Segment	North Point to Bay			Bay to Chestnut/Sansome 900 ft			Sansome to Lombard/Battery Lombard/Battery to Green			Green to Broadway Broadway to		o Washington Washington to Mission (Ferry Building			rry Building)			
Segment Length	490 ft		525 ft				1,460 ft		745 ft		1,120 ft		1,370 ft					
Description of Alternative Project Criteria / Impacts		Two-Way Maintain two through lanes; maintain passenger load zones/parking	One-way protected bikeway both sides of Embarcadero; SB right-turns pro- hibited at Bay		Two-Way Repurpose one NB vehicle lane, main- tain two travel lanes throughout	One-Way One-way protected bikeway both sides of Embarcadero; parking removed for extended SB right-turn lane	Two-Way Narrow center median, convert NB left-turn lane (to Chestnut) into a through lane	One-Way Close vehicular access to/from Lombard and relo- cate crosswalk for separate SB bike phase	Two-Way Narrow existing Promenade and/or repurpose parking and bike lanes; maintain two travel lanes and some loading	One-Way Repurpose parking and bike lanes for one-way protected bikeway both sides; separate SB bike phase	Two-Way Narrow existing Promenade and/or repurpose parking and bike lanes; maintain two travel lanes and some loading	one-way protected bikeway both sides;	Two-Way Narrow existing Promenade and/or repurpose third travel lane and bike lane; maintain two travel lanes and two left-turn lanes to Broadway	protected bikeway both sides;		zones with minimum	travel lane and one	Rep tra tan Pro
Traffic / Circulation																		
	1 (2) Minor Retain NB left-turn lane; potential 2nd NB thru lane during peaks if parking prohibited	off-street bikeway	from dedicated SB bike phase		2 (2) Minor Retain two NB left- turn lanes; second NB thru lane impacts Promenade width	2 (2) Minor SB left-turns to Chestnut (minor movement) likely prohibited	may mitigate Chestnut	2 (2) Major Long SB vehicle queues with separate bike phase at Battery; cul-de-sac Lombard	left-turns onto	2 (2) Minor New SB right-turn pocket and SB bike signal phase		2 (2) Minor New SB right-turn pocket & bike signal phase (requires SB U-turn lane removal)	carry NB traffic during	direction; new SB	turn lane configuration	carry NB traffic most times, but impacts ex-	2 (2) Moderate/Major Two thru lanes each direction; new SB right-turn lane with separate bike phase	ex trav
Parking / Loading																		
Number of On-Street Spaces Removed: Impacts to Loading / Other:	None Potential for substantially improved loading/parking zone	None No impacts identified at this time			13 spaces Prioritize retention of existing blue zone, po- tential for small load zone pending design	tial to retain some/all	or loading in this seg- ment	or loading in this seg- ment			i vianicani ioaa/vaioc			24 spaces Lose non-peak hour spaces on city-side; waterside parking and loading maintained			28 spaces Lose non-peak hour spaces on city-side; waterside parking and loading maintained	loa
Pedestrian Facilities																		
Existing/Proposed Sidewalk Width (City-side): Impacts to Promenade Width: Other/Comment:	(from ~22 ft to ~24 ft) or wider bikeway;	or wider bikeway;	and/or provide wider	slightly where parking exists (from ~23.5 ft to ~21 ft) but 6-foot wide	parking currently exists; no change	"+" scenario or if park- ing removed; narrowed	Promenade width re- duced only slightly or unchanged pending final bikeway design	slightly or unchanged; closure of Lombard improves sidewalk connectivity, but	largely maintained or narrowed slightly with reduced clutter; <mark>south</mark>	largely maintained or narrowed slightly to retain parking; City-side sidewalk at Fog City	11-14 ft, pinchpoint of 19 ft at Pier 9 and restaurant; de-clutter	11-14 ft, pinchpoint of 19 ft at Pier 9 and restaurant; narrow	Promenade narrowed 11 ft from Pier 7 to restaurant (at Broad- way left-turn lanes), but Promenade is particularly wide in	9.5+ ft / 9.5+ ft Promenade narrowed 11 ft from Pier 7 to restaurant; city-side sidewalk narrowed 3.5 ft at Washington (from 16 ft to 12.5 ft)	additional width & flex- ibility during events;	maintained; some load- ing activities moved off promenade onto bike-	f Promenade width po- tentially expanded	
Trees/Landscape Design													this location					
Number of Trees Impacted: Other Impacts / Opportunities:	None Opportunities for landscape design TBD		12 (London Plane) Remove 7 pedestrian lights on City-side		None Opportunities for landscape design TBD		Narrowed median may	12 (London Plane) Remove 7 pedestrian lights on City-side			-	9 (London Plane) Remove 4 pedestrian lights on City-side		6 (London Plane) Remove 4 pedestrian lights on City-side	None Major opportunities for urban design / public space	for additional land-	None Moderate opportuni- ties for landscaped buffer on City-side	desi
Transit / Bus Operations																		
Comment:	No MUNI impacts; potential (tour) bus loading island/zone	No significant impacts to MUNI or bus operators	No significant impacts to MUNI or bus operators	No significant impacts to MUNI or bus operators	No significant impacts to MUNI or bus operators	No significant impacts to MUNI or bus operators		Impacts to MUNI and GGT from added congestion (AM Peak)	removal of Greenwich	removal of Greenwich	of Broadway & Wash-	Consider consolidation of Broadway & Wash- ington stops at Pacific	to MUNI or bus	No significant impacts to MUNI or bus operators	TBD but additional vehicle crossings of tracks needs study	No significant impacts to MUNI or bus operators	No significant impacts to MUNI or bus operators	No si to
Bikeway Quality																		
¥	Meets/exceeds pre- ferred bikeway width; potential yield control at Bay St (reduces delay)	ferred bikeway width;	options limited; new		pedestrian separation;	ed where parking does	ferred bikeway width; option to maintain SB	ration options limited; new SB signal phase	way width plus re- duced conflicts; option to maintain SB	only advisable/ feasi-	way width, though	ed where parking does not currently exist; new	ferred bikeway width;	Meets/exceeds pre- ferred bikeway width both directions, includ- ing SB buffer options	ferred bikeway width	ferred bikeway width;		ferre
Cost	\$\$	\$\$	\$\$\$\$	\$\$	\$\$	\$\$\$\$	\$\$\$	\$\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$\$	\$\$	\$\$\$	\$\$\$\$	\$\$	\$\$\$	



Municipal Transportat² Agency



Embarcadero Enhancement Project - One-Way and Two-Way Bikeway Alignment Impacts Matrix DRAFT 11/2016

Mission t	o Howard	Howard t	o Folsom	Folsom to	Harrison	Harrison	to Bryant	Bryant to Brannan 855 ft		
635	ō ft	675	ō ft	64	0 ft	930	D ft			
Two-Way Repurpose one NB travel lane; main- tain two travel lanes and existing Promenade width	One-Way Repurpose one NB travel lane and narrow sidewalk / remove parking on city-side; separate SB bike phase	Two-Way Repurpose one NB travel/parking lane; maintain two travel lanes and existing sidewalk width	One-Way Repurpose one NB travel/parking lane; repurpose parking lane or narrow side- walk on city-side; prohibit right-turns onto Folsom	Two-Way Convert NB left-turn lane to a thru lane; maintain loading/ parking lane at restaurants; prohibit left-turns onto Folsom	One-Way Convert NB left-turn lane to a thru-lane; narrow sidewalk on city-side; prohibit right-turns onto Har- rison & left-turns onto Folsom	Two-Way Repurpose parking lane and narrow Promenade slightly	One-Way Repurpose parking lane & narrow Prom- enade slightly; re- purpose city-side parking lane or narrow sidewalk; separate SB bike phase at Bryant	Two-Way Repurpose parking lane and narrow Promenade slightly	One-Wa Repurpose pa lane & narrow enade slightl purpose city parking lan separate SB phase at Bra	
2 (2) Moderate Additional congestion expected for NB travel; SB remains largely unaffacted	2 (2) Major Significant congestion expected for left / right-turns onto Howard due to SB bike phase	2 (2) Moderate Additional congestion expected for NB travel; SB largely unaf- facted	2 (2) Major Significant congestion expected for left & right turns to Howard due to SB bike phase	2 (2) Minor* NB left-turns accom- modated at Howard *assumes peak lane reduc- tion in short-term	2 (2) Major ~260 SB right-turns (AM peak) diverted to Bryant; significant con- gestion anticipated	2 (2) Negligible No significant impacts to traffic circulation or capacity anticipated in this segment	2 (2) Major ~260 SB right-turns (AM peak) diverted to Bryant; significant con- gestion anticipated	2 (2) Negligible No significant impacts to traffic circulation or capacity anticipated in this segment	2 (2) Modera Additional cong at Brannan dug bike phase (rig pocket provi	
None No existing parking or loading this block	Load Zone shortened Existing ~80-ft load zone likely to be maintained if shortened		~42 spaces Two-way parking im- pacts plus removal of all City-side parking	2-4 spaces Existing valet load zone maintained along with most parking stalls	2-4 spaces Same impacts as two-way alternative (no parking City-side)	Up to 19 spaces Some loading and parking may be re- tained in wider sec- tions of Promenade	Up to 46 spaces Two-way parking im- pacts plus removal of most / all City-side park- ing	Up to 16 spaces Some loading and parking may be re- tained in wider sec- tions of Promenade	Up to 45 spa Two-way parkin pacts plus remo most / all City-sid ing	
20 ft / 20 ft Promenade width (~30 ft) maintained with additional buffer from traffic	20 ft / 17.5 ft Sidewalk on City-side reduced by 2 to 2.5 ft at a minimum; Promenade largely untouched or widened slightly		13 ft / 9 ft Sidewalk on water-side maintained or widened slightly; City-side side- walk unchanged except at Folsom St (narrowed to 9 ft)	15 ft / 15 ft Sidewalk on water-side (next to restaurants) maintained with new loading island; City-side sidewalk width maintained	15 ft / 11 ft Sidewalk on water-side (next to restaurants) widened with new loading island; City-side sidewalk nar- rowed by 4 feet	20 ft / 20 ft Promenade narrowed by 3-4 ft where park- ing exists (minimum 23 feet maintained)	20 ft / 20 ft Promenade and City-side sidewalk largely maintained (if parking removed); remove bulbout at Spear St turnaround	13 ft / 13 ft Promenade narrowed by 3-4 feet where parking exists (minimum 30 feet maintained)	13 ft / 9 Promenade v maintained (if p removed); City sidewalk largely tained except a nan St appro	
None Landscaped buffer design opportunities TBD	12 (London Plane) Potential impacts to pedestrian lights on City-side TBD	None Landscaped buffer design opportunities TBD	2 (London Plane) Remove 3 pedestrian lights on City-side	2 (Palms) Narrow median; new opportunities for land- caped island	9 (Mixed) Two-way plus impacts to 7 London Planes, 12 lights on City-side	None Slight relocation of pedestrian lights on Promenade	None Landscaped buffer design opportunities TBD	None Slight relocation of pedestrian lights on Promenade	None Landscaped k design opportu TBD	
No significant impacts to MUNI or bus operators	No MUNI impacts but increased congestion for other bus operations	No significant impacts to MUNI or bus operators	No MUNI impacts but increased congestion for other bus operations	No significant impacts to MUNI or bus operators	No MUNI impacts but increased congestion for other bus operations	No significant impacts to MUNI or bus operators	No MUNI impacts but increased congestion for other bus operations	No significant impacts to MUNI or bus operators	No significant i to MUNI or operators	
Meets/exceeds pre- ferred bikeway width; option to maintain SB bike lane	SB buffer options limit- ed where parking does not currently exist; new SB signal phase at Howard	option to maintain SB	SB buffer options limit- ed where parking does not exist; SB vehicle right-turns restricted at Folsom	Meets/exceeds pre- ferred bikeway width; option to maintain SB bike lane	SB buffer options limit- ed; SB vehicle right-turns restricted at Harrison	Meets/exceeds pre- ferred bikeway width; option to maintain SB bike lane	Meets/exceeds pre- ferred bikeway width both directions; new SB bike signal phase at Bryant St	Meets/exceeds pre- ferred bikeway width; option to maintain SB bike lane	Meets/exceed ferred bikeway both directions SB bike signal p Brannan S	
\$\$	\$\$\$	\$\$	\$\$\$	\$\$\$	\$\$\$\$	\$\$	\$\$\$	\$\$	\$\$\$	

Brannan to Townsend 1,075 ft Two-Way One-Way Repurpose parking Narrow Promenade Prom- lane and narrow slightly; repurpose htly; re-
ty-sidePromenade slightly;
protected bikewaycity-side parking
lane & possibly
plaza; transition to
Townsend or contin-htly; re-
ty-sidePromenade slightly;
protected bikewaycity-side parking
lane & possibly
plaza; transition to
Townsend and/or annan ues behind park Promenade shared as shared use path use path TBD 2 (2) 2 (2) Minor Minor destion Limited changes; bike-Limited changes; ie to SB way junction way junction leveloped/confirmed developed/confirm Up to 32 spaces spread over the length of the water-side (approx. 3 miles), and up to 132 None aces ing im- No existing parking or Two-way parking im- spaces depending on various alignment options. Parking mitigation / renoval of loading this block pacts plus removal of placement options would be explored. most / all City-side parkde parkwidth Promenade narrowed Promenade width nar- it may be narrowed by 11-14 ft, and in some cases it could be widened y-side (narrows to 12 feet at sidewalk maintained sible, improve marginal wharf areas, and upgrade curb ramps. Except for removed. Pier 38 pinchpoint) (except bulbout re- short sections at Pier 38 and at Broadway, a minimum Promenade width of moved at midblock crossing) None None I buffer Relocation of Relocation of tunities pedestrian lights on pedestrian lights on Promenade Promenade





The basic two-way alignment keeps two NB travel lanes and double-left

turn lanes at Washington, Broadway, and Bay; prohibits NB left-turns at

(approx. 4 blocks). A modest increase in NB delay during peak periods is

anticipated (approx. 2-4 minutes). Alignment options north of Bay Street,

The basic two-way alignment impacts approximately 89 parking spaces

Although some shifting of zones may be necessary, existing loading areas

The basic two-way alignment has varied impacts to the Promenade:

City-side sidewalks could be widened if the SB bike lane is removed.

The basic two-way alignment impacts up to 6 palm trees (total) at

Folsom and Battery streets where center medians may be narrowed,

basic and optional alignments create opportunities for new/improved

landscaping and urban design elements pending additional design.

and could impact up to 20 Sycamore trees near Pier 39. Otherwise, the

on the water-side would be retained and/or enhanced.

20 ft is expected to be maintained throughout.

Folsom; and repurposes a third travel lane between Howard & Pier 5

study. Existing SB travel conditions largely would not be affected.



Traffic / Circulation

Impacts Summary By Alignment



The one-way alignment keeps two NB and SB travel lanes and NB doubleleft turn lanes; repurposes a NB travel lane between Howard & Pacific; and repurposes SB peak period lanes between Broadway and Don Chee Way. Due to required bike signal phases, SB congestion is forecast to substantially increase at Battery Street and at most intersections south of near Pier 27, and the "Big Move" concept at the Ferry Building require more Ferry Building. SB right turns at Folsom and Harrison would be prohibited, and Lombard Street may be closed to vehicles at The Embarcadero.

Parking / Loading



The one-way alignment impacts approximately 314-330 parking spaces depending on final design. Mitigation/replacement efforts may reduce the number of parking spaces removed, but options are limited.

Existing load zones on the water-side would be largely retained; City- side impacts include Chaya, Delancey Street restaurant load zones.

Pedestrian Facilities



Due to existing narrow sidewalks on the City-side, the one-way alignment 15 ft / 15 ft / 15 ft for most blocks it would be minimal (narrowing of 0-4 ft), at key pinchpoints results in potentially unacceptable sidewalk widths (9 ft or less) from North Point to Battery, Howard to Harrison, and at Brannan Street. Existing bulb by up to 11 feet rowed 3-4 ft; City-side slightly. All alignment options would 'de-clutter' the Promenade where pos- outs for midblock crossings at Greenwich and Delancy streets would be

> On the water-side, the one-way alignment would still impact the width of the Promenade but much less so than the two-way alignment. The Promenade, wharf areas, and curb ramps would be upgraded.



The one-way alignment could impact up to 62 London Plane trees and 44 pedestrian light poles on the City-side, with limited options to replace or relocate on site (in addition to the 6 center median palm trees that would be removed). Opportunities for new / improved landscaping on the water-side are similar to the basic two-way alignment.

Transit / Bus Operations

The basic alignment minimally impacts transit, and should not impact tour bus operations beyond some increased congestion where travel lanes are removed. Impacts to trolley operations are not expected, although trolley impacts from the 'big move' concept require further study. consolidating trolley stops may (or may not) be explored with the Project



in portions of the existing SB blke lane could also be retain





The one-way (vs. two-way) alignment has more impacts to bus opera-

tions from additional SB lane reductions & dedicated bike signals. Trol-

ley impacts are not expected. For both one-way & two-way alignments

eeds pre- Potential reduction of Meets preferred bike- The two-way alignment meets or exceeds the preferred minimum width The one-way alignment widens the existing SB bike lanes and improves ntersection safety at most locations with dedicated signals or vehicle imit its attractiveness as an alternative to the P

> **\$\$\$\$** Detailed cost estimates are not available, but the one-way alignment



Symbols denote overall IEv. change from existing conditions



One-Way

Ster.

AK