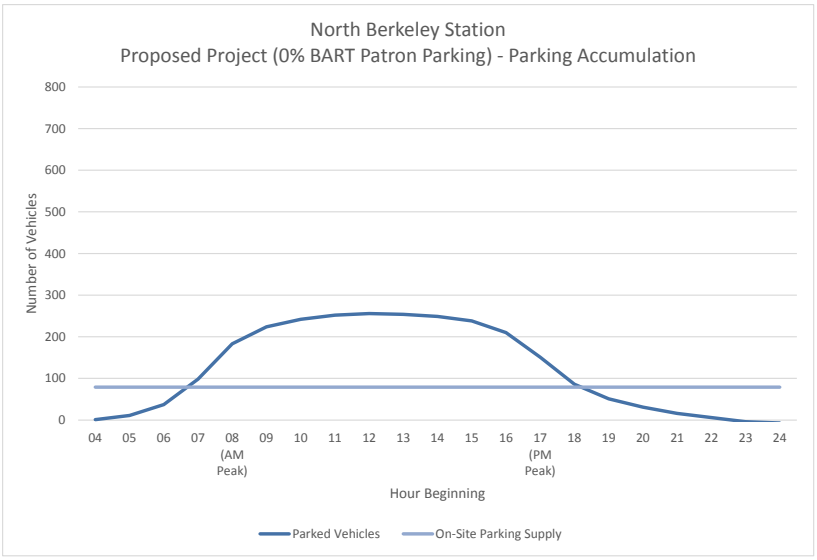

Ashby Station
Existing (2019) Average Parking Accumulation
Number of Vehicles
600
500
400
300
200
100
0
04 05 06 07 08 (AM Peak) 09 10 11 12 13 14 15 16 17 (PM Peak) 18 19 20 21 22 23 24
Hour Beginning
Parked Vehicles
On-Site Parking Supply


North Berkeley Station
Existing (2019) Average Parking Accumulation
Number of Vehicles
800
700
600
500
400
300
200
100
0
04 05 06 07 08 (AM Peak) 09 10 11 12 13 14 15 16 17 (PM Peak) 18 19 20 21 22 23 24
Hour Beginning
Parked Vehicles
On-Site Parking Supply

Proposed Project Conditions
(2019 ridership, 2020 mode share, 77% and 65retention, zero replacement parking)

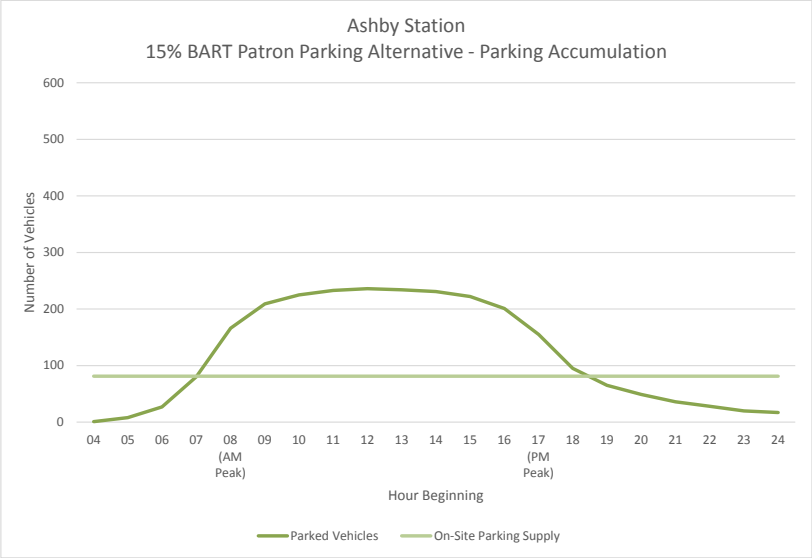
Ashby			North Berkeley			Ashby			North Berkeley		
Inbound	Outbound	Total	Inbound	Outbound	Total	Parking Accumulation	Parking Surplus/Deficit	Percent Surplus/Deficit	Parking Accumulation	Parking Surplus/Deficit	Percent Surplus/Deficit
1	0	1	1	0	1	1	-1	-100%	1	78	7800%
9	1	10	11	1	12	9	-9	-100%	11	68	618%
24	6	30	30	4	34	27	-27	-100%	37	42	114%
66	15	81	73	12	85	78	-78	-100%	98	-19	-19%
101	19	120	102	17	119	160	-160	-100%	183	-104	-57%
54	13	67	52	11	63	201	-201	-100%	224	-145	-65%
24	9	33	27	9	36	216	-216	-100%	242	-163	-67%
17	10	27	19	9	28	223	-223	-100%	252	-173	-69%
15	12	27	15	11	26	226	-226	-100%	256	-177	-69%
14	15	29	13	15	28	225	-225	-100%	254	-175	-69%
14	16	30	13	18	31	223	-223	-100%	249	-170	-68%
17	25	42	17	28	45	215	-215	-100%	238	-159	-67%
23	43	66	22	50	72	195	-195	-100%	210	-131	-62%
28	73	101	26	85	111	150	-150	-100%	151	-72	-48%
19	77	96	18	83	101	92	-92	-100%	86	-7	-8%
10	40	50	8	43	51	62	-62	-100%	51	28	55%
6	22	28	5	25	30	46	-46	-100%	31	48	155%
5	17	22	4	19	23	34	-34	-100%	16	63	394%
3	10	13	2	12	14	27	-27	-100%	6	73	1217%
2	9	11	1	11	12	20	-20	-100%	-4	83	-2075%
0	3	3	0	3	3	17	-17	-100%	-7	86	-1229%
0	1	1	0	1	1	16	-16	-100%	-8	87	-1088%
452	**436**	**888**	**459**	**467**	**926**	**2,463**	**-2,463**	**-22**	**2,577**	**-839**	**53**

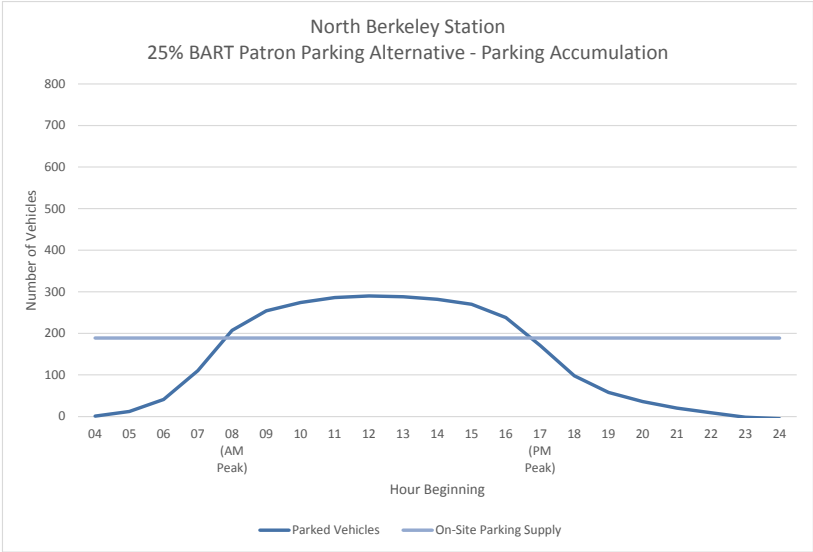

Ashby Station
Proposed Project (0% BART Patron Parking) - Parking Accumulation
Number of Vehicles
600
500
400
300
200
100
0
04 05 06 07 08 (AM Peak) 09 10 11 12 13 14 15 16 17 (PM Peak) 18 19 20 21 22 23 24
Hour Beginning
Parked Vehicles
On-Site Parking Supply


North Berkeley Station
Proposed Project (0% BART Patron Parking) - Parking Accumulation
Number of Vehicles
800
700
600
500
400
300
200
100
0
04 05 06 07 08 (AM Peak) 09 10 11 12 13 14 15 16 17 (PM Peak) 18 19 20 21 22 23 24
Hour Beginning
Parked Vehicles
On-Site Parking Supply

Low Replacement Scenario
(2019 ridership, 2020 mode share, 80% and 74% retention, lower replacement parking)

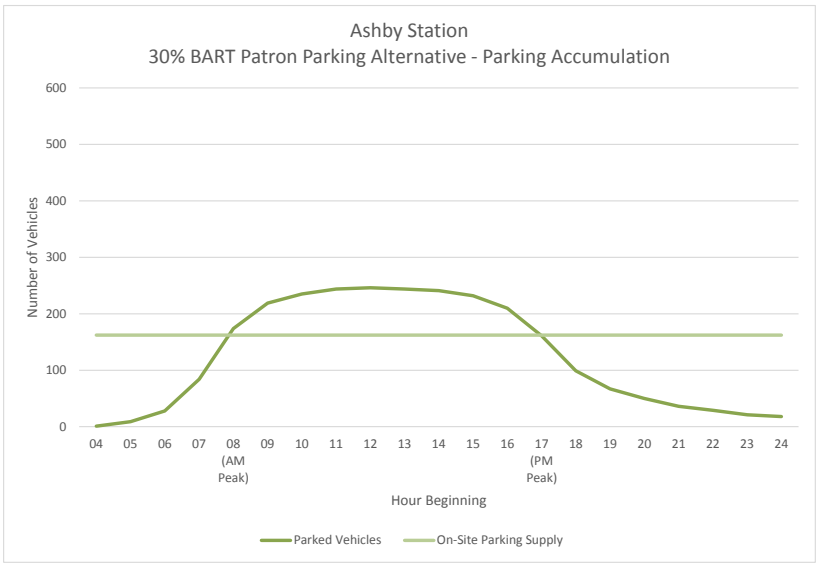
Ashby			North Berkeley			Ashby			North Berkeley		
Inbound	Outbound	Total	Inbound	Outbound	Total	Parking Accumulation	Parking Surplus/Deficit	Percent Surplus/Deficit	Parking Accumulation	Parking Surplus/Deficit	Percent Surplus/Deficit
1	0	1	1	0	1	1	80	8015%	1	188	18800%
9	2	11	12	1	13	8	73	914%	12	177	1475%
25	6	31	34	5	39	27	54	201%	41	148	361%
69	16	85	82	13	95	80	1	1%	110	79	72%
106	20	126	116	19	135	166	-85	-51%	207	-18	-9%
57	14	71	59	12	71	209	-128	-61%	254	-65	-26%
25	9	34	30	10	40	225	-144	-64%	274	-85	-31%
18	10	28	22	10	32	233	-152	-65%	286	-97	-34%
16	13	29	17	13	30	236	-155	-66%	290	-101	-35%
14	16	30	15	17	32	234	-153	-65%	288	-99	-34%
14	17	31	15	21	36	231	-150	-65%	282	-93	-33%
17	26	43	20	32	52	222	-141	-63%	270	-81	-30%
24	45	69	25	57	82	201	-120	-60%	238	-49	-21%
30	76	106	30	97	127	155	-74	-48%	171	18	11%
20	80	100	21	94	115	95	-14	-15%	98	91	93%
11	41	52	9	49	58	65	16	25%	58	131	226%
7	23	30	6	28	34	49	32	66%	36	153	425%
5	18	23	5	21	26	36	45	125%	20	169	845%
3	11	14	3	14	17	28	53	190%	9	180	2000%
2	10	12	1	12	13	20	61	306%	-2	191	-9550%
0	3	3	0	3	3	17	64	377%	-5	194	-3880%
0	1	1	0	1	1	16	65	407%	-6	195	-3250%
473	**457**	**930**	**523**	**529**	**1,052**	**2,554**	**-769**	**100**	**2,932**	**1,226**	**74**

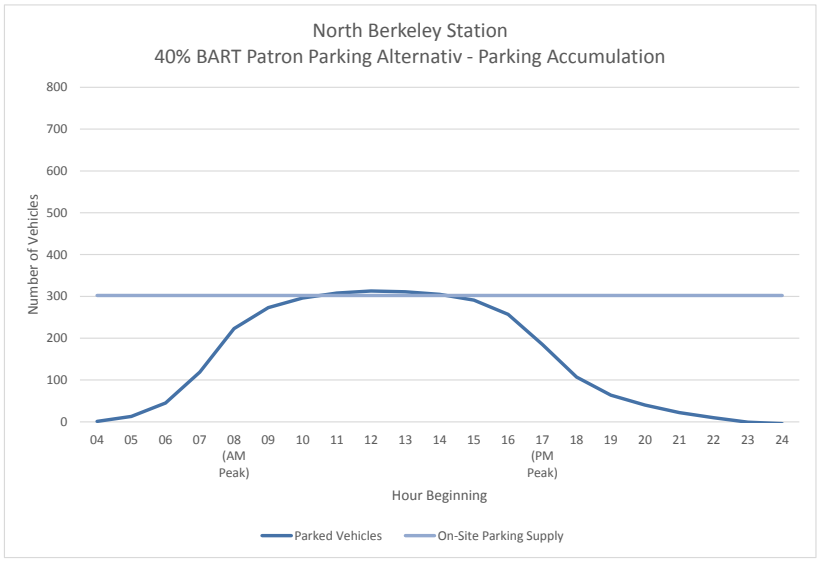

Ashby Station
15% BART Patron Parking Alternative - Parking Accumulation
Number of Vehicles
600
500
400
300
200
100
0
04 05 06 07 08 (AM Peak) 09 10 11 12 13 14 15 16 17 (PM Peak) 18 19 20 21 22 23 24
Hour Beginning
Parked Vehicles
On-Site Parking Supply


North Berkeley Station
25% BART Patron Parking Alternative - Parking Accumulation
Number of Vehicles
800
700
600
500
400
300
200
100
0
04 05 06 07 08 (AM Peak) 09 10 11 12 13 14 15 16 17 (PM Peak) 18 19 20 21 22 23 24
Hour Beginning
Parked Vehicles
On-Site Parking Supply

High Replacement Scenario
(2019 ridership, 2020 mode share, 84% and 79%retention, higher replacement parking)

Ashby			North Berkeley			Ashby			North Berkeley		
Inbound	Outbound	Total	Inbound	Outbound	Total	Parking Accumulation	Parking Surplus/Deficit	Percent Surplus/Deficit	Parking Accumulation	Parking Surplus/Deficit	Percent Surplus/Deficit
1	0	1	1	0	1	1	161	16130%	1	301	30140%
10	2	12	13	1	14	9	153	1703%	13	289	2226%
26	7	33	37	5	42	28	134	480%	45	257	572%
72	16	88	88	14	102	84	78	93%	119	183	154%
111	21	132	124	20	144	174	-12	-7%	223	79	36%
59	14	73	63	13	76	219	-57	-26%	273	29	11%
26	10	36	33	10	43	235	-73	-31%	296	6	2%
19	10	29	23	11	34	244	-82	-33%	308	-6	-2%
16	14	30	19	14	33	246	-84	-34%	313	-11	-3%
15	17	32	16	18	34	244	-82	-33%	311	-9	-3%
15	18	33	16	22	38	241	-79	-33%	305	-3	-1%
18	27	45	21	35	56	232	-70	-30%	291	11	4%
25	47	72	27	61	88	210	-48	-23%	257	45	18%
31	80	111	32	104	136	161	1	1%	185	117	63%
21	83	104	22	100	122	99	63	64%	107	195	183%
11	43	54	10	53	63	67	95	142%	64	238	373%
7	24	31	6	30	36	50	112	225%	40	262	656%
5	19	24	5	23	28	36	126	351%	22	280	1275%
4	11	15	3	15	18	29	133	460%	10	292	2924%
2	10	12	2	13	15	21	141	673%	-1	303	-30340%
0	3	3	0	3	3	18	144	802%	-4	306	-7660%
0	1	1	0	1	1	17	145	855%	-5	307	-6148%
494	**477**	**971**	**561**	**566**	**1,127**	**2,665**	**906**	**217**	**3,173**	**3,480**	**-55**


Ashby Station
30% BART Patron Parking Alternative - Parking Accumulation
Number of Vehicles
600
500
400
300
200
100
0
04 05 06 07 08 (AM Peak) 09 10 11 12 13 14 15 16 17 (PM Peak) 18 19 20 21 22 23 24
Hour Beginning
Parked Vehicles
On-Site Parking Supply


North Berkeley Station
40% BART Patron Parking Alternativ - Parking Accumulation
Number of Vehicles
800
700
600
500
400
300
200
100
0
04 05 06 07 08 (AM Peak) 09 10 11 12 13 14 15 16 17 (PM Peak) 18 19 20 21 22 23 24
Hour Beginning
Parked Vehicles
On-Site Parking Supply

Existing (Year 2019) Percentage Total Ridership - Hourly Distribution of Entries and Exits					
Ashby			North Berkeley		
Entries	Exits	Total	Entries	Exits	Total
0%	0%	0%	0%	0%	0%
2%	0%	1%	2%	0%	1%
5%	1%	3%	7%	1%	4%
15%	3%	9%	16%	3%	9%
22%	5%	14%	22%	4%	13%
12%	3%	8%	11%	2%	7%
5%	2%	4%	6%	2%	4%
4%	2%	3%	4%	2%	3%
3%	3%	3%	3%	2%	3%
3%	3%	3%	3%	3%	3%
3%	4%	3%	3%	4%	3%
4%	6%	5%	4%	6%	5%
5%	10%	7%	5%	11%	8%
6%	17%	11%	6%	18%	12%
4%	18%	11%	4%	18%	11%
2%	9%	6%	2%	9%	6%
1%	5%	3%	1%	5%	3%
1%	4%	2%	1%	4%	3%
1%	2%	2%	0%	3%	2%
0%	2%	1%	0%	2%	1%
0%	1%	0%	0%	1%	0%
0%	0%	0%	0%	0%	0%
100%	**100%**	**100%**	**100%**	**100%**	**100%**

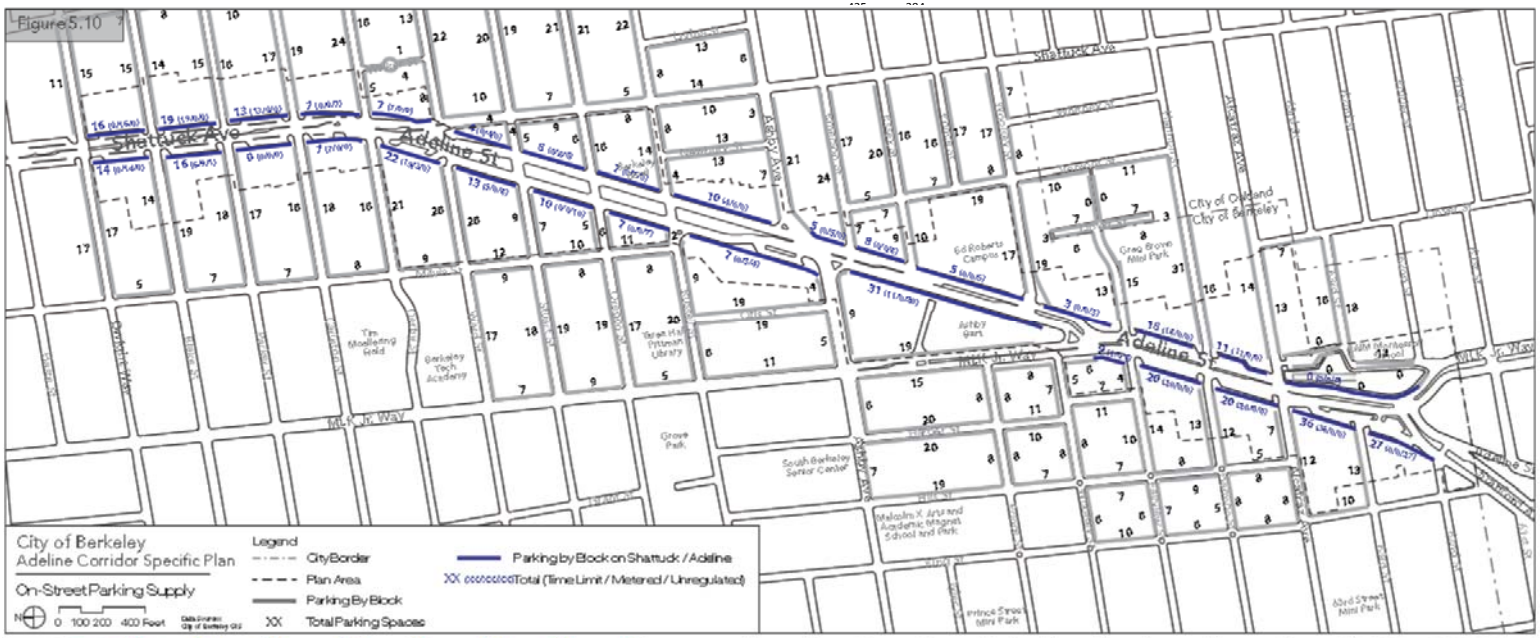
Ashby and North Berkeley BART Stations

Vehicle Parking Demand and Accumulation Analysis

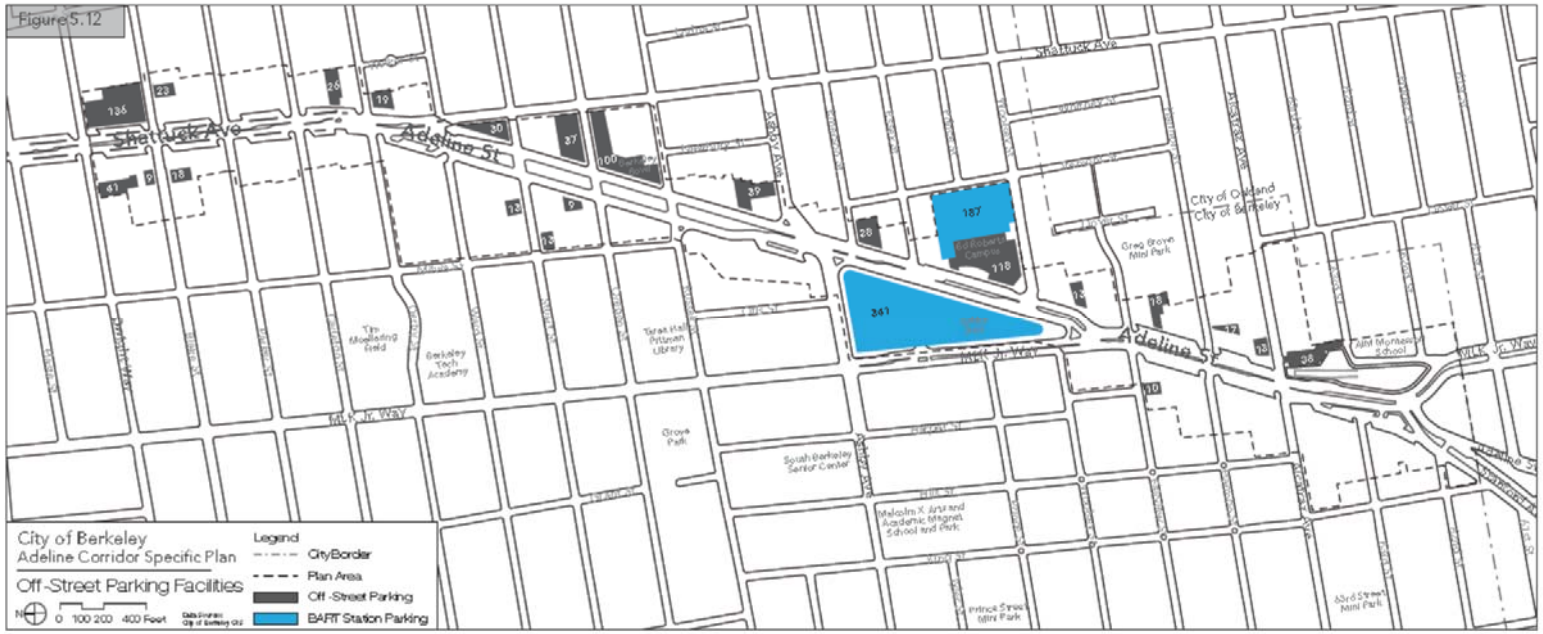
BART Station Access - Drive and Park Mode Share

Inputs and Assumptions	Ashby	North Berkeley	Notes
Vehicle parking supply			
Existing	541	756	Existing on-site vehicle parking supply. Includes surface parking lot and auxiliary lots.
low retention	81	189	Assumes 15% replacement at Ashby and 25% replacement at North Berkeley
high retention	162	302	Assumes 30% replacement at Ashby and 40% replacement at North Berkeley
project	0	79	Assumes 0% replacement at Ashby and maintenance of 79 spaces on existing auxiliary lot at North Berkeley
Station access mode share (drive and park)			
2008 Station Profile			
Study (all origins)	21.0%	37.0%	
2015 Station Profile			
Study (all origins)	13.0%	20.0%	
Existing (2019)	12.2%	18.5%	Applies adjustment factor based on observed mode shift occurring between 2008 and 2015
Existing (2020)	11.5%	17.1%	Applies adjustment factor based on observed mode shift occurring between 2008 and 2015
Low replacement	11.5%	17.1%	Assumes baseline (2020) mode share. Does not include adjustments to directly account for parking supply on-site or transportation demand management measures that may be implemented with the project.
High replacement	11.5%	17.1%	Assumes baseline (2020) mode share. Does not include adjustments to directly account for parking supply on-site or transportation demand management measures that may be implemented with the project.
0 spaces	11.5%	17.1%	Assumes baseline (2020) mode share. Does not include adjustments to directly account for parking supply on-site or transportation demand management measures that may be implemented with the project.
Rider loss/rider retention			
Low replacement	19.6%	26.3%	Assumes 85% and 75% of the ridership loss would occur in the low replacement scenarios at Ashby and North Berkeley, respectively, compared to the proposed project (zero replacement parking) scenario.
High replacement	16.1%	21.0%	Assumes 70% and 60% of the ridership loss would occur in the high replacement scenarios at Ashby and North Berkeley, respectively, compared to the proposed project (zero replacement parking) scenario.
0 spaces	23%	35%	Source: BART TOD Access Model outputs of 77% retention at Ashby and 65% retention at North Berkeley

Ashby BART Station - Areawide Parking Conditions
Source: Adeline Corridor Specific Plan, Existing Conditions Summary



Ashby BART Station - Areawide Parking Conditions
Source: Adeline Corridor Specific Plan, Existing Conditions Summary



Ashby BART Station - Areawide Parking Conditions
Source: Adeline Corridor Specific Plan, Existing Conditions Summary

Attachment D Alameda County Transportation Commission Congestion Management Program (CMP) Land Use Analysis Program Analysis

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ASHBY AND NORTH BERKELEY BART ZONING STANDARDS – CONGESTION MANAGEMENT PROGRAM (CMP) LAND USE PROGRAM ANALYSIS

Introduction

Based on the expected trip generation potential of the proposed project (i.e., greater than 100 peak hour vehicle trips), an Alameda County Transportation Commission (Alameda CTC) Congestion Management Program (CMP) Land Use Analysis Program analysis of the proposed project's effect on Metropolitan Transportation System (MTS) roadways and regional transportation network is required.[1]

The designated CMP roadway network includes state highways and principal arterials that carry 30,000 vehicles per day; have four or more lanes; are major cross-town connectors; and connect at both ends to another CMP route or major activity center. The Alameda CTC adopted a two-tier approach for the CMP network in 2011. The first tier (Tier 1) is the existing CMP network and the second tier (Tier 2) consists of an expanded number of roadways that forms a supplemental network that is monitored for informational purposes. The MTS system is a regionally designated system that includes the entire CMP network as well as major arterials, transit services, rail, maritime ports, airports, and transfer hubs and includes roadways recognized as "regionally significant" as well as all interstate highways, state routes, and portions of the local street network.

Analysis Topics

Consistent with the 2019 CMP[2], the following topics are analyzed.

- Autos: Study impacts to roadway segments on the 2002 Metropolitan Transportation System. Vehicle delay using the HCM 2010 methodology and consistency with adopted plans.
- Transit: Study impacts to MTS transit operators (ACE, AC Transit, BART, Capitol Corridor, LAVTA, Union City Transit, and WETA). Effects of vehicle traffic on mixed-flow transit, transit capacity, transit access/egress, need for future transit service, consistency with adopted plans, and Circulation Element needs.

[1] Alameda CTC requires the assessment of development-driven impacts to regional roadways of projects that generate more than 100 "net new" PM peak-hour trips for which an EIR is being prepared. Impact thresholds are established by local agencies.

[2] An amendment to Chapter 6: Land Use Analysis Program was approved June 2020.

- Bicycles: Study impacts to cyclists on facilities of countywide significance, defined in the Countywide Active Transportation Plan. Effects of vehicle traffic on bicyclists' conditions, site development, and roadway improvements, and consistency with adopted plans.
- Pedestrians: Study impacts to pedestrians within the areas of countywide significance defined in the Countywide Active Transportation Plan. Effects of vehicle traffic on pedestrian conditions, site development, and roadway improvements, and consistency with adopted plans

Project Travel Demand

The trip generation estimates were developed based on the vehicle trip rates provided in the Institute of Transportation Engineer's (ITE) Trip Generation Manual (10th Edition) with adjustments using methods consistent with the City of Berkeley's Transportation Impact Report Guidelines (TIR Guidelines) and are presented in Table 1.

Table 1: Project Travel Demand – Project External Person-Trips by Mode[3]

Mode	Weekday AM Peak Hour			Weekday PM Peak Hour		
	In	Out	Total	In	Out	Total
Ashby BART Station Site						
Auto[1]	452	553	1,005	368	294	662
Transit	416	509	925	339	270	609
Walk	92	113	205	75	60	135
Bike	144	176	320	117	94	211
Other	95	116	211	77	62	139
Project External Person-Trips[1]	**1,199**	**1,467**	**2,666**	**976**	**780**	**1,756**
Project External Vehicle-Trips[2]	*367*	*450*	*817*	*299*	*239*	*538*
North Berkeley BART Station Site						
Auto[1]	242	351	593	256	188	444
Transit	224	325	549	237	174	411
Walk	52	77	129	55	41	96
Bike	68	100	168	72	54	126
Other	78	113	191	82	61	143
Project External Person-Trips[1]	**664**	**966**	**1,630**	**702**	**518**	**1,220**
Project External Vehicle-Trips[2]	*189*	*274*	*463*	*200*	*147*	*347*

Source: Kittelson & Associates, Inc. 2021
Notes: "Other" mode includes carpooling. Total external trips may not add up to totals in Table 4 due to rounding.
1 The project person auto-trip estimates shown in this table are not directly comparable to the ITE Vehicle-Trip Generation estimates shown in Table 1. Project person-trip estimates are calculated by factoring ITE vehicle-trips by a multiple of 1.18 to convert vehicle-trips to person-trips (this factor is consistent with the factor applied in the West Berkeley Circulation Master Plan) and then converts back to trips by mode using mode share adjustment rates derived from US Census.

[3] Estimated external project trips are in addition to the existing trips from the on-site parking.

2 Project external vehicle-trips are calculated as auto person-trips divided by the average vehicle ridership. The average vehicle ridership for Ashby (census tract 4239.01) is 1.23 and the AVO for North Berkeley (census tract 4222) is 1.28.

Project Trip Distribution

The directional distribution and assignment of trips generated by the Project was determined based on 2020 volumes from the Alameda CTC model**.** Based on this proposed trip distribution pattern, the trips generated by the proposed Project were assigned to the nearby study intersections during the PM peak hour as follows:

North Berkeley BART:

- I-80/I-580/Eastshore Highway from the north via University Avenue – 37%
- I-80/I-580/Eastshore Highway from the south via University Avenue – 35%
- San Pablo Avenue/Delaware Street from the north – 7%
- San Pablo Avenue/Delaware Street from the south – 7%
- University Avenue/Sacramento Street from the east – 7%
- University Avenue/Sacramento Street from the west – 7%

Ashby BART:

- Ashby Avenue from the west – 10%
- Ashby Avenue from the east – 11%
- Adeline Street from the north – 12%
- Adeline Street from the south – 13%
- MLK Jr. Way from the north – 13%
- MLK Jr. Way from the south – 15%
- Shattuck Avenue from the north – 18%
- Shattuck Avenue/Alcatraz Avenue from the south – 8%

Autos: CMP and MTS Roadway Segment Analysis

Analysis Methodology

Analysis of roadway segments on the CMP and MTS network was performed based on the service volume tables from the Highway Capacity Manual, as shown in Table 2. A volume to capacity ratio was calculated using the volumes from the Alameda CTC model and the level of service (LOS) F service volume threshold as the estimate for roadway capacity. On CMP and MTS designated roadway segments that are projected to exceed the CMP standard in the future (Year 2040) without

the proposed project, the impact is significant if the proposed project adds at least five percent to the future peak hour traffic volume.

Table 2. Roadway Segment Level of Service Criteria

Level of Service	Description	Volume-to-Capacity Ratio (V/C Ratio)
A	Vehicles travel at free-flow speeds and can maneuver almost freely within the traffic stream.	≤ 0.30
B	Vehicles travel at free-flow speeds and movement within the traffic stream is only slightly restricted.	> 0.30 and ≤ 0.50
C	Vehicles travel at or near free-flow speed and movement is somewhat restricted. Incidents can cause local queuing.	> 0.50 and ≤ 0.71
D	Vehicle speed declines as density increases, and maneuverability within the traffic stream is noticeably limited.	> 0.71 and ≤ 0.89
E	Roadway is operating at or near capacity, with vehicles closely spaced. Any incident can cause backups that propagate upstream.	> 0.89 and ≤ 1.00
F	Roadway operates beyond capacity, with significant queuing at bottlenecks such as key intersections or lane drops. Vehicles are closely spaced and maneuverability is extremely restricted.	> 1.00

Source: Transportation Research Board, *Highway Capacity Manual*, 2000.

Kittelson applied the standards and methodologies outlined in Chapter 6 Land Use Analysis Program of the most recent Alameda CTC CMP (2020 Amendment) for this analysis. Alameda CTC uses LOS standards as defined in the 1985 HCM using speed-based methodology for Tier 1 roadways and reports both 1985 HCM and 2000 HCM (density-based) LOS for Tier 2 roadways.

The CMP legislation requires a standard of LOS E for all CMP Tier 1 roadways in Alameda County. This LOS E threshold is used to determine deficiency as part of the LOS monitoring CMP element and does not apply to the Land Use Analysis Program. This threshold is used for biennial monitoring, not to determine long-term impacts by an individual land use action.

For the purposes of this analysis, Kittelson will utilize the Florida Department of Transportation generalized service volume tables[4], which implements HCM 2010 methodology to evaluate study roadway segments. Consistent with City of Berkeley practice, the following thresholds of significance will be applied:

For a roadway segment of the ACTC Congestion Management Program (CMP) Network:

- On CMP designated roadway segments that are projected to meet the CMP standard in the future (Year 2040) without the Project, the impact is significant if the Project causes the segment to exceed the standard and adds at least five (5) percent to the future peak hour traffic volume; or

[4] Florida Department of Transportation. 2012. Generalized Service Volume Tables. Online: https://www.fdot.gov/docs/default-source/planning/systems/programs/SM/invisible/QLOS/Tampa/FDOT-2012-Generalized-Service-Volume-Tables.pdf

- On CMP designated roadway segments that are projected to exceed the CMP standard in the future (Year 2040) without the Project, the impact is significant if the Project adds at least five (5) percent to the future peak hour traffic volume.

CMP and MTS Roadway Segment Analysis

CMP and MTS roadways in the vicinity of the North Berkeley and Ashby BART station sites include I-80/I-580, Ashby Avenue (State Route 13), San Pablo Avenue (State Route 123), University Avenue, Adeline Street, Martin Luther King Jr Way, and Shattuck Avenue.

Traffic forecasts for Year 2040 Conditions were extracted from the current version of the Countywide Model (updated June 2018) at the selected roadway segments. The Cumulative (Year 2040) traffic analysis takes into consideration forecasted land use development and planned, funded, and approved changes to the transportation (roadway, transit, pedestrian, and bicycle) network and infrastructure near the proposed project sites. The Alameda CTC travel demand model roadway network is consistent with the assumptions of Plan Bay Area 2040. The Cumulative Plus Project forecasts were derived by manually adding the project-generated traffic to the Cumulative no Project forecasts. The Cumulative Conditions level of service analysis results and proposed project contribution for the weekday PM peak hour for the Ashby BART station and North Berkeley BART station are shown in **Error! Reference source not found.** and Table 4, respectively.

Table 3. Ashby BART Roadway Segment Analysis – Cumulative (Year 2040) Plus Project Conditions, PM Peak Hour

#	Segment	Capacity	Cumulative Conditions			Cumulative Plus Project Conditions			
			Volume	v/c Ratio[a]	LOS[b]	Project Volume	v/c Ratio[c]	LOS[b]	Project Contribution[d]
Northbound/Eastbound									
1	MLK Jr. Way, north of Adeline Street	1,690	2,007	1.19	F	31	1.21	F	1.5%
2	MLK Jr. Way, south of Adeline Street/Standford Avenue	1,690	1,804	1.07	F	45	1.09	F	2.4%
3	Shattuck Avenue, north of Adeline Street	1,690	2,064	1.22	F	43	1.25	F	2.0%
4	Shattuck Avenue, south of Alcatraz Avenue	1,690	835	0.49	B	24	0.51	C	2.8%
5	Adeline Street, south of Ashby Avenue	1,690	1,335	0.79	D	39	0.81	D	2.8%
6	Adeline Street, north of Ashby Avenue	1,690	1,528	0.9	E	29	0.92	E	1.9%
7	Ashby Avenue, west of Adeline Street	1,690	977	0.58	C	30	0.60	C	3.0%
8	Ashby Avenue, east of Adeline Street	1,690	1,964	1.16	F	26	1.18	F	1.3%
Southbound/Westbound									
9	MLK Jr. Way, north of Adeline Street	1,690	1,847	1.09	F	39	1.12	F	2.1%
10	MLK Jr. Way, south of Adeline Street/Standford Avenue	1,690	2,014	1.19	F	36	1.21	F	1.8%
11	Shattuck Avenue, north of Adeline Street	1,690	1,979	1.17	F	53	1.20	F	2.6%
12	Shattuck Avenue, south of Alcatraz Avenue	1,690	1,013	0.6	C	19	0.61	C	1.8%
13	Adeline Street, south of Ashby Street	1,690	2,208	1.31	F	31	1.32	F	1.4%
14	Adeline Street, north of Ashby Street	1,690	1,291	0.76	D	36	0.79	D	2.7%
15	Ashby Avenue, west of Adeline Street	1,690	1,013	0.6	C	24	0.61	C	2.3%
16	Ashby Avenue, east of Adeline Street	1,690	773	0.46	B	33	0.48	B	4.1%

[a] v/c Ratio: Volume-to-Capacity Ratio
[b] LOS: Level-of-Service
[c] Project-related increase to v/c Ratio
[d] Project contribution to Cumulative Plus Project volume
Source: Kittelson & Associates, Inc., 2021.

Table 4. North Berkeley BART Roadway Segment Analysis – Cumulative (Year 2040) Plus Project Conditions, PM Peak Hour

#	Segment	Capacity	Cumulative Conditions			Cumulative Plus Project Conditions			
			Volume	v/c Ratio[a]	LOS[b]	Project Volume	v/c Ratio[c]	LOS[b]	Project Contribution[d]
Northbound/Eastbound									
1	I-80/I-580, north of University Avenue	10,360	11,974	1.16	F	55	1.16	F	0.5%
2	I-80/I-580, south of University Avenue	10,360	12,495	1.21	F	70	1.21	F	0.6%
3	San Pablo Ave, north of Delaware Street	1,690	2,287	1.35	F	10	1.36	F	0.4%
4	San Pablo Ave, south of Delware Street	1,690	2,180	1.29	F	14	1.30	F	0.6%
5	University Avenue, west of Sacramento Street	1,690	2,060	1.22	F	14	1.23	F	0.7%
6	University Avenue, east of Sacramento Street	1,690	1,503	0.89	D	10	0.90	E	0.7%
Southbound/Westbound									
7	I-80/I-580, north of University Avenue	10,360	9,969	0.96	E	74	0.97	E	0.7%
8	I-80/I-580, south of University Avenue	10,360	9,983	0.96	E	52	0.97	E	0.5%
9	San Pablo Ave, north of Delaware Street	1,690	2,022	1.2	F	14	1.20	F	0.7%
10	San Pablo Ave, south of Delware Street	1,690	2,089	1.24	F	10	1.24	F	0.5%
11	University Avenue, west of Sacramento Street	1,690	2,018	1.19	F	10	1.20	F	0.5%
12	University Avenue, east of Sacramento Street	1,690	2,057	1.22	F	14	1.23	F	0.7%

[a] v/c Ratio: Volume-to-Capacity Ratio
[b] LOS: Level-of-Service
[c] Project-related increase to v/c Ratio
[d] Project contribution to Cumulative Plus Project volume
Source: Kittelson & Associates, Inc., 2021.

The following Ashby BART station study roadway segments would operate at LOS E or LOS F under Cumulative Conditions and would continue to operate at LOS E or LOS F under Cumulative Plus Project Conditions with the addition of traffic generated by the proposed project.

- **Segment 1** (northbound Martin Luther King Jr. Way, north of Adeline Street) (LOS F)
- **Segment 2** (northbound Martin Luther King Jr. Way, south of Adeline Street) (LOS F)
- **Segment 3** (northbound Shattuck Avenue, north of Adeline Street) (LOS F)
- **Segment 6** (northbound Adeline Street, north of Ashby Avenue) (LOS E)
- **Segment 8** (eastbound Ashby Avenue, west of Adeline Street) (LOS F)
- **Segment 9** (southbound Martin Luther King Jr. Way, north of Adeline Street) (LOS F)
- **Segment 10** (southbound Martin Luther King Jr. Way, south of Adeline Street) (LOS F)
- **Segment 11** (southbound Shattuck Avenue, north of Adeline Street) (LOS F)
- **Segment 13** (southbound Adeline Street, south of Ashby Avenue) (LOS F)

All North Berkeley BART study roadway segments except **Segment 6** (eastbound University Avenue, east of Sacramento Street) would operate at LOS E or LOS F under Cumulative Conditions and would continue to operate at LOS E or LOS F under Cumulative Plus Project Conditions with the addition of traffic generated by the proposed project. **Segment 6** would operate at LOS D under Cumulative No Project Conditions and would operate at LOS E under Cumulative Plus Project Conditions. The project contribution to **Segment 6** is 0.7%.

With the addition of traffic generated by the proposed project, all study CMP and MTS roadway segments that are operating at LOS E or LOS F without the proposed project would continue to operate at LOS E or LOS F with the proposed project at both Ashby and North Berkeley BART stations. As shown in Table 3 and Table 4.

, the proposed project would add less than 5 percent to the future peak hour traffic volume at Ashby BART and North Berkeley BART stations, respectively. Therefore, according to the significance criteria, this impact is less than significant.[5]

Transit: MTS Operators

The DEIR addresses potential impacts of the proposed project to transit operations, including the MTS transit operators, such as BART and AC Transit, within the study area. Section 4.11.1 discusses existing transit conditions at the Ashby BART and North Berkeley BART station sites. AC Transit lines 12, 18, 80, 688, 800, and F all have stops and routes within a ½-mile of the Ashby BART Station site. AC Transit lines 51B, 52, 604, 688, 800, and J all have stops and routes within a ½-mile of the North Berkeley BART Station site. Potential impacts to transit are discussed under Impact TRA-1 and Impact TRA-3 (Section 4.11.5).

Pedestrians and Bicycles: Facilities of Countywide Significance

The DEIR addresses potential impacts of the proposed project to bicycle facilities on and around the project area, including facilities of countywide significance. Section 4.11.1 discusses existing pedestrian and bicycle facilities and the challenges pedestrians and cyclists at the Ashby BART and North Berkeley BART station sites. Potential impacts to people walking and biking are discussed under Impact TRA-1 and Impact TRA-3 (Section 4.11.5).

[5] The criteria of significance are consistent with criteria used in the 2020 Long Range Development Plan EIR. Online: http://realestate.berkeley.edu/sites/default/files/4.12_transportation.pdf. Accessed March 23, 2021. The significance criteria states that on CMP and MTS designated roadway segments that are projected to exceed the CMP standard in the future (Year 2040) without the Project, the impact is significant if the Project adds at least 5 percent to the future peak hour traffic volume.