Trolley Extension Feeder Bus Study

2021

Metropolitan Transit System

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Section 1: Study Area and Travel Market

1.1 Trolley Extension Project Overview

The Trolley Extension project, currently under construction and set to open in the fall of 2021, is an 11-mile, 9-station extension of the UC San Diego Blue Line Trolley (Trolley) north to University City along the Interstate 5 (I-5) corridor. The capital project for the construction of the Trolley extension is called the Mid-Coast Trolley. This study refers to the project and the service to be operated as the Trolley. The San Diego Metropolitan Transit System (MTS) expects the service will generate 13,500 daily rides. Once completed, the extension will bring light rail service to growing residential and employment centers in Northwest San Diego along with the UC San Diego (UCSD) campus, nearby hospitals, and the Westfield UTC shopping center.

The Trolley extension is an important addition to the regional travel network. The ultimate purpose of this study is to ensure that the existing transit network in communities affected by the new Trolley service is reconfigured to maximize access to new Trolley stations constructed in the Trolley extension project.

The Blue Line Trolley expansion is proposed to deliver a one-seat ride to the UCSD and the University City area from Old Town Transit Center, Downtown San Diego, South Bay communities, and the San Ysidro Port of Entry. The MTS will operate the UCSD Blue Line on the expanded right-of-way (ROW), between Old Town Transit Center and UTC Transit Center, once the Trolley extension construction has completed in 2021.

As with other new Trolley lines and Trolley line extensions, this project will generate revisions to the fixed-route bus network to optimize transit service and provide convenient access to Trolley stations from surrounding communities. The Trolley Extension Feeder Bus Study identifies potential changes to the existing fixed-route bus network to serve new Trolley station locations to:

1. Enhance access between the Trolley extension and surrounding communities.
2. Rationalize the transit network following the introduction of the extended Trolley service.
3. Improve travel throughout communities affected by the Trolley extension.

This feeder bus study addresses:

1. Transit Market - Community demographics, existing transit service, and the propensity to use transit among the different neighborhoods in the study area.
2. Travel demand projections, existing bus service, and bus access and capacity at Trolley station locations.
3. Proposed bus service concepts and alternatives.

The analysis and findings from the feeder bus study are based on the findings of the above planning activities in addition to community input received through a series of public workshops, public meetings, and bilingual paper and online surveys.

This report is organized in the following fashion: this first section defines the study area and provides a brief overview of bus ridership within the study area. Section Two summarizes travel demand projections based on SANDAG travel data to identify key internal and external travel patterns for the study area, evaluating existing transit services within the study area, and assessing bus access and bus bay capacities at the new Trolley stations. Section Three develops proposed concepts for fixed-route bus service changes in conjunction with the Trolley extension. Proposed bus network changes are comprised of changes in routing and service levels optimized for Trolley integration.

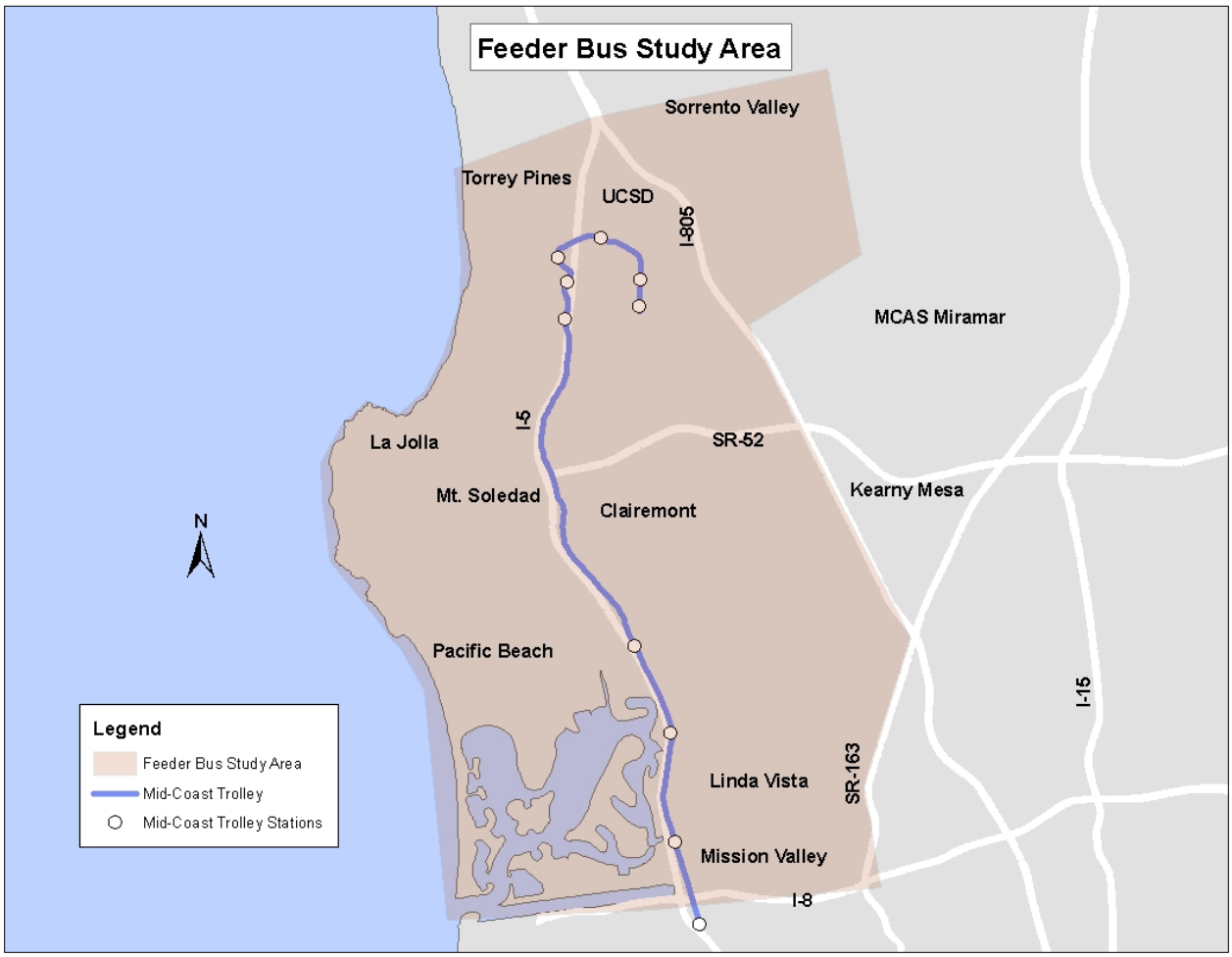
1.2 Study Area

MTS initially defined the study area boundary extending approximately one mile on either side of the Trolley extension ROW. Review of the subject bus routes proved expanding the study area to be advantageous. Thus, for the purposes of evaluating transit orientation, the original study areas were broadened to the north, east, and south to incorporate the service areas of these bus routes. The study area, shown in *Figure 1.1*, is bounded to the north by Sorrento Valley, to the east by Camino Santa Fe Road, I-805 and SR-163, to the south by the San Diego River, and to the west by the Pacific Ocean and Mission Bay.

The study area encompasses several communities, including:

1. University City
2. Torrey Pines
3. Sorrento Valley
4. La Jolla
5. Clairemont
6. Pacific Beach
7. Mission Beach
8. Kearny Mesa
9. Bay Park
10. Linda Vista

Figure 1.1: Map of the study area Trolley Extension Feeder Bus Study showing affected communities, and Trolley stations and alignment.



In the existing MTS bus network, 23 bus routes operate within the study area boundaries. MTS bus routes serving the study area vary greatly; including *Rapid*, Express, Urban Frequent, Urban Standard, and Circulator bus routes. Bus routes in the study area operate on highways, major corridors, arterials, and neighborhood streets, depending on the service type. The major corridors, destinations, and routes serving the study area are listed by route in *Table 1.1* below.

Urban Core North: a radial, crosstown network of both "L-shaped" and standalone routes on key mixed-use corridors, focusing on major transit hubs at Old Town, Fashion Valley, and Kearny Mesa Transit Centers. Frequent service operates nearly exclusively on major regional and sub-regional corridors, with pockets of residential areas without transit service.

San Diego North Inland: suburban communities with frequent commuter-oriented bus service focused on major corridors (e.g., Mira Mesa, I-15) augmented with community circulators. Origin access emphasizes park-and-ride lots at transit centers and *Rapid* stations along the I-15 corridor.

Table 1.1: MTS bus routes currently serving the study area of the Trolley Extension Feeder Bus Study.

Route	Current Major Corridors/Destinations
8	Pacific Beach - Old Town via Mission Beach
9	Pacific Beach - Old Town via Mission Beach via SeaWorld
25	Kearny Mesa Transit Center - Fashion Valley Transit Center
27	Pacific Beach - Kearny Mesa Transit Center via Balboa Ave
30	UTC/VA Medical Center - Downtown via La Jolla & Pacific Beach
31	Miramar College Transit Station - UTC Transit Center via Miramar Rd
41	UCSD/VA Hospital - Fashion Valley Transit Center via Genesee Ave
44	Old Town Transit Center - Clairemont Square via Linda Vista
50	UTC Express - Downtown Express
60	UTC via Kearny Mesa - Euclid Ave Trolley Station via Kearny Mesa
105	Old Town Transit Center - UTC via Morena Blvd/Clairemont Dr./ Genesee
120	Kearny Mesa Transit Center - Downtown San Diego (Limited Stops)
150	UTC/VA Hospital via UCSD - Downtown via UCSD/VA Hospital
201/202	UCSD Medical Center - UCSD - Nobel - UTC
204	UTC - Executive - Judicial - UTC
237	Miramar College Transit Station - UCSD via Mira Mesa Blvd
921	Miramar College Transit Station - UTC Transit Center via Mira Mesa Blvd
928	Fashion Valley Transit Center - Kearny Mesa Transit Center via Serra Mesa
972	Sorrento Valley COASTER Station - Sorrento Mesa
973	Sorrento Valley COASTER Station - Carroll Canyon
974	Sorrento Valley COASTER Station - UCSD
978	Sorrento Valley COASTER Station - Torrey Pines
979	Sorrento Valley COASTER Station - North University City

Some routes of these routes have only a small portion of their routes within the study area. Routes 31, 60, *Rapid* 237, and 921 are routes with a terminus in the study area, and provide access within the MTS service area. These routes all terminate at or near the future UTC Trolley Station. Changes to these routes will likely be limited to schedule adjustments to facilitate connections with the Trolley and other bus routes at transit centers at Trolley stations. Performance data for routes affected by the Trolley extension are shown in *Table 1.2* below.

The study area has service from routes with limited span. The Express Route 60 operates at peak hours on weekdays in the peak direction while the Express Route 50 operates bi-directionally at peak hours on weekdays. Urban Standard Routes 31 and *Rapid* 237 operate exclusively during peak hours on weekdays. All of these routes terminate within the study area, expanding access from the study area throughout the MTS service area. Where sustainable, some of the limited span routes may be considered for enhancement by extending service span, improving access to the Trolley beyond the study area.

MTS operates Sorrento Valley COASTER Connection (SVCC) Routes 972, 973, 974, 978, and 979 in a partnership with the North County Transit District (NCTD). The service is a commuter circulator service, which connects NCTD COASTER commuter rail passengers with

employment destinations in Torrey Pines, University City, and Sorrento Valley. SVCC routes are scheduled to meet peak COASTER trips at Sorrento Valley COASTER Station (SVCS). SVCC buses shuttle passengers from SVCS to employment destinations in the morning then back to SVCS in the afternoon. The routing for the SVCC is designed to provide access from commuter rail to employment destinations in an area that is difficult to serve with traditional fixed-route transit, due to topography, land use, and street network designed primarily for single occupant vehicle travel. The extended Trolley service will operate at a much greater frequency than the NCTD COASTER, with similar destinations; however, Trolley riders will access the region's largest employment hub from the south.

Table1.2: Bus route performance statistics for MTS bus routes in the feeder bus study area.

FY 2019 ANNUAL ROUTE STATISTICS							
Route	Annual Passengers	Avg. Wkday Passengers	Passengers/ Rev Hour	Cost per Passenger	Average Fare	Subsidy per Passenger	Farebox Recovery
8	419,835	1,106	21.9	$5.44	$0.94	$4.51	17.2%
9	388,726	1,153	22.9	$5.20	$0.94	$4.26	18.1%
25	60,610	240	9.7	$5.36	$1.05	$4.31	19.6%
27	222,253	811	14.5	$3.89	$1.06	$2.83	27.3%
30	1,579,366	5,146	22.6	$5.28	$0.98	$4.30	18.6%
31	106,759	422	21.7	$5.49	$0.97	$4.52	17.7%
41	1,113,043	3,797	30.8	$3.87	$1.02	$2.85	26.3%
44	1,017,661	3,339	27.4	$4.35	$0.96	$3.39	22.1%
50	140,309	555	18.5	$6.43	$0.98	$5.45	15.2%
60	82,709	327	25.0	$4.76	$0.97	$3.79	20.3%
105	279,555	958	20.1	$5.93	$0.97	$4.96	16.3%
150	824,005	3,069	33.9	$3.51	$1.03	$2.48	29.4%
201/ 202	2,525,053	8,770	58.3	$2.05	$1.10	$0.94	53.8%
204	73,677	291	17.9	$6.67	$1.08	$5.59	16.2%
235	1,494,413	4,930	22.6	$5.27	$0.94	$4.33	17.9%
237	267,962	1,059	23.0	$5.19	$1.06	$4.13	20.4%
972	32,676	129	19.8	$2.82	$0.99	$1.83	35.0%
973	17,962	71	13.3	$4.20	$0.99	$3.21	23.5%
978	16,166	64	12.5	$4.48	$0.99	$3.49	22.1%
979	17,384	69	13.9	$4.02	$0.99	$3.03	24.6%

*Route 974 is not included in the table because operation was implemented in January 2020.

The Trolley extension will include nine new Trolley stations which are being constructed at the time of this study. Design options for feeder bus service are constrained by the attributes of Trolley stations and the ability to support timed transfers between bus and rail at transit centers. Of the nine new Trolley stations being constructed, only two will have new bus facilities to facilitate transfers between MTS buses and the Trolley. The stations and their attributes that are impactful to the propensity for feeder bus service are shown in *Table 1.3* below.

Table 1.3: New Trolley stations and key attributes influencing feeder bus service design.

Station	Bus Bays	On-Street Bus Stops	Timed Connections	Other Transit Systems	Transit Parking
Old Town Transit Center	18	-	Yes	NCTD, Triton Transit (UCSD only), Amtrak, Flixbus	Yes
Tecolote Drive Station	0	-	No	No	No
Clairemont Drive Station	0	2	No	No	No
Balboa Avenue Transit Center	5	1	Yes	No	Yes
Nobel Drive Station	0	2	No	No	Yes
VA Medical Center Station	0	-	No	No	No
UC San Diego Central Campus	1	-	Yes	Triton Transit (UCSD Only)	No
UC San Diego Health La Jolla	0	-	No	Triton Transit (UCSD Only)	No
Executive Drive	0	1	No	Triton Transit (UCSD Only)	No
UTC Transit Center	12	2	In transit center	NCTD	Yes

1.2.1 University City

The majority of new Trolley stations and affected bus routes are within University City. The community is geographically isolated, due to topography and man-made barriers. University City is built on a mesa and surrounded by Peñasquitos Canyon, Rose Canyon, the Pacific Ocean, and Marine Corps Air Station (MCAS) Miramar. Access into and out of University City is heavily constricted by the surrounding topography and land use.

University City is a major commute destination for the San Diego Region. Approximately 66,000 people are employed in the area, 93-percent of which commute from external communities. Commuters traveling to University City have origins from throughout the region, spanning as far north as Carlsbad and as far south as Chula Vista. The Trolley and feeder bus routes will improve access to University City from communities to the south.

University City has been incrementally changing toward being a transit supportive community. Over the past twenty years, community plan amendments have increased permitted land

densities to foster the intensification of both residential and commercial office uses. The community has seen investment in pedestrian amenities around and between activity nodes, focused in areas around La Jolla Colony, Westfield UTC, and the UC San Diego campus.

North of Rose Canyon, the North University City community is a strong transit market, rich with employment destinations and densely-populated housing. University City is served by radial and crosstown routes, from downtown San Diego and other regional transit hubs. Services from other transit hubs are augmented by a frequent bus service, the *Rapid* 201/202. The current MTS bus network reaches all major destinations in University City within ¼-mile walking distance, including:

1. UCSD Main Campus
2. UCSD Health Center
3. Veteran Affairs Medical Center (VA Medical Center)
4. Scripps Memorial Hospital
5. Jacobs Medical Center
6. Executive Drive
7. Westfield University Towne Center (UTC)

The University Community is home to one of San Diego's largest employers, UCSD, which employs over 34,000 people. UCSD offers a partially-subsidized transit pass to faculty and staff, branded the UCSD EcoPass. The subsidized transit passes are currently an optional benefit for faculty and staff. UCSD and MTS are working towards an agreement for UCSD to provide transit passes for all UCSD faculty and staff, expecting wider usage of MTS services when the extended Trolley is operational in 2021.

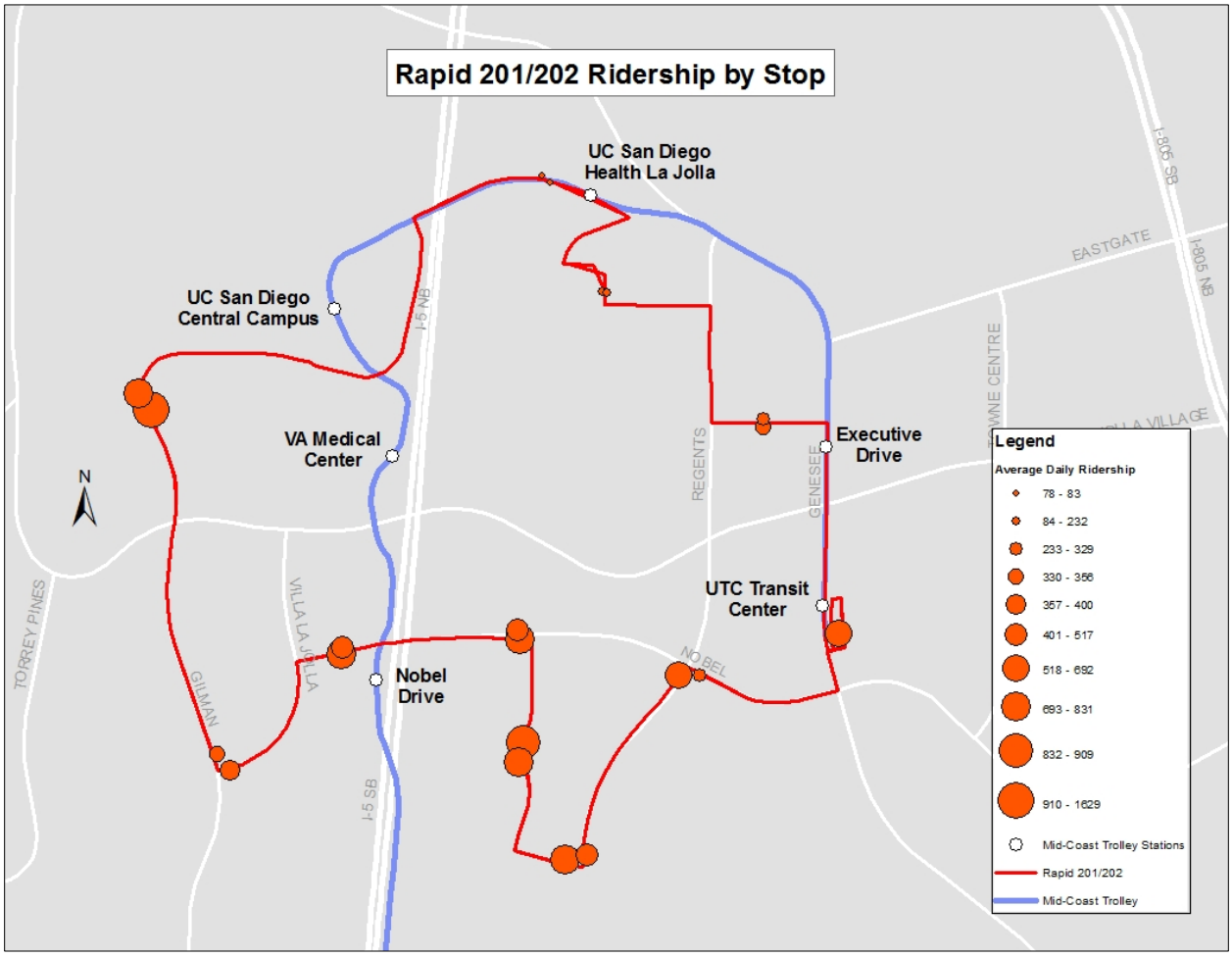
Many of UCSD's 36,000 students rely heavily on public transit for their daily mobility needs. With the exception of international students, UCSD students receive a transit pass each quarter of enrollment, called the U-Pass. The student transit passes are funded by student fees. In January 2020, MTS began operating a shuttle between the Sorrento Valley COASTER Station and the Gilman Transit Center called Route 974. The service is one of the SVCC routes; however, Route 974 is funded by the North County Transit District and UCSD.

Students living in the La Jolla Colony area in University City rely on the *Rapid* 201/202 (also known as the SuperLoop) for travel between home and the UCSD Main Campus. The SuperLoop is the top performing route in the MTS bus network with over 2.5 million boardings in FY 2019. The Rapid 201/202 has had a significant ridership increase due to a service agreement between MTS and UCSD to operate additional service to replace the UCSD Arriba Shuttle. A short line variant of the Rapid 201/202 operates trips between La Jolla Colony and the Gilman Transit Center.

The geographic distribution of ridership on the SuperLoop is unbalanced, heavily skewed towards trips between La Jolla Colony and UCSD West Campus (see *Figure 1.2*). With a loop route pattern, riders have to choose between the direction that will have the shorter travel distance and time to reach their destination. The opening of two Trolley stations in the UCSD

East Campus area presents an opportunity to streamline the SuperLoop routing to focus on the high demand portion in La Jolla Colony.

Figure 1.2 Map showing average weekday ridership (boardings and alightings) by stop for MTS Rapid 201/ 202.



Bus service in southern University City is largely routes operating north-south service through the north urban core, with a focus on Genesee Avenue. The combined service of MTS Routes 41, 50, and 105 provide robust service between Clairemont Mesa Boulevard and the UTC Transit Center on the busy Genesee Avenue Corridor. Routes serving the South University Community funnel into Genesee Avenue then extend across Rose Canyon, onward to the UTC Transit Center. Routes 41 and 105 are cross-town bus routes traveling north-south on Genesee Avenue through much of the corridor, with Route 41 operating through Serra Mesa and Linda Vista to the Fashion Valley Transit Center and Route 105 serving the Old Town Transit Center via Clairemont and the Morena Boulevard Corridor through West Linda Vista.

East-west service is operated by Route 50 in the segment serving Governor Drive between Regents Drive and Genesee Avenue; however, Route 50 is primarily a north-south route. Route 50 is a limited stop express route, operating during peak commute hours through the University City and Clairemont Communities, and on I-5 between Clairemont Drive and Downtown San

Diego. Route 50 operates a similar routing as the Trolley alignment, making the service partially redundant once the extended Trolley is operational. Bus routes serving University City are in *Table 1.4* and below. University City destinations served by bus routes are in *Table 1.5* below.

Table 1.4: Table of MTS bus routes serving University City with service frequencies.

Route	Service Type	Peak Headway	Base Headway
30	Urban Frequent	15	15
31	Urban Standard	30	-
41	Urban Frequent	7.5/15	15
50	Express	15/30	-
60	Express	15/30	-
105	Urban Standard	15/30	-
150	Express	15/30	30
201/202	*Rapid*	5/10	15
204	Rapid	30	30
237	*Rapid*	15/30	-
921	Urban Standard	30	30
974	Circulator	~30	-
979	Circulator	~30	-

Table 1.5: Table of bus routes serving University City and destinations within the community.

Route	La Jolla	Nobel Drive	La Jolla Colony	La Jolla Village Drive	VA Medical Center	UCSD West	UCSD East	Executive Drive	UTC Mall	UTC Transit Center	Judicial/ Towne Center Drive	South University City
30	x			x	x	x			x			
31				x						x		
41				x	x	x			x	x		x
50									x	x		x
60									x			
105									x	x		x
150				x	x	x			x	x		
201/ 202		x	x			x	x	x	x	x		
204							x		x	x	x	
237				x		x			x			
921				x	x	x			x	x		
974						x						
979							x	x	x			

1.2.2 Sorrento Valley

Sorrento Valley is a major employment hub for the San Diego Region. The area is home to Qualcomm's headquarters, one of the top five employers in the region with 9,400 employees. In addition to the tech industry, Sorrento Valley is rich with biotech labs and medical research facilities, which cluster in the area due to its proximity to UC San Diego and the talent produced by UCSD bioscience programs. In this section, Sorrento Valley will refer to north and south Sorrento Mesa and western Mira Mesa, while the employment center section that follows will refer to the Sorrento Valley employment center as a larger area, which includes University City, Torrey Pines, and northern La Jolla.

Though the area is employment-rich, Sorrento Valley has little housing, with employees travelling from throughout the San Diego Region to commute to work. Approximately 58,500 people are employed in Sorrento Valley and almost all (99.5%) commute from external communities.

Many Sorrento Valley commuters live in dispersed bedroom communities north of Sorrento Valley, along the SR-56 Corridor. These northern communities are heavily car-dependent and historically unsustainable for traditional fixed-route transit. Among these communities, Carmel Valley and Black Mountain Ranch are the neighborhoods with the most residents commuting to Sorrento Valley. No transit service currently exists between communities along the SR-56 corridor.

Sorrento Valley transportation is greatly influenced by topography and land use. Access for transit, cycling, and walking to employment destinations in Sorrento Valley/Sorrento Mesa are limited by street design, which includes large mega-blocks and disconnected streets, built around the auto-oriented corridor Mira Mesa Boulevard. The area lacks the human-scaled design that could support alternative transportation within the employment hub. Employment destinations are difficult to reach due to the auto-oriented land use of the large campuses, which are set behind sprawling surface parking lots. Further limiting access is the clustering of these high-demand employment sites on canyon fingers.

Sorrento Mesa is within the Mira Mesa Community Plan Area, in the western side which is designated for commercial land use. The community plan recommends encouraging employers to operate private feeder transit service and recognizes the limitations for alternative transportation due to land use, stating:

> Mira Mesa has experienced traffic congestion on its major streets since construction activity boomed in the early 1970s. As in most recently developed communities, Mira Mesa's strictly segregated land use pattern reinforces our over-reliance on the automobile. Due primarily to noise impacts from MCAS Miramar, industrial/business park uses have been concentrated west of Camino Santa Fe and along Miramar Road Residential uses have been restricted to the east, limiting the opportunity for walking or biking to work.
>
> The shortage of through streets in the community also contributes to traffic congestion. Winding street patterns with cul-de-sacs concentrate traffic on major streets and at key

intersections. This often results in longer travel distances—again making walking, biking or transit use less attractive.

Despite the built environment not being supportive of transit, MTS provides direct service to Sorrento Valley employment destinations from major transit hubs in University City, Mira Mesa, and Sorrento Valley. MTS operates three bus service types in Sorrento Mesa: the SVCC employment circulator routes 972 and 973, the Urban Standard route (921), and the *Rapid* 237. A summary of transit serving Sorrento Mesa can be viewed in *Table 1.6*.

Table 1.6: Transit hubs served by MTS bus routes in Sorrento Valley and connecting bus routes at transit hubs.

	Routes to Sorrento Valley	Connecting Services at Transit Hub
North County		
Sorrento Valley COASTER Station	972 and 973	COASTER (North County Transit District)
University City		
Gilman Transit Center (UCSD Campus)	*Rapid* 237	30, 41, 150, *Rapid* 201/202, NCTD 101
UTC Transit Center	*Rapid* 237 and 921 (weekends only)	30, 31, 41, 50, 105, 150, *Rapid* 201/202, *Rapid* 204, NCTD 101
Mira Mesa		
Miramar College Transit Station	*Rapid* 237 and 921	20, 31, 110, *Rapid* 235, 964

The two SVCC routes, Route 972 and 973 connect the Sorrento Mesa with the SVCS connecting with NCTD COASTER commuter rail trips. Route 972 serves north of Mira Mesa Boulevard, which includes fourteen Qualcomm buildings and two campuses for Sony Interactive Entertainment. Route 973 serves south of Mira Mesa Boulevard, including technology and biotech campuses along Carroll Canyon. SVCC service operates in peak direction only.

The routing of MTS Route 921 is similar to the Route 972 through Mira Mesa. Route 921 serves North Sorrento Mesa, operating between the UTC Transit Center and Miramar College Transit Station operating on the Mira Mesa Boulevard Corridor. Route 921 uses a standard 40-foot long bus at 30-minute frequency throughout the day. The Urban Standard route provides local service for the Mira Mesa Community.

The *Rapid* 237 operates between the Gilman Transit Center at UCSD and the Miramar College Transit Station. The limited-stop *Rapid* route provides service to Sorrento Valley along Mira Mesa Boulevard. Its service design is a linear route with wide stop spacing. The *Rapid* route effectively serves employment destinations that are oriented towards the street; however, many employment destinations lack pedestrian access from Mira Mesa Boulevard, as the facilities were designed for single occupant vehicle travel.

1.2.3 Kearny Mesa

Kearny Mesa is a key employment destination for the San Diego Region in San Diego's north urban core. Over 96,000 people are employed in Kearny Mesa, of which 99.5 percent commute from other communities. Kearny Mesa's employment to population ratio is well over 1,000:1, signaling a high concentration of jobs to residents. The mismatch between housing and jobs in Kearny Mesa requires the area have a strong transportation network to accommodate the inflow of traffic from throughout the region.

Over the past 20 years, planning for Kearny Mesa has moved to encourage a mix of land uses. The Kearny Mesa Community Plan has been amended to change designations from industrial to mixed use and high density residential. The community has had infill development along transit corridors with dense residential developments as a result of these changes. A mix of land uses and an improved pedestrian environment will foster growth employees both living and working in Kearny Mesa. The Kearny Mesa Community Plan states:

> Most of the streets in the community are improved with sidewalks, and a few are used by pedestrians. Problems confronting pedestrians include automobile oriented, strip commercial developments, reduced sidewalk widths, the frequent placement of illegal A-frame signs on the sidewalks, the absence of a buffer between the pedestrians and the street, and traffic volumes which inhibit convenient street crossing.
>
> Ideally, forecasted traffic volumes on the surface street system will be reduced as additional mass transit services and facilities are provided and citywide and regional trip reduction programs become increasingly effective. This Plan acknowledges the desire for a balanced, multimodal transportation system to serve Kearny Mesa, and contains recommendations relating to public transit facilities, a potential shuttle "loop," LRT, bikeways and street improvements.
>
> The future Kearny Mesa is envisioned to include access points to a LRT Line, with bus service and loop shuttles transporting riders from LRT stations and park-and-ride lots to activity centers within the community. Implicit in this conceptual scenario would be an urban form much different from what currently exists in Kearny Mesa -- transit corridors of intense development to buttress the area as a regional employment center.

Being centrally located, Kearny Mesa has bus service that connects the popular employment hub with residential communities and destinations throughout the region. Bus routes in Kearny Mesa operate as a radial, crosstown network of both "L-shaped" and standalone routes on key mixed- use corridors. The routes focus on major transit hubs at Old Town, Fashion Valley, and Kearny Mesa Transit Centers. Frequent bus service is limited to major regional and sub-regional corridors, including Clairemont Mesa Boulevard, Balboa Avenue, and Convoy Street. The frequency of routes serving Kearny Mesa can be viewed in *Table 1.7* below and the key destinations and transit hubs, with which the routes connect, are shown in *Table 1.8* below.

Table 1.7: MTS bus routes serving Kearny Mesa with headways.

Route	Service Type	Weekday Peak Headway	Base Headway
20	Express	15	30
25	Circulator	60	60
27	Urban Standard	30	30
44	Urban Frequent	15	15
60	Express	15-30 (peak direction)	-
120	Urban Frequent	15	15
235	Rapid	15	15
928	Urban Standard	30	30

Table 1.8: MTS bus routes serving Mira Mesa and other destinations.

Route	Downtown San Diego	Old Town Transit Center	Fashion Valley Transit Center	University of San Diego	Mesa College	Convoy Street	Kearny Mesa Transit Center	I-15 at El Cajon Blvd. & University Ave.	UTC Transit Center	Miramar College Transit Station	Sabre Springs/ Peñasquitos Transit Station	Rancho Bernardo Transit Station	Del Lago Transit Station	Escondido Transit Center
20	X		X				X			X		X		
25			X				X							
27						X	X							
44		X		X	X	X								
60						X		X	X					
120	X		X				X							
235	X						X	X		X	X	X	X	X
928			X				X							

The Kearny Mesa Transit Center is the transit hub for this community, while employment destinations are dispersed throughout Kearny Mesa. Employment destinations in Kearny Mesa scatter throughout the area with many not within reasonable walking distance to a transit stop. First/last mile mobility is critical for a successful transit network, limiting the appeal of transit service in Kearny Mesa, with its car-centric built environment. The bus network operates on auto-oriented, commercial corridors lined with shopping centers. Office and industrial employment destinations are often located behind the shopping centers, without direct pedestrian connections. Most employment destinations are accessed through side streets. Further compounding the limited pedestrian access to employment is the large block size and street network pattern, which is often disconnected or constrained by highways or the Montgomery-Gibbs Executive Airport.

MTS Route 27 currently connects Kearny Mesa Transit Center with Clairemont and Pacific Beach via Convoy Street and the Balboa Avenue/Garnet Avenue Corridor. The current Route 27 routing passes the future Balboa Avenue Transit Center (BATC), presenting an opportunity

to connect Clairemont with the Trolley station, either terminating at the BATC or continuing along Garnet Avenue to serve Pacific Beach.

The MTS Transit Optimization Plan (TOP), implemented in 2018, sought to connect the Kearny Mesa Transit Center with Old Town Transit Center via Kearny Mesa, with a new routing for Route 44. The Route 44 change was not implemented with the TOP due to the cost. The routing change to Route 44 would have filled a significant gap in the MTS bus network, connecting the University of San Diego (USD) and Mesa College to the *Rapid* 235 and several other routes at Kearny Mesa Transit Center, as well as Kearny Mesa employment destinations.

1.2.4 Clairemont Mesa

Clairemont Mesa (Clairemont) is predominantly a single-family residential community within San Diego's north urban core. Clairemont Mesa has several main corridors, on which retail destinations and multi-family residential. MTS bus routes serve the main corridors in the community, which are often the only route across natural and manmade barriers. Due to an abundance of canyons and highways, service design options for Clairemont are limited to through commercial corridors, including:

1. Clairemont Mesa Boulevard: Served by Route 44 connecting to Old Town Transit Center via Linda Vista and Kearny Mesa, with service to the University of San Diego and Mesa College. The corridor has several multi-family housing developments and retail centers. The intersections at Genesee Avenue (Route 41) and Clairemont Drive (Routes 50 and 105) are key transfer points. Riding the current network, traveling by bus between the corridor and the future BATC would require taking two or three buses, depending on the trip origin.

2. Genesee Avenue: Served by Routes 41 and 105. Route 41 connects Clairemont with UCSD via UTC and with the Orange Line Trolley at Fashion Valley Transit Center. Route 105 connects Clairemont with the UTC Transit Center, and with Old Town Transit Center via Clairemont Drive and Morena Boulevard. The Clairemont segment of the Genesee Avenue Corridor has several multi-family developments and shopping centers. Intersections with key transfer points include Balboa Avenue (Route 27) and Clairemont Mesa Boulevard (Route 44 & 105),

3. Clairemont Drive: Served by Routes 50 and 105 connecting to Old Town Transit Center via Morena Boulevard and to Downtown San Diego via Interstate 5.Clairemont Drive is a commercial corridor with multi-family housing and shopping centers. The retail hub Clairemont Town Square at Clairemont Drive and Clairemont Mesa Boulevard is a major activity center with retail, entertainment, and employment destinations. In addition to the Clairemont Mesa Boulevard intersection, the Balboa Avenue intersection is a key transfer point to Route 27, the connecting route to Kearny Mesa Transit Center and Pacific Beach.

4. Balboa Avenue: Served by Route 27 connecting Clairemont with Kearny Mesa Transit Center via Convoy Street and to Pacific Beach via Garnet Avenue. All bus service connecting with the BATC from the east will operate at least partially of Balboa Avenue, providing very frequent service for residents along Balboa Avenue where there are multiple bus routes. Balboa Avenue is an auto-oriented commercial corridor lined with shopping centers with some multi-family housing. With the current network, key transfer intersections are Genesee Avenue (Routes 105) and Clairemont Drive (Routes 50 and 105).

When the Trolley extension is operational, the BATC will be the key transit hub for the Clairemont Mesa community once in service. Currently, Clairemont bus service connects to the MTS transit network at UTC Transit Center, Kearny Mesa Transit Center, Fashion Valley Transit Center, Old Town Transit Center, and Downtown San Diego. Routes serving Clairemont and their frequencies are shown in *Table 1.9* and the destinations for routes serving Clairemont are shown in *Table 1.10* below.

Table 1.9: MTS bus routes serving Clairemont and frequency of service.

Route	Service Type	Peak Headway	Base Headway
27	Urban Standard	30	30
41	Urban Frequent	7.5/15	15
44	Urban Frequent	15	15
50	Express	15/30	-
105	Urban Standard	30	30

Table 1.10: MTS bus routes currently serving Clairemont and destinations.

Route	Balboa Avenue	Clairemont Mesa Boulevard	Clairemont Drive	Clairemont Town Square	Genesee Avenue	Morena Boulevard
27	x					
41		x			x	
44		x	x	x		
50		x	x		x	
105		x	x	x	x	x

1.2.5 La Jolla

La Jolla is a coastal community located between two natural barriers: the Pacific Ocean to the west and Mount Soledad and its foothills to the east. Access into and out of La Jolla is mostly through Torrey Pines Road and La Jolla Shores Drive to the north and La Jolla Boulevard from Pacific Beach to the south. Additionally, Torrey Pines Road can be reached from I-5 (east of La Jolla) via La Jolla Parkway.

Although difficult to access from other areas, La Jolla is a popular destination for tourists and locals alike. With its famous beaches and coastal views, the community is a popular tourist destination and regional attraction. Downtown La Jolla is a thriving entertainment and shopping area enjoyed by tourists and locals year-round, supported by an important service economy. Service workers travel from across the region relying on transit to access jobs.

Northern La Jolla draws many commute trips, due to UCSD and the surrounding research facilities. Popular destinations in northern La Jolla include:

1. Scripps Institute of Oceanography
2. Birch Aquarium
3. UCSD campus
4. Torrey Pines employment

La Jolla is difficult to serve with fixed-route transit, due to topography, traffic calming infrastructure, and limited through routes, which are often circuitous. La Jolla is served by MTS Route 30, which connects La Jolla to a many destinations including UCSD, the VA Medical Center, Westfield UTC Mall, Pacific Beach, Old Town Transit Center, and Downtown San Diego. Route 30 is an extremely long route, with a peak one-way travel time of 1.75 hours. Travel in La Jolla is mostly along north to south running thoroughfares, which are often heavily congested. MTS buses are delayed by the same traffic as single-occupant vehicles. Circuitous streets like La Jolla Shores Drive (home to Scripps Institute of Oceanography) require significantly more time than more direct streets, adding travel time for through-riders. Additionally, the traffic circles on La Jolla Boulevard make for very slow bus travel.

However, the La Jolla Community Plan (LJCP) recognizes the critical role of transit in effectively moving people to, from, and within La Jolla. The transportation goals of the LJCP acknowledge increased transit usage as a relief from transit congestion and a link between community destinations. The LJCP transportation goals are:

- Provide an adequate circulation system to serve residents, visitors and employees to La Jolla's downtown commercial, recreational areas and community facilities by promoting the use of public transit and/or shuttle service as an alternative form of transportation within the community.
- Reduce traffic congestion in La Jolla by increasing the efficiency of public transit, by promoting safe and pleasant bicycle and pedestrian routes, and by providing physical and operational improvements to the existing circulation system.

- Improve the availability of public parking in those areas closest to the coastline as well as in the village core through a program of incentives (such as peripheral and central parking facilities, parking programs and improved transit).

The LJCP includes specific recommendations for transit, which include service from the Trolley to central La Jolla. The transit recommendations in the LJCP are:

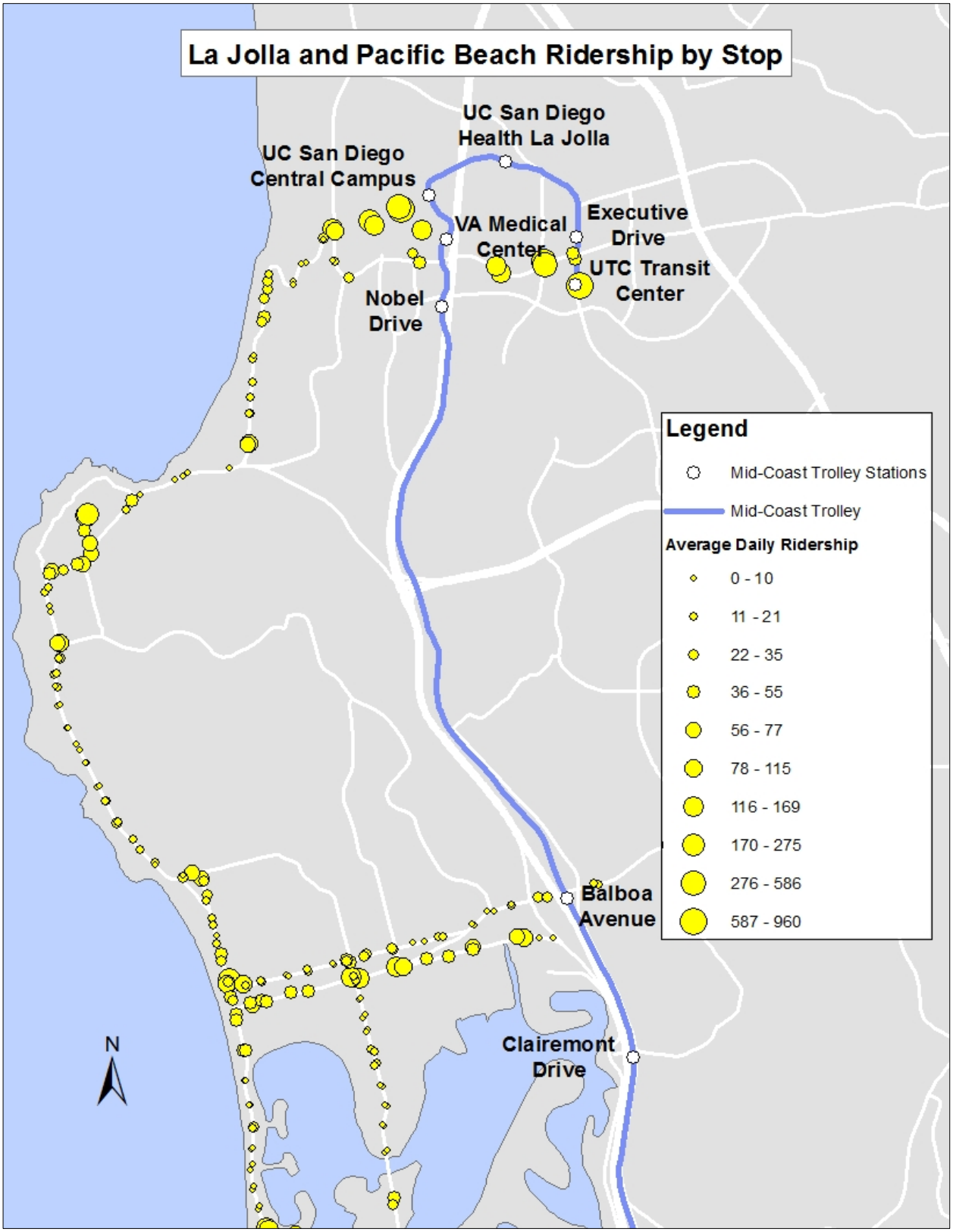
- MTDB should evaluate a shuttle bus system that would provide service to central La Jolla from peripheral parking areas and the proposed LRT line within the Interstate 5 corridor.

- Require commercial redevelopment along transit routes to provide landscaping and passenger waiting areas at transit stops within the public right-of-way. Consider and maintain attractive kiosks at key pedestrian nodes and transit waiting areas with input on the design of these kiosks and transit waiting areas from the community planning group.

- Encourage shuttle service through La Jolla to the beach and recreational areas in order to help relieve traffic congestion in the village and public recreational areas.

Bus ridership in La Jolla is unbalanced throughout, with long stretches with few boardings and alightings. Key trip generators include UC San Diego, downtown La Jolla, and the Scripps Insitiute of Oceanography. Many riders are through riders, with destinations and/or origins in Pacific Beach, University City, or a connecting service at the OTTC. As seen in *Figure 1.3* below, several segments of La Jolla have boardings and alightings, with most rider activity at key destinations.

Figure 1.3: Bus ridership (boardings and alightings) by stop in La Jolla and Pacific Beach.



1.3 Service Span and Frequency

MTS currently operates 98 bus routes on weekdays, 68 on Saturdays, and 59 on Sundays. The system's three Trolley routes are operated all-week. Together, these services create a large regional network throughout the week, with daily service operating as early as 4am to as late as 3am.

Frequent service, which is defined as 15 minutes or better, is considered the threshold for facilitating lifestyle transit that attracts and retains riders The frequent network is the most complete during the peak periods, when 47 percent of the MTS systems operates with 15-minute or better service, and the frequent network generates 53 percent of weekday boardings. During the peak periods, major activity centers such as UCSD, University City, and Kearny Mesa are all connected with 10-minute or better services. The Trolley network acts as the foundation of the frequent network, and frequent bus service connects areas with high population and employment density to key job centers and stations.

1.4 Study Area Profile

The Study Area Profile analyzes the population and employment distribution within the study area of the Trolley Extension Feeder Bus Study. This section identifies which communities within the study area may have the highest demand for transit service, based upon densities of subpopulations most likely to use transit. Higher population and employment densities are often positive market indicators for generating transit ridership as higher concentrations allow transit to attract more customers for a variety of trip purposes. Additionally, the examination of population and employment projections will allow MTS to realign its services and resources to ensure it meets the mobility needs of current and future residents.

This section includes the following:

Population Demographic Characteristics: This segment of the market analysis provides an overview of where specific demographic groups are concentrated in the region. These demographic groups are more likely to use public transit than the overall population, so identifying where they are concentrated in the region provides insight into where transit service is likely to be most successful. This section also provides plan direction regarding Title VI considerations.

Travel Demand: Based upon SANDAG travel patterns, this section discusses popular trip patterns between cities and community planning areas. The overview provides a summary of common peak hour and all-day internal and external trips within the service area. Travel demand can help provide insight into where transit service may be a competitive alternative.

Population and Employment Projections: Using SANDAG projections for regional growth, this section discusses future population and employment expansion out to the year 2050. This section includes an overview of where future growth will likely be concentrated, with specific reference to community plans and planned developments. A segment is also dedicated to discussing the future growth of San Diego's senior population and how this impacts special transit service strategies.

Access

Despite the robust coverage of the MTS bus network, not all areas can be serviced by fixed-route transit. In some areas, access numbers are generally low due to sprawled development patterns, topographical limitations, and non-linear street networks, which are difficult to serve effectively with fixed-route transit. While some areas will always be difficult to serve, expanding the range of mobility options beyond fixed-route transit as well as the extent of the frequent network will help increase regional access to public mobility services. Additionally, the emerging trend of mobility as a service (MaaS) with the integration of traditional fixed-route public transit with private sector first-last mile modes, such as taxis, transportation network companies (TNCs) and scooter share, can be leveraged to create a seamless customer experience for multi-modal trips from a single app.

MTS is undertaking the Trolley Feeder Bus Study to identify opportunities to enhance bus service through integrating the bus network with the coming rail service. The *Market Analysis* examines regional development and demographic trends to identify areas in the region where transit is likely to be most successful.

Data Sources
The market analysis draws from three main data sources to analyze market demand for transit within MTS service area. Current population and employment data was gathered from San Diego Association of Governments (SANDAG) and the 2014 American Community Survey (ACS, US Census Bureau). ACS data also provided information on the density and distribution of certain demographic groups, including subpopulations based on age, income level, ethnicity, and vehicle availability. SANDAG also provided population and employment projections out to year 2050 based upon its Series 13 estimates, the same forecasts used in *San Diego Forward: The Regional Plan.* SANDAG's travel demand data for the years 2020 and 2025 provided information on personal vehicle and transit trips within San Diego County to show popular trip patterns within the service area.

Project Context
MTS provides bus and Trolley services to residents within a 570-square mile area of San Diego County. This includes ten cities and parts of unincorporated areas of the county with a total population of roughly 2.3 million. The service area includes the cities of Chula Vista, Coronado, El Cajon, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, Santee, and San Diego. The City of San Diego itself has over fifty different communities and is approximately 372 square miles in size.

The market analysis focuses on the market for transit in the study area based on population demographics and employment opportunities. The following sections provide an overview of current market trends to establish a framework and local context for the development of the Trolley Feeder Bus Study service recommendations.

1.4.1 Current Population and Employment Density

Population
Coastal communities such as Pacific Beach, Mission Beach, and Ocean Beach each contain small pockets of high population density and tend to serve college-aged residents. A significant number of residents are also clustered in communities surrounding the region's major universities, such as in University City (UCSD) and Linda Vista (USD).

While there are pockets of relatively dense development within the study area, it is mostly characterized by low-density, suburban development. Population and employment clusters are largely separated, with light employment interspersed in large residential communities rather than an equal balance.

Employment

The study area for the Trolley Extension Feeder Bus Study contains four of the top five employment destinations in the MTS service area, the other is proposed to connect with the study area by the Trolley and the existing Blue Line Trolley. Major concentrations of employment span across University City, Sorrento Valley, Mira Mesa, and Kearny Mesa. The largest employer in San Diego County is the University of California, San Diego and its associated medical and research facilities. UCSD facilities are primarily located in areas with high population densities which make it an area that can support high levels of transit investment. Downtown and surrounding communities also form an area with both high employment and population concentrations. *Table 1.11* below shows the top five major San Diego employers and an approximate number of employees using data from State of California Employment Development Department and SANDAG Data Surfer.

Table 1.11: Top five San Diego employment destinations.

MAJOR SAN DIEGO EMPLOYERS		
EMPLOYER	**LOCATION**	**EMPLOYEES**
UCSD	La Jolla	30,000
Sharp Healthcare	Linda Vista; South County	17,000
MCAS Miramar	Miramar	15,000
Naval Base San Diego	Barrio Logan	10,000
Qualcomm	Sorrento Valley	9,400

1.4.2 North San Diego Employment Centers and Commute Patterns

Commute patterns in northern San Diego are heavily influenced by the geographical distribution and density of employment and housing in the region. In 2019, SANDAG identified the two largest regional employment centers, which are both within the study area for the Feeder Bus Study: Sorrento Valley (Sorrento Mesa, University City, Torrey Pines, and northern La Jolla) and Kearny Mesa. The two regional job centers employ over 250,000 people, generating commute trips from neighboring residential communities and throughout the region.

The majority of employees working in San Diego's two largest employment hubs commute to work. There are dense housing developments in northern University City and in Kearny Mesa, with housing density increasing over the past two decades. The University Community is currently undergoing a study for its community planning update. The current University Community Plan has enabled increased residential density for increased live/work balance.

The recently approved Kearny Mesa Community Plan Update supports increased residential development allowing an increase in residential units of roughly 600% over the next thirty years, raising the number of permitted housing units from 4,300 to nearly 26,000. The plan fosters an increasingly balanced live/work ratio in coming decades; however, when the Trolley extension becomes operational in 2021, the great majority of Kearny Mesa employees will still reside in other communities. The distribution of residences from which people commute to Kearny Mesa is shown in *Figure 1.5* and *Figure 1.6* below.

Of key importance to this study are the residential communities which contain or surround Trolley stations and trip-generating regional employment centers. With the lack of a true central business district, the San Diego Region is a region with several employment hubs, with many employees clustered in nearby residential communities. As seen in *Figure 1.5* and *Figure 1.6*, residents in communities surrounding the Sorrento Valley and Downtown San Diego employment centers travel to their neighboring employment centers much more than from other communities.

The communities surrounding the Kearny Mesa employment center do not have the housing supply or density to support clusters of people commuting to Kearny Mesa. Commuters to Kearny Mesa travel from throughout the region, including from communities adjacent to the Trolley alignment. There is an opportunity to strengthen the MTS transit network through increasing east-west access between the Trolley and Kearny Mesa Transit Center, thereby increasing regional access to and from coastal San Diego.

Figure 1.4: Map of population density in the San Diego Region in May 2019.

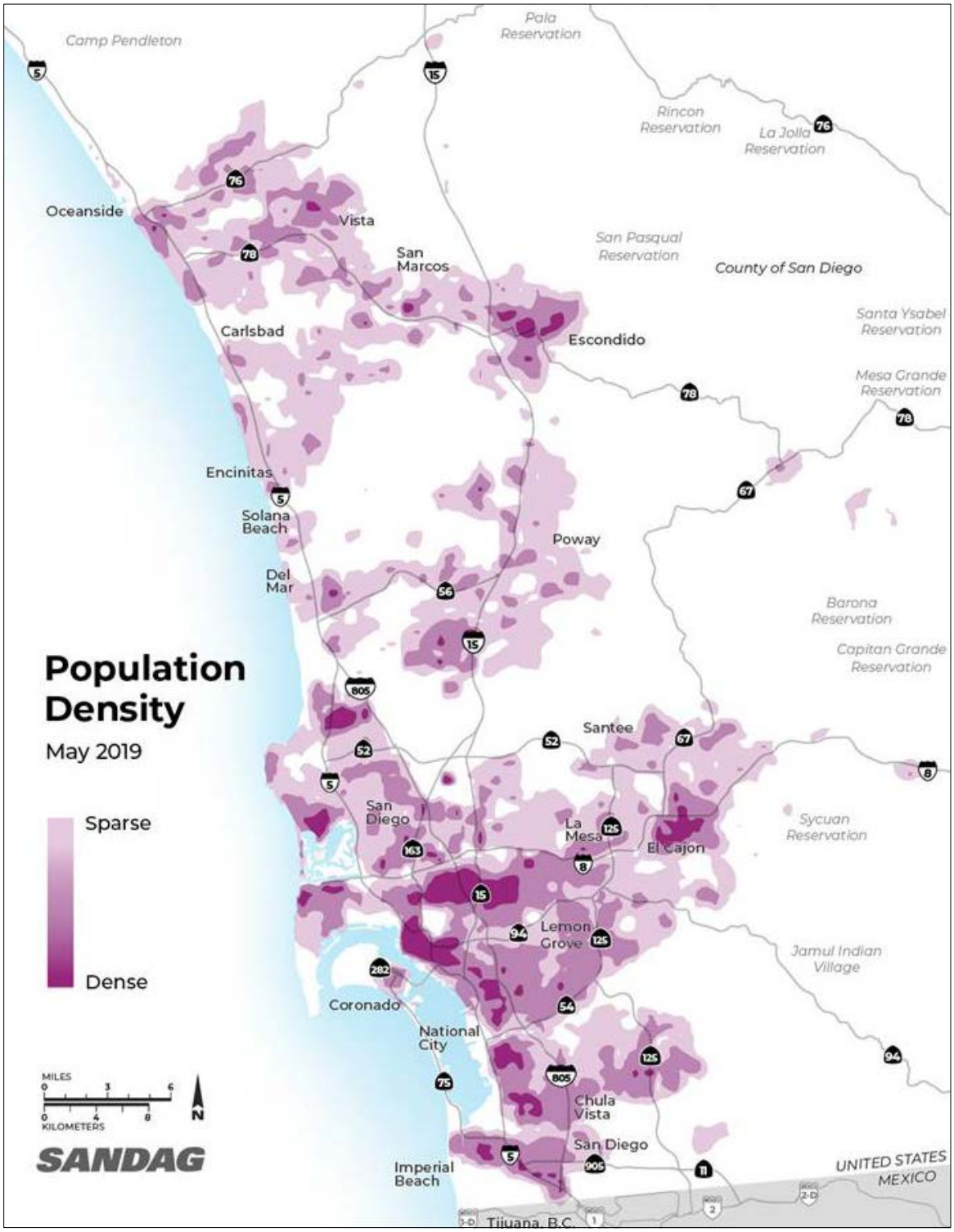
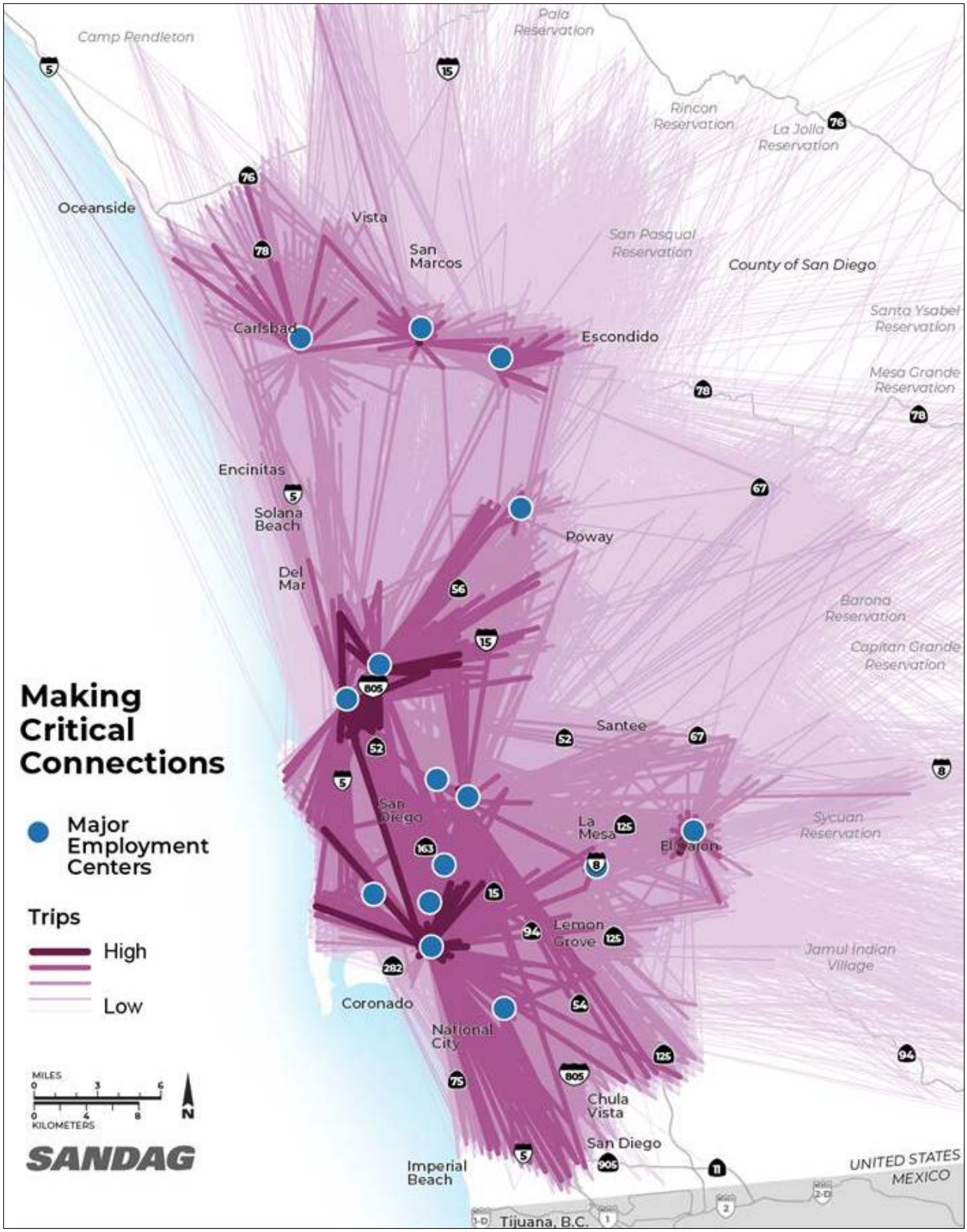


Figure 1.5: Map of commute trips to San Diego employment centers from throughout the region from cellphone tower data from SANDAG.

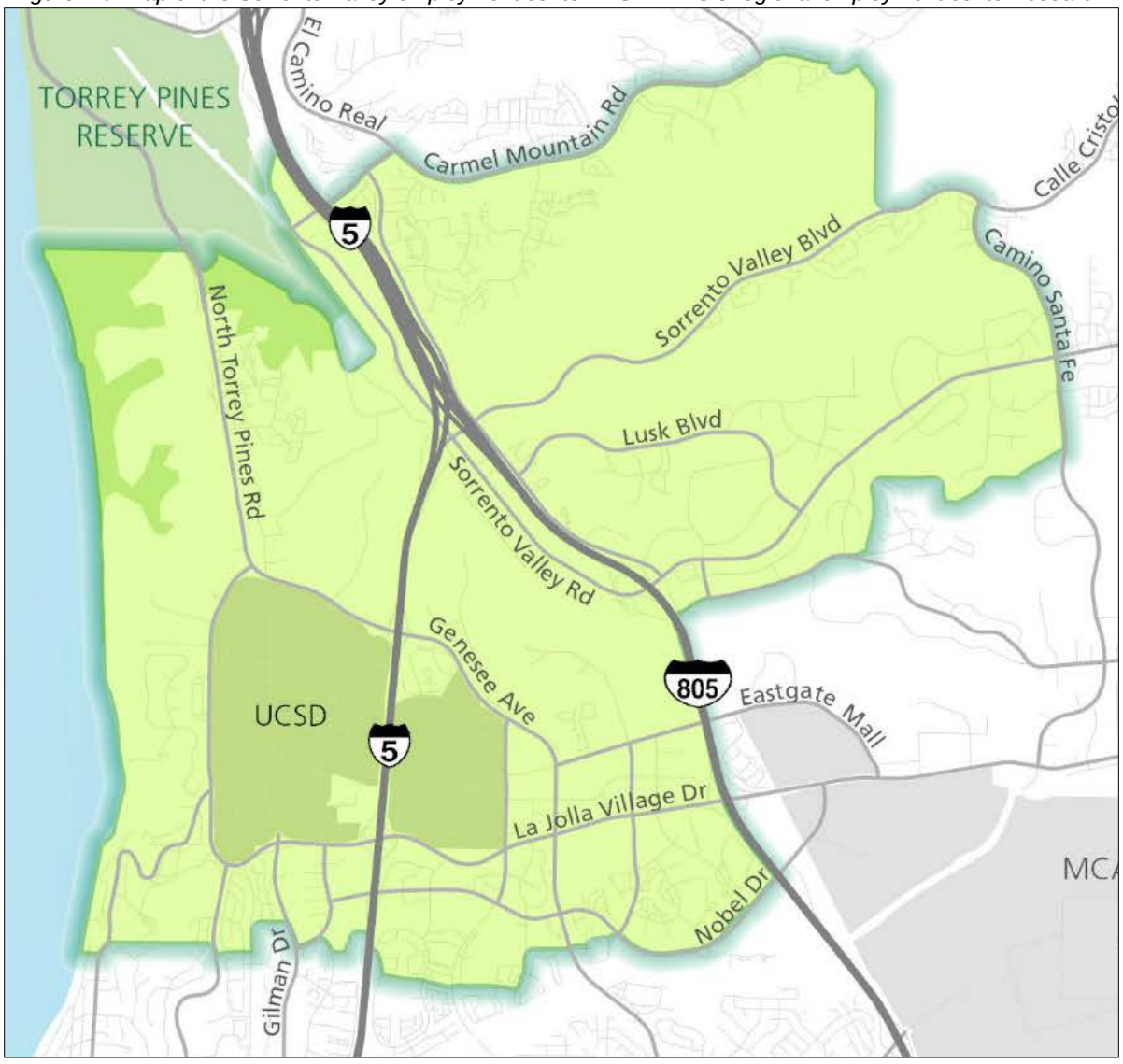


1.4.3 SANDAG Sorrento Valley Employment Center Research

In May 2019, SANDAG released a study on the Sorrento Valley employment center. The SANDAG economic study combines the communities of Sorrento Valley, University City, La Jolla, and Torrey Pines for a regional employment hub of 15 square miles. The study, headed by SANDAG Chief Economist, Ray Major, examines the nature of employment within the study area, the demographics of area employees, and employee commute patterns into Sorrento Valley. The study area is shown in *Figure 1.7* below.

The Sorrento Valley employment center is the largest employment hub in the MTS service area and the San Diego Region. The employment center employs 129,242 people and has an employment density of 8,542 employees per square mile. The majority of jobs in the area are professional, scientific, and technical services, education (UCSD), and health care/social assistance. Additionally, support service employees, including administrative, food, and retail services, commute to the regional employment hub.

Figure 1.6: Map of the Sorrento Valley employment center in SANDAG's regional employment center research.



The vast majority of commute trips to the Sorrento Valley employment center are made by employees driving alone in their personal automobiles. SANDAG's 2016 Activity Based Model (see *Figure 1.7* below) shows the mode share for employees driving alone in their personal automobiles is 81-percent, while public transit's mode share is a mere 5-percent of commute trips. There is significant potential for mode shift from single occupant vehicles to public transit with the high-frequency and high capacity transit service of the Trolley; however, the geographic spread of Sorrento Valley employee residences limits the potential mode share.

While Sorrento Valley employees commuting by transit on average have shorter commute distances than commuters driving alone to Sorrento Valley, the average travel time is more than double for transit commuters. Commuters who drive alone on average travel 14.5 miles in 31.6 minutes for an average speed of 27.5 mph while transit commuters travel an average of 12.7 miles in 77.4 minutes for an average speed of 16.4 mph. The average single occupant vehicle (SOV) trip is nearly twice as fast as the average transit trip. The Trolley extension will improve travel times for riders who live and work in close proximity to Trolley stations, narrowing the gap between transit and SOV commute times.

Commutes to the Sorrento Valley employment center add considerable automobile traffic volume to the San Diego Region's highways and arterials. *Figure 1.8* below shows automotive travel volumes for commute trips to and from the employment center. The map shows that I-5 is heavily traveled for Sorrento Valley commute trips and a strong market for the Trolley along the I-5 Corridor, with feeder bus service for first and last mile travel.

Figure 1.7: Chart of Sorrento Valley commute distances and travel times by mode.

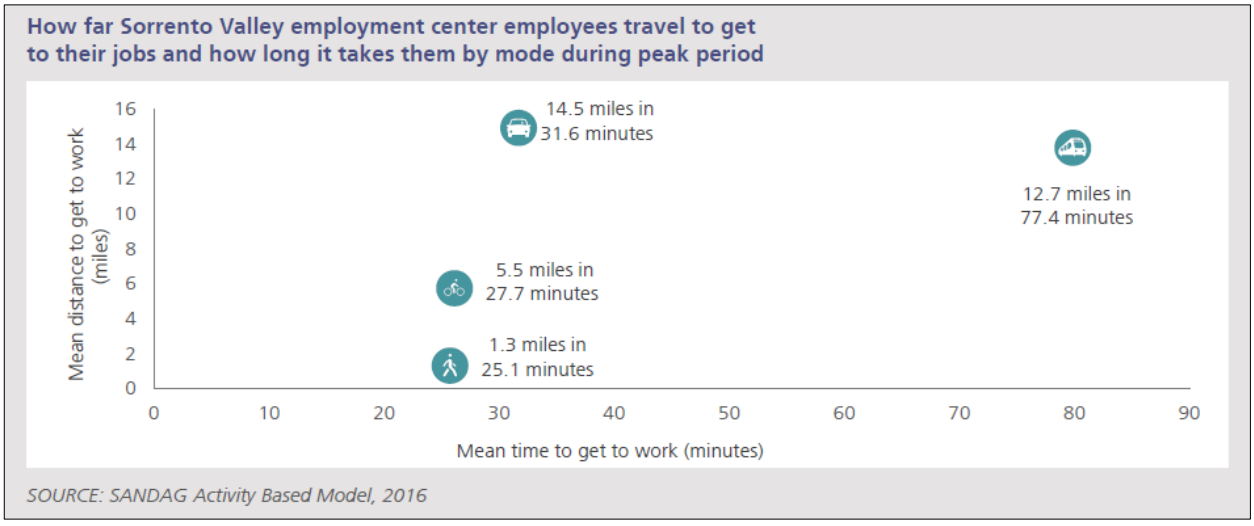
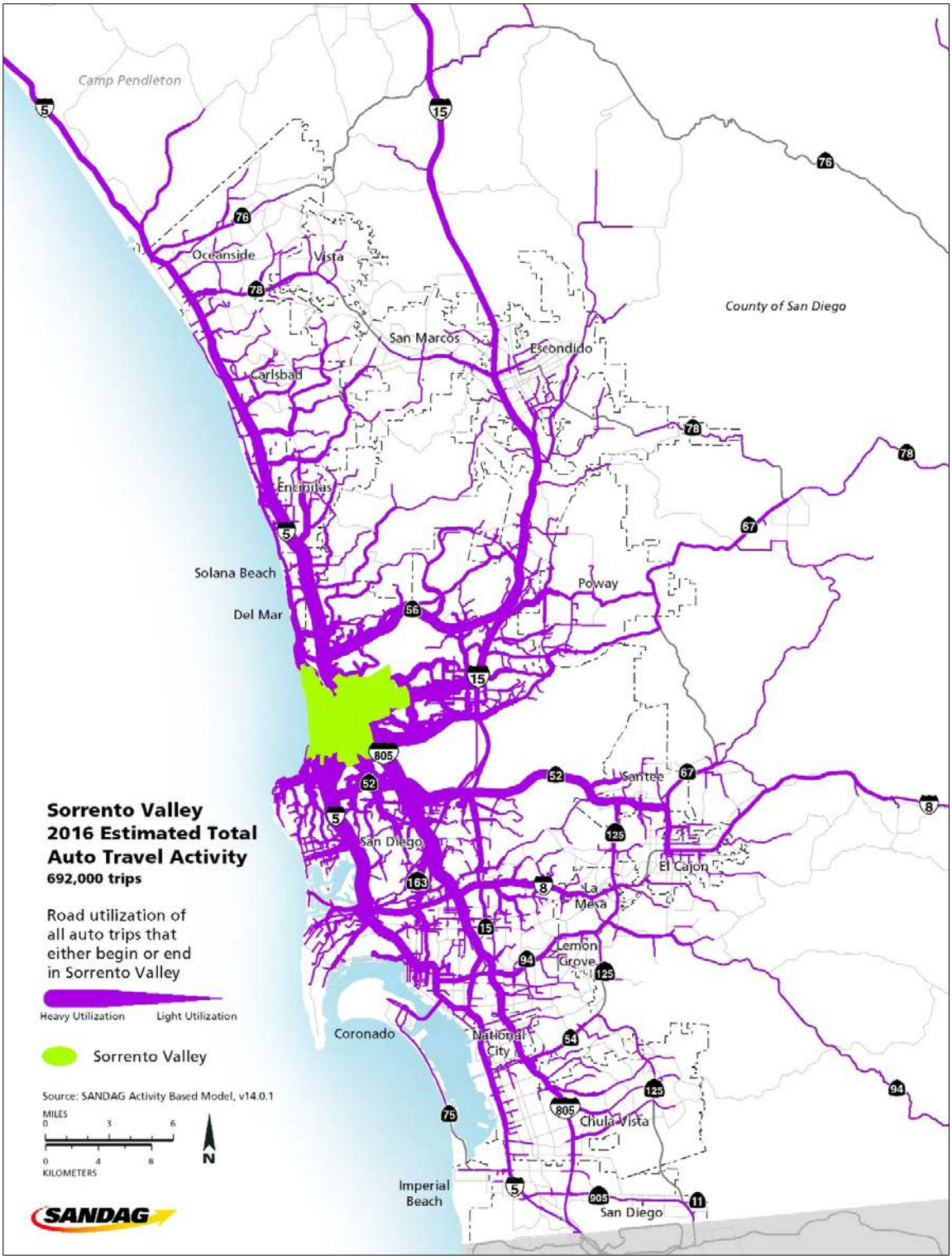
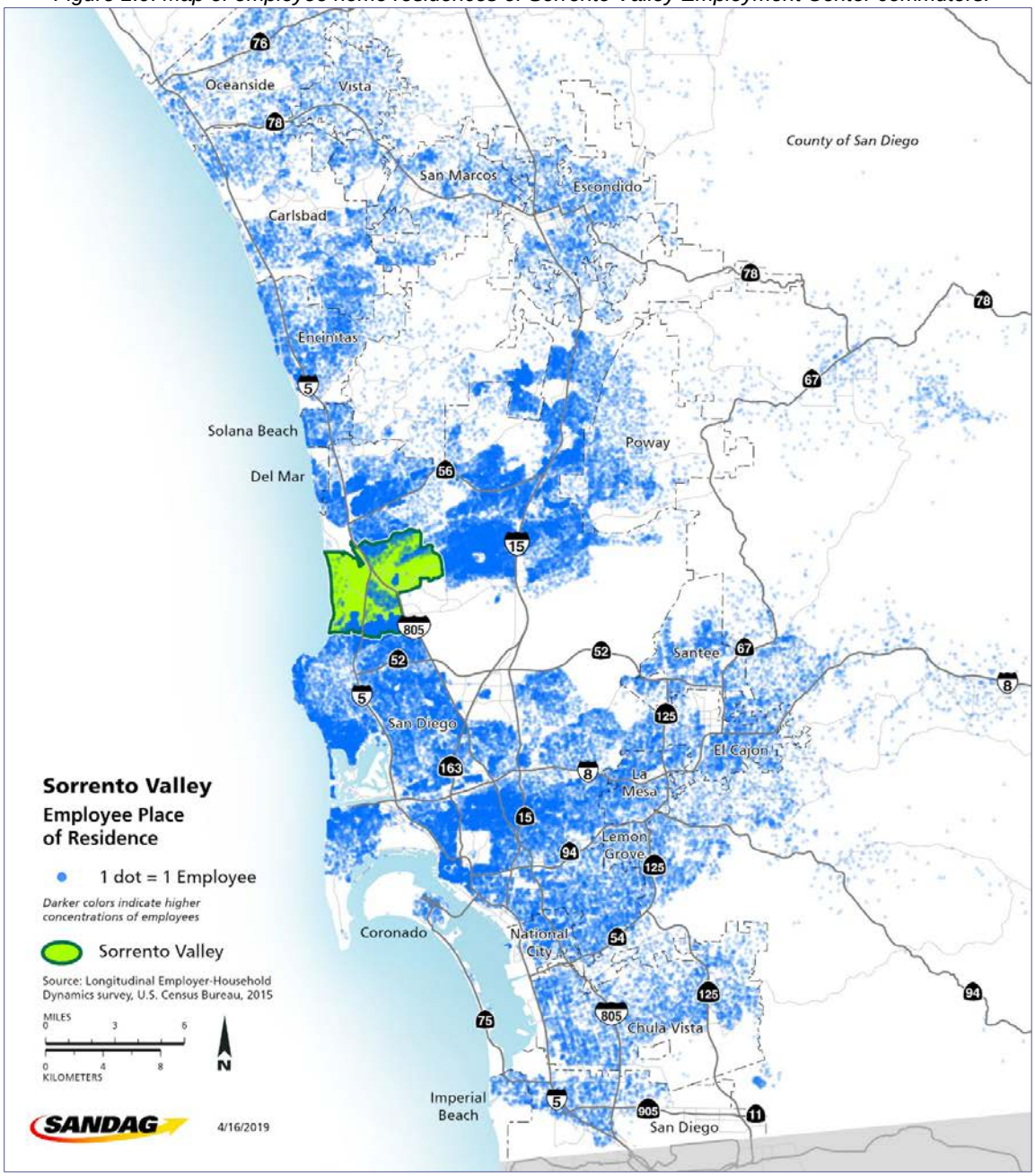


Figure 1.8: Map of regional auto travel activity to the Sorrento Valley employment center (2016).



The Sorrento Valley work force is widely dispersed throughout San Diego and the San Diego Region. Sorrento Valley employees living south of Sorrento Valley will have access to the Trolley; however, many commute from north and east of Sorrento Valley. Mira Mesa densely houses Sorrento Valley employees along the Mira Mesa Boulevard Corridor with access to the employment center on the Rapid 237 and Route 921. However, car-dependent bedroom communities of North County, the SR-56 Corridor, and the I-15 Corridor, do not have access to the Trolley for commute trips. *Figure 1.9* below shows the distribution of Sorrento Valley commuter residences.

Figure 1.9: Map of employee home residences of Sorrento Valley Employment Center commuters.



The SANDAG regional employment center research for Sorrento Valley shows the regional draw for commute trips to the communities surrounding the northern end of the Trolley and the importance of linking Trolley stations with commuter residences and employment destinations.

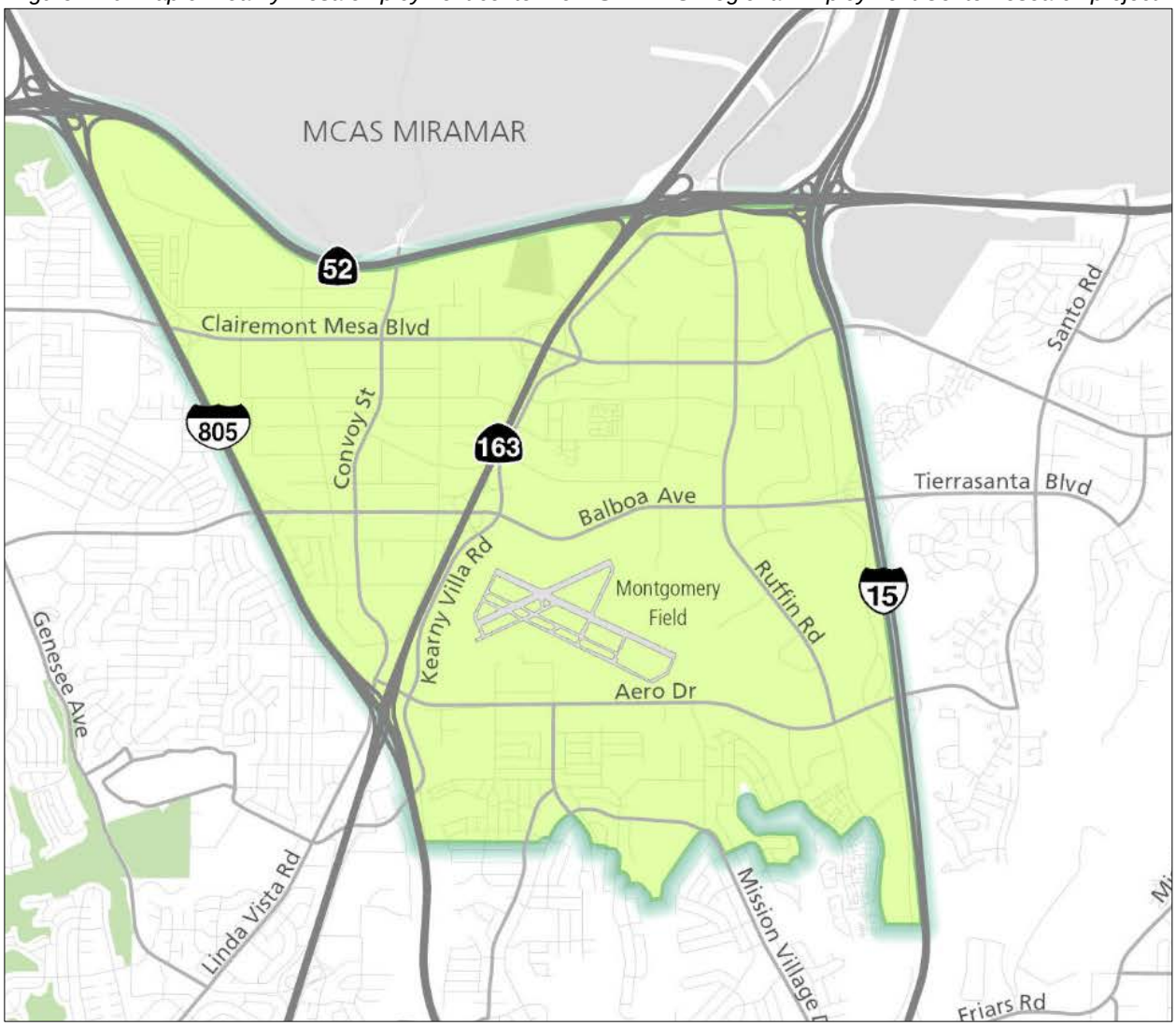
Currently, the mode share for commute trips to the employment hub from across the region is heavily skewed towards SOV trips, with SOV trips being nearly twice as fast as transit trips. The Trolley can be competitive with the private automobile in moving people along the I-5 Corridor. In order for the Trolley to appeal to choice riders, connecting travel modes at their destination stations must efficiently take them to their jobs.

With Sorrento Valley commuters widely dispersed throughout the region, the Trolley will be a commute option for a relatively small segment of the employee population; however, the market for communities along the I-5 Corridor is strong, provided that commuters are able to reach employment destinations in Sorrento Valley by feeder bus and other alternative transportation modes.

1.4.4 SANDAG Kearny Mesa Regional Employment Center Research

In May 2019, SANDAG released a study on the Kearny Mesa employment center, which is 7.23 square miles, between I-805 to the west, I-15 to the east, SR-52 to the north, and Serra Mesa to the south (see *Figure 1.10)*. The study examines nature of area employment, the demographics of employees, and employee commute patterns.

Figure 1.10: Map of Kearny Mesa employment center from SANDAG Regional Employment Center research project.



Kearny Mesa is the second largest employment center in the San Diego region, with 8-percent of regional jobs and 7.2-percent of the region's labor income. The employment density of the employment hub is 16,915 employees per square mile and a population density of 2,396 residents per square mile.

Kearny Mesa has 122,293 employees and an estimated residential population of 17,300. Approximately 1-percent of Kearny Mesa employees both live and work in Kearny Mesa. Just over half (52-percent) of the employees traveling to this job concentration area come from San

Diego, with the other top two areas including the unincorporated areas of the region and Chula Vista.

The transportation modes used by Kearny Mesa employment center employees were very similar to the region, with 83-percent driving alone (compared to 80-percent regionally) and 4-percent taking transit (compared to 4-percent regionally). Kearny Mesa employment center employees who are travelling by car drive during peak hours a mean of 12.5 miles and it takes them a mean of 29 minutes. In comparison, those that take transit travel 11.9 miles on average and it takes them a mean of 75.5 minutes, seen in *Figure 1.11* below.

Due to its proximity to four highways, Kearny Mesa is accessible to private automobile commuters from throughout the region, with SOVs being the dominant mode of travel. Popular routes for commuters include I-15, I-805, SR-163, and SR-52. The Kearny Mesa commute travel volumes from throughout the San Diego region are shown in *Figure 1.12* and the trip origins of Kearny Mesa commuters are shown in *Figure 1.13* below.

Figure 1.11: Chart showing mean travel length and time by mode of Kearny Mesa commuters.

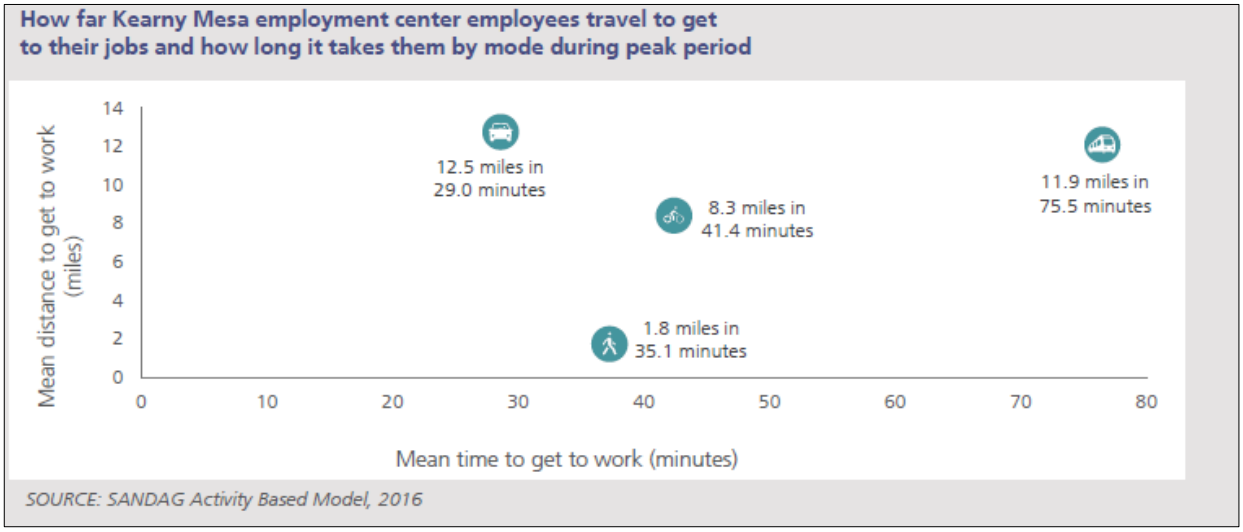


Figure 1.12: Map of regional auto travel activity to the Kearny Mesa employment Center (2016).

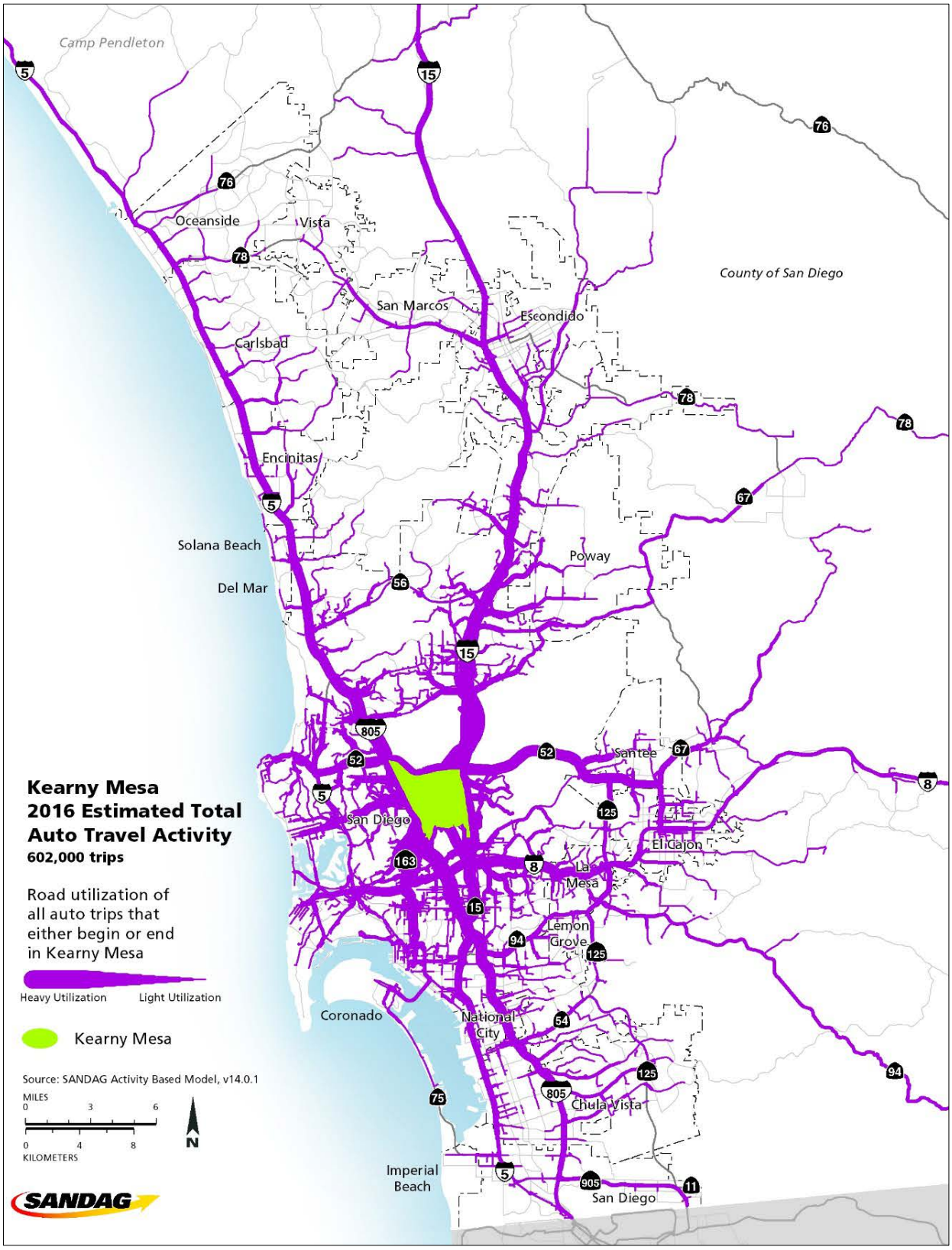
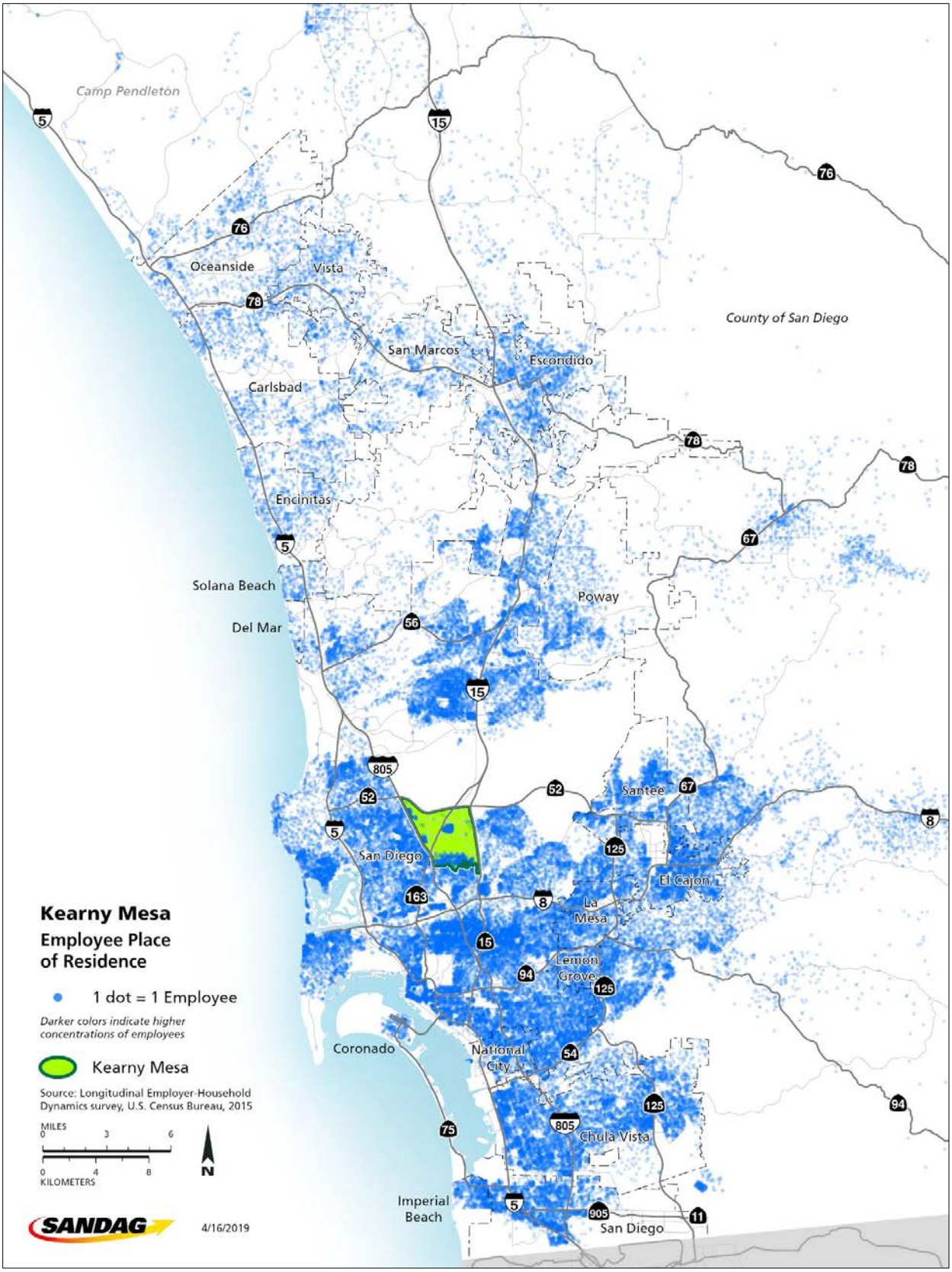


Figure 1.13: Map of employee home residences of Kearny Mesa employment center commuters.



1.4.5 Population Demographic Characteristics

Certain demographic groups typically use transit service more often than the general population due to age, financial constraints, or limited access to personal vehicles. Understanding the distribution of these markets throughout the MTS service area can inform service changes to better address unmet mobility needs. An analysis of San Diego's demographic characteristics will identify specific areas with high concentrations of individuals who are likely to rely on transit the most.

This section includes analyses of the following subpopulations based on 2014 American Community Survey data:

- College-aged (Ages 18-24)
- Seniors (Ages 60+)
- Minority Populations
- Low-Income Households
- Zero-Vehicle Households
- Persons with Disabilities

College-Aged (Ages 18-24)

College-age is defined as persons 18-24 years of age. This age range largely consists of students and younger working-class individuals who temporarily have lower income levels and may be less likely to own vehicles. This subpopulation may also be more likely to seek alternative transportation modes to personal vehicle travel. There are approximately 274,000 college-aged persons in the service area, comprising 12-percent of the total population (*Figure 1.14*).

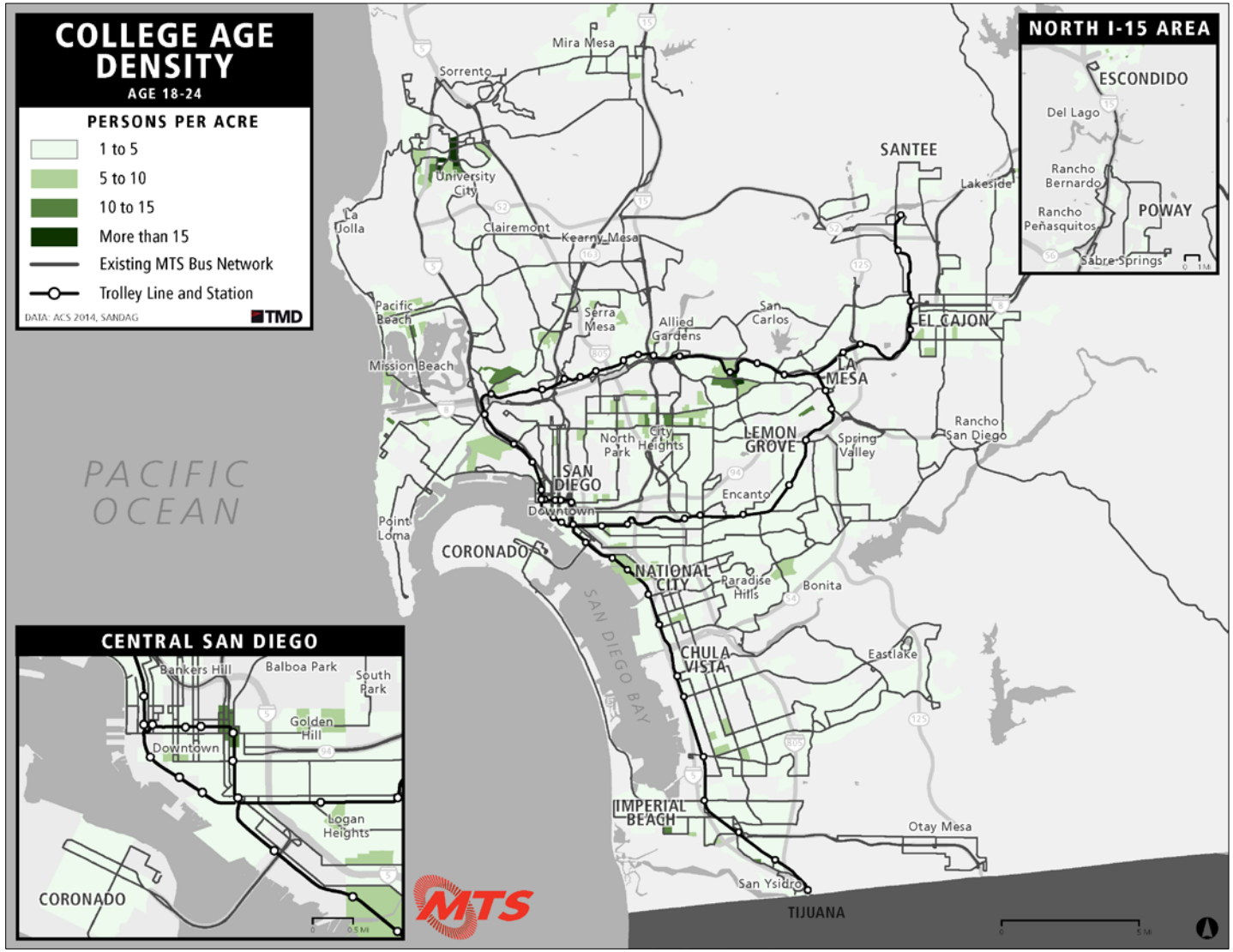
College-aged populations are highly concentrated around major San Diego universities such as University of California, San Diego, San Diego State University (SDSU), and University of San Diego (USD). UCSD and SDSU both have total student populations of over 33,000, while USD has a total student population of over 8,000.

University City, La Jolla, Linda Vista, Mission Valley, and Mid-City all feature dense college-aged populations due to their proximity to major area universities. Mission Beach and Pacific Beach are not adjacent to universities but are popular housing areas for university students. Other higher education institutions in the MTS service area have significantly smaller student populations than San Diego's major universities. These smaller schools and community college districts tend to have a greater percentage of student commuters who are dispersed throughout the region.

MTS currently has a partnership program with UCSD which facilitates the U-Pass to all students. The U-Pass is a universal transit pass program that provides unlimited ridership on most regional mass transit routes provided by MTS and NCTD. The U-Pass is included in student fees and is valid during the school year.

In January 2019, MTS and UCSD executed a service agreement for MTS to operate additional SuperLoop service (*Rapid* 201/202) to replace the UCSD-operated Arriba Shuttle. The additional service has service as frequent as every 3 minutes during peak demand times and 10-minute service off-peak. *Rapid* 201/202 service is also extended to midnight under the service agreement. The service also has additional capacity from operating MTS articulated coaches, which have 50% more capacity than the shuttles previously operated by UCSD Transportation. The increased frequency, extended service span, and expanded capacity support MTS to meet the high demand for transit service between La Jolla Colony and UCSD.

Figure 1.14: Map of college age population density in the MTS service area.



Seniors (Ages 60+)

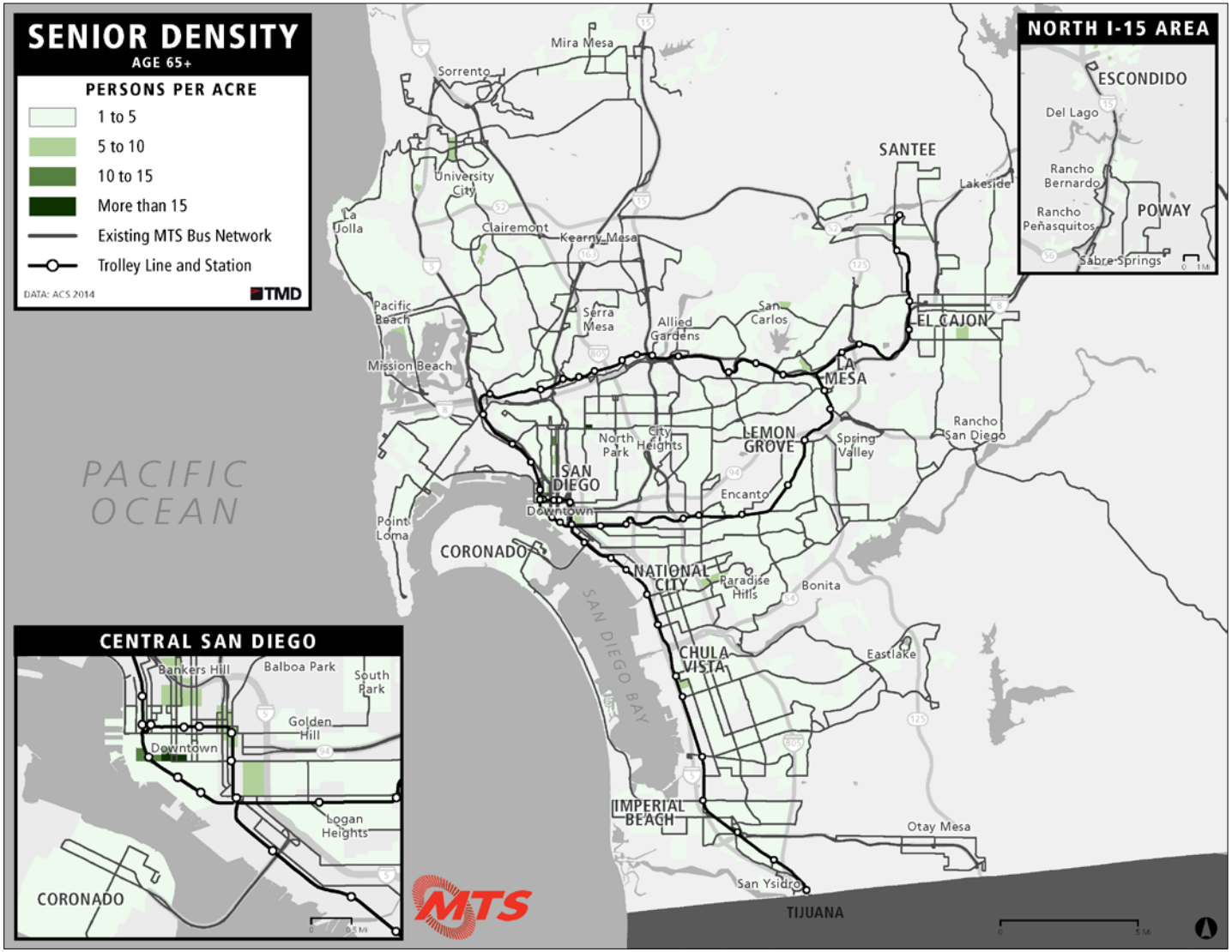
Senior citizens are defined as persons that are 60 years or older. The location of senior populations poses significant implications for transit service, as seniors tend to rely on transit and paratransit services more than other populations for their mobility needs.

The senior population in San Diego is significantly dispersed throughout the region. There are no major concentrations of seniors within the study area, adding difficulty in designing service to meet the needs of this vulnerable population. *Figure 1.15* below shows a few small pockets of slightly increased density, which tend to be senior and assisted living homes. Some of these complexes provide their own transportation for their residents, reducing the potential increases in propensity for transit ridership by seniors in these population clusters.

San Diego's population is rapidly aging. As the senior population grows, it becomes increasingly dispersed, due to a preference to age-in-place at their homes. The recent trend of aging-in-place, and the resulting distribution of senior citizens, is impactful to the ability of public transit to meet the needs of the senior population. This dispersed density limits the cost-efficiency of separate senior-based mobility to destinations such as medical facilities and grocery stores.

Areas with more dense senior populations (5-10 people/acre) within the area affected by the Trolley extension are located in North University City, South University City, Clairemont, and Southern Pacific Beach. These areas currently have robust service, with routes proposed to be realigned to connect with the Trolley, thereby expanding coastal access for seniors between University City and San Ysidro.

Figure 1.15: Map of senior population density in the MTS service area.



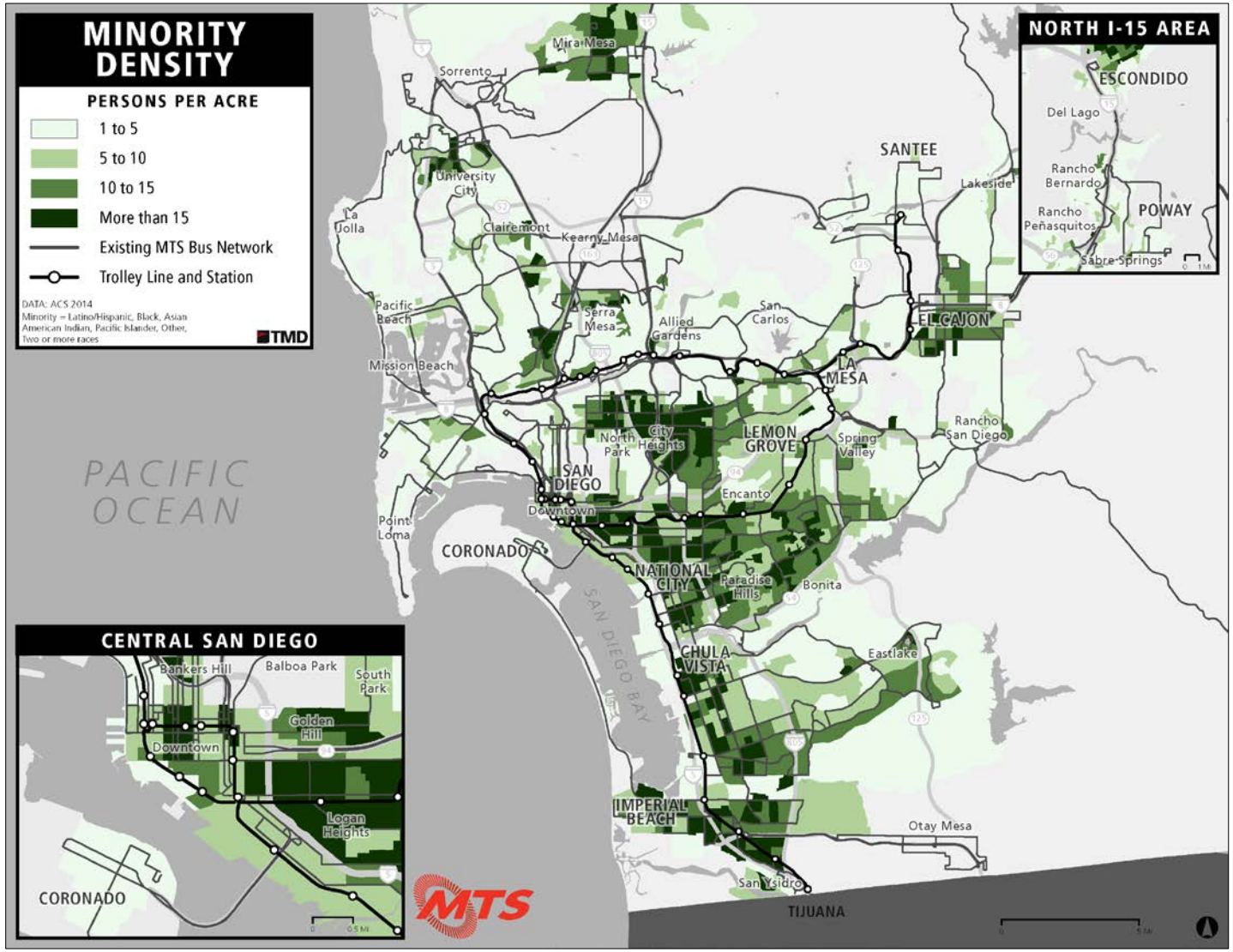
Minority Populations

Minority populations consist of all groups that identify as non-White. There are over 1.3 million people who identify as minorities in the MTS service area, forming 55-percent of the population. Of total regional residents, 33-percent identify as Hispanic, 13-percent as Asian, 6-percent as African-American, and 3-percent as multiracial. Approximately 45-percent of residents identify as white.

San Diego is a “majority-minority” city, in which slightly more than half of the total population identifies as a minority. Significant concentrations of minority populations are located in within communities affected by the Trolley Extension, including University City, Clairemont, and Linda Vista. The population density for minority populations is shown in *Figure 1.16* below.

Federal regulations from Title VI of the Civil Rights Act require that MTS identify and mitigate potential disparate impacts to minority populations as part of any major services changes, including any that might be implemented as part of the Trolley Extension Feeder Bus Study. Understanding the distribution of both minority populations is especially important when considering Title VI implications. A Title VI analysis will be performed before the changes proposed in the Feeder Bus Study go to public hearing for approval by the MTS Board of Directors. The Title VI analysis will be appended to this study once completed.

Figure1.16: Map of minority population density in the MTS service area.



Low-Income Households

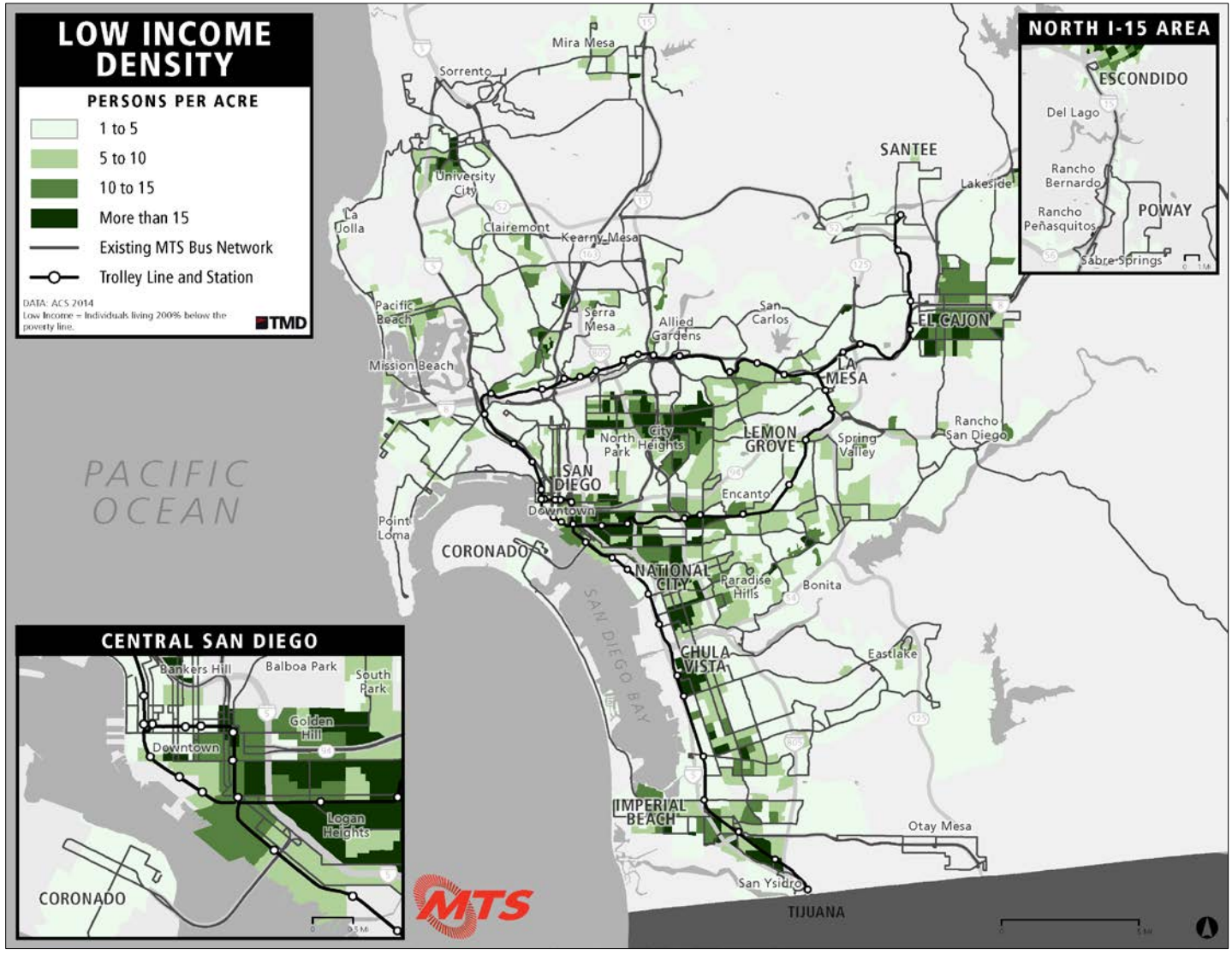
Low-income households consist of individuals living below 200-percent of the poverty line. In San Diego, roughly 32-percent, or 740,000 people, are considered low-income. Low-income households tend to rely on transit as an affordable mobility option for all or some members of the household. Access to transportation contributes to upward mobility by providing access to both school and job opportunities and basic needs such as grocery shopping, medical facilities, and social services.

Within the study area for the Trolley Extension Feeder Bus Study, low-income populations are concentrated in areas such as University City, Clairemont, Pacific Beach, and Linda Vista. Clusters of low-income households near major universities are typically college students, such as in UCSD students in Clairemont and University City, USD students in Linda Vista, and Pacific Beach where many full-time students reside. The population density of low-income households is shown in *Figure 1.17* below.

Federal guidance for compliance with Title VI of the Civil Rights Act requires that transit agencies identify and mitigate potential disproportionate burden to low income households as part of any major service changes. Any major changes to bus service that may be implemented developed in the MTS Trolley Extension Feeder Bus Study require Title VI analysis.

The distribution of low income households has critical Title VI implications. The low-income population clusters are located in areas where MTS is looking to enhance transit service and expand regional access by feeder bus and Trolley travel. MTS anticipates a favorable result from Title VI analysis which will be performed before the proposed changes go to public hearing for approval by the MTS Board of Directors.

Figure 1.17: Map of population density of low-income households in the MTS service area.

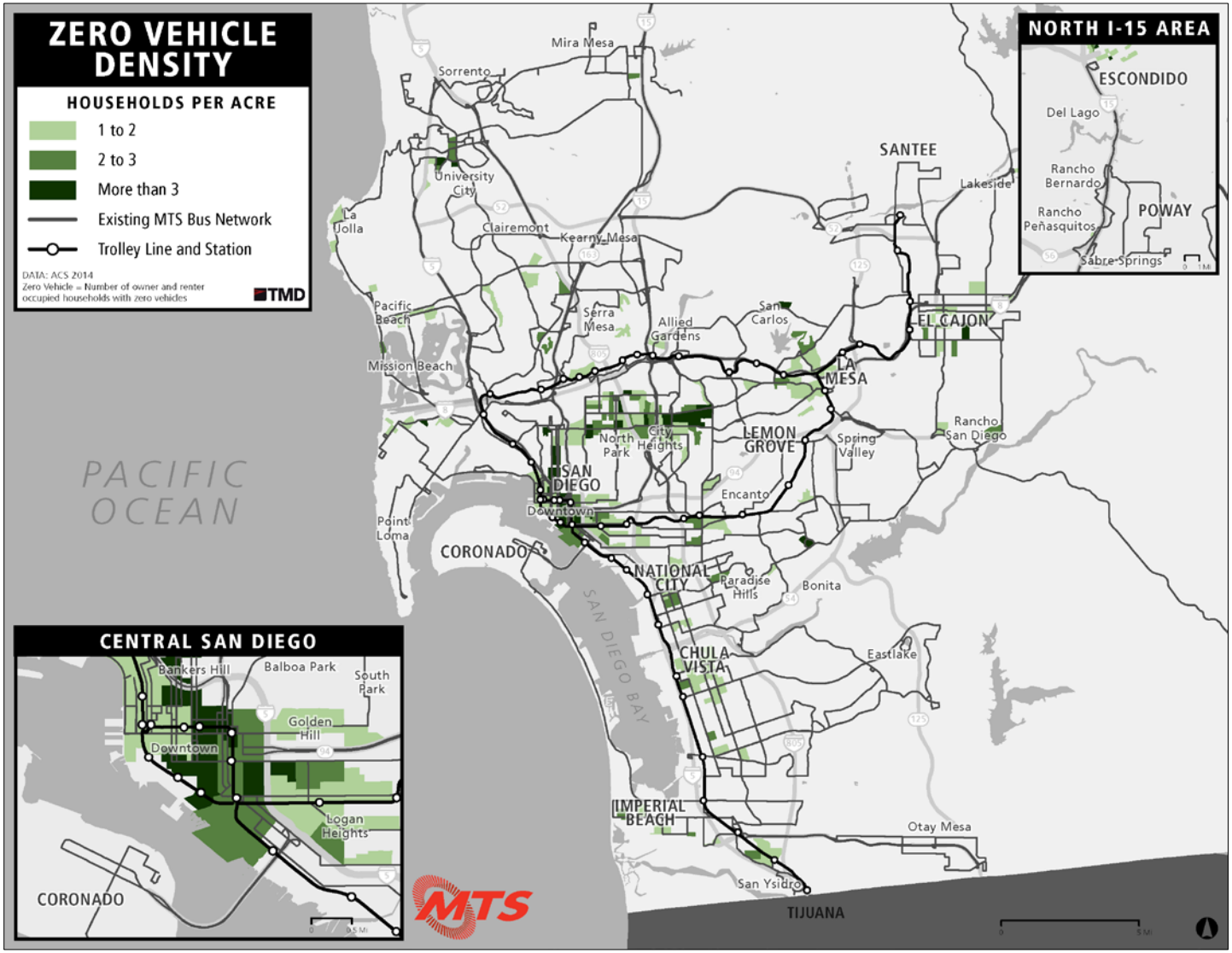


Zero-Vehicle Households

Two percent of regional households do not have access to a personal vehicle. This subpopulation of approximately 55,000 is more likely to use transit as a method of daily transportation. Areas of the MTS service area with higher proportions of zero-vehicle households are typically in areas with dense populations, low-income populations, and senior populations, including downtown San Diego, Mid-City, National City, Chula Vista, and University City. A car-free lifestyle is further enhanced in areas with pedestrian-friendly streetscapes, human-scale urban design, and robust transit service.

The majority of the study area has populations with low concentrations of zero-vehicle households. Zero-vehicle households include low-income, disabled, and choice riders. College students are often zero-vehicle households due to a combination of having low-income and selecting to use transit as their preferred mode of travel. University City in particular, has a major concentration of zero-vehicle households, reflecting the student population's access to an abundance of transit service surrounding UCSD. Linda Vista has a few pockets within the community with concentrations of zero-vehicle households, which can be attributed to the community's student, low-income, and senior populations. The population density of zero-vehicle households is shown in *Figure 1.18* below.

Figure 1.18: Map of population density of zero vehicle households in the MTS service area.



1.5 Qualitative Assessment of the Bus Transit Network in Study Area

Route 8
Route 8 is a 6-mile Urban Frequent route, connecting the western Pacific Beach and Mission Beach communities with Point Loma, Pechanga Arena (formerly San Diego Sports Arena), and the MTS bus and rail network at Old Town Transit Center. At its northern end, Route 8 connects with Routes 9, 27, and 30 in northwest Pacific Beach. Route 8 headways increase from 20 minutes to 15 minutes to meet increased demand during the summer months, carrying passengers from Old Town Transit Center to Mission and Pacific Beaches. Route 8 serves the often congested corridors of Mission Boulevard, West Mission Bay Drive, Sports Arena Boulevard, and Rosecrans Street. Currently, access to the location of the future BATC from Route 8 is made by connecting to Route 27 at Bayard Street and Garnet Avenue in northwest Pacific Beach.

Route 9
Route 9 is a 7.3-mile Urban Frequent route, connecting the Pacific Beach community with Mission Bay, SeaWorld, Point Loma, Pechanga Arena, and the MTS bus and rail network at Old Town Transit Center. At its northern end, Route 9 connects with Routes 8, 27, and 30 at Bayard Street and Garnet Avenue, operating parallel to Route 27 along Garnet Avenue, then again connecting with Route 30 at Ingraham Street and Grand Avenue. Route 9 headways increase from 20 minutes to 15 minutes between Old Town and SeaWorld, to meet increased demand during the summer months. Route 9 serves Garnet Avenue, Ingraham Street, West Mission Bay Drive, Sports Arena Boulevard, and Rosecrans Street. The combined service of Routes 8 and 9 provide frequent service along West Mission Bay Drive, Sports Arena Boulevard, and Rosecrans Street (between Sports Arena Boulevard and Pacific Highway).

Route 27
Route 27 is an 8.5-mile Urban Standard route, connecting the Pacific Beach community with Clairemont, Kearny Mesa, and the MTS bus network at the Kearny Mesa Transit Center. At its western end, Route 27 connects with Routes 8, 9, and 30 at Mission Boulevard & Felspar Street, operating in tandem with Route 9 along Garnet Avenue between Mission Boulevard and Ingraham Street. Garnet Avenue employment and retail destinations benefit from the overlap of service on its western segment.

Route 27 is a critical east-west link in the MTS bus system. It connects with Route 41 at Balboa Avenue and Genesee Avenue then serves employment-rich Kearny Mesa along Balboa Avenue and Convoy Street, providing access to the MTS bus network at Kearny Mesa Transit Center.

Route 27 travel time in the afternoon peak increases by 4 minutes due to the extremely heavy congestion on Garnet Avenue at Mission Bay Drive and the undercrossing below Interstate 5, the freight rail tracks, and Morena Boulevard.

The Urban Standard route has infrequent service and a limited service span. On weekdays, Route 27 operates

Route 30
Route 30 is a 21.7-mile Urban Frequent route, serving the communities of University City, La Jolla, Pacific Beach, Old Town, and Downtown San Diego. Route 30 operates on local streets through University City, La Jolla, and Pacific Beach, accessing I-5 at Mission Bay Drive and Grand Avenue, continuing to Pacific Highway to connect with the MTS bus and rail networks at Old Town Transit Center, then returning to I-5 to serve Downtown San Diego. A long and circuitous route operating on local streets is subject to a large number of variables that can affect the performance of the service. Route 30 experiences variation in travel times due to the long length of the route, with one-way travel times ranging from 90-100 minutes.

Route 31
Route 31 is a linear, weekday peak-only Urban Standard bus route operating between the transit hubs UTC Transit Center and Miramar College Transit Station, along La Jolla Village Drive, Miramar Road, and Black Mountain Road. Route 31 operates 18 trips each weekday, with 30-minute frequency during peak hours.

Route 31 is a critical link in the MTS transit network, providing coverage to a highly-travelled, employment-rich area, connecting two of North San Diego's major employment areas: University City and Miramar Road. Route 31 faces considerable challenges due to the automotive nature of Miramar Road. Miramar Road is a six-lane auto-oriented corridor with a posted speed limit of 50mph with actual speeds frequently around 60mph. The south side of Miramar Road has sidewalks, but abuts Marine Corps Air Station Miramar (MCAS Miramar), with few destinations. Although rich with employment, the built environment of Miramar Road and the area to the north are extremely hostile to pedestrians and cyclists, making transit an unappealing mode of transportation to Miramar. Route 31 serves the main access gate to MCAS Miramar; however, the on-base facilities are spread out with long walking distances from the main gate.

Route 41
Route 41 is an Urban Frequent bus route, operating on 7.5-minute headways on the northern segment during peak hours and 15-minute headways off-peak. The route provides critical connections for the MTS bus and rail networks for communities affected by the TROLLEY, with a future connection to the Trolley at UTC Transit Center. Currently, Route 41 operates local service between Fashion Valley Transit Center and the UCSD campus via Genesee Ave and La Jolla Village Drive.

Route 41 serves the communities of Mission Valley, Linda Vista, Clairemont, and University City, averaging 3,771 weekday boardings. Connecting with three transit hubs, Route 41 provides access to MTS Trolley network at Fashion Valley Transit Center and the MTS local and *Rapid* bus networks at UTC Transit Center and the Gilman Transit Center.

Route 41 operates at varying speeds due to traffic congestion at peak hours. Route 41 averages 16 mph operating speed, on par with the system and Local route average. The freeway segment speed between Fashion Valley Transit Center and Genesee Avenue & Linda Vista Road is higher than the route average, though PM peak trips experience slower-than-average speed on this segment. On local streets, speed on Genesee Avenue decreases as

Route 41 gets closer to the UTC Transit Center. It also experiences the slowest segment speeds during AM peak periods on local streets.

Route 41 is able to improve efficiency by maintaining linear routing at UTC Transit Center and the VA Medical Center. Serving UTC on weekdays at on-street bus stops improves operating speed providing a highly-utilized one-seat-ride to UCSD from communities to the south. MTS expects the travel time to UCSD improve, due to the routing change implemented in January 2019. Route 41 serves the VA Medical Center bus stops at an on-street bus stop on Villa La Jolla Drive.

Route 44

Route 44 is an Urban Frequent bus route, operating on 7.5-minute headways on the southern segment during peak hours and 15-minute headways off-peak. The route currently connects the communities of Clairemont and Linda Vista with the Old Town Transit Center, via Linda Vista Road/Convoy Street and Clairemont Mesa Boulevard. Route 44 provides service to Mesa College and the University of San Diego campuses, as well as the dense, multi-family and student housing along Linda Vista Road. In Clairemont, Route 44 has an origin and terminus at Clairemont Mesa Boulevard & Clairemont Drive, adjacent to the Clairemont Town Square shopping center.

Route 44 feeds into the future Trolley station at Old Town Transit Center. Its current routing terminates at a shopping center in the residential community of Clairemont. There is potential to connect with an additional Trolley station or transit hub, to enhance access from adjacent residential communities to the new Trolley service.

Route 50

Route 50 connects University City and Downtown San Diego through Clairemont and Bay Park. The origin (UTC Transit Center) and destination (Downtown San Diego) for MTS Route 50 are well covered by the Trolley extension and its routing is largely duplicative of Route 105. Route 50 is a peak-only Express bus route with 30-minute service. Route 50 operates on surface streets through University City and Clairemont, which are often congested, including Genesee Avenue, Clairemont Mesa Boulevard, and Clairemont Drive. Route 50 operates on Interstate 5 between Clairemont Drive and Downtown San Diego, exiting at Front Street. Route 50 serves Broadway Street with a terminus and origin at 9th Avenue & C Street. The travel time from UTC Transit Center to the terminus at 9th Avenue & C Street varies from 38-55 minutes.

Due to its duplicative and often-congested routing, demand for Route 50 is expected to be minimal once revenue service on the Trolley extension is operational. Route 50 presents an opportunity to reallocate service within the feeder bus network for the extended Trolley service.

Route 60
Route 60 operates a peak-only, peak-direction express bus service connecting Southeast San Diego and City Heights with Kearny Mesa and University City. Route 60 operates between UTC Transit Center and Euclid Trolley Station, via the I-805, and the I-15/SR-15 corridors. Route 60 serves City Heights at off-ramp bus stops at El Cajon Boulevard and University Avenue.

Route 105
Bus Route 105 is a north-south operating, Urban Standard route operating on 30-minute headways operating on the Morena Boulevard, Clairemont Drive, Clairemont Mesa Boulevard, and Genesee Avenue corridors. In the study area, Route 105 largely duplicates the routing of Express Route 50, with the exception of service through south University City on Regents Boulevard and Governor Drive. On weekdays, the northern terminus for Route 105 is at Clairemont Square.

Route 150
Route 150 connects Westfield UTC Shopping Center with Downtown San Diego via the VA Medical Center, UCSD and Old Town Transit Center. The 150 operates on 7.5-15-minute headways in the peak direction at peak hours and 30-minute headways in the off-peak direction at peak hours. Route 150 serves local bus stops along La Jolla Village Drive and Gilman Drive, carrying some of the demand for rides to UCSD from University City. Express Route 150 is circuitous for an express route, with its performance affected by delays associated with varying delays serving the VA Medical Center and the Gilman Transit Center at UCSD. Much of Express Route 150 is duplicative with the coming Trolley, with both services operating between Westfield UTC, the VA Medical Center, UCSD, Old Town Transit Center, and Downtown San Diego.

Rapid 201/202
Rapid 201/202 is a high-frequency loop route operating in University City. *Rapid* 201 operates in the counter-clockwise direction and *Rapid* 202 operates in the clockwise direction. The route originates and terminates at UTC Transit Center, serving La Jolla Colony, Nobel Drive, Gilman Drive, the Gilman Transit Center (UCSD West Campus), UC San Diego Health La Jolla, Scripps Memorial Hospital, and Health Center Drive (UCSD East Campus).

The vast majority of demand for *Rapid* 201/202 is bringing UCSD students from La Jolla Colony to UCSD in the morning on *Rapid* 202 and in the opposite direction in the afternoon/evening on *Rapid* 201. *Rapid* 201/202 routes operate at 5-minute headways using 60-foot long articulated buses at peak hours in the peak direction. Many of the trips added to meet peak demand are the shorter variants, *Rapid* 201A and *Rapid* 202A. *Rapid* 201A originates at Gilman Transit Center and terminates at Nobel Drive and Regents Drive. *Rapid* 202A originates at Regents Drive and Nobel Drive and terminates at the Gilman Transit Center. Ridership for the loop route is heavily skewed toward the southern and western segments of the loop (La Jolla Colony and West Campus), with a significant drop off in the north and eastern segments (East Campus).

Rapid 204

Rapid 204 is a clockwise loop route serving northeast University City operating on 30-minute headways on weekdays. The route has historically performed poorly in terms of ridership. Effective January 2018 the frequency of *Rapid* 204 was reduced from 15-minutes to 30-minutes. *Rapid* 204 connects employment destinations on Judicial Drive and Town Center Drive with the MTS bus network at UTC Transit Center and with shopping and entertainment at the Westfield UTC Mall.

Rapid 237

Rapid 237 is a peak-only *Rapid* bus route connecting the I-15 corridor with UCSD and Sorrento Valley employment via Mira Mesa Boulevard, I-805, and La Jolla Village Drive. *Rapid* 237 operates on 15-minute headways during morning and evening commute hours with infrequent stop spacing to enhance the speed of the *Rapid* bus route.

Congestion on Mira Mesa Boulevard and I-805 are impactful to the performance of *Rapid* 237. Transit signal priority (TSP) on Mira Mesa Boulevard has been disabled due to the severe congestion rendering TSP ineffective in speeding travel for *Rapid* 237 buses. MTS has proposed the concept of a reversible, peak-direction dedicated transit lane for *Rapid* 237 in the median of Mira Mesa Boulevard.; it could also be used by emergency vehicles to reduce their delays.

Route 921

Route 921 is an Urban Standard bus route operating along Mira Mesa Boulevard between Miramar College Transit Station and UTC Transit Center on weekdays, with a deviation to serve employment rich Pacific Heights Boulevard, Barnes Canyon Road, and Scranton Road. Route 921 operates on half hour headways with frequent stops.

Route 921A is the weekend variant of Route 921 operating between Miramar College Transit Station and Gilman Transit Center at UCSD, serving the VA Medical Center. Route 921A does not deviate from Mira Mesa Blvd in Sorrento Valley, due to low weekend demand, but does deviate from Mira Mesa Boulevard to Westonhill Drive, Gold Coast Drive, and Camino Ruiz, serving some of the residential areas Route 964 covers on weekdays.

Route 972

Route 972 is a Sorrento Valley COASTER Connection (SVCC) route that connects Sorrento Mesa (north of Mira Mesa Boulevard) to Sorrento Valley COASTER Station (SVCS). The commuter circulator route is scheduled to meet NCTD COASTER trips, picking up customers at SVCS during the morning peak (4 trips) and dropping off customers at SVCS during the afternoon peak (5 trips). Route 972 serves the rich employment market along Lusk Boulevard, Barnes Canyon Road, Pacific Center Drive, and Morehouse Drive. Route 972 riders can connect with or Route 921 to reach destinations on the Mira Mesa Boulevard Corridor.

Route 973
Route 973 is a SVCC route which connects Sorrento Mesa (south of Mira Mesa Boulevard) with the SVCS. Route 973 is scheduled to meet COASTER trips, with 4 trips picking up passengers at SVCS in the morning peak and with 5 trips dropping off passengers at SVCS in the afternoon peak. Route 973 provides commute service to employment destinations on Mira Mesa Boulevard, Pacific Heights Boulevard, Carroll Park Drive, and Oberlin Drive. Route 973 riders can connect with *Rapid* 237 or Route 921 to reach destinations on the Mira Mesa Boulevard Corridor.

Route 974
Route 974 is a SVCC route which connects UCSD with the SVCS. Route 974 is scheduled to meet COASTER trips, with 4 trips picking up passengers at SVCS in the morning peak and with 5 trips dropping off passengers at SVCS in the afternoon peak. Route 974 provides commuter service to UCSD West Campus, with bus stops on Gilman Drive and Eucalyptus Grove Lane and at the Gilman Transit Center.

Route 978
Route 978 is a SVCC route which connects Torrey Pines with SVCS. Route 978 is scheduled to meet COASTER trips, with 4 trips picking up passengers at SVCS in the morning peak and with 5 trips dropping off passengers at SVCS in the afternoon peak. Route 978 provides commute service to employment destinations on Science Center Drive, North Torrey Pines Road, John Hopkins Drive, Torreyana Road, and Science Park Road.

Route 979
Route 979 is a SVCC route which connects northeastern University City and surrounding employment destinations with SVCS. Route 979 is scheduled to meet COASTER trips, with 4 trips picking up passengers at SVCS in the morning peak and with 5 trips dropping off passengers at SVCS in the afternoon peak. Route 979 serves Genesee Avenue, Executive Drive, and Eastgate Mall. Route 979 riders can access the MTS bus system with a short walk to La Jolla Village Drive and Genesee Avenue or to the UTC Transit Center. The route passes the future location of the Executive Drive Trolley Station and will be able to connect with the Trolley at the station.

Section 2: Public Outreach and Findings

2.1 Public Workshops

To collect input from the public to guide the planning effort for Trolley feeder bus service, MTS conducted extensive public outreach in communities affected by the Trolley Extension. The outreach effort for the project consisted of discussions at nine community planning group meetings, five public workshops, online surveys, and interactive online activities. All workshops, online surveys, and interactive online activities were available in both English and Spanish.

The five public workshops were advertised to engage community members. All advertising was written in both English and Spanish, including:

1. The Trolley Extension Feeder Bus Study project webpage on the MTS website.
2. The UCSD Transportation webpage.
3. Printed newspaper advertisements in:
    a. Beach & Bay Press
    b. San Diego Chinese Tribune
    c. Clairemont Times
    d. El Latino
    e. Filipino Press
    f. La Jolla Light
    g. La Jolla Village News
    h. Nguoi Viet Tu Do
4. Fliers at community groups.
5. MTS social networking accounts.

In addition to digital and print media, the public workshops were advertised by MTS planners at public meetings, including:

- Linda Vista Community Planning Group – September 24, 2018
- University Community Plan Update Workshop – September 26, 2018
- UCSD Student Transportation Advisory Committee – October 1, 2018
- University Community Planning Group – October 9, 2018
- Mission Beach Precise Planning Board – October 16, 2018
- Clairemont Mesa Community Planning Group – October 16, 2018
- Kearny Mesa Community Planning Group – October 17, 2018
- La Jolla Traffic and Transportation Committee – October 17, 2018
- Pacific Beach Community Planning Group – October 24, 2018

Public workshops were held between October 2018 and December 2018. The public workshop schedule was as follows:

- Beach Areas: Pacific Beach Recreation Center - October. 29, 2018, 4-7pm
- Mesa Areas: North Clairemont Recreation Center - Nov. 1, 2018, 5-8pm
- UCSD: Price Center – November 14, 2018, 12-2pm
- Linda Vista/Morena: Linda Vista Library Tuesday, Dec. 4, 2018, 12-2pm
- University City/La Jolla: Doyle Recreation Center - Dec. 4, 2018, 4-7pm

The public workshops provided community engagement opportunities at which MTS planners shared information with the public about the feeder bus study, discussed local transit and transportation issues and opportunities with attendees, and gathered input specific to community travel needs and preferences for feeder bus service between their communities and future Trolley stations.

Workshop attendees participated in interactive activities contributing input of travel behavior and their preferences for transit facilities. The activities included a board for ranking potential amenities at rail stations and transit centers, as well as marking the origins and destinations for their typical commute trip with colored dot stickers. Additionally, MTS distributed a paper based survey at the community workshops, and provided the online survey web address for people who preferred an online survey.

The public workshops and online public engagement activities included story boards. The story boards served as visual representations of the existing bus transit network, affected communities, employment density, population density, Trolley station locations, and the planned Trolley alignment. The story boards are included in Appendix 1.

Public engagement through the feeder bus study project webpage at www.sdmts.com/open-house was effective in extending access to participate in the planning effort. All information and activities from the public workshops were accessible through the project webpage - including the storyboards, interactive activities, and surveys. With nearly 1,700 responses, participation through the project webpage greatly expanded public participation in the planning effort for the Trolley feeder bus routes.

In the months after the public workshops MTS planners continue to communicate with communities and accept feedback during the planning effort. After the public workshops were completed, several community groups requested additional presentations to inform their board members and communities about the planning effort to develop the feeder bus plan for the Trolley. MTS presented at the following public meetings:

- La Jolla Town Council Mobility Forum– May 9, 2019
- UCSD Student Transportation Advisory Committee – June 3, 2019
- Clairemont Community Planning Group Ad Hoc Subcommittee – November 12, 2019

2.2 Public Survey

MTS distributed a survey for the feeder bus study at community workshops and online on the project webpage for the Trolley extension on the MTS website. The survey was open October 2018 – January 2019 and available in both English and Spanish languages. The online survey web address was distributed in promotional materials for the public workshops, newspaper advertisements, the MTS website, the UCSD Transportation webpage, and the SANDAG website.

MTS received a combined 1,979 responses to the survey from community workshops and the online survey option. The survey collected input which MTS was able to analyze findings to gain an understanding of people's travel needs and preferences to incorporate into the feeder bus study.

Question 1: What is your home zip code?

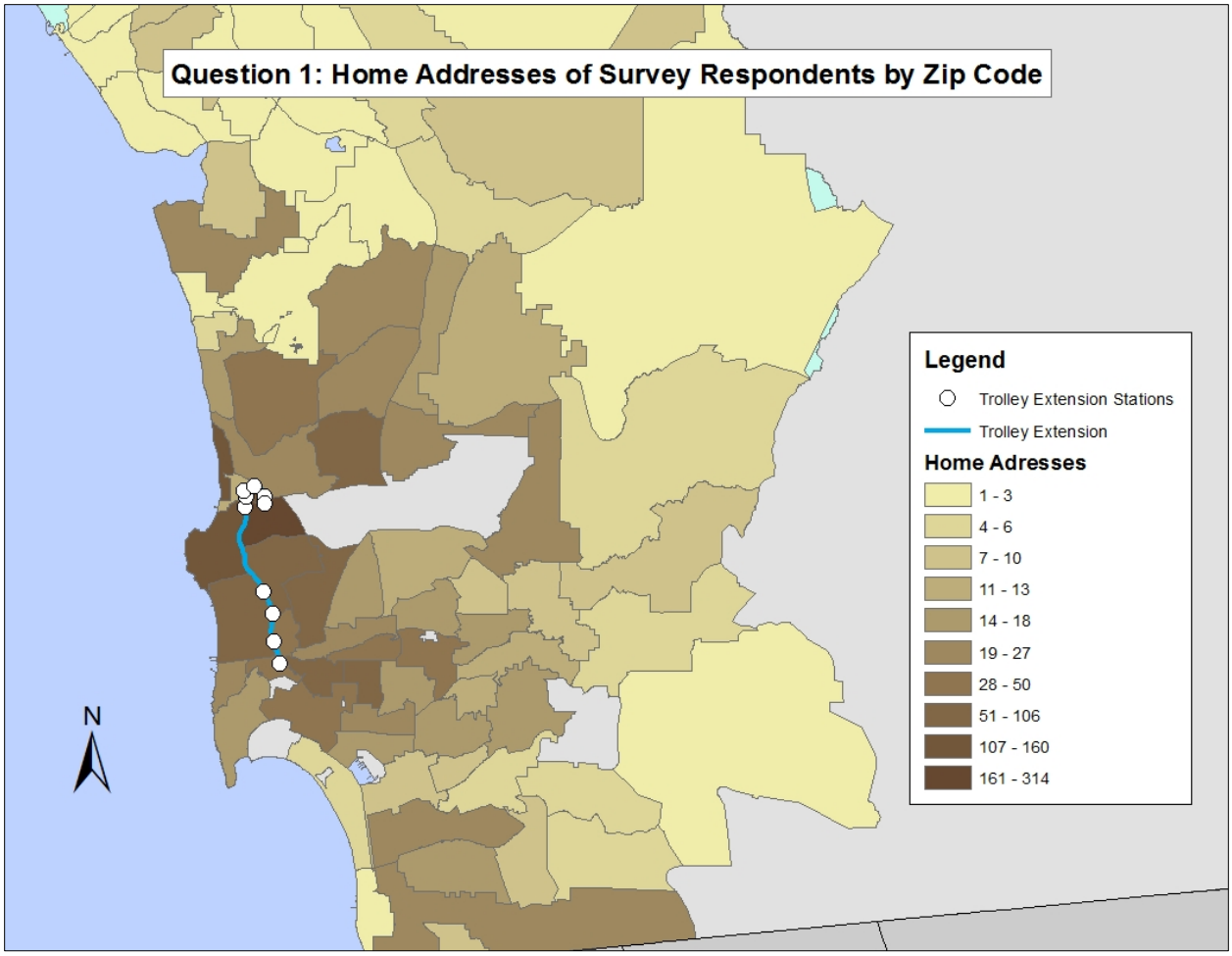
Question 1 asks survey respondents to provide their home zip code. The purpose of the question is to collect trip origin data for analysis. Question 1 received 1,935 responses.

The home address data shows a population that is widely distributed throughout San Diego County, with clustering in communities around the UCSD main campus and UCSD Hillcrest Medical Center. Communities in and around UCSD and the UCSD Hillcrest Medical Center were selected as eight of the ten highest responses for home address zip codes, with 53% of respondents living in communities adjacent to UCSD campuses. With UCSD being the region's largest employer and the talent source for San Diego's thriving biotech industry, the responses for home addresses are consistent with the San Diego job and housing markets. Zip codes of survey respondents are shown in *Table 2.1* and a map with survey responses by zip code is in *Figure 2.1* below.

Table 2.1: Ten most selected home address zip codes of survey respondents.

Zip Code	Community	Responses	% of Respondents
92122	University City	310	16%
92037	La Jolla/UCSD	154	8%
92093	UCSD	118	6%
92117	Clairemont	100	5%
92103	Hillcrest	82	4%
92109	Pacific Beach/Mission Beach	79	4%
92126	Linda Vista/Kearny Mesa	71	4%
92111	Mira Mesa	69	4%
92104	North Park	67	3%
92116	Normal Heights	50	3%

Figure 2.1: Map of Question 1 results showing the zip codes of survey respondent home addresses.



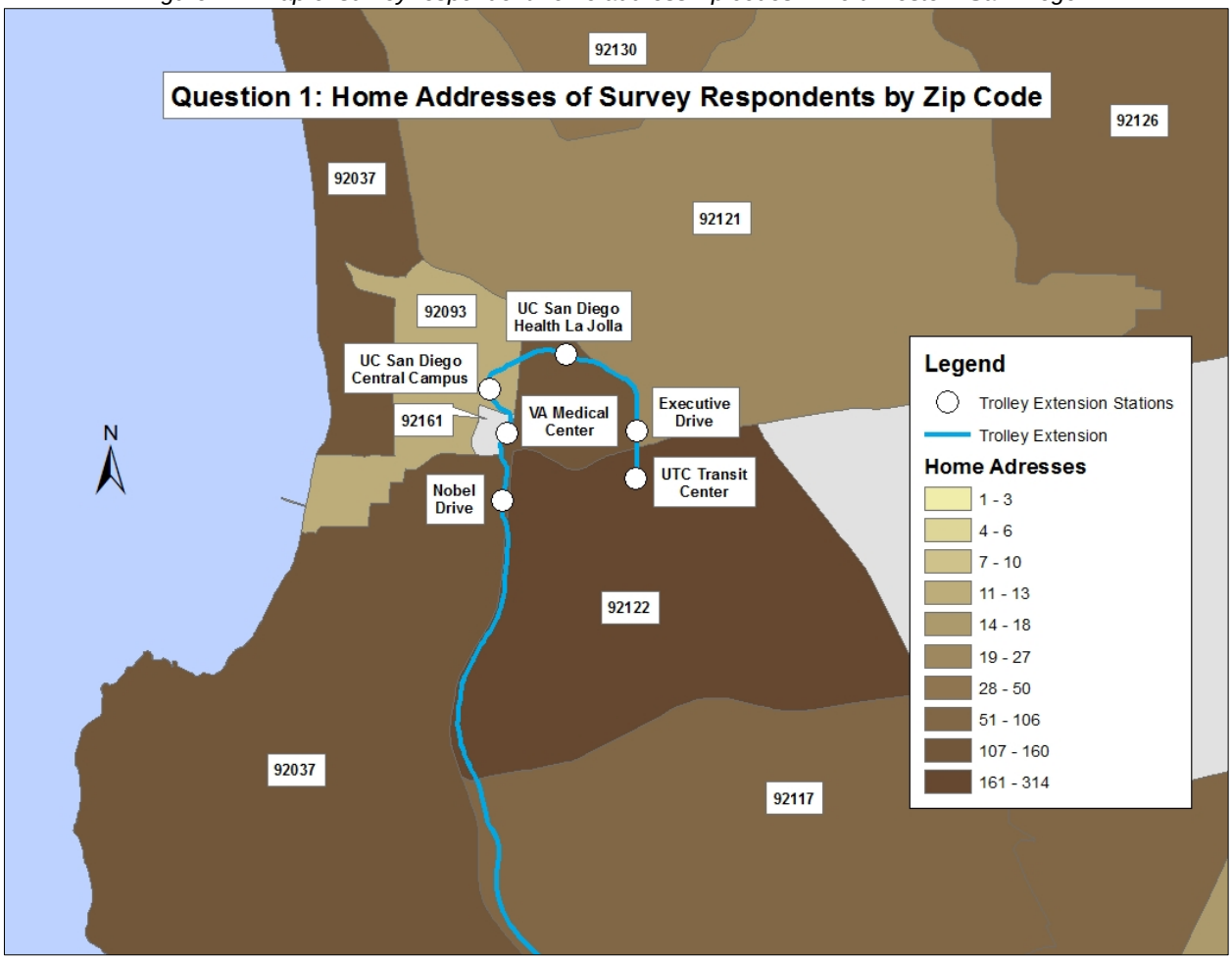
MTS received surveys from throughout the region, with the highest concentrations of respondents in coastal North San Diego. The distribution of survey participant home addresses shows that the majority of survey participants were from communities affected by the Trolley, the communities within the study area of the Trolley Feeder Bus Study.

For inland communities, the existing north-south bus service may be a preferable option to the Trolley. A direct, one-seat ride may be more time effective than riding a feeder bus to the I-5 corridor, then transfer to the Trolley to reach the same destinations. For example, Route 41 riders have a direct connection from Mission Valley, Linda Vista, Clairemont, and University City to Westfield UTC, the VA Medical Center, and UCSD. Likewise, rather than transfer from a feeder route to the Trolley at the UTC Transit Center, North University City/La Jolla Colony residents will likely continue to ride the 5-minute peak service *Rapid* 201/202 bus routes for travel between their homes, the UCSD campus, and community destinations.

In the communities along the I-5 corridor and the Trolley Stations, the current network is heavy with north-south service, at places overlapping with the future Trolley service. The redundancy

of services presents an opportunity to shift resources from some north-south routes to east-west services, to connect communities adjacent to the Trolley with the coming Trolley stations.

Figure 2.2: Map of survey respondent home address zip codes in northwestern San Diego.



As seen in *Figure 2.2* above, the survey data shows a heavy concentration of survey respondents living in zip codes the northern San Diego area. The home zip codes of respondents are consistent with the study area, with all of the nine new Trolley stations being constructed in northern San Diego.

University City (92122 zip code) was home to the most respondents. This area has a heavy concentration of UCSD students and employees as well as biotech personnel. MTS conducted outreach to UCSD and partnered with UCSD Transportation to advertise the on-campus workshop and online survey and activities on the UCSD Transportation webpage. Additionally, MTS partnered with Biocom to inform the biotech community in the area. The UCSD and biotech communities were proportionately engaged in the feeder bus study, given their proximity to the six Trolley stations in the employment hub.

The bedroom communities of Clairemont, Mira Mesa, Del Mar Heights, and Carmel Valley are home to a significant amount of survey respondents. The western end of Mira Mesa and the Clairemont Mesa communities are within the study area, with western Clairemont Mesa having Clairemont Drive Trolley Station and BATC. Bus routes connecting from the Clairemont Mesa community to BATC are a critical component to the study and future transit network. Additionally, the proximity of both the Mira Mesa and Clairemont Mesa communities to the Sorrento Valley employment hub has made both communities popular among Sorrento Valley and UCSD commuters.

Question 2: Where do you most frequently travel to (communities or zip codes)?

Question 2 had 1,954 respondents who provided 3,539 responses for the zip codes of their most frequently traveled destinations. Many respondents answered the question with several zip codes to which they frequently travel.

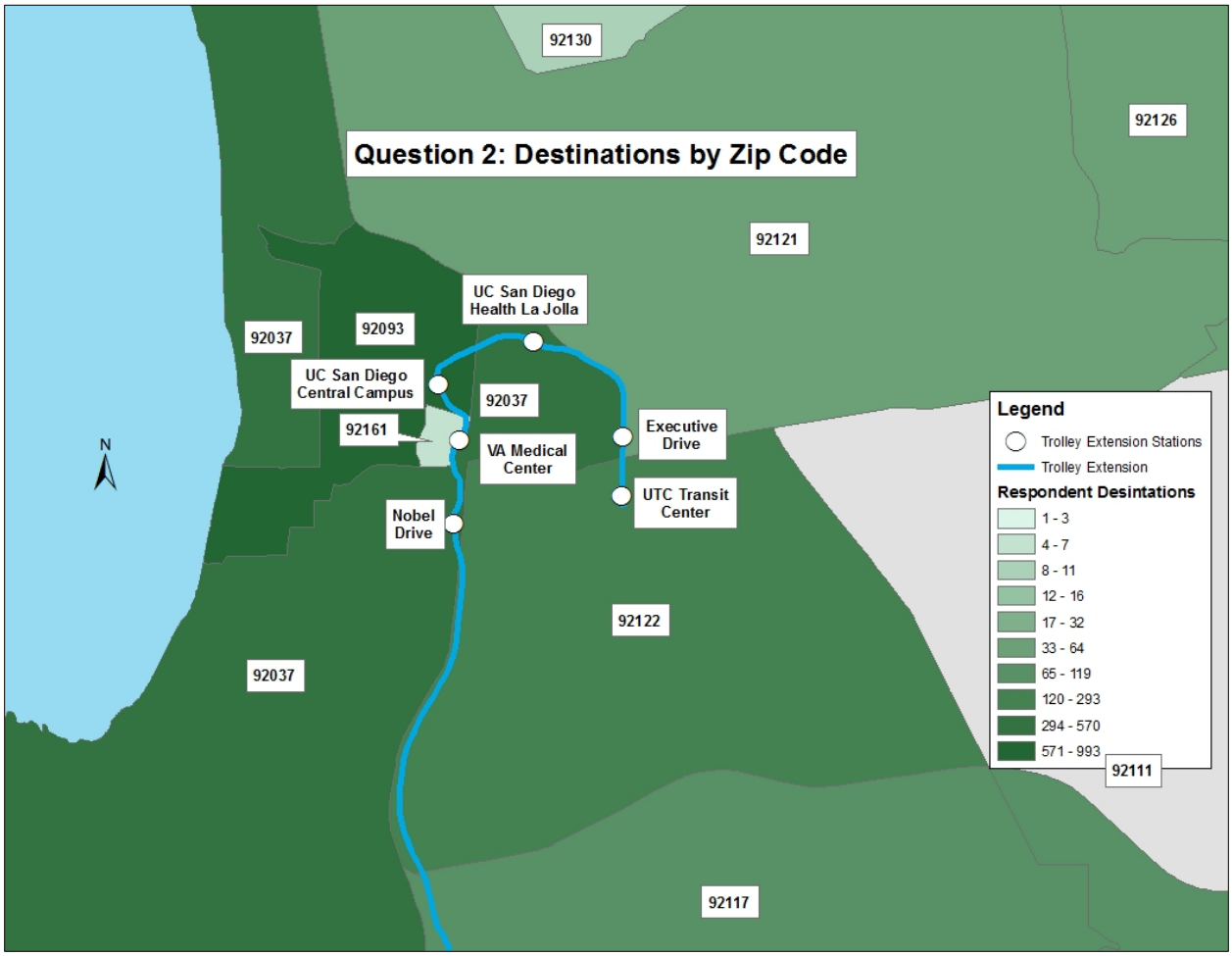
Table 2.2: Destination zip codes of survey respondents.

Destination Zip Code	Destination Area	Responses	% of Respondents
92093	UCSD	993	51%
92037	La Jolla/UCSD/ Torrey Pines	560	29%
92101	Downtown San Diego	267	14%
92122	University City	168	9%
92103	Hillcrest/UCSD Medical Campus	157	8%
92117	Clairemont	106	5%
92104	North Park	101	5%
92109	Pacific Beach/Mission Beach	101	5%
92111	Linda Vista/Kearny Mesa	95	5%
92108	Mission Valley	86	4%

As seen in *Table 2.2* above and *Figures 2.3 and 2.4* below, four of the top five most travelled to zip codes contain or are nearby UCSD and the UCSD Hillcrest Medical Center. With its nearly 35,000 academic and staff employees and nearly 37,000 enrolled students, UCSD is the region's largest employer and one of the regions largest trip generators. The existing MTS bus network in and around UCSD operates robust, frequent service, which is heavily utilized. At the main UCSD campus, the Gilman Transit Center is a short walk to the new UC San Diego Central Campus Trolley Station. Additionally, the UTC Transit Center is adjacent to the future UTC Trolley Station, both of which provide access to and from the MTS network and the San Diego Region.

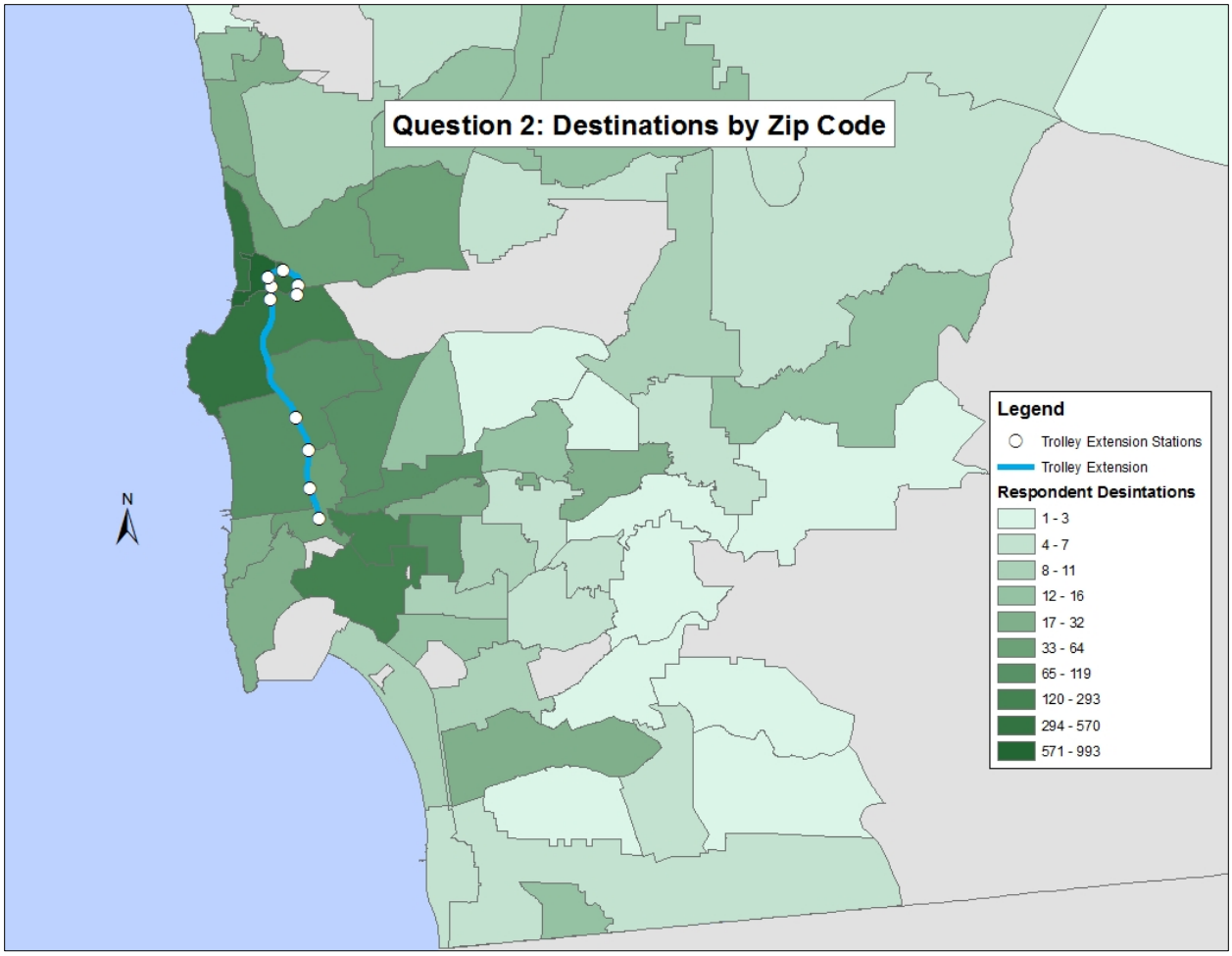
Riders with destinations in University City and Clairemont may prefer to continue to ride their current MTS bus route(s) than ride the Trolley for local trips. Participants at the public forums who ride Route 41 overwhelmingly said they plan to continue to ride Route 41 along Genesee Avenue to UCSD rather than travel westerly on a bus to a Trolley station then transfer to the Trolley. However, Clairemont residents who currently transfer to Route 41 may prefer to ride the Trolley, if an easily accessible and frequent east-west route were to connect with the Trolley at BATC.

Figure 2.3: Map of Question 2 results showing respondent destinations by zip code focused on the northern end of the Trolley extension.



The employment centers of Sorrento Valley and Torrey Pines are areas of key importance for transport in the San Diego Region. While rich with employment, these areas are difficult to serve with fixed-route bus service due to natural and man-made barriers. Sorrento Valley and the Torrey Pines areas currently destinations are served by the Sorrento Valley COASTER Connection Routes 972, 973, and 978. Last-mile service similar to the SVCC routes to connect the Trolley to employment destinations would enhance the MTS bus network, extending transit access to the region's premier employment hubs.

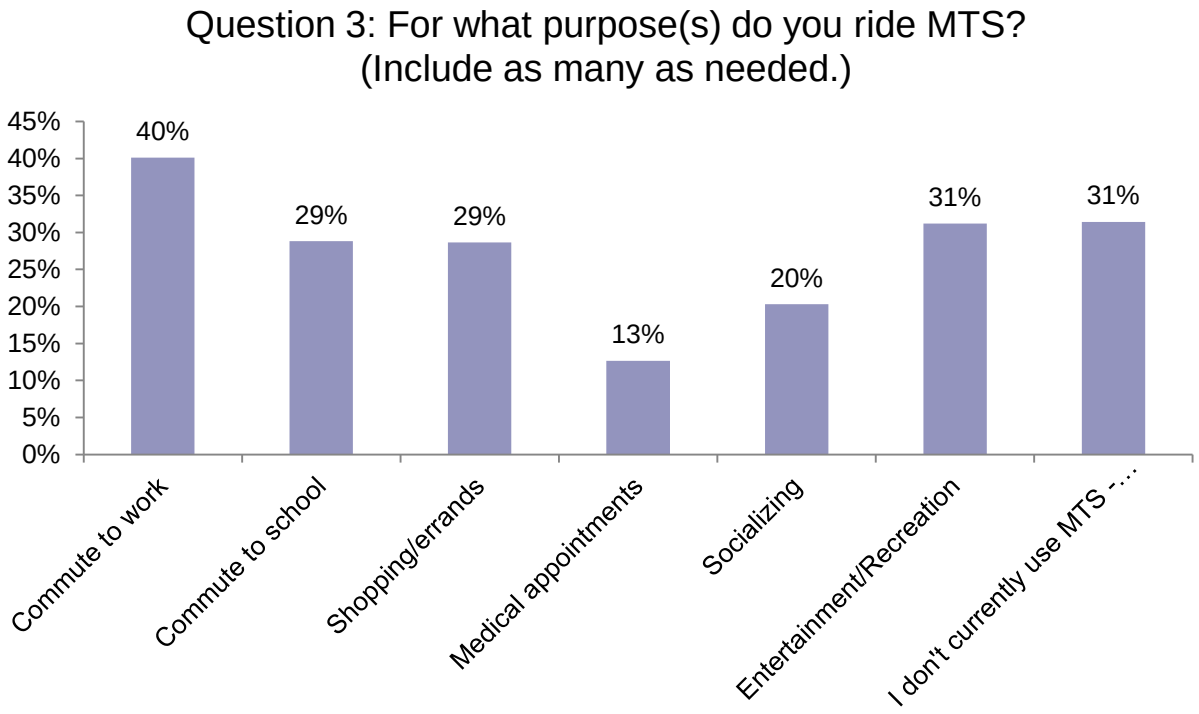
Figure 2.4: Map of Question 2 results showing respondent destinations by zip code.



Question 3: For what purpose(s) do you ride MTS? (Include as many as needed.)

Question 3 had 1,940 respondents with 3,747 responses, with respondents selecting multiple trip purposes. Commute trips were the most common purpose for respondents riding MTS with 40% of respondents using MTS to commute to work and 29% of respondents using MTS to commute to school, highlighting the importance of the Trolley extension to provide regional access to jobs and the need for connecting Trolley stations to employment destinations with circulator bus service. Respondents indicating that they do not ride MTS were instructed to skip to Question 6. Survey responses for Question 3 are shown in *Figure 5* below.

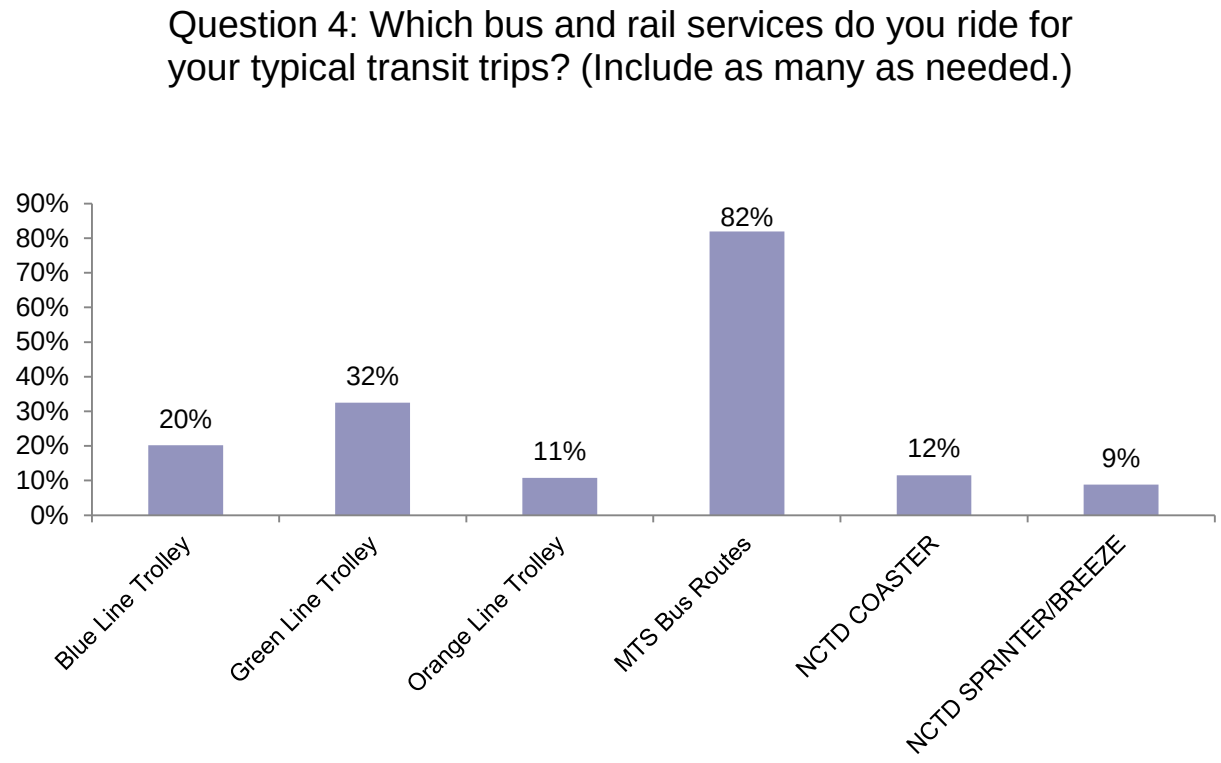
Figure 2.5: Chart of responses to survey Question 3, identifying the purposes for which respondents ride MTS..



Question 4: Which bus and rail services do you ride for your typical transit trips? (Include as many as needed.)

Question 4 had 1,349 respondents with 3,185 responses. The respondents for Question 4 indicated that they ride MTS services in Question 3. MTS bus service was the most utilized transit service type for respondents, with 82% of respondents indicating that they ride MTS bus services. With current rail service focused on the I-8, SR-94, and I-5 (south of I-8), the bus network in the affected area is the only MTS transit option for most of the communities affected by the Trolley Extension. Some existing bus routes have the potential to be modified to connect with the new Trolley Stations. The survey responses for Question 4 are shown in *Figure 2.6* below.

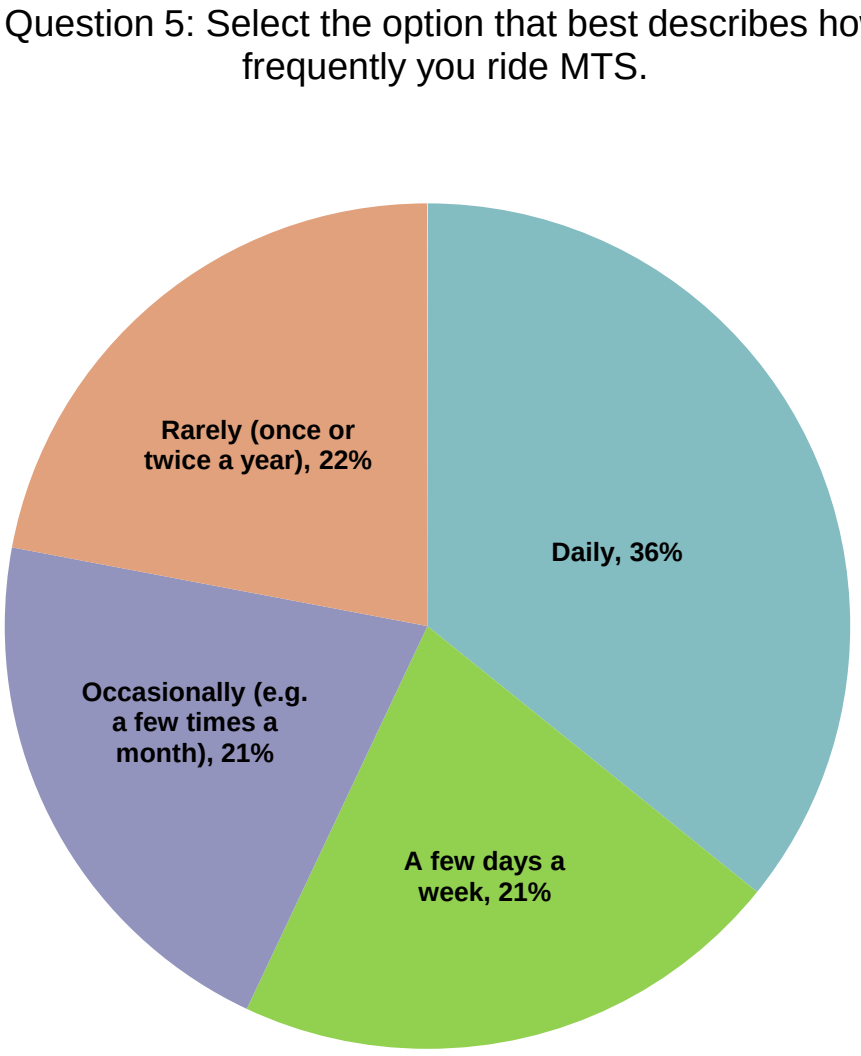
Figure 2.6 Chart of Question 4 responses showing transit services used by survey respondents.



Question 5: Select the option that best describes how frequently you ride MTS.

Question 5 had 1,531 respondents, who identified themselves as MTS riders in Question 3. The responses showed that 57% of respondents ride MTS at least a few days a week, with 36% riding daily. Considering that for Question 3, 40% of respondents indicated that they ride MTS to commute to work and 29% indicated they ride MTS to commute to school, the breakdown of ridership frequency in Question 5 is consistent with Question 3, showing a strong commute market for MTS service. The survey results for Question 5 are shown in *Figure 2.7* below.

Figure 2.7: Question 5 results showing frequency respondents ride MTS services.



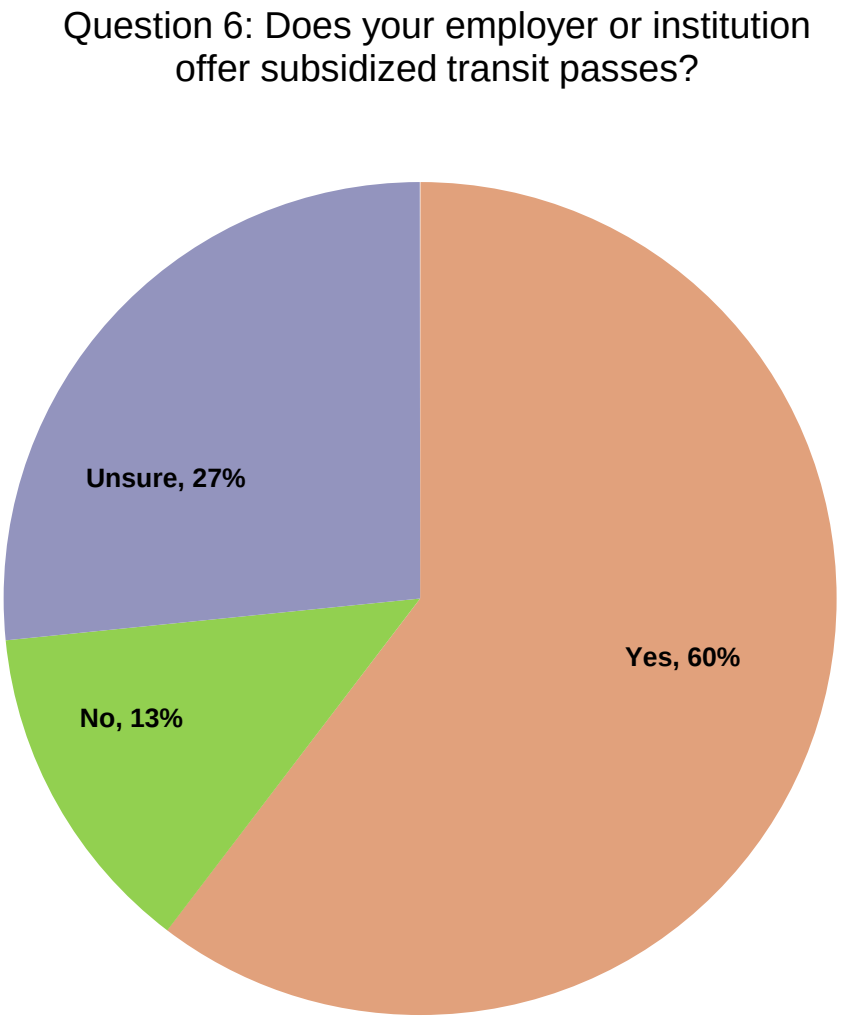
Question 6: Does your employer or institution offer subsidized transit passes?

Question 6 had 1,935 responses, with 60% of respondents indicating that their employer or institution offers subsidized transit passes. The distribution of survey responses for Question 6 is shown in *Figure 2.8* below.

The Trolley extension will serve an employment rich area in which many employers have travel demand management (TDM) programs that include free or partially subsidized transit passes for employees. SANDAG's iCommute program partners with employers to encourage employees to commute by transit.

Enrolled UC San Diego students receive MTS transit passes which is paid for by student fees. With a student population of 35,000, there is a significant population with incentive to ride MTS bus and rail services. Additionally, the 37,000 of UCSD faculty and staff have the option to buy discounted transit passes, which are subsidized by the university.

Figure 2.8: Question 6 responses showing subsidized transit pass availability for respondents.

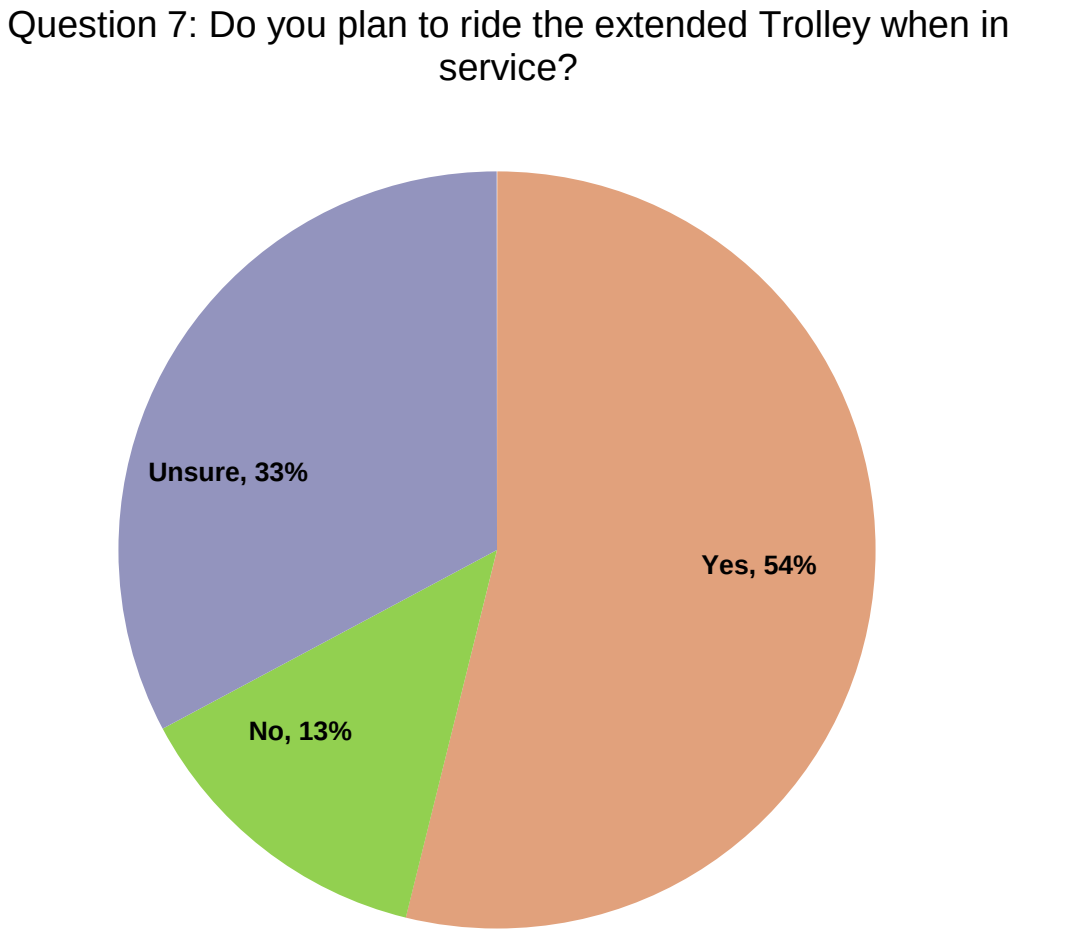


Question 7: Do you plan to ride the Trolley extension when in service?

Question 7 had 1,935 responses of which 54% of respondents indicated they plan to ride the Trolley extension, when in service. The distribution of survey responses for Question 7 is shown in *Figure 2.9* below.

With the majority of respondents living and working at and around UCSD and University City, where the existing bus network is robust, the Trolley will not be the transit service used most by many survey respondents. For example, many people ride Route 41 from south University City and Clairemont. Route 41 bypasses UTC Transit Center stopping on Genesee Avenue, then proceeds to serve La Jolla Village Drive, the VA Medical Center (from the street-side bus stops at Villa La Jolla Drive), and the Gilman Transit Center. Route 41 riders travelling to University City or UCSD likely will continue riding Route 41 as the route is a direct, one-seat ride from their residential communities.

Figure 2.93: Chart of Question 6 responses showing future plans of respondents to ride the Trolley.

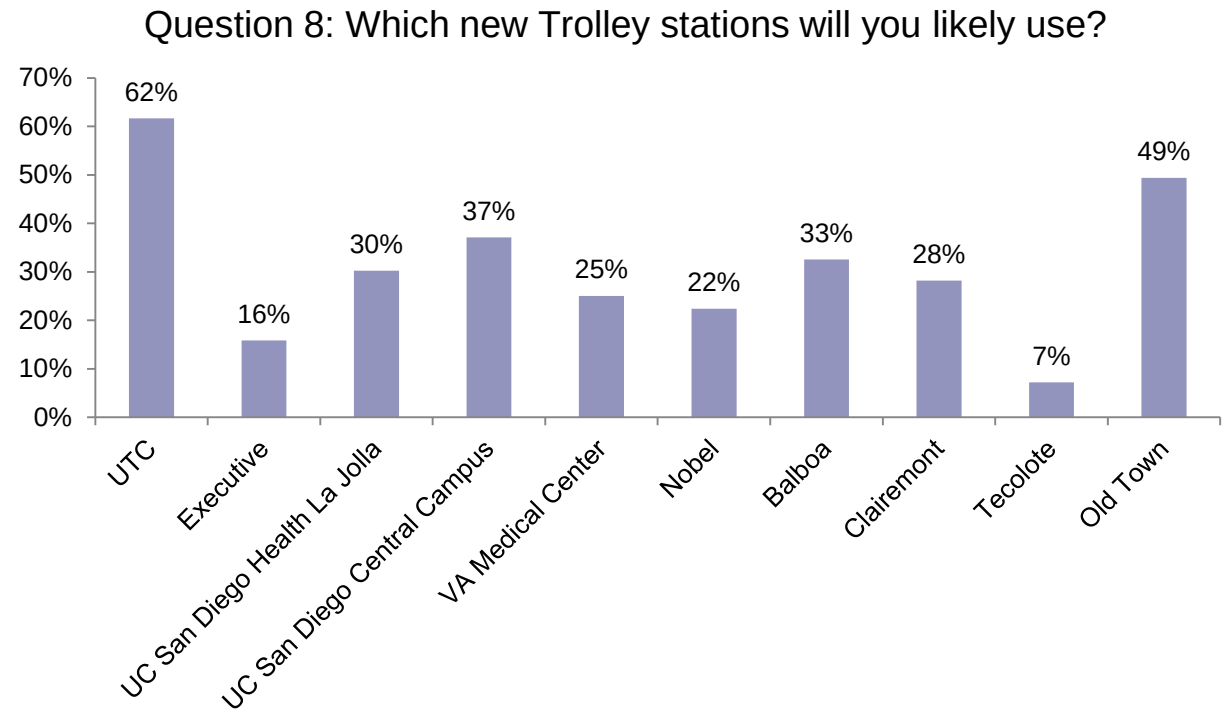


Question 8: Which new Trolley stations will you likely use?

Question 8 had 1,684 respondents and 5,213 responses. As seen in *Figure 2.10* below, the most popular stations are at major transit hubs: UTC Trolley Station with 1,038 (62%) and Old Town Trolley Station with 832 (49%). BATC is a future transit hub, with 548 (33%) respondents indicating they plan to use this station. UC San Diego Central Campus Station on the west side of the UCSD campus is nearby the Gilman Transit Center and will be accessible by much of the MTS bus network.

For the Trolley Extension Feeder Bus Study, the BATC will be a key location, there is no pre-existing service. Route 27 currently passes by on Balboa Avenue but only offers a 30-minute frequency and does not run on Sundays. Old Town Transit Center and UTC Transit Center are at capacity and the other new Trolley stations will not have bus transit centers. There is an opportunity for BATC to be a local transit hub for coastal communities and a gateway to the beach areas.

Figure 2.10: Chart of Question 8 responses showing the expected use of new Trolley statons by respondents.



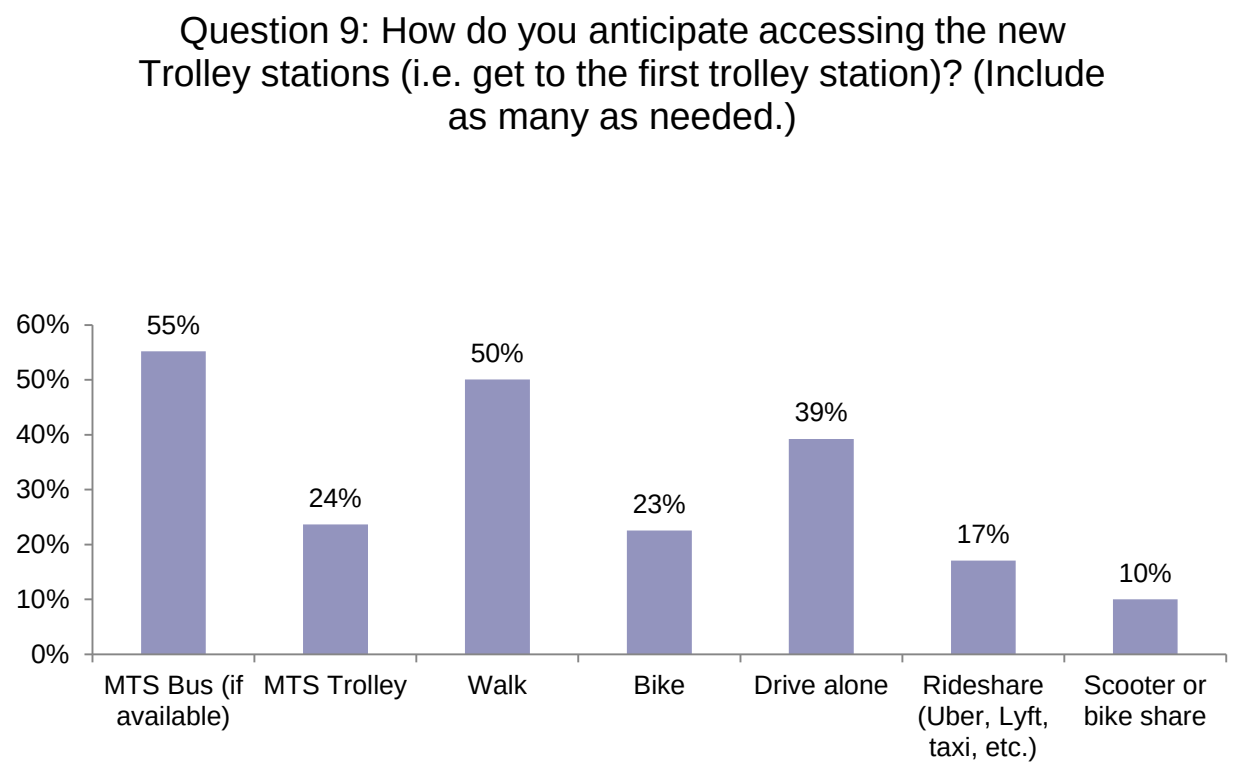
Question 9: How do you anticipate accessing the new Trolley stations (i.e. get to the first Trolley station)? (Include as many as needed.)

Question 9 had 1,692 respondents with 3,684 responses. As shown in *Figure 2.11* below, the majority (56%) of respondents indicated they would access new Trolley stations by MTS bus. The survey responses suggest a strong market for feeder bus service connecting with the Trolley stations from surrounding neighborhoods.

Half of Question 9 survey respondents (847) indicated they plan to walk to Trolley stations. Due to topography challenges at southern stations, these respondents likely plan to access stations at UCSD or in University City. Trolley stations along the I-5 corridor are in communities that are less walkable than University City, and will likely be accessed using other transportation modes.

Many respondents (39%) indicated they plan to drive alone to access Trolley Stations. However, only 1/3 of new Trolley stations will have transit parking. The limited parking available may increase demand for feeder bus service and other alternative modes of transportation.

Figure 2.11: Chart of Question 9 responses showing the expected mode(s) respondents plan to use to access Trolley Stations.



Question 10: Rank your priorities for bus service to and from the new Trolley stations on a scale of 1 to 5, where 1 is "Not Important at All" and 5 is "Very Important."

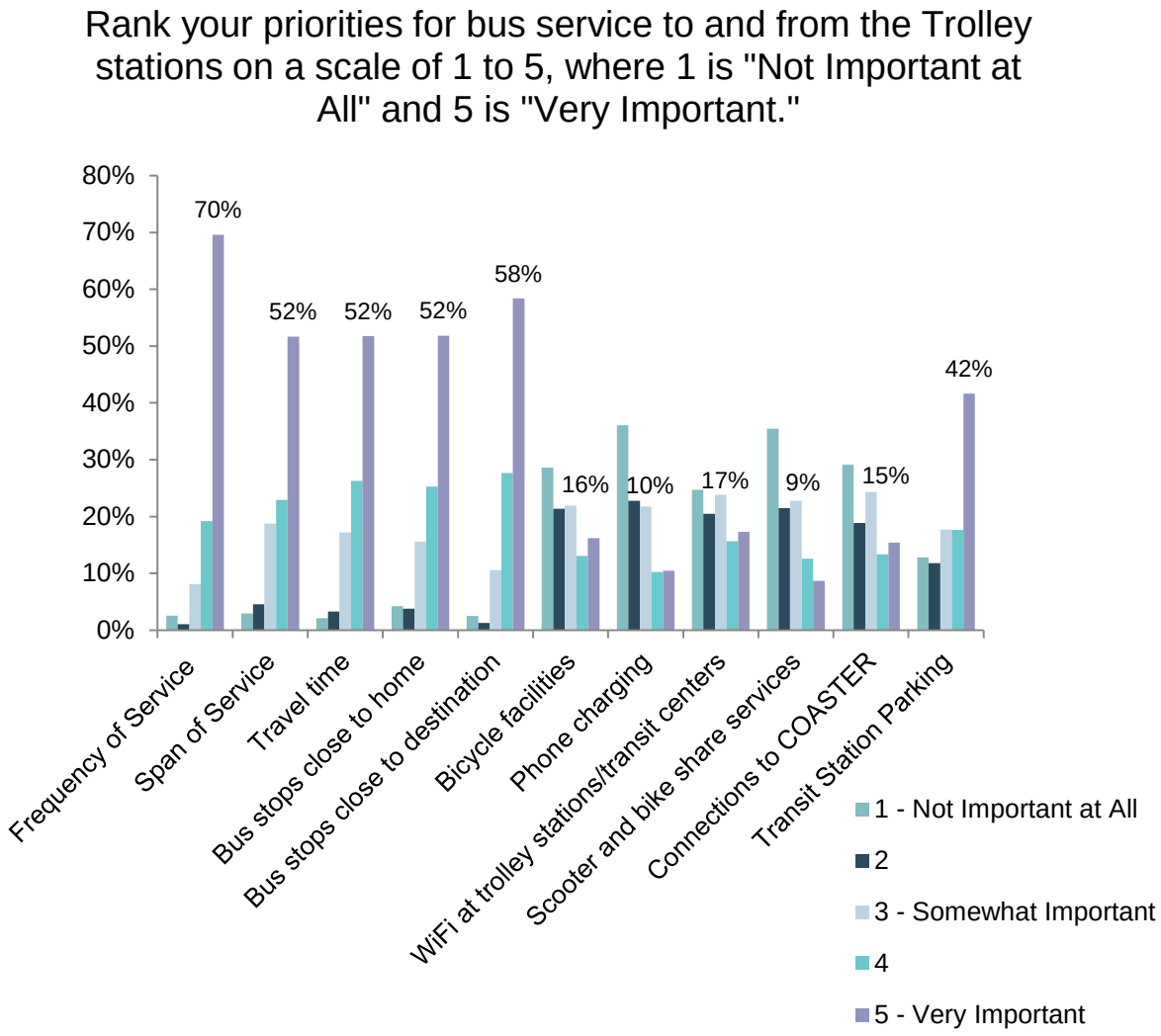
For Question 10, respondents were asked to rank their priorities for feeder bus service between communities and Trolley stations. As seen in *Table 2.3 and Figure 2.12* below, the results for Question 10 showed that respondents value service-related attributes for feeder bus service than passenger amenities at Trolley stations and transit centers (42%), with the exception of parking at stations. Frequency was the highest valued (70%) while the majority of respondents valued service span (52%), travel time (52%), and bus stop proximity to home (52%), and bus stop proximity to destination (58%) as very important. Respondents ranked the above attributes as unimportant ranges between 2% - 4%.

Passenger amenities at transit centers and Trolley stations were more likely to be ranked by respondents as unimportant and less likely to be ranked by respondents as very important. Respondents indicated hold little value for Wi-Fi service, scooter/bike share, bicycle facilities, and phone charging at transit facilities.

Table 2.3: Table of Question 10 responses ranking eleven attributes transit service and facilities.

	1 - Not Important		2		3 - Somewhat Important		4		5 - Very Important		Total
Frequency of Service (How often the bus arrives)	2.6%	43	1.1%	18	8.1%	136	19.2%	321	69.6%	1,164	1,673
Span of Service (Start and end times of bus service)	3.0%	49	4.6%	76	18.8%	311	22.9%	380	51.7%	857	1,659
Travel time	2.1%	35	3.3%	54	17.2%	283	26.3%	432	51.8%	851	1,644
Bus stops close to home	4.2%	70	3.8%	63	15.6%	259	25.3%	420	51.8%	861	1,661
Bus stops close to destination	2.5%	42	1.3%	21	10.6%	175	27.7%	459	58.4%	968	1,658
Bicycle facilities at Trolley stations/transit centers	28.6%	473	21.4%	353	21.9%	362	13.1%	216	16.2%	268	1,652
Phone charging at Trolley stations/transit centers	36.1%	596	22.8%	376	21.8%	360	10.2%	169	10.5%	173	1,652
WiFi at Trolley stations/transit centers	24.7%	409	20.5%	339	23.8%	394	15.7%	259	17.3%	286	1,654
Scooter and bike share services at Trolley stations/transit centers	35.5%	584	21.5%	354	22.8%	375	12.6%	207	8.7%	143	1,647
Connections to COASTER	29.1%	480	18.9%	311	24.4%	401	13.4%	220	15.4%	254	1,647
Transit Station Parking	12.8%	212	11.8%	196	17.7%	294	17.7%	293	41.7%	691	1,659

Figure 2.12: Chart of Question 10 responses showing the ranking of eleven attributes for transit service and facilities by survey.



2.3 Biotechnology Employer Outreach

San Diego is home to one of the three clusters of biotechnology (biotech) companies in California. The cluster of biotech companies with labs and research facilities in Sorrento Valley, University City, La Jolla, and Torrey Pines is a major employment hub for the San Diego Region. The employment hub generates many commute trips which are mostly single occupant vehicle commute trips. In order to gauge the travel market to Sorrento Valley, University City, and Torrey Pines areas, MTS partnered with the Biocom Life Science Association (Biocom), which represents biotechnology and life science research companies in North San Diego.

MTS met with Biocom and their member companies to engage the biotech industry in San Diego in a discussion about transportation and the market for biotech employees to pivot from single occupancy vehicle commutes to alternative transportation. Biocom coordinated with member companies to collect home zip codes of 5,987 biotech employees working in North San Diego, which Biocom shared with MTS planners for analysis. A breakdown of the companies and the amount of employees surveyed are in *Table 2.4* below. In order to maintain privacy for employees, the zip code data provided to MTS excluded personally identifiable information, allowing MTS to analyze the data anonymously. The breakdown of employees by participating Biocom member company is shown in the table below.

Table 2.4: Table showing participating biotech companies, employees, and facility/campus locations.

Company	Employees	Address
Athlea CMO	472	11040 Roselle Street
Biocom Life Sciences Association	37	10996 Torreyana Road
Illumina	3,173	4795 Executive Drive
		9440 Carroll Park Drive
		5200 Illumina Way
Genomics Institute of the Novartis Research Foundation	497	10675 John Jay Hopkins Drive
Scripps Research Institute	1,808	10550 North Torrey Pines Road

MTS aggregated the zip code data from the five participating biotech companies to identify common trip origins for North San Diego's regional employment hub. As seen in *Table 2.5* below, the majority of the employees of the participating companies commute from the periphery of the employment hub and bedroom communities along the State Route 56 and Interstate 15 Corridors. Six of the ten most selected communities were shared with the results of the MTS outreach survey for this study. Communities where the biotech employee survey top ten differed include Del Mar Heights/Carmel Valley, Torrey Highlands/Rancho Peñasquitos, Rancho Bernardo/4S Ranch, and Scripps Ranch.

The auto-dependent communities popular with biotech employees are difficult to serve with fixed-route transit and have minimal, if any, transit service. MTS Route 20 operates north-south service, serving Rancho Bernardo and Rancho Peñasquitos, connecting the communities with the MTS transit network at Miramar College Transit Station, Kearny Mesa Transit Center, Fashion Valley Trolley Station & Transit Center, and Downtown San Diego. Route 964 is a

circulator route serving the west side of Scripps Ranch and Mira Mesa, connecting with the MTS transit network at Miramar College Transit Station. Del Mar Heights, Carmel Valley, Torrey Highlands, and 4S Ranch do not have transit service. The topography, street patterns, and land use make these communities difficult to serve with fixed-route transit. Historically, service to these areas has been unsustainable.

Table 2.5: Table of 10 most common biotech employee home zip codes from Biocom survey.

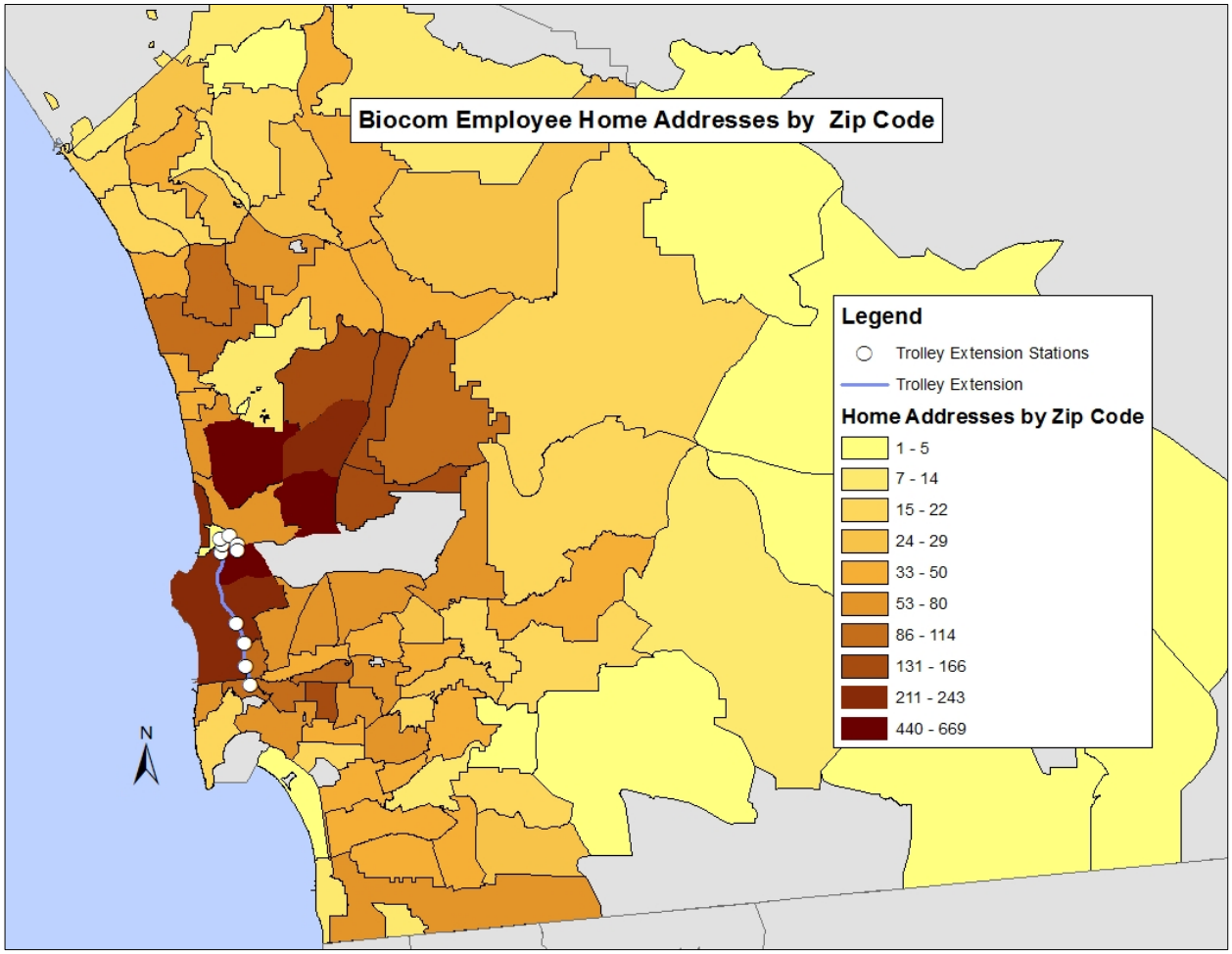
Zip Code	Community	Employee Home Addresses	% of Addresses
92122	University City	669	11%
92126	Linda Vista/Kearny Mesa	487	8%
92130	Del Mar Heights/Carmel Valley	440	7%
92037	La Jolla/UC San Diego	243	4%
92117	Clairemont	232	4%
92129	Torrey Highlands/Rancho Peñasquitos	230	4%
92109	Pacific Beach/Mission Beach	211	4%
92127	Rancho Bernardo/4S Ranch	166	3%
92104	North Park	147	2%
92131	Scripps Ranch	147	2%

Using Geographic Information System (GIS) software, MTS created maps to show the zip codes of the home addresses from where 5,987 biotech lab employees commute. By joining SANDAG's zip_code GIS layer with the aggregated home zip code survey data, the quantity of biotech employees residing in each zip code was able to be presented spatially. The maps use graduated colors to show the amount of employees living in each zip code. *Figures 2.13 and 2.14* show the distribution of biotech employee home addresses at a regional level and at the local level at the north end of the Trolley line.

Figure 2.13 shows a pattern of clustering in communities adjacent to biotech employment hub in northwest San Diego and a higher concentration of biotech employees residing in communities north of Marine Corps Air Station Miramar (MCAS Miramar). Mira Mesa has bus service (via Sorrento Mesa) to both UTC and Gilman Transit Centers during peak commute hours. *Rapid* 237 connects to the UTC Trolley Station at La Jolla Village Drive and Genesee Avenue, and then proceeds to UCSD. MTS Route 921 is a local route that terminates at UTC Transit Center.

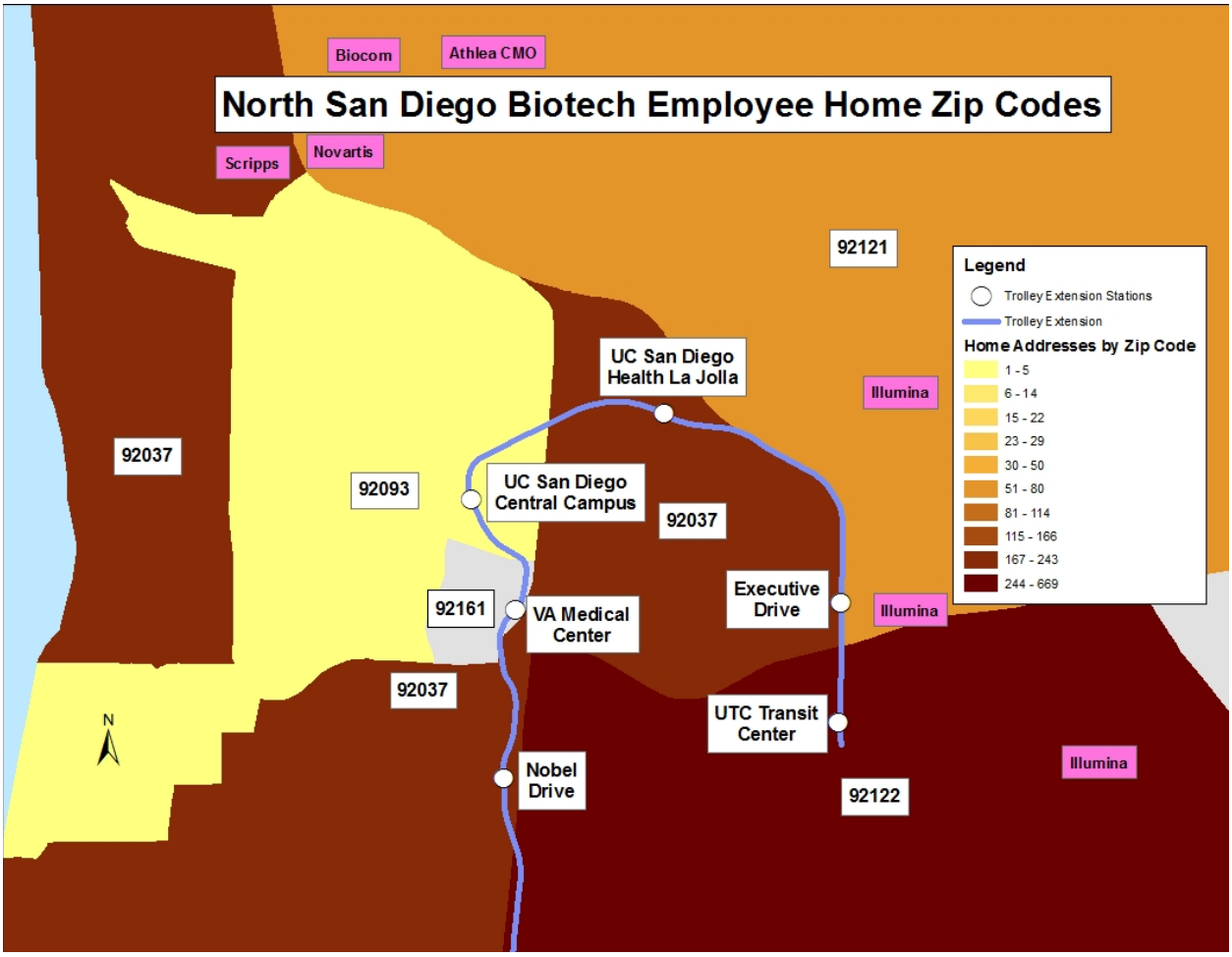
The communities of La Jolla, Pacific Beach, and Clairemont are within close proximity to biotech campuses and are home to many of the employees of the participating biotech companies. These communities have bus service nearby the future BATC, which can be realigned to serve the Trolley Station. Residents of these communities will be able to access the Trolley by feeder bus and access their employment site by a commute circulator route from their destination Trolley station.

Figure 2.13: Map home addresses of biotech employees from participating companies by zip code.



Additional commuter services between Trolley stations and the employment biotech rich employment areas of Sorrento Valley, Torrey Pines/La Jolla, and Del Mar Heights would provide access from communities throughout the MTS system with employment and for employees living in University City. However, many of these difficult to serve communities with large populations of biotech employees would not have access to a feeder bus service, as the Trolley is not within their commute route.

Figure 2.14: Map of biotech employee home address by zip code, focused on zip codes surrounding northern stations for the Trolley extension.



Section 3: Feeder Bus Route Proposals

The proposed route concepts and service levels presented in this section are a budget-neutral realignment of the MTS bus network to integrate with the extended Blue Line Trolley service, operating on the infrastructure constructed in the Trolley extension project.

The concepts were developed based on analysis of the existing transit market, community input, the future Trolley alignment, planned Trolley stations, SANDAG ridership models, projected growth, community plans, and the Regional Transportation Plan (RTP).

The reimagining of the bus network in northwestern San Diego enabled MTS to design a stronger network, filling critical gaps, to improve access for residents and commuters alike. Route changes extend access to community colleges and major universities from the I-15 corridor as far north as Escondido. The proposed network would connect local routes to Trolley stations, expand access to the I-5 corridor between University City/La Jolla to the international border at San Ysidro, and enhance access to employment opportunities along the coast. The current and proposed bus networks are shown in *Figure 3.1 and Table 3.1* below.

Figure 3.1: The existing MTS bus network (right) within the study area and the proposed MTS bus network (left) re-aligned to feed passengers to and from Trolley stations. Table 3.1 summarizes changes proposed for each route.

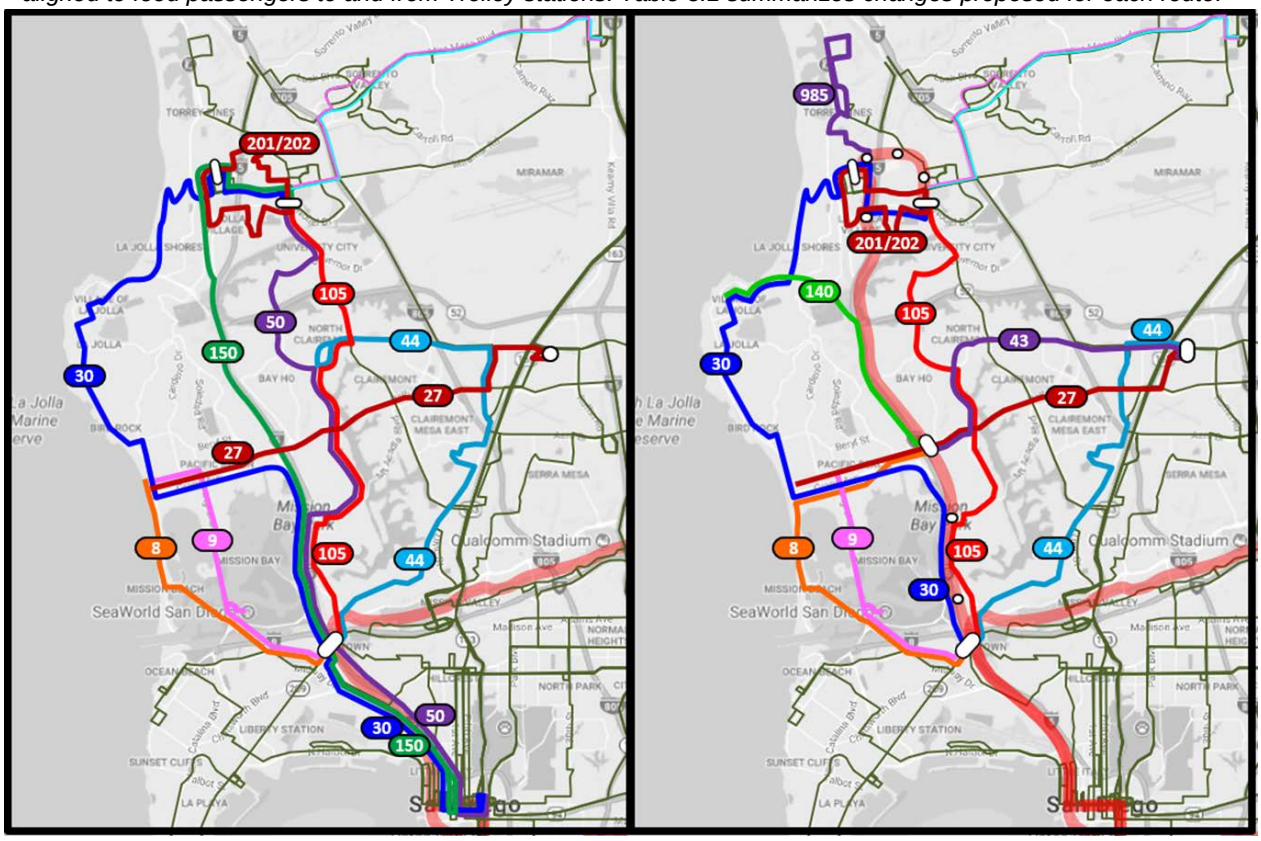


Table 3.1: Proposed bus route changes. The colors of the routes in the table correspond to the route lines on the map in Figure 3.1.

Route	Proposal
50 150	Discontinue north-south Express routes
27	Realign to Kearny Villa Road instead of Convoy Street, add Sunday service *Seven days/week, 15-minute frequency M-F, 30-minute weekend service*
43*	**New** East - West route connecting Balboa & KMTC via Clairemont Mesa Boulevard *Seven days/week, 15-minute frequency M-F, 30-minute weekend service*
44	Realign northern end to Kearny Mesa Transit Center instead of Clairemont
8	Extend east across Grand Avenue to Balboa Station, increase to 15-minute weekday frequency
9	Shorten to Ingraham Street/Garnet Avenue
30	Shift southern terminal to Old Town Transit Center, re-align form La Jolla Village Drive to Nobel Drive
140*	**New** express route between Balboa Avenue Station and downtown La Jolla via Interstate-5 *Seven days/week, 15-minute frequency M-F, 30-minute weekend service*
105	Realign to Regents Road/Governor Drive
201/202	Realign from UC San Diego East Campus to La Jolla Village Drive
985*	**New** peak-only UC San Diego Central Campus Station -Torrey Pines commuter shuttle route

*Per MTS Policy 42, new routes are operated as a pilot for 12 months.

3.1 Route 8 Proposal

Figure 3.2: Proposed concept for Route 8, which would extend Route 8 easterly across Pacific Beach to serve the new BATC.

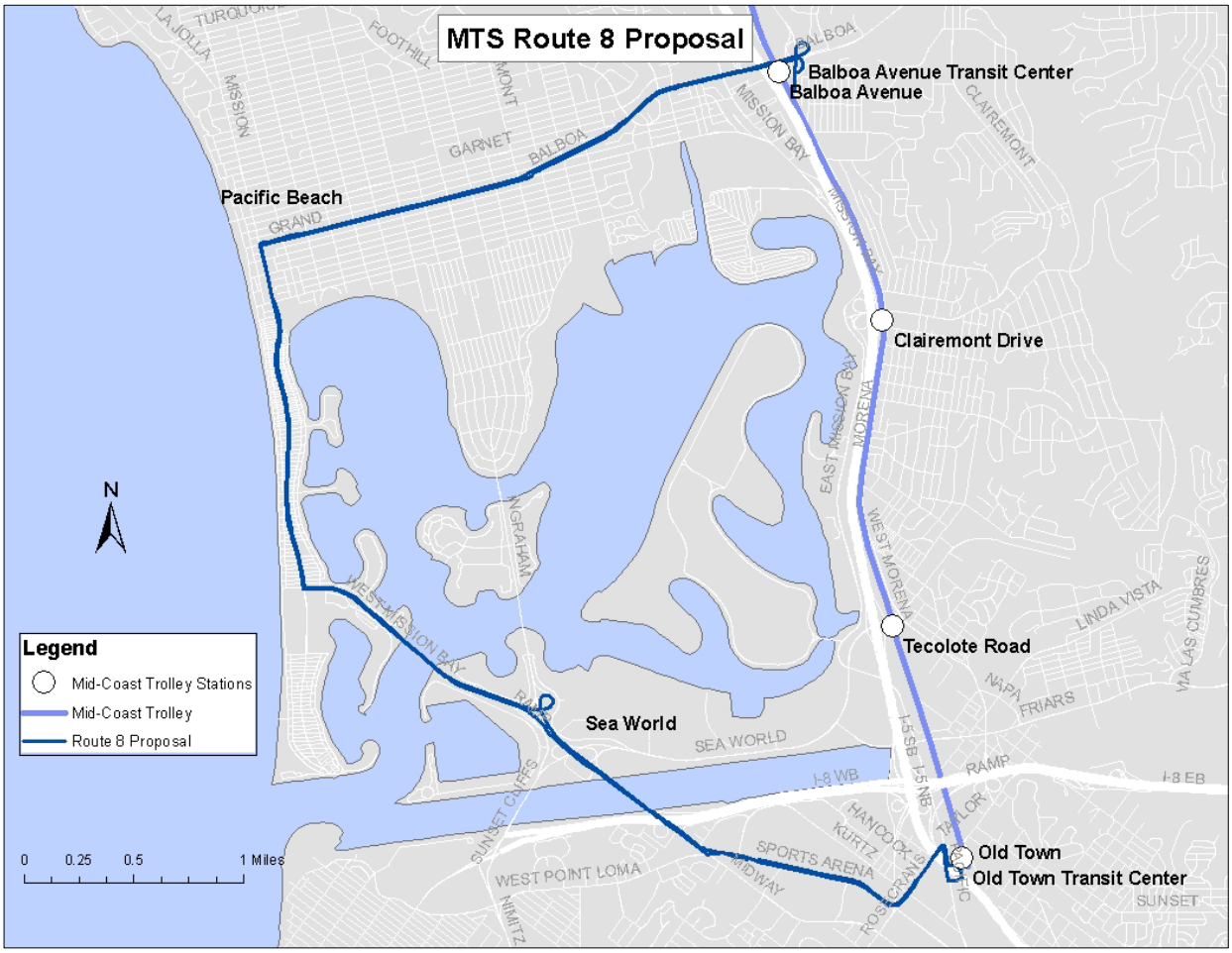


Figure 3.2 above shows the proposed Route 8 concept, which would realign its routing to connect to the Trolley at the BATC. Rather than continuing north on Mission Boulevard, the Route 8 concept would travel east along Grand Avenue, keeping left to merge onto Balboa Avenue. The northern terminus would move to BATC instead of its current terminus at Bayard Street and Garnet Avenue.

Service to the BATC brings additional transit to the area identified in the Pacific Beach Community Plan as an opportunity for transit-oriented development. Additionally, the Balboa Avenue Station Area Specific Plan (adopted in 2019) allows for increased densities in the area surrounding BATC. A gradual transition from auto-oriented land uses to human-scaled land uses will foster increased ridership for MTS bus and rail services within, to, and from Pacific Beach.

The proposed Route 8 concept connects with Route 9 at the intersection of Grand Avenue and Ingraham Street, for service to Crown Point and Sea World. The connection to Route 9 will extend access to Sea World to coastal communities north and east of Pacific Beach. Sea World visitors from the south and southeast would still connect to Route 9 at Old Town Transit Center.

In addition to connecting beaches and Sea World with the Trolley, the Route 8 proposal increases access for the Pacific Beach community. By overlaying with the Route 30 proposal, the Route 8 can absorb some of the demand for Route 30 to schools on Grand Avenue, easing standing loads on the popular cross-town route. Community input was supportive of a service connecting the beach areas with the new Trolley station across I-5 at Balboa, particularly for service operating on Grand Avenue rather than Garnet Avenue.

The proposed Route 8 would continue to serve the beach areas adding frequent service to Grand Avenue; however, the routing change will reduce service on Mission Boulevard. The tradeoff is extended access to the Mission and Pacific Beaches from coastal communities north of OTTC and south of Downtown San Diego from the Blue Line Trolley.

The Route 8 proposal would operate more frequently than the current Route 8 during non-summer months, at proposed 15-minute headways all week, an improvement over the current 20-minute service. The proposed frequency increase would enable Route 8 to connect with the Trolley and MTS bus routes 34 and 43 (during peak hours) at BATC, at their proposed service levels.

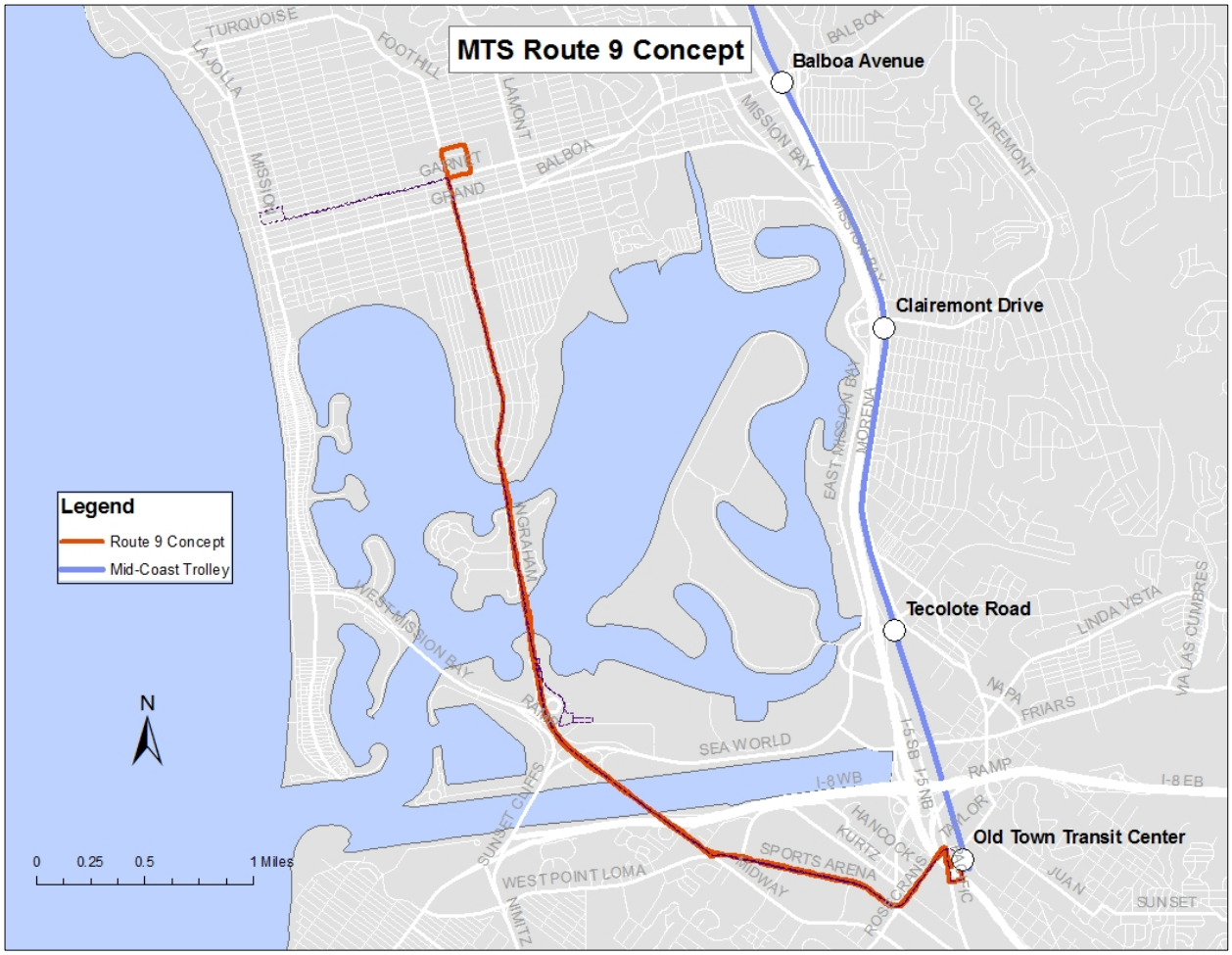
The Route 8 concept would maintain its southern terminus at the Old Town Transit Center, where it is a critical connection for beach access from the Green Line Trolley, the MTS bus network, Amtrak, and the NCTD COASTER. As proposed, Route 8 would provide year-round frequent service in Point Loma, along the Sports Arena Boulevard corridor, serving the historic Midway District and the Pechanga Arena.

Alternatives

Route 8 could continue on Mission Boulevard, and then turn right onto Garnet Avenue, to serve the popular commercial corridor as it proceeds to BATC. Garnet Avenue is currently served by Route 27 and is proposed to be served by the new Route 34 with the Route 27 proposed to terminate at BATC. Route 8 service on Garnet Avenue could fill the gap created by a shortened Route 27 terminating at BATC; however, the Grand Avenue Corridor supports faster transit operation. The corridor would benefit from the proposed Route 8 overlay of the limited-stop Route 30 proposal. Additionally, Grand Avenue is a more direct route between BATC and beach destinations.

3.2 Route 9 Proposal

Figure 3.3: Proposed Route 9 concept, which would be shortened to terminate at Ingraham Street and Garnet Avenue.



The proposed Route 9 concept shown in *Figure 3.3* above, is a shortened version of the current Route 9 operating at the same service levels. The route concept would terminate at Ingraham Street and Garnet Avenue rather than turning left onto Garnet Avenue then continuing west to Mission Boulevard. By shortening Route 9, resources can be reallocated to other feeder bus services. Route 9 concept would remain the MTS bus route serving Sea World in Mission Bay. The Route 9 proposal maintains the current Route 9 headways and would retain its Sunday terminus at Sea World.

The Route 9 proposal would not connect to the Trolley at BATC; however, passengers can connect to BATC or La Jolla on Garnet Avenue on the proposed Route 34 proposal. At Grand Avenue, the proposed Route 9 could also connect with the proposed southbound Route 8 proposal to access the beaches or the proposed Route 30 to access La Jolla. Both the beach area and BATC can be reached by transferring from Route 9 to an east-west route on Grand or

Garnet Avenue. Additionally, a one-seat ride to the beach area is still available from the Old Town Transit Center on Route 8.

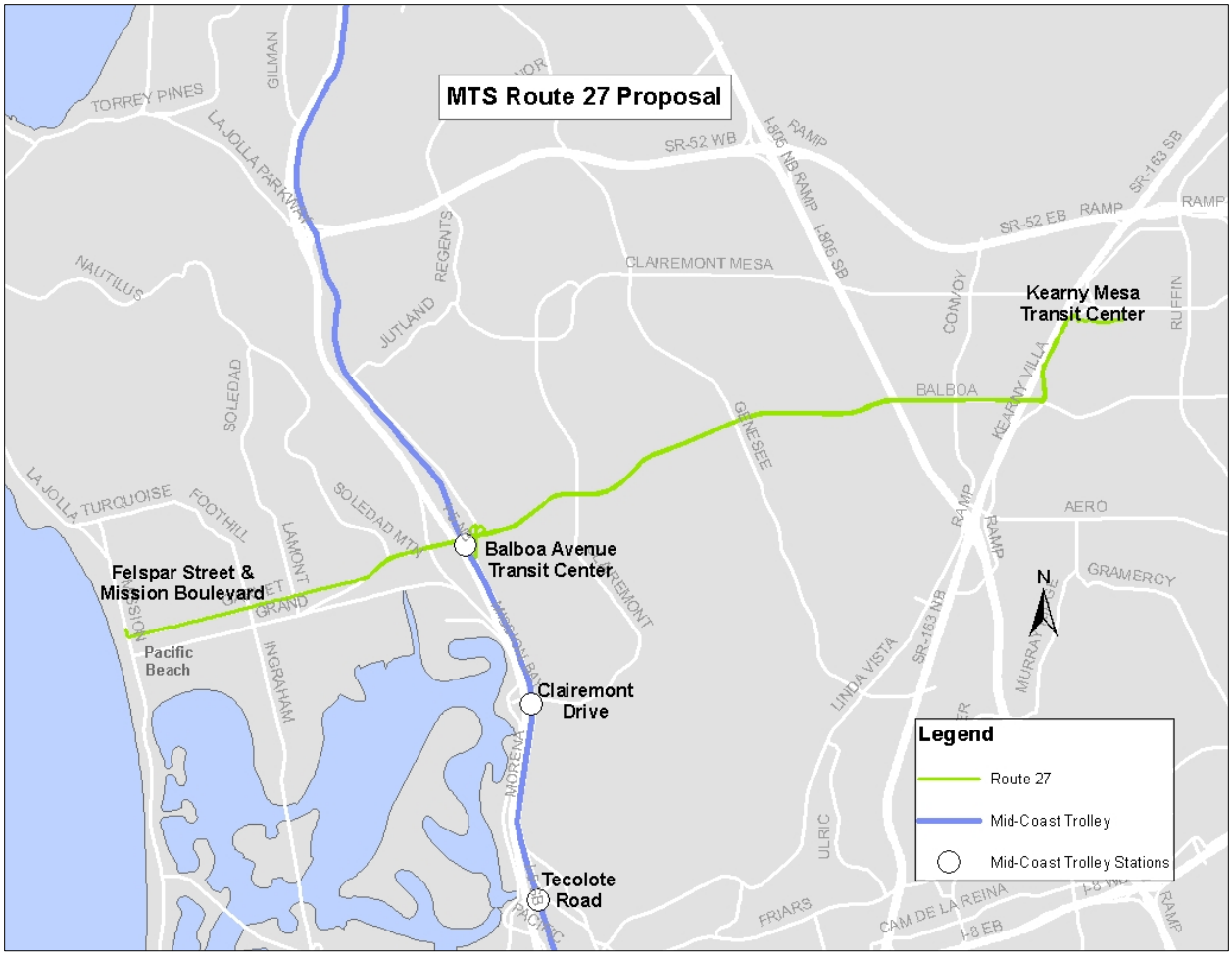
Discontinuing the segment of Route 9 service on Garnet Avenue would affect riders from Ingraham Street south of Grand Avenue. What was once a one-seat ride to Mission Boulevard will require a transfer at either Grand Avenue or Garnet Avenue; however, the impact would be minimal with very few riders between Ingraham Street and Mission Boulevard. Ridership on Ingraham Street is sparse, with most stops averaging less than 5 riders per weekday. Similarly, ridership to Mission Bay Drive averages 5 riders per weekday.

Alternatives

Consideration was given for Route 9 to connect with BATC rather than have Route 8 connect with BATC. Route 8 connecting to BATC was the preferred alternative to provide additional service along the high-demand east-west Grand Avenue Corridor from Mission Boulevard to the BATC. With Route 9 serving Ingraham Street, a Grand Avenue west of Ingraham Street would have less service than Grand Avenue east of Ingraham Street.

3.3 Route 27 Proposal

Figure 3.4: The proposed concept for Route 27, which would operate between Kearny Mesa Transit Center and Pacific Beach, via Kearny via Road and BATC.



The proposed Route 27 concept shown in *Figure 3.4* above would connect the Pacific Beach and Clairemont communities with the Trolley at BATC. Balboa Avenue bus service is a critical link between the Trolley and the regional employment center and critical transit hub at KMTC. The proposed Route 27 routing would be the most direct link between the KMTC and BATC. The route proposal is streamlined to focus on reliable travel between the two transit nodes, with a direct connection to the Kearny Mesa employment center via Kearny Villa Road..

The proposed Route 27 concept would change the western terminus from Bayard Street and Garnet Avenue to the BATC where it connects with the Trolley and other bus routes serving the transit center. Shortening the route improves service reliability by avoiding the segment between BATC and Mission Bay Drive. The intersection of Mission Bay Drive and Balboa Avenue is heavily congested, with variability in congestion-related delays affecting schedule adherence.

The eastern end of the proposed Route 27 concept would be enhanced by a change to a more direct routing - shifting from Kearny Villa Road from the current routing on Convoy Street and Clairemont Mesa Boulevard between Balboa Avenue and KMTC. The eastern terminus remains at KMTC. The proposed routing bypasses slower traffic on Convoy Street and variable peak-hour congestion on Clairemont Mesa Boulevard between I-805 and SR-163, increasing service reliability to and for critical connections at the regional transit and employment hub.

To match the frequency of the Trolley once it is operational, service levels for Route 27 would need to increase. In the Environmental Impact Report for the Trolley extension, SANDAG projects that the Trolley at BATC will generate an average of 3,260 daily riders with 2,290 daily riders (70%) using transit to access the Trolley station. The proposed shortened routing would supply resources to reallocate to increase frequency and span for the Route 27 proposal to meet the demand generated by the Trolley.

Proposed weekend service levels for Route 27 are significantly greater than current Route 27 service levels. Route 27 currently operates hourly service on Saturdays and does not operate on Sundays. The proposed Route 27 concept would operate 30-minute all-day service on weekdays, Saturdays, and Sundays.

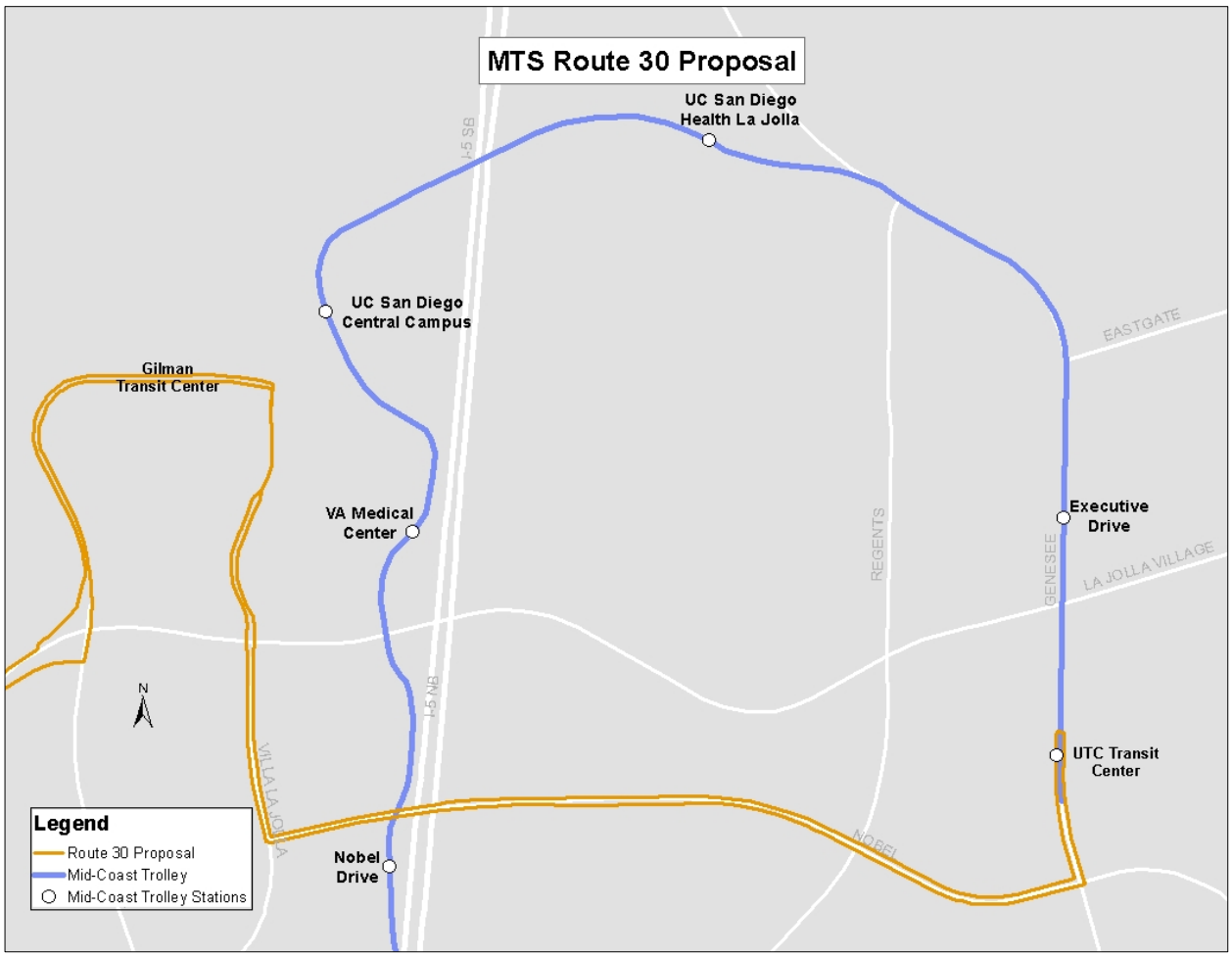
Alternatives

It was considered to have Route 27 keep its current terminus in Pacific Beach at Bayard Street and Garnet Avenue, connecting with Route 8 on Mission Boulevard. The route proposal would serve BATC with a timed transfer then proceed on its current routing. This routing would have worked for Route 27; however, the benefits of having direct service between the Trolley and the beaches would not be realized if Route 8 were to remain with its current routing to meet Route 27 on Mission Boulevard. Operating Route 8 on Grand and Route 27 on Garnet would be operationally costly in this budget-neutral service plan.

3.4 Route 30 Proposal

Figure 3.5 The proposed concept for Route 30, which would operate between Old Town Transit Center and the UTC Transit Center via Nobel Drive, stopping adjacent to the Nobel Drive Trolley Station.

Figure 3.6: Map of Route 30 in University City. The proposed Route 30 would serve Nobel Drive rather than La Jolla Village Drive, stopping near the Nobel Drive Trolley Station.



The proposed Route 30 concept is shown in *Figures 3.5 and 3.6* above at both the route level and a map focused on the new Trolley stations in University City. The proposed Route 30 is very similar to the current Route 30. The two routing changes for the proposed Route 30 are:

1. The southern terminus would move to OTTC discontinuing service to downtown San Diego.

2. Route 30 would serve limited stops on Grand Avenue, with Route 8 serving all local stops currently served by Route 30.

Maintaining existing regional transit connections is integral to the success of the cross-town route. Service to OTTC allows a single transfer between the Green Line Trolley and Route 30 rather than transferring to the Blue Line Trolley, then to a bus at BATC. Maintaining single transfers to the proposed Route 30 from the Green line, and other services at OTTC, will retain existing Route 30 riders.

Demand for Route 30 at OTTC is high due an abundance of connecting transit service at the regional transit hub. Connecting transit services at OTTC include:

- MTS Blue and Green Trolley lines
- MTS Bus Routes 8, 9, 10, 28, 30, 35, 44, 83, 84x, 88, and 105
- Triton Transit Medical Center shuttle (for UCSD students and employees)
- NCTD COASTER (service between Oceanside and Downtown San Diego)
- Amtrak (interregional service)
- Flixbus (interregional service)

Feedback from the outreach with the La Jolla Traffic and Transportation Board and the La Jolla Town Council was a strong desire for a faster service to connect people between the Trolley, Downtown La Jolla, and UCSD. Both groups expressed interest in a route that bypasses local bus stops to prioritize speed of the long cross-town route, which is the La Jolla Community Plan. The Route 30 proposal is designed for fast travel through Pacific Beach with fewer stops on Grand Avenue, overlaid with the proposed Route 8 serving all existing local stops on Grand Avenue.

The Route 30 concept is proposed to operate at 15-minute frequency during peak hours and 30-minute service mid-day and at night throughout the week. Demand for travel to Pacific Beach and La Jolla extends beyond the commute peaks. The proposed faster, limited-stop service would match the current service levels to meet the high demand for travel to the area served by Route 30.

Alternatives

1. **A local route between BATC and UTC Transit Center via Garnet Avenue and Nobel Drive.** The route would serve Garnet Avenue and Route 27 would terminate at BATC. Between Mission Boulevard and GTC, the route concept would be identical to the current Route 30. Between GTC and the UTC Transit Center Route 30 would operate on Villa La Jolla Drive and Nobel Drive, serving the bus stops adjacent to Nobel Drive Station, then La Jolla Colony. Connections from throughout the service area at OTTC would no longer be available.

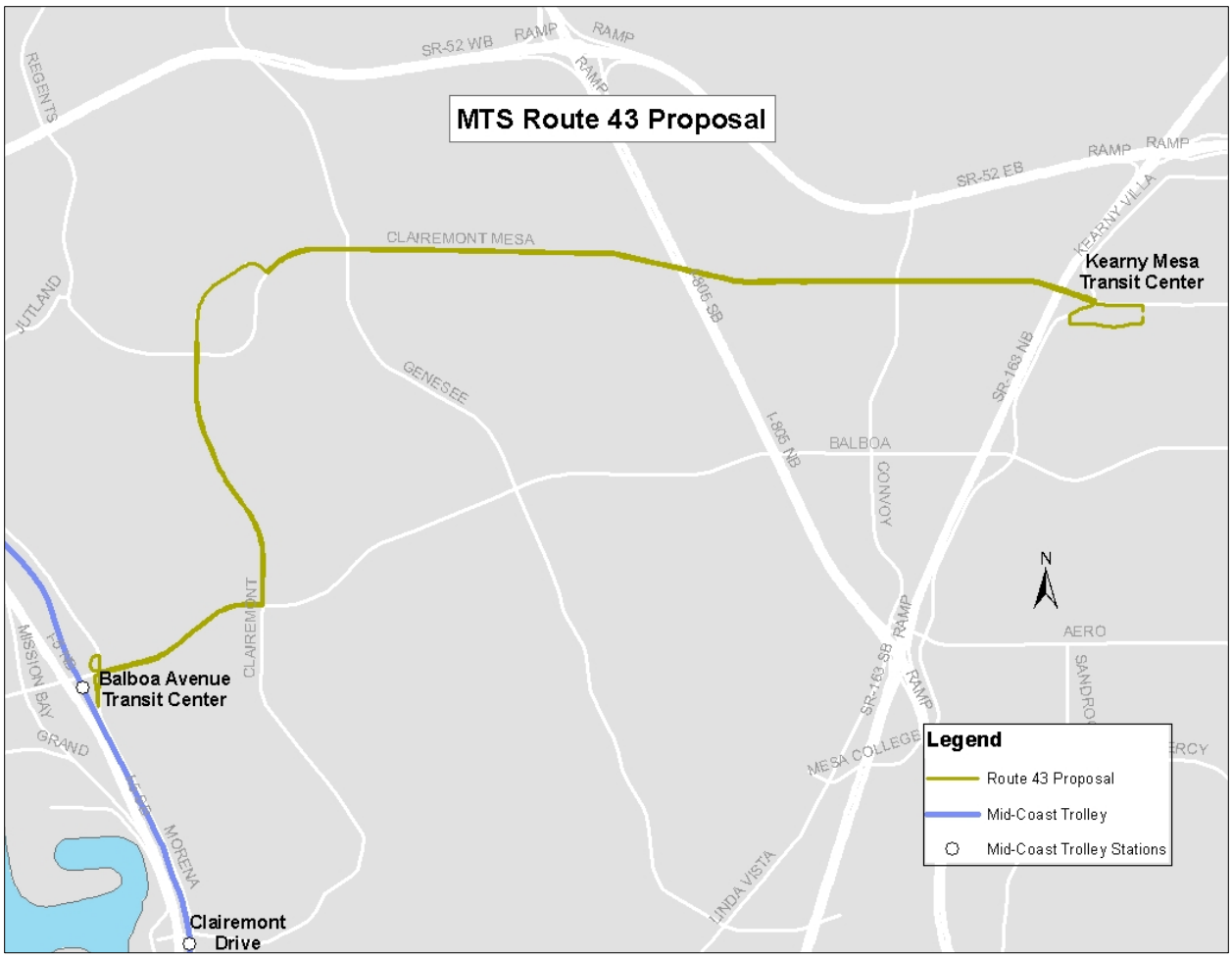
2. **A limited-stop route between BATC and UTC Transit Center.**
   The concept would serve the GTC and Nobel Drive Trolley Station via Garnet Avenue, Torrey Pines Road, and Nobel Drive. This concept would miss the connecting services at OTTC and would operate on the slower moving Garnet Avenue Corridor, which is better suited for local service. A limited stop route utilizing Grand Avenue and a southern terminus at OTTC is preferred.

3. **A limited stop route between OTTC and Gilman Transit Center.** The route concept would be similar to the proposed Route 30 concept; however, to improve travel time, the concept would operate on Grand Avenue and Torrey Pines Road. It would serve GTC, Nobel Drive Trolley Station, and La Jolla Colony. Public feedback showed a desire for

service to the Scripps Institute of Oceanography on La Jolla Shores Drive. A second local route would need to serve La Jolla Shores Drive to maintain service to the popular research facility.

3.5 Route 43 Proposal

Figure 3.7: The proposed concept for the new Route 43, which would operate between Kearny Mesa Transit Center and the new BATC via Clairemont Mesa Boulevard, Clairemont Drive, and Balboa Avenue.



The proposed Route 43 concept is a new route serving operating between KMTC and BATC, operating on the collector arterials Clairemont Mesa Boulevard, Clairemont Drive, and Balboa Avenue. As seen in *Figure 3.7*, the routing serves street segments currently operated by MTS Routes 44, 50, and 105. The proposed new route fills the service gap created by the proposed Route 44 routing, while strengthening the MTS bus network through linking coastal communities with Kearny Mesa via Clairemont.

The proposed new Route 43 concept would have its western terminus at BATC, enabling timed connections with the Blue Line Trolley and MTS Bus Routes 8, 27, and 140. Through a single transfer at BATC, access to frequent transit service from Clairemont is extended throughout the I-5 corridor, Pacific Beach, UCSD, University City, Mission Beach, Point Loma, and La Jolla.

Unlike the existing bus service on Clairemont Mesa Boulevard, the proposed Route 43 concept terminates at the regional transit hub KMTC. The proposed one-seat ride from North Clairemont to the region's second largest employment center provides access to employment opportunities, fostering upward mobility for community residents. At KMTC, passengers can connect to MTS Bus Routes 20, 25, 27, 120, *Rapid* 235, and 928, extending access throughout the I-15 Corridor and to employment destinations throughout Kearny Mesa.

Through passengers from BATC to KMTC can ride the proposed Route 43 concept; however, the proposed Route 27 concept may be the preferred option, due to its more direct routing and shorter travel time. The proposed Route 27 concept has an estimated peak travel time between BATC and KMTC of 29 minutes, while the proposed Route 43 concept has an estimated travel time of 32 minutes.

To retain existing riders, proposed service levels for the Route 43 concept is designed to match the current service levels on Clairemont Mesa Boulevard, the existing Route 44. Route 43 service is proposed to operate at 15-minute all day headways on weekdays and 30-minute all day headways on weekends, enabling convenient connections with the Trolley and MTS bus routes at BATC. The proposed Route 43 service span matches the existing Route 44 service span as well, operating weekday service from before 5am until after 11pm, supporting travel for Clairemont residents with non-traditional work hours. The proposed Route 43 weekend span matches existing Route 44 weekend span as well, with service operating between 5am and 10pm.

In combination with the other proposed route concepts in Clairemont Mesa, the proposed Route 43 concept fulfills Objective 3 of the Clairemont Mesa Community Plan. Objective 3 states:

> Provide an efficient and high level of public transit within and surrounding the community. Design and plan land uses that will support and make use of the future light rail transit.

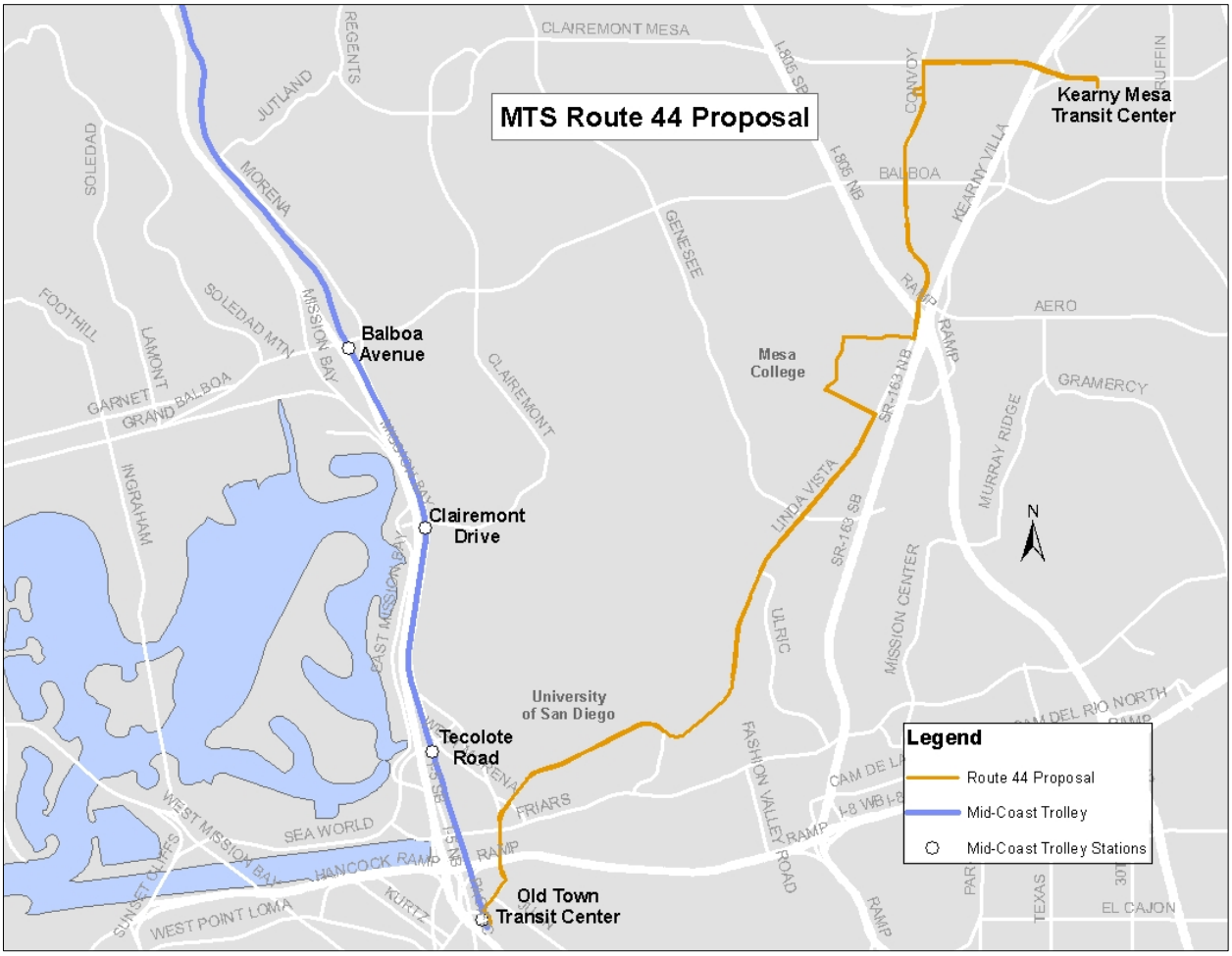
The route proposals form a frequent transit network connected with the Trolley, enhancing mobility for the Clairemont Mesa Community.

Alternatives

The MTS Transit Optimization Plan, implemented in 2018, recommended terminating Route 44 at KMTC while extending Route 105 to KMTC to serve Clairemont Mesa Boulevard west of KMTC. This portion of the TOP was not implemented due to operating cost considerations. This planning effort to realign the bus service is an opportunity to realize the benefits of connecting Route 44 with KMTC. The Route 44 portion of the TOP recommendation is proposed in this study; however, with Route 50 being discontinued, Route 105 will need to retain its routing south to OTTC via Clairemont Drive and Morena Boulevard. A new route concept focused on travel between BATC and KMTC via Clairemont Mesa Boulevard is the preferred option.

3.6 Route 44 Proposal

Figure 3.8: The proposed concept for Route 44 which would operate between Old Town Transit Center and Kearny Mesa Transit Center via Convoy Street and Clairemont Mesa Boulevard.



The proposed Route 44 concept shown in *Figure 3.8* above would operate between OTTC and KMTC, primarily serving Linda Vista and Kearny Mesa. The Clairemont Mesa Boulevard portion of the route would be served by the proposed Route 43 concept. The Route 44 proposal would travel on Clairemont Mesa Boulevard east of Convoy Street to KMTC, rather than the current routing west along Clairemont Mesa Boulevard west to Clairemont Drive.

The proposed Route 44 routing between OTTC and Clairemont Mesa Boulevard is identical to the current Route 44 route. Route 44 is the backbone of transit service in Linda Vista, serving both the University of San Diego and Mesa College. Maintaining existing service through Linda Vista and connections at OTTC is critical to retaining existing riders on the proposed Route 44 concept. Due to a lack of bus bays, and the Blue Line Trolley being the only transit service at Tecolote Trolley Station, OTTC makes a much better southern terminus when the Trolley is operational.

The proposed Route 44 concept would greatly strengthen the MTS network. The proposed routing connects Linda Vista Community with Kearny Mesa employment hub and the MTS bus network at KMTC. Relocating the northern terminus of the proposed concept to KMTC enables connections to the MTS network between Linda Vista and northeast San Diego. MTS bus routes at KMTC include Routes 20, 25, 27, *Rapid* 235, and 928. Access is greatly extended by connecting to the *Rapid* 235, serving the I-15 Corridor between Downtown San Diego and Escondido. Transit access to University of San Diego and Mesa College extends to residential communities along the I-15 corridor, via Route 20 and the *Rapid* 235.

Alternatives

Rather than terminate at KMTC it was considered to extend Route 44 to BATC. The extended route would be a long U-shaped route. An extended Route 44 concept to BATC would be difficult to operate while adhering to the schedule. Long bus routes experience increased variability in travel time and are difficult to keep on schedule. Additionally, extending Route 44 westerly to BATC would result in a missed opportunity to strengthen the network by routing Route 44 east on Clairemont Mesa Boulevard to KMTC.

3.7 Route 105 Proposal

Figure 3.9: The proposed concept for Route 105 which would operate between UTC Transit Center and Old Town Transit Center via Governor Drive, Regents Drive, and Clairemont Mesa Boulevard, stopping adjacent to the new Clairemont Drive Trolley Station.

The proposed concept for Route 105 shown in *Figure 3.9* above is shaped by other changes in the proposed bus network in University City and Clairemont Mesa. With two north-south bus routes operating between UTC and Downtown San Diego being discontinued with the opening of the Trolley, the Route 105 proposal must fill gaps in coverage, particularly for lost service from Route 50.

The proposed Route 105 concept partially returns the Route 105 to its routing before the TOP, serving Governor Drive west of Genesee Avenue and Regents Drive/Clairemont Mesa Boulevard north of Clairemont Drive. The TOP moved Route 105 to Genesee Avenue, enhancing the Genesee Avenue Corridor with additional all day service, overlaying the very frequent and popular Route 41. The less-productive Governor Drive segment of the route changed to peak-only, express service of Route 50.

If approved, the proposed Route 105 concept would extend access for University City and North Clairemont Mesa communities. Governor Drive and Regents Drive/Clairemont Mesa Boulevard would once again have all-day service and access to the Trolley at Clairemont Drive Trolley Station.

Route 105 is proposed to stop either on Ingulf Street or Morena Boulevard in on-street bus stops in traffic lanes. Both streets have constrained right-of-way. The initial plan had off-street bus stops within the transit-oriented development across from Clairemont Trolley Station; however, the bus bays were removed from the development plans. SANDAG is currently designing a pair of bus stops and an additional pedestrian-activated signal across Morena Boulevard south of Ingulf Street. The proposed bus stop locations on Morena Boulevard have constraints that must be overcome. If the bus stops are constructed, Morena Boulevard is the preferred bus stop location.

Whether serving bus stops on Morena Boulevard adjacent to the Clairemont Drive Trolley Station or Ingulf Street, Route 105 will not have timed connections with the Trolley. The bus stops nearest the stations are constrained by the built environment. All proposed locations would have the bus stopping in a traffic lane, eliminating the ability to be time points and unable to have timed connections with the Trolley.

The proposed Route 105 concept retains the existing terminus at OTTC. The Route 105 proposal would not terminate in Downtown San Diego like the discontinued Route 50. Route 105 provides local bus service the Morena Boulevard Corridor, South Clairemont, and Linda Vista and is proposed to connect those communities with the Trolley at Clairemont Station and to the MTS Trolley and bus network, COASTER, Amtrak, and Flixbus at OTTC. Additionally, the shorter routing of the existing Route 105 terminus would not add redundant north-south service by extending Route 105 to downtown.

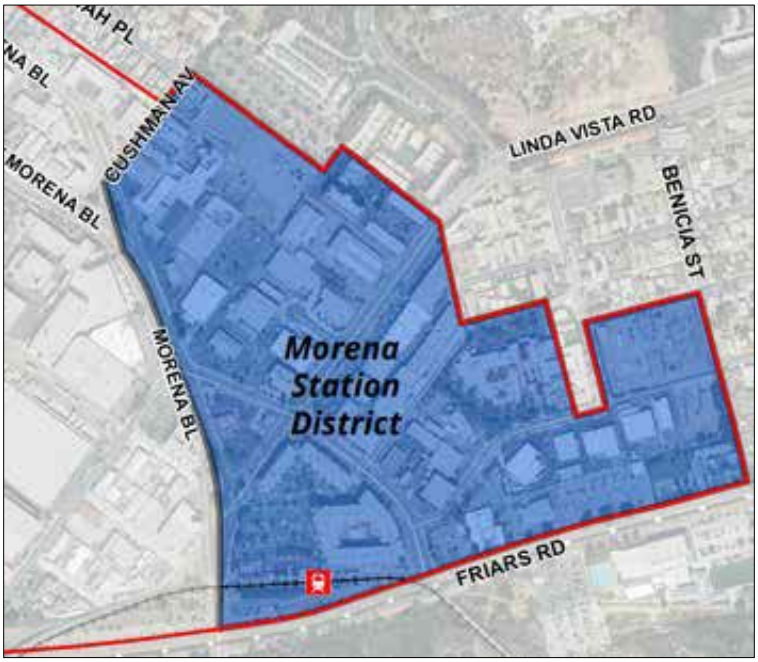
The proposed frequency would provide more frequent service on weekends. Currently, Route 105 operates hourly service on weekends. Hourly service is unsuitable for service connecting with frequent transit service, such as the Trolley. The lack of bus bays at Clairemont Drive Station would further compound the difficult connections of operating hourly weekday service. To improve connections with the Trolley at Clairemont Drive Station, proposed weekend frequency is at 30-minute headways.

Due to constrained resources, the proposed weekday frequency would remain at 30-minute headways. With the proposed elimination of Route 50 service, the segment of Clairemont Drive between Balboa Avenue and Denver Street would peak-hour service reduced by 50%.

Although Route 105 currently operates on Morena Boulevard, parallel to the future Tecolote Trolley Station on West Morena Boulevard, the proposed Route 105 retains its current routing on Morena Boulevard to continue serving the neighborhood. Trolley riders alighting at Tecolote Drive Station would have a short walk (less than ¼ mile) to bus stops on Morena Boulevard.

The Morena Boulevard Specific Plan designates the area surrounding the Tecolote Drive Morena/Linda Vista Trolley Stations as a Community Village, with an allowed population density up to 73 dwelling units per acre. The City of San Diego's plan fosters mixed land uses, transit-oriented development, pedestrian circulation, and human-scaled design within the Morena Station District, shown in *Figure 3.10* below. Through infill development, the largely industrial area will evolve into a dense residential community with employment and entertainment destinations. As the neighborhood becomes a more desired destination the pedestrian environment will improve, creating a pleasant walk between Tecolote Drive Station and nearby Morena Boulevard to connect with bus service.

Figure 3.10: Map of the planned Morena Station District.

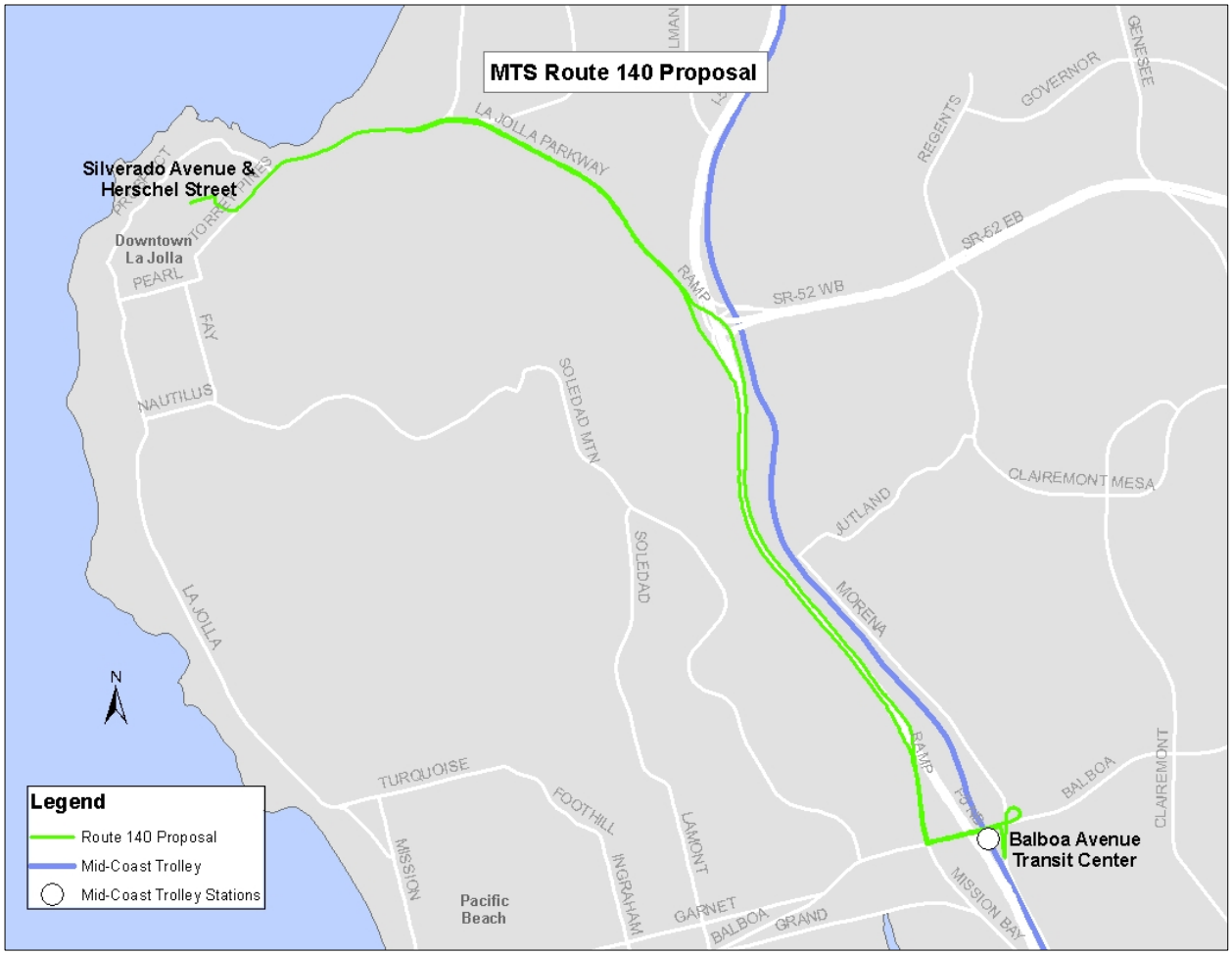


Alternatives

It was considered to change the routing for Route 105 to West Morena Boulevard to stop adjacent to the Tecolote Drive Trolley Station. Due to a lack of bus bays and connecting bus routes, and the loss of service on Morena Boulevard, it is preferred to maintain the existing Route 105 on Morena Boulevard and the terminus at OTTC, where riders have access to a multitude of rail and bus services with which to connect.

3.8 Route 140 Proposal

Figure 3.11: The Route 140 proposal is an express route connecting downtown La Jolla with the BATC via La Jolla Parkway and Interstate 5.



The proposed Route 140, shown in *Figure 3.11* above, is an express route connecting downtown La Jolla with the BATC via Torrey Pines Road and Interstate 5. The express route would serve the existing pair of Route 30 bus stops at Silverado Street and Herschel Avenue then continue to Interstate 5 via Torrey Pines Road and La Jolla Parkway. The express route would provide direct access between the Blue Line Trolley and the popular tourist destination and service employee destination of downtown La Jolla avoiding the long travel time through Pacific Beach, Bird Rock, and La Jolla Boulevard on Route 30. Passengers can transfer to Route 30 from downtown La Jolla to access beaches or other La Jolla destinations. Route 140 is proposed to operate 15-minute service during peak hours and 30-minute service off-peak, aligned with Trolley trips.

Alternatives

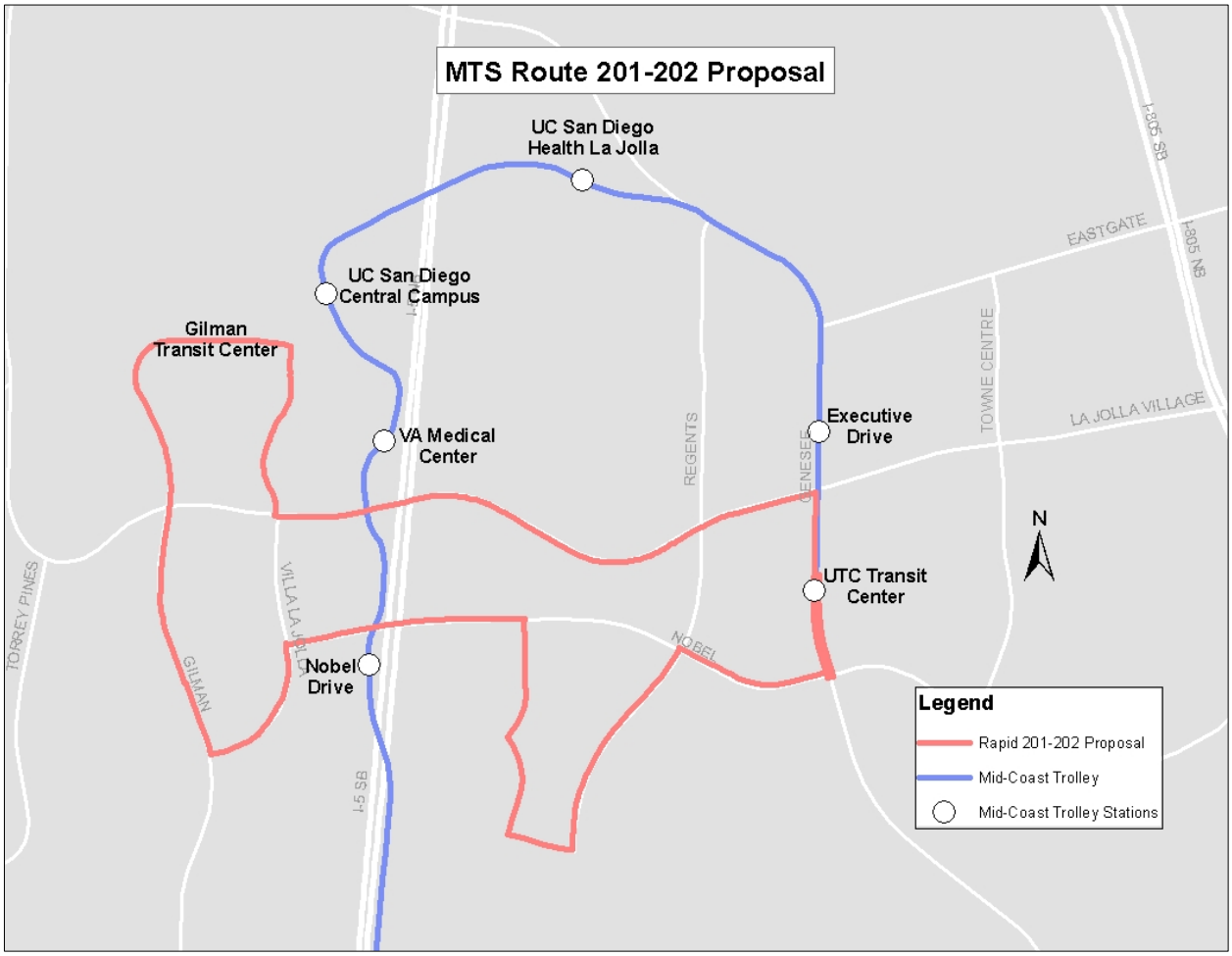
Several alternatives were considered to for service between BATC and downtown La Jolla.

1. Terminate Route 30 at BATC. This simple and cost-effective option would result in the loss of critical connections from throughout the MTS bus and rail network, the NCTD Coaster, Triton Transit (UCSD only), Amtrak, and Flixbus at the OTTC.

2. Operate a second route, tentatively called Route 34, to operate local service between BATC and UTC Transit Center or Gilman Transit Center. The local route would overlay Route 30 for much of its route. Route 30 would be changed to a limited-stop route, with a streamlined routing via Garnet Avenue, Torrey Pines Road, and Nobel Drive, rather than Grand Avenue, La Jolla Shores Drive and La Jolla Village Drive. The limited stop Route 30 would have served the on-street stops adjacent to Nobel Drive Trolley Station as the proposed Route 40 would if approved. Analysis showed the second route overlaying Route 30 would require more resources than available in this revenue-neutral planning effort. Additionally, with long stretches with little to no travel demand, such as portions of La Jolla Boulevard and La Jolla Shores Drive, the overlaid routes would be an inefficient allocation of resources.

3.9 *Rapid* 201/202 Proposal

Figure 3.12: The proposed concept for Rapid 201/202 operating in a bi-directional loop between UTC Transit Center and Gilman Transit Center via La Jolla Village Drive.



The proposed *Rapid* 201/202 concept, shown in *Figure 3.12* above, is designed to align the service with the demand. If approved, the bi-directional loop would be streamlined to meet the extremely high demand for travel between UCSD and La Jolla Colony/La Jolla Village Drive. The northern half of the loop shifts south to La Jolla Village Drive between Genesee Avenue and Villa La Jolla Drive. The proposed concept would not serve Gilman Drive east of Villa La Jolla Drive, UC San Diego Health La Jolla, Campus Point Drive, Medical Center Drive, Health Sciences Drive, Executive Drive or Genesee Avenue.

With five stations within the University Community, the Trolley will provide inter-community trips as well as regional access to the employment hub. The Trolley will provide service between UCSD East and West Campuses as well as the Westfield UTC Mall. Just as the Trolley enables a reallocation of resources of north-south bus service between UTC Transit Center and Downtown San Diego, it enables a reallocation of bus resources, specifically *Rapid* 201/202.

Feedback from outreach to UCSD students, UCSD administration, the University Community, and online surveys strongly supported additional *Rapid* 201/202 service between La Jolla Colony and the Gilman Transit Center. With 5-minute peak and 10-minute base frequencies, and additional capacity from operating articulated buses, the proposed *Rapid* 201/202 capacity on La Jolla Village Drive would exceed the lost capacity from the proposed Route 30 realignment and the proposed elimination of Route 150, which currently serves to meet high travel demand on La Jolla Village Drive between GTC and the UTC Transit Center.

The proposed SuperLoop routing would affect service to hospitals served by Rapid 201/202. Currently, the *Rapid* 201/202 operates 10-minute service. The Trolley will operate at 15-minute service when it opens, which amounts to a 50-percent reduction in frequency. The tradeoff for decreased frequency in the area that would no longer be served by the proposed *Rapid* 201/202 concept is the expansion of access via a one-seat ride on the UCSD Blue Line from as far as the international border in San Ysidro. The medical facilities will benefit from increased access from throughout the region. UC San Diego Health La Jolla Trolley Station is located adjacent to Scripps Memorial Hospital. The UCSD Health Center will operate its own tram service for staff and patients between the UC San Diego Health La Jolla Trolley Station and their facilities that would no longer be served by *Rapid* 201/202.

The proposed concept would focus on the high demand segment of the route to improve overall productivity over the current *Rapid* 201/202. The route is the most productive route in the MTS bus system; however, the route is imbalanced. Ridership between La Jolla Colony and the Gilman Transit Center accounts for 90-percent of boarding activity (20,026 average daily boardings). The La Jolla Colony and UCSD West Campus segments greatly exceed ridership between Gilman Transit Center and UTC Transit Center via East Campus which accounts for only 5-percent of ridership.

The *Rapid* 201/202 operation is funded by TransNet, the half-cent local sales tax approved by voters to fund major transportation projects. Resources are fixed; therefore; service levels, frequency and span, would remain unchanged in the proposal. Although the routing is shorter, revenue hours estimated to remain similar to the current routing, due to increased dwell time from additional boardings and alightings along La Jolla Village Drive.

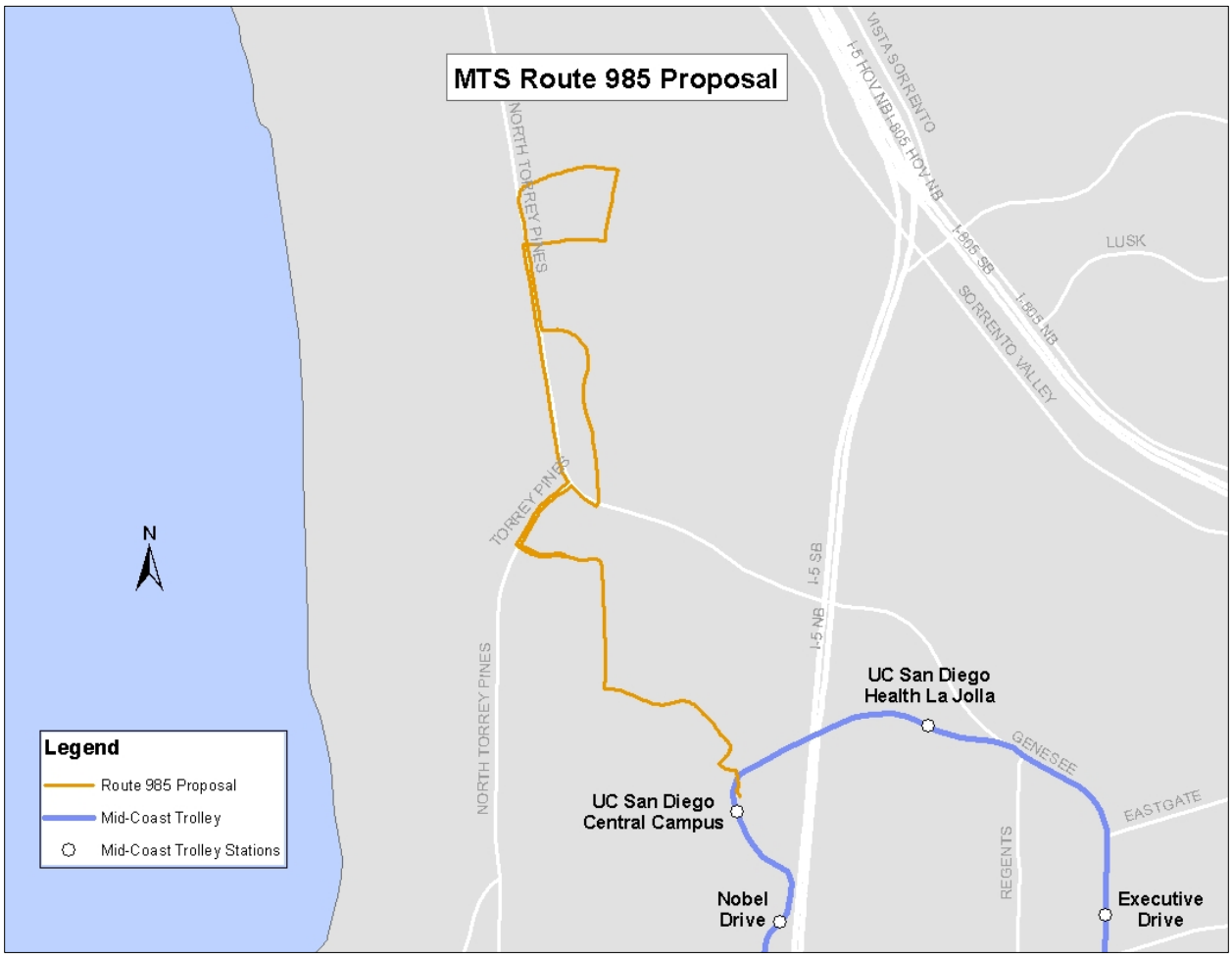
Alternatives

An alternative route concept that would route the *Rapid* 201/202 over the Gilman Bridge was considered. The routing has been used as a temporary re-route to accommodate Trolley construction. The route concept would be more streamlined than the current routing but would not be as productive as the proposed concept. Additionally, the Gilman Bridge route concept would not serve the existing *Rapid* stations at UC San Diego Health La Jolla and Medical Center Drive, yet would not improve route productivity. The proposed concept utilizing La Jolla Village Drive is preferred.

3.10 Route 985 Proposal

The proposed Route 985 concept, shown in *Figure 3.13* below, is a commute-focused, circulator route that would operate between UC San Diego Central Campus Trolley Station and North Torrey Pines Road. The proposed route is very similar to the current Route 978, which operates between the Sorrento Valley COASTER Station and North Torrey Pines Road. The proposed Route 985 concept would serve many of the same employment destinations as the SVCC commuter shuttle Route 978.

Figure 3.13: The proposed concept for the new Route 985, which would operate between UC San Diego Central Campus Trolley in the UCSD West Campus and North Torrey Pines Road via UC San Diego Health La Jolla, Hopkins Drive, North Torrey Pines Road, John Hopkins Drive, Science Park Road, Torreyana Road, and Callan Road.



The proposed Route 985 concept would operate through UCSD West and North Campuses between the UC San Diego Central Campus Trolley Station and North Torrey Pines Road. The proposed commuter route would operate on UC San Diego Health La Jolla (west of the Trolley station), Hopkins Drive, and the UCSD North Point Driveway before reaching North Torrey Pines Road.

The proposed commuter route concept would make two deviations to serve employment destinations on and near North Torrey Pines Road. The commute shuttle would serve employment destinations on John J. Hopkins Drive, which include:

1. UC San Diego Research Center
2. aTyr Pharma, Inc.
3. Sequenom
4. Nantkwest, Inc.
5. BASF Enzymes
6. General Atomics
7. Scripps Research Instititute Dorris Reuroscience Center
8. Scripps Research Institute Skaggs Institute for Chemical Biology
9. Genomics Institute of the Novartis Research Foundation

On North Torrey Pines Road, the proposed Route 985 would serve employment destinations and medical institutions, including:

1. West Health Institute
2. San Diego Center for Creative Leadership
3. Lyons and Associates Creative Services
4. Six Scripps Reasearch Institute facilities
5. Scripps Clinic Medical Group
6. Scripps Clinic Anderson Outpatient Pavillion
7. Scripps Shiley Pavilion
8. The Hilton La Jolla Torrey Pines

The proposed route would detour a second time at Science Park Drive, onto Torreyana Road, then return to North Torrey Pines Road via Vallan Road. On this segment of the proposed route, employment destinations include:

1. Two Sanford Burnhab Prebys Medial Discovery Institute facilities
2. Kura Oncology
3. Mpex Pharmaceuticals
4. Scrips Research Institute North Campus
5. Neuropore Therapies
6. Abide Therapeutics
7. San Diego Biomedical Research Institute
8. BD Biosciences Pharmingen
9. Biocom Life Sciences

10. The Alexandria Hotel
11. BioDuro Research Institute
12. BioAtla Corporate Campus
13. Agilent Technologies
14. Inhibrx
15. Ambrx

The Route 985 proposal would be the only MTS bus route serving the new UC San Diego Central Campus Trolley Station. UCSD has incorporated a bus bay for the circulator route to recover time and pick up passengers adjacent to the Trolley station on the UCSD West Campus, rather than at Gilman Transit Center or UC San Diego Health La Jolla Station.

UCSD preferred the route connect at UC San Diego Central Campus Station to have direct access between the University and neighoring employment destinations, due to the University's relationship with the nearby research facilities and the exchange in people and knowledge that flow between area companies and the University. Biocom Life Sciences is also supportive of having a route connecting the Torrey Pines area with the Trolley and the UCSD campus.

Alternatives

1. The original concept considered would have operated between UC San Diego Health La Jolla Trolley Station and Torrey Pines Road via Genesee Avenue. At the time, the plans for UC San Diego Central Campus Trolley Station did not include a bus bay for an MTS bus route. This concept would take considerably longer to operate and require more resources due to congestion on Genesee Avenue as well as increase travel time for passengers by traveling east on the Trolley to Voigt Station then backtrack west on the commuter shuttle. Additionally, a route originating at UC San Diego Health La Jolla Station would not connect the UCSD West Campus with the Torrey Pines research facilities.

2. The Gilman Transit Center was considered as an origin for the Route 974 concept; however, the distance between the UC San Diego Central Campus Trolley Station Station and the Gilman Transit Center would add considerable travel time for the trip. The tradeoff would be convenient transfers from throughout the MTS bus network; however the NCTD Route 101 currently serves North Torrey Pines Road from GTC and the purpose of the route is to be a last-mile solution to connect the Trolley with the commute destinations in Torrey Pines

3.11 Proposed Frequencies for Feeder Bus Service

Another aspect of modifying bus service to complement the Trolley is the scheduling of trips to estimate the resources for the proposed bus services. Schedulers from the MTS Planning and Scheduling estimated the amount of operating time for each proposed route, to enable the planning of service levels for the proposed feeder bus routes.

At a high level, key factors considered in scheduling for proposed feeder bus routes include:

1. **Revenue neutral** – The resources for the frequency and the span of the proposed routes cumulatively be at a level that would not require additional net resources to operate.

2. **Peak hour buses deployed** - The amount of weekday peak hour buses needed to operate the service is impactful to resources needed to operate the service. Additional peak buses have an increased capital cost and require space to store in bus yards during the mid-day.

3. **Connections with the Trolley** – Timed transfers with other services to allow for convenient and reliable connections. The Trolley is proposed to operate 15-minute or 30-minute service, to facilitate connections with the Trolley. Proposed new routes have their frequencies planned for 15-minute peak or 15-minute all day service for connections with the Trolley during the critical peak commute hours.

The current and proposed frequencies for feeder bus routes for the Trolley extension are listed in *Table 3.2* below. The majority of changes in frequency for route proposals is changing increasing frequency to 15-minute service. There are minor upticks in service, like the Route 8 proposal to improve from 20-minute to 15-minute service and there are substantial increases such as the Route 27 proposal to improve from 60-minute to 30-minute service on Saturdays, and adding Sunday 30-minute service.

For new routes, the proposed frequency varies based on the estimated demand. Route 43 operates along the Clairemont Mesa Boulevard corridor, which currently has 15-minute all day service operated on Route 44. The demand for this busy corridor is expected to persist; therefore, the proposed frequency for Route 43 matches the current Route 44 frequency.

Route 140 is designed to move people between downtown La Jolla and BATC. Travel demand in La Jolla is peak-oriented; however, the direct service from BATC may draw ridership from tourists. The demand for off-peak service is not as strong as the demand for peak service; therefore, the proposed frequency for Route 140 is 15-minute peak/30-minute base service.

Operating a similar routing to the SVCC Route 978, the demand for the proposed Route 985 is heavily peak oriented. The route will operate as an employment shuttle between UCSD Central Campus Station and employment sites on and around North Torrey Pines Road. The proposed 15-minute peak service on weekdays the only service that would be operated for Route 985.

Table 3.2: The current and proposed frequencies for feeder bus routes. New route proposals do not have current frequencies for comparison.

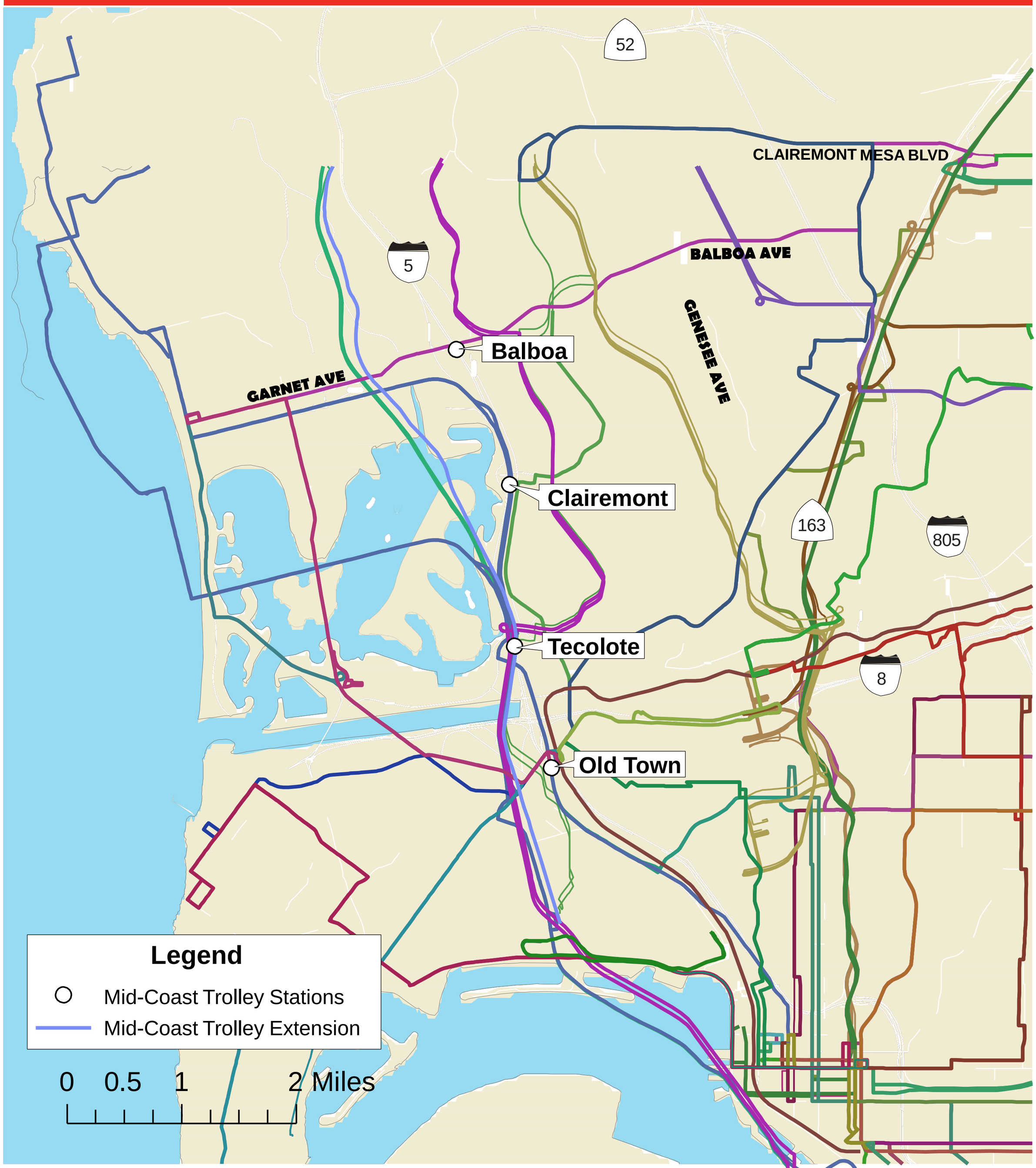
Route	Proposal	Current Weekday Peak	Proposed Weekday Peak	Current Weekday Base	Proposed Weekday Base	Current Saturday	Proposed Saturday	Current Sunday	Proposed Sunday
8	OTTC - BATC via Grand Avenue	20	**15**	20	**15**	20	**15**	30	**15**
9	OTTC - Ingram Avenue/Garnet Avenue via SeaWorld	20	**20**	20	**20**	20	**20**	30	**30**
27	KMTC - Felspar Street./Mission Boulevard via Kearny Villa Road and BATC	30	**30**	30	**30**	60	**30**	-	**30**
30	OTTC - GTC (Limited Stops on Grand Avenue)	15	**15**	15	**15**	15/30	**30**	15/30	**30**
43*	New route from KMTC to BATC via Clairemont Mesa Boulevard and Clairemont Drive	-	**15**	-	**15**	-	**30**	-	**30**
44	OTTC - KMTC via Kearny Villa Road	15	**15**	15	**15**	30	**30**	30	**30**
50	DISCONTINUE	30	**-**	-	**-**	-	**-**	-	**-**
105	UTC - OTTC via Governor Drive	30	**30**	30	**30**	60	**30**	60	**30**
140*	Downtown La Jolla - BATC Express	-	**15**	-	**30**	-	**30**	-	**30**
150	DISCONTINUE	15/30	**-**	30	**-**	30	**-**	-	**-**
201/202	UTC - GTC - UTC loop via La Jolla Village Drive	5	**5**	10	**10**	15	**15**	15	**15**
985*	New route from UC San Diego Central Campus Station to North Torrey Pines Road via Voigt Drive and Hopkins Drive	-	**15**	-	**-**	-	**-**	-	**-**

Appendix 1
Storyboards from Public Outreach Events

CHANGING THE WAY

SAN DIEGO MOVES

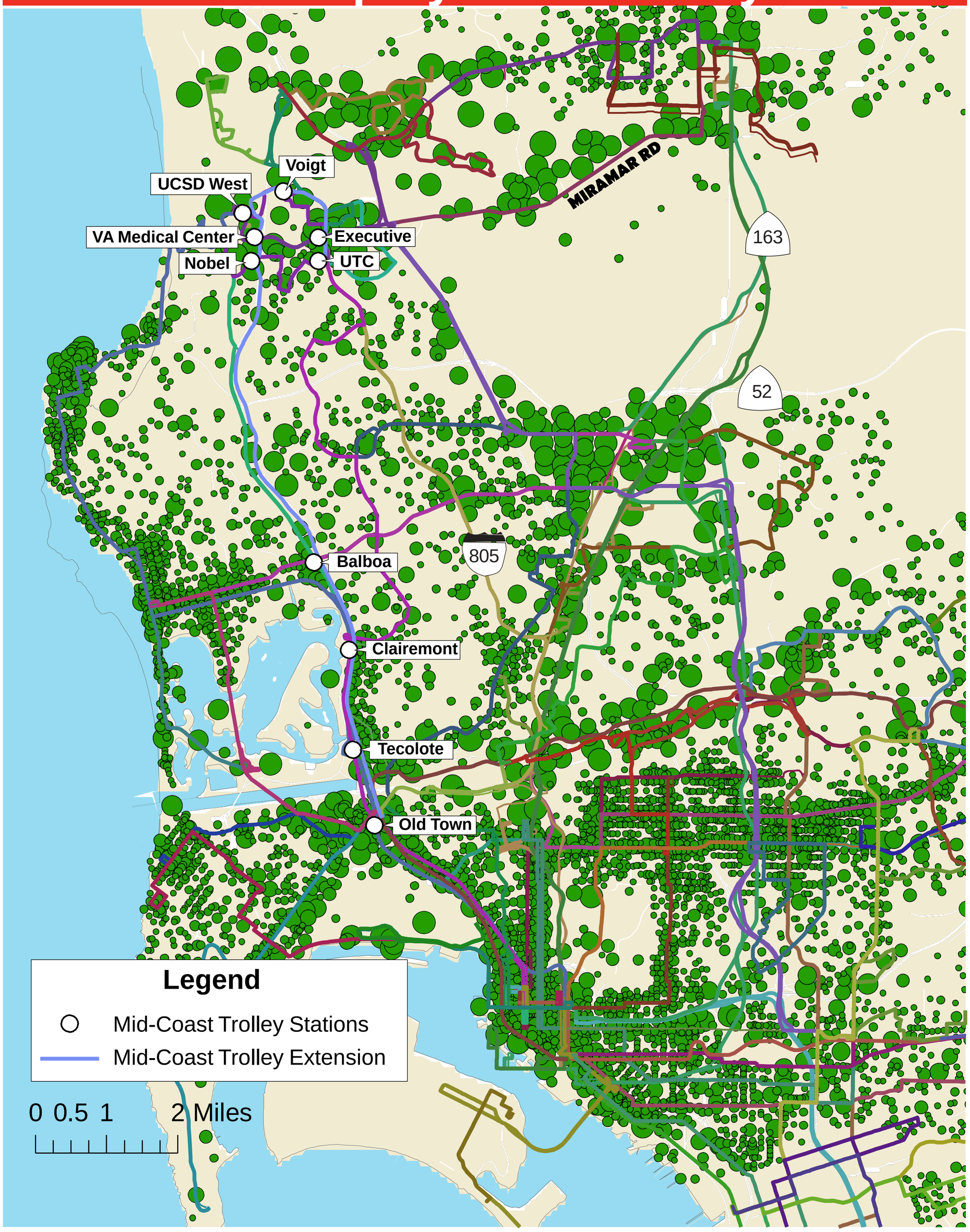
I-5 Cooridor



CHANGING THE WAY

SAN DIEGO MOVES

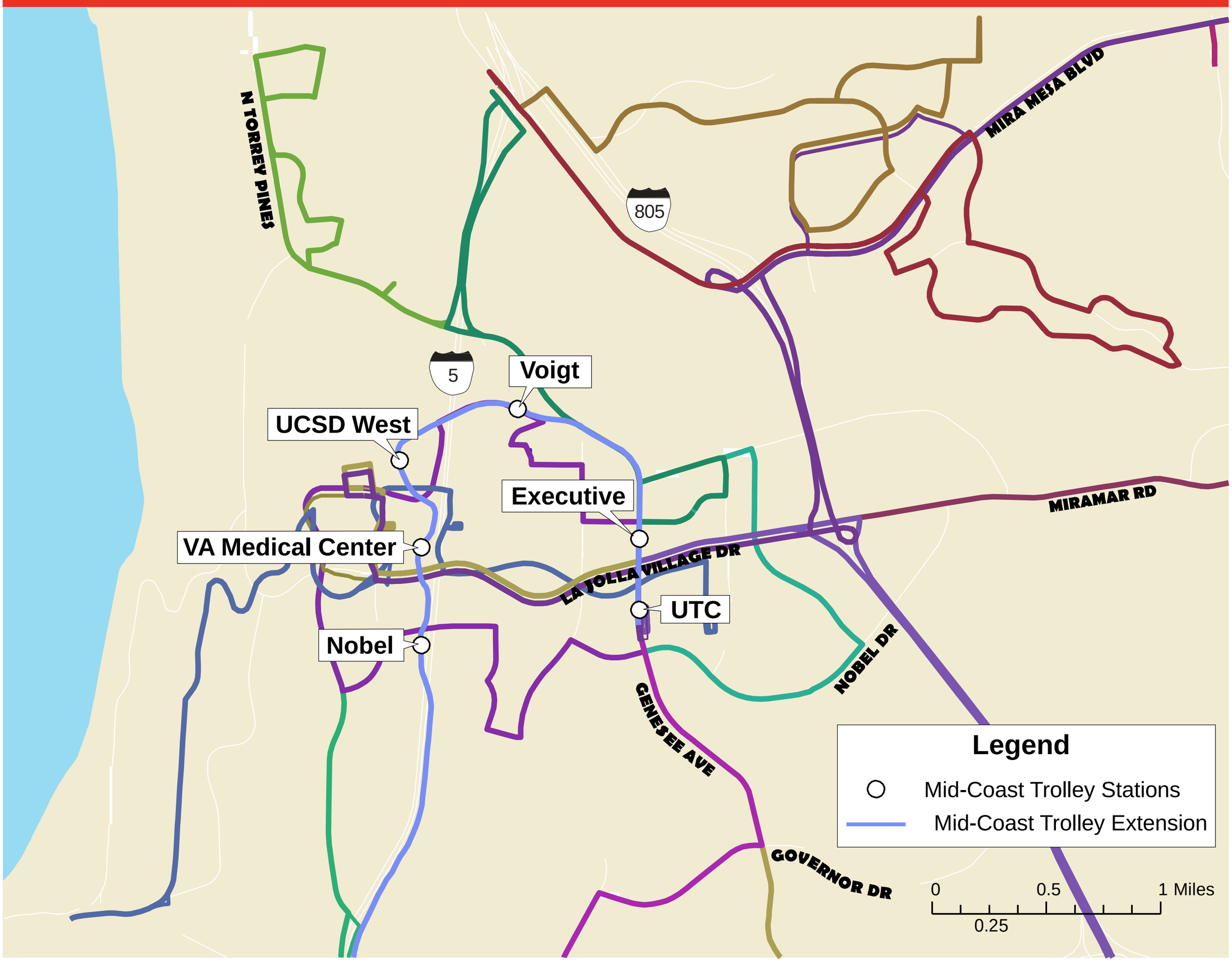
I-5 Employment Density



CHANGING THE WAY

SAN DIEGO MOVES

UC Bus Network



CHANGING THE WAY

SAN DIEGO MOVES

Regional Transit Map