

APPENDIX D

Ridership and Air Quality Calculations

APPENDIX D RIDERSHIP AND AIR QUALITY CALCULATIONS

IMPACTS OF PROPOSED ROUTING CHANGES ON TRANSIT RIDERSHIP AND GREENHOUSE GAS EMISSIONS

Based on the proposed service changes, B-Line is anticipating a modest increase in ridership and a small reduction in greenhouse gas (GHG) emissions based on data generated by the regional travel model.

Ridership

Data from BCAG’s regional travel model bus ridership tool provides individual route forecasts. For the proposed service changes, this tool was modified and updated to generate ridership numbers. The forecast shows an increase in daily ridership, using a FY 2012 base year, with ridership growth at 2% by FY 2015, assuming short-term improvements (does not assume anything other than route changes). By FY 2020, ridership growth within the near mid-term timeframe is calculated to be 7%, with growth doubling to 14% by FY 2027. Assuming the changes made in the mid-term scenario are carried forward to the longer term, even without some potential expansion routes, ridership is calculated to be 24% greater in 2035 than it is today.

Ridership impacts by route are shown in Figure D-1

Figure D-1 Ridership Impacts of Proposed Service Changes

Route	2012 Ridership (NTD)	BCAG Direct Ridership Model Ridership Estimates			
		2016	2020	2027	2035
Chico Local					
1		--	--	919	986
2		505	516	538	563
3		348	359	383	413
7		611	638	689	749
8		414	421	436	454
9 / 9c		204	210	222	237
15N		570	580	--	--
15S		347	355	--	--
16		284	295	320	347
Oroville Local					

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Route	2012 Ridership (NTD)	BCAG Direct Ridership Model Ridership Estimates			
		2016	2020	2027	2035
24		70	71	74	77
26		55	56	58	61
27		51	51	51	52
Intercity/Paradise					
20		511	547	612	686
30		9	12	14	18
31		16	18	21	26
32		5	5	7	26
40 / 40x		618	662	740	829
41		611	655	732	820
Total	5,103	5,229	5,451	5,816	6,344
% Change	-	2%	4%	7%	9%
% Cumulative Change	-	2%	7%	14%	24%

Greenhouse Gas Emissions

BCAG's travel model includes countywide vehicle miles traveled (VMT) estimates for GHG and air quality emissions. Based on the growth in transit ridership on new and/or modified bus routes (as well as the recommended bicycle and pedestrian improvements highlighted in Chapter 8) estimates for VMT were calculated for 2020 and 2035 using the BCAG TransCAD model.

The analysis shows that implementation of the recommended services are anticipated to result in a reduction in emissions of about 0.25% to 0.27%, as shown in Figure D-2.

Figure D-2 GHG and Fuel Impacts of Proposed Service Changes

Calendar Year	Title	Vehicles	Vehicle Population	VMT	Trips	Total CO2 Emissions			Total Fuel Use	
						Standard Calculation	Pavley I + Low Carbon Fuel Standard ¹	Gasoline (1000 gal)	Diesel (1000 gal)	
2020 Status Quo	Includes through trips	All	140,160.97	5,318,727.00	916,379.85	3,202.54	2,500.17	259.07	72.65	
	Excludes through trips	All	134,354.96	5,098,405.00	878,419.89	3,069.88	2,396.60	248.34	69.64	
	Excludes through trips	LDV (SB 375) ²	114,030.11	4,258,491.43	714,218.89	2,057.48	1,485.44	221.90	0.47	
2020 With service changes	Includes through trips	All	139,793.09	5,304,767.00	913,974.64	3,194.13	2,493.61	258.39	72.46	
	Excludes through trips	All	133,987.08	5,084,445.00	876,014.68	3,061.47	2,390.04	247.66	69.45	
	Excludes through trips	LDV (SB 375) ²	113,717.88	4,246,831.20	712,263.28	2,051.84	1,481.38	221.29	0.47	
2035 Status Quo	Includes through trips	All	184,483.13	6,932,093.00	1,205,050.27	4,168.42	3,036.20	336.47	92.89	
	Excludes through trips	All	174,709.86	6,564,855.00	1,141,210.93	3,947.59	2,875.35	318.65	87.97	
	Excludes through trips	LDV (SB 375) ²	148,352.20	5,492,065.03	928,940.25	2,663.17	1,719.38	284.90	0.58	
2035 With service changes	Includes through trips	All	184,082.08	6,917,023.00	1,202,430.56	4,159.35	3,029.60	335.74	92.69	
	Excludes through trips	All	174,308.81	6,549,785.00	1,138,591.22	3,938.53	2,868.75	317.92	87.77	
	Excludes through trips	LDV (SB 375) ²	148,011.65	5,479,457.68	926,807.81	2,657.06	1,715.43	284.25	0.58	

¹ From California Air Resources Board (ARB): in 2007, ARB adopted the Pavley clean-car standards to reduce GHG emission from passenger vehicles. In 2009, ARB adopted a Low Carbon Fuel Standard (LCFS) to reduce the carbon intensity of vehicle fuel. Now, under SB 375, MPOs and local governments are developing plans to reduce our driving needs as our communities grow. This tool allows the MPOs to estimate how the three strategies work together to reduce emissions.

² LDV or Light Duty Vehicles; SB 375 is Sustainable Communities legislation that provides regional GHG reduction targets for LDVs