

# Appendix W: Isochrone Methodology and Analysis - Proposed Condition (2050)

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To: San Diego Association of Governments and Caltrans District 11  
From: North County Comprehensive Multimodal Corridor Plan (CMCP) Project Team  
Date: October 2022  
Subject: North County Comprehensive Multimodal Corridor Plan (CMCP) – Isochrone Methodology and Analysis

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## Overview

The North County Comprehensive Multimodal Corridor Plan (CMCP) will identify integrated transportation solutions that enhance the way people travel throughout North County.

The purpose of this appendix is to inform the North County CMCP project team on the proposed network shown through isochrone maps. An isochrone is a visualization tool—a geographic shape—that shows the area a traveler can reach within a travel time limit from a specific point of origin. For instance, an isochrone can show the maximum area that can be reached within 30 minutes of a specific location using transit or walking and transit. A series of 30-minute isochrone sheds have been developed and analyzed for the North County Study Area during the PM peak. The isochrone analysis, which compares the isochrones for the current transit conditions versus the proposed 2050 conditions, will be valuable in understanding the effects of the proposed transit network updates on how far users can travel. This appendix details the methodology and analysis of 13 isochrone origins in the North County Study Area in regard to the proposed North County transit network.

## Methodology

### STEP 1: ISOCHRONE ORIGIN SELECTION

As part of the Isochrone Analysis for North County’s baseline conditions, 13 isochrone origin points were identified. The same 13 origin points have been used for the isochrone analysis of proposed conditions to provide an accurate point of comparison. The following 13 points are included in the analysis:

- Barham Dr and Campus Way
- Camp Pendleton Gate (Vandergrift)
- Carlsbad Blvd and Carlsbad Village Dr
- College Blvd and SR 76
- Faraday Ave and El Camino Real
- Felicita Ave and Centre City Pkwy
- Maple St and W Grand Ave
- Oceanside Blvd and Avenida del Oro

- Poinsettia Ave and Business Park Dr
- Via Vera Cruz and San Marcos Blvd
- Vista Village Dr and Santa Fe Ave
- West Lake Dr and San Marcos Blvd
- Wisconsin Ave and Coast Highway

## STEP 2: DEVELOPING GTFS NETWORK DATASET

To generate isochrones, a Global Transit Feed Specification (GTFS) dataset reflecting the proposed transit network in 2050 for the North County Study Area had to be created. The project team utilized Podaris – a software platform that allows users to create multimodal transportation networks along with high-level schedules to generate a GTFS network dataset that can be used for planning purposes. Using the existing Metropolitan Transit System (MTS) GTFS and North County Transit District (NCTD) GTFS, the project team updated the frequencies of existing routes and coded new routes to portray transit improvements identified in SANDAG’s 2021 Regional Plan, NCTD’s Planned Network, and recommendations from the North County CMCP.

The routes and scheduled were exported from Podaris as a GTFS file that was brought used as the transit network to develop transit/walk isochrones.

## STEP 3: ISOCHRONE DEVELOPMENT

To develop the transit-walk isochrone sheds, the following parameters were used:

- Time Limit
  - 30-minute
- Time Period<sup>1</sup>
  - PM Peak (4:30 PM, 4:40 PM, 4:50 PM)
- Mode
  - Walk and transit
- Transportation Network<sup>2</sup>
  - Proposed General Transit Feed Specification (GTFS) dataset developed in Podaris
  - Underlying travel network from OpenStreetMap

Using the parameters indicated above, three isochrones were developed for each isochrone origin at each specified time limit and period. The isochrones for each time period varied in size due to alignment with the specific service times within the GTFS dataset. To understand and analyze the variability in transit access, a high likelihood and a furthest reaching isochrone was mapped for each origin point:

- The **High Likelihood** isochrone represents the overlap between the isochrones generated for each peak period and most accurately reflects a user’s reach within a 30-minute travel period
- The **Furthest Reaching** isochrone represents how far a user could go if they began their trip at a time that is more aligned with North County’s proposed transportation network schedule.

<sup>1</sup> The travel shed process using the GTFS network requires specific time inputs. To better understand the transit network throughout the peak period, three time periods during peak travel times were used to develop the travel sheds.

<sup>2</sup> Note that the transportation network for the isochrone analysis does not include Amtrak services.

## STEP 4: REACH ANALYSIS

To understand the destinations within reach for each isochrone origin, the number of users (people), destinations, jobs, housing units, seniors, People of Color, and low-income households were calculated for each isochrone shed.

- Destination Points from SANDAG's Places Shapefile
- Jobs (census block group level) from LEHD LODES Dataset (2018)
- Demographic information (census block group level) from American Community Survey (ACS) 2019 5-Year Estimates
- DS39 demographic information (TAZ level) developed by SANDAG for 2016
- DS38 demographic information (TAZ level) developed by SANDAG for 2050

To capture the number of destinations, people, and jobs accessible within each travel shed, the points and centroids of block groups and TAZs were joined to each isochrone shed. The data for each isochrone shed is summarized in the Isochrone Analysis and Findings section below.

## Isochrone Analysis and Findings

This section contains the analysis that compares the variation proposed and existing isochrones. It also contains that analysis that compares the proposed highest likelihood and the existing highest likelihood isochrones generated for each origin point for a 30-minute travel time limit at PM peak. The analysis of each isochrone origin contains a map showing the travel sheds generated and a table summarizing the reach analysis for each isochrone.

The large variation between each of the categories analyzed as part of the reach analysis shows that infrequent transit time significantly impacts a user's accessibility to destinations, housing, and jobs. The large change in access between existing and proposed conditions shows how the changes outlined in the CMCP will cause widespread increases in access to transit.

## SUMMARY OF 30-MINUTE ISOCHRONE REACH ANALYSIS

**Table 1** summarizes the percentage change in variance between the proposed and existing conditions for each of the isochrone origins at 30 minutes for various reach factors. **Table 2** summarizes the variation between the existing and the proposed 30-minute isochrones generated for each isochrone origin for various reach factors.

### *Destinations*

The average percent change in variation for destinations between the proposed and existing isochrones is 46.3%. The Via Vera Cruz and San Marcos Blvd. origin point generates isochrones that have the largest amount of variance, with a 141.9% change. Excluding Camp Pendleton, the Poinsettia and Business Park Dr origin has the smallest variance with a 14.1% change.

The average change in access for destinations within reach between each set of 30-minute isochrones generated is 299.8%. The isochrones generated for Poinsettia and Business Park Drive resulted in the largest change in access for destinations with a change of 703.5%. Excluding Camp Pendleton (Vandergrift), the isochrones generated for Maple Street and W Grand Ave resulted in the smallest change in access for destinations with an increase of 113.2%.

## *Housing Units*

The average percent change in variation for housing between the proposed and existing isochrones is 56.6%. The Via Vera Cruz and San Marcos Blvd. origin point generates isochrones that have the largest amount of variance, with a 152.7% change. Excluding Camp Pendleton, the Maple St and W Grand Ave origin has the smallest variance change with a 15.4% change.

The average change in access for destinations within reach between each set of 30-minute isochrones generated is 339.9%. The isochrones generated for Via Vera Cruz and San Marcos Blvd. resulted in the largest change in access for destinations with a change of 947.79%. Excluding Camp Pendleton (Vandergrift), the isochrones generated for Maple Street and W Grand Ave resulted in the smallest change in access for destinations with an increase of 98.64%.

## *Jobs*

The average percent change in variation for jobs between the proposed and existing isochrones is 144.6%, due to a large increase of 1,307.8% in Camp Pendleton. Excluding Camp Pendleton, the Felicita and Centre City Pkwy origin point generates isochrones that have the largest amount of variance, with a 119.7% change. The Poinsettia and Business Park Dr origin has the smallest variance change with a 8% change.

The average change in access for jobs within reach between each set of 30-minute isochrones generated is 271.3%. The isochrones generated for Via Vera Cruz and San Marcos Blvd. resulted in the largest change in access for destinations with a change of 575.3%. The isochrones generated for Carlsbad Blvd. and Carlsbad Village Dr resulted in the smallest change in access for destinations with an increase of 4.3%.

## *Population*

The average percent change in variation for population between the proposed and existing isochrones is 62.3%. The Via Vera Cruz and San Marcos Blvd. origin point generates isochrones that have the largest amount of variance, with a 193.8% change. The Maple St and W Grand Ave origin has the smallest variance change with a 8.3% change.

The average change in access for populations within reach between each set of 30-minute isochrones generated is an increase of 378.7%. The isochrones generated for Poinsettia and Business Park Dr resulted in the largest change in access for destinations with a change of 1104.3%. Excluding Camp Pendleton, the isochrones generated for Maple St and W Grand Ave resulted in the smallest change in access for destinations with an increase of 97.3%.



Table 1: Summary of High Likelihood Reach Analysis (30-Minute Isochrones)

Isochrone Origin	% Change in Variation	% Change in Variation	% Change in Variation	% Change in Variation
		Housing	Jobs	Population
Unit:	Destinations			
Barham Dr and Campus Way	-67.4	-91.1	-44.3	-91.1
Camp Pendleton Gate (Vandergrift)	N/A	N/A	1307.8	N/A
Carlsbad Blvd and Carlsbad Village Dr	-68.1	-77.0	-10.0	-74.4
College Blvd and SR 76	-10.8	-12.6	-45.0	11.0
Faraday Ave and El Camino Real	2.5	-54.4	-61.3	-50.7
Felicita Ave and Centre City Pkwy	14.8	54.5	119.7	80.3
Maple St and W Grand Ave	-46.2	-15.4	-56.5	-8.3
Oceanside Blvd and Avenida del Oro	-53.1	-39.0	-66.9	-40.6
Poinsettia Ave and Business Park Dr	14.1	32.8	8.0	45.9
Via Vera Cruz and San Marcos Blvd	141.9	152.7	32.7	193.8
Vista Village Dr and Santa Fe Ave	-60.0	-39.8	-64.7	-45.2
West Lake Dr and San Marcos Blvd	53.6	80.5	29.9	83.9
Wisconsin Ave and Coast Highway	23.2	-29.6	32.4	-21.8

Sources: (1) LEHD LODES Dataset (2018)

Table 2: Summary of Reach Analysis Variation (30-Minute Isochrones)

<b>Isochrone Origin</b>	<b>%Change in Access</b>	<b>%Change in Access</b>	<b>%Change in Access</b>	<b>%Change in Access</b>
<b>Unit:</b>	<b>Destinations</b>	<b>Housing</b>	<b>Jobs</b>	<b>Population</b>
Barham Dr and Campus Way	239.2	375.5	251.6	355.1
Camp Pendleton Gate (Vandergrift)	66.7	55.1	78.5	86.7
Carlsbad Blvd and Carlsbad Village Dr	180.4	172.7	4.3	171.9
College Blvd and SR 76	523.3	322.8	445.6	286.5
Faraday Ave and El Camino Real	245.7	255.5	182.7	231.2
Felicita Ave and Centre City Pkwy	297.0	223.2	488.7	219.5
Maple St and W Grand Ave	113.2	98.6	127.1	97.3
Oceanside Blvd and Avenida del Oro	335.7	546.0	289.8	515.6
Poinsettia Ave and Business Park Dr	703.4	563.2	339.7	1104.3
Via Vera Cruz and San Marcos Blvd	404.6	947.8	575.3	1082.0
Vista Village Dr and Santa Fe Ave	131.2	126.2	215.1	131.2
West Lake Dr and San Marcos Blvd	515.4	586.3	385.6	473.8
Wisconsin Ave and Coast Highway	141.7	145.1	142.5	168.7

Sources: (1) LEHD LODES Dataset (2018)

# BARHAM DR AND CAMPUS WAY

Figure 1: Barham Dr and Campus Way, 30-Minute Travel Sheds at PM Peak

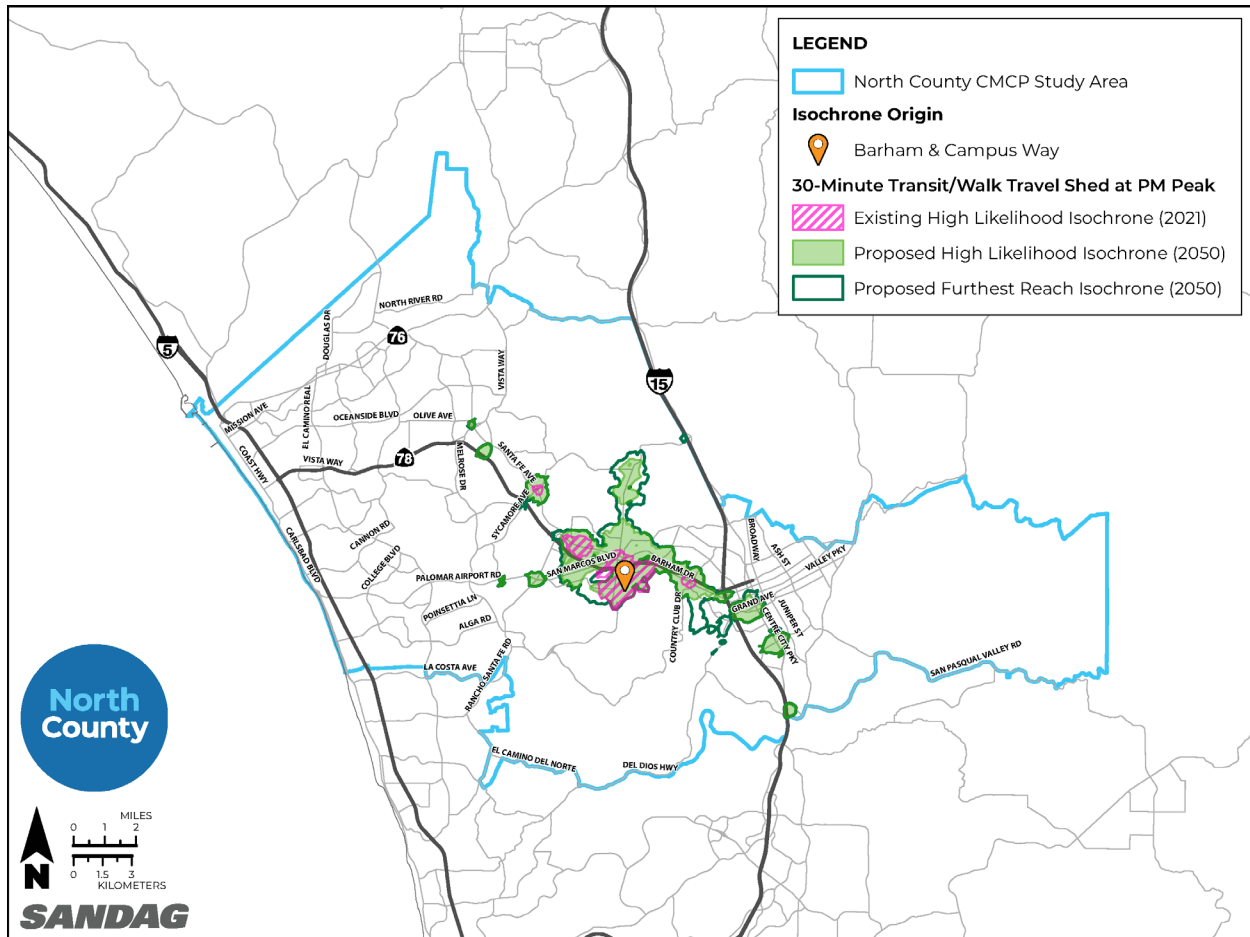


Table 3: Isochrone Summary - Barham Dr and Campus Way (30-Minute)

Characteristics Within Travel Shed	Proposed Likelihood Isochrone	Existing High Likelihood Isochrone	% Change from Existing High Likelihood Access
Destinations <sup>1</sup>	122	51	139.2%
ACS/LEHD Lodes Estimates – Characteristic Within Travel Shed	ACS/LEHD Lodes Estimates – Proposed High Likelihood Isochrone	ACS/LEHD Lodes Estimates – Existing High Likelihood Isochrone	ACS/LEHD Lodes Estimates – % Change from Existing High Likelihood Access
Housing Units <sup>2</sup>	7,180	1,912	275.5%
Jobs <sup>3</sup>	37,833	15,037	151.6%
Low-Income <sup>2*</sup>	2,477	882	180.8%
Senior (65+) <sup>2</sup>	1,947	262	643.1%
Senior (75+) <sup>2</sup>	858	115	646.1%
People of Color <sup>2</sup>	15,880	5,270	201.3%
Total Population <sup>2</sup>	21,484	6,050	255.1%
DS39 Estimates <sup>4</sup> – Characteristic Within Travel Shed	DS39 Estimates <sup>4</sup> – Proposed High Likelihood Isochrone	DS39 Estimates <sup>4</sup> – Existing High Likelihood Isochrone	DS39 Estimates <sup>4</sup> – % Change from Existing High Likelihood Access
Housing Units	11,481	4,168	175.5%
Jobs	41,304	13,665	202.3%
Low-Income	16,046	5,464	193.7%
Senior (75+)	1,709	692	147.0%
People of Color	22,195	6,286	253.1%
Total Population	36,090	12,818	181.6%
DS38 2050 Estimates <sup>4</sup> – Characteristic Within Travel Shed	DS38 2050 Estimates <sup>4</sup> – Proposed High Likelihood Isochrone	DS38 2050 Estimates <sup>4</sup> – Existing High Likelihood Isochrone	DS38 2050 Estimates <sup>4</sup> – % Change from Existing High Likelihood Access
Housing Units	19,477	8,587	126.8%
Jobs	60,494	27,223	122.2%
Low-Income	23,884	11,155	114.1%
Senior (75+)	5,698	2,519	126.2%
People of Color	42,996	18,185	136.4%
Total Population	57,794	27,336	111.4%

Notes: \*Low-Income ACS data collected at the household level.

Source: (1) SANGIS/Places Shapefile (2) LEHD LODES Dataset (2018) (3) SANDAG DS39 Forecast Estimates 2016 Baseline (2021).

# CAMP PENDLETON GATE (VANDERGRIFT)

Figure 2: Camp Pendleton Gate (Vandergrift), 30-Minute Travel Sheds at PM Peak

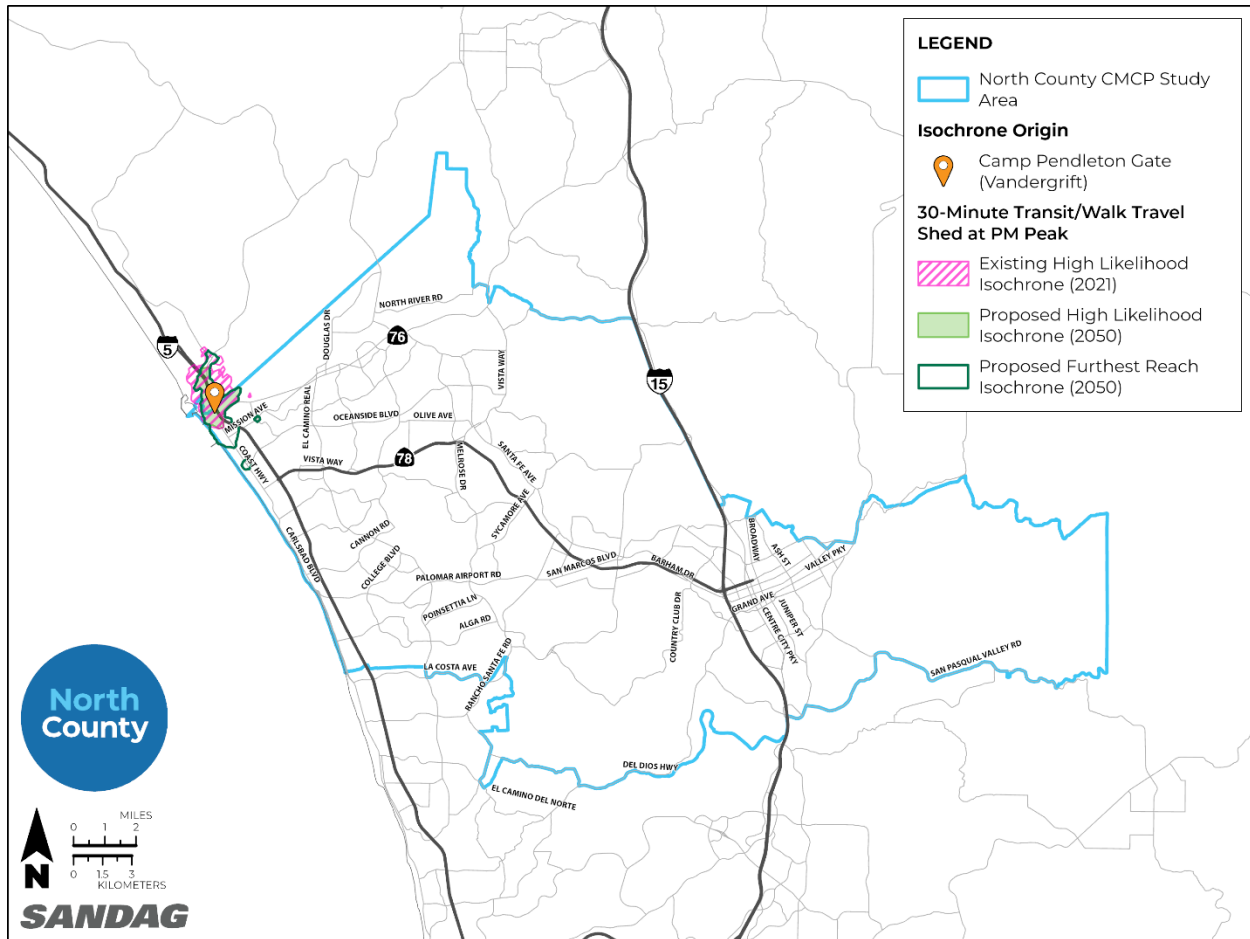


Table 4: Isochrone Summary - Camp Pendleton Gate (Vandergrift) (30-Minute)

Characteristics Within Travel Shed	Proposed Likelihood Isochrone	Existing High Likelihood Isochrone	% Change from Existing High Likelihood Access
Destinations <sup>1</sup>	2	3	-33.3%
ACS/LEHD Lodes Estimates – Characteristic Within Travel Shed	ACS/LEHD Lodes Estimates – Proposed High Likelihood Isochrone	ACS/LEHD Lodes Estimates – Existing High Likelihood Isochrone	ACS/LEHD Lodes Estimates – % Change from Existing High Likelihood Access
Housing Units <sup>2</sup>	1,112	2,017	-44.9%
Jobs <sup>3</sup>	796	1,014	-21.5%
Low-Income <sup>2*</sup>	341	391	-12.8%
Senior (65+) <sup>2</sup>	433	558	-22.4%
Senior (75+) <sup>2</sup>	125	184	-32.1%
People of Color <sup>2</sup>	1,501	1,564	-4.0%
Total Population <sup>2</sup>	2,979	3,437	-13.3%
DS39 Estimates <sup>4</sup> – Characteristic Within Travel Shed	DS39 Estimates <sup>4</sup> – Proposed High Likelihood Isochrone	DS39 Estimates <sup>4</sup> – Existing High Likelihood Isochrone	DS39 Estimates <sup>4</sup> – % Change from Existing High Likelihood Access
Housing Units	937	937	0.0%
Jobs	659	659	0.0%
Low-Income	788	788	0.0%
Senior (75+)	132	132	0.0%
People of Color	1,279	1,279	0.0%
Total Population	2,513	2,512	0.0%
DS38 2050 Estimates <sup>4</sup> – Characteristic Within Travel Shed	DS38 2050 Estimates <sup>4</sup> – Proposed High Likelihood Isochrone	DS38 2050 Estimates <sup>4</sup> – Existing High Likelihood Isochrone	DS38 2050 Estimates <sup>4</sup> – % Change from Existing High Likelihood Access
Housing Units	1,295	1,295	0.0%
Jobs	667	667	0.0%
Low-Income	965	965	0.0%
Senior (75+)	401	401	0.0%
People of Color	2,176	2,176	0.0%
Total Population	3,228	3,228	0.0%

Notes: <sup>1</sup>Reach analysis only uses data from the San Diego region, data for auto isochrones extending beyond the region's boundary was not included.

<sup>\*</sup>Low-Income ACS data collected at the household level. <sup>\*\*</sup>Due to the presence/size of the military base, limited data surrounding the base, and small size of isochrones generated, the lack of variation in the reach analysis does not indicate that the base has more consistent transit facilities.

Sources: (1) SANGIS/Places Shapefile (2) LEHD LODES Dataset (2018) (3) SANDAG DS39 Forecast Estimates 2016 Baseline (2021).

# CARLSBAD BLVD AND CARLSBAD VILLAGE

Figure 3: Carlsbad Blvd and Carlsbad Village, 30-Minute Travel Sheds at PM Peak

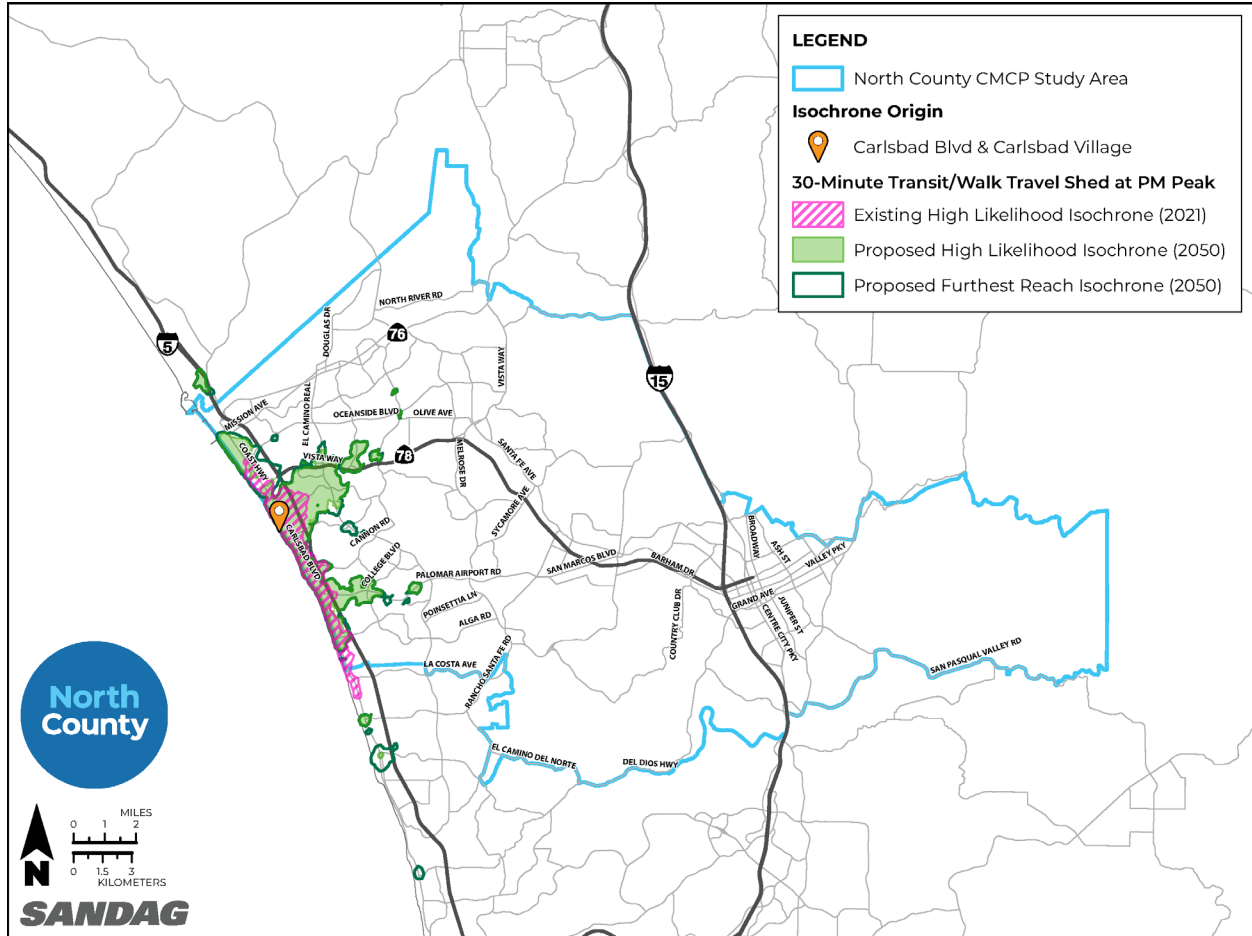




Table 5: Isochrone Summary - Carlsbad Blvd and Carlsbad Village (30-Minute)

Characteristics Within Travel Shed	Proposed Likelihood Isochrone	Existing High Likelihood Isochrone	% Change from Existing High Likelihood Access
Destinations <sup>1</sup>	101	56	80.4%
ACS/LEHD Lodes Estimates – Characteristic Within Travel Shed	ACS/LEHD Lodes Estimates – Proposed High Likelihood Isochrone	ACS/LEHD Lodes Estimates – Existing High Likelihood Isochrone	ACS/LEHD Lodes Estimates – % Change from Existing High Likelihood Access
Housing Units <sup>2</sup>	13,550	7,846	72.7%
Jobs <sup>3</sup>	19,988	12,780	56.4%
Low-Income <sup>2*</sup>	3,061	1,903	60.9%
Senior (65+) <sup>2</sup>	4,271	2,682	59.2%
Senior (75+) <sup>2</sup>	1,752	1,162	50.8%
People of Color <sup>2</sup>	8,484	4,907	72.9%
Total Population <sup>2</sup>	25,257	14,697	71.9%
DS39 Estimates <sup>4</sup> – Characteristic Within Travel Shed	DS39 Estimates <sup>4</sup> – Proposed High Likelihood Isochrone	DS39 Estimates <sup>4</sup> – Existing High Likelihood Isochrone	DS39 Estimates <sup>4</sup> – % Change from Existing High Likelihood Access
Housing Units	15,679	7,566	107.2%
Jobs	21,475	10,986	95.5%
Low-Income	8,130	3,461	134.9%
Senior (75+)	2,368	1,134	108.8%
People of Color	12,194	4,869	150.4%
Total Population	34,706	15,919	118.0%
DS38 2050 Estimates <sup>4</sup> – Characteristic Within Travel Shed	DS38 2050 Estimates <sup>4</sup> – Proposed High Likelihood Isochrone	DS38 2050 Estimates <sup>4</sup> – Existing High Likelihood Isochrone	DS38 2050 Estimates <sup>4</sup> – % Change from Existing High Likelihood Access
Housing Units	17,719	8,661	104.6%
Jobs	23,307	12,772	82.5%
Low-Income	8,937	3,782	136.3%
Senior (75+)	5,528	2,569	115.2%
People of Color	20,579	7,653	168.9%
Total Population	41,127	19,264	113.5%

Notes: <sup>1</sup>Reach analysis only uses data from the San Diego region, data for auto isochrones extending beyond the region's boundary was not included.

\*Low-Income ACS data collected at the household level.

Source: (1) SANGIS/Places Shapefile (2) LEHD LODES Dataset (2018) (3) SANDAG DS39 Forecast Estimates 2016 Baseline (2021).

# COLLEGE BLVD AND SR 76

Figure 4: College Blvd and SR 76, 30-Minute Travel Sheds at PM Peak

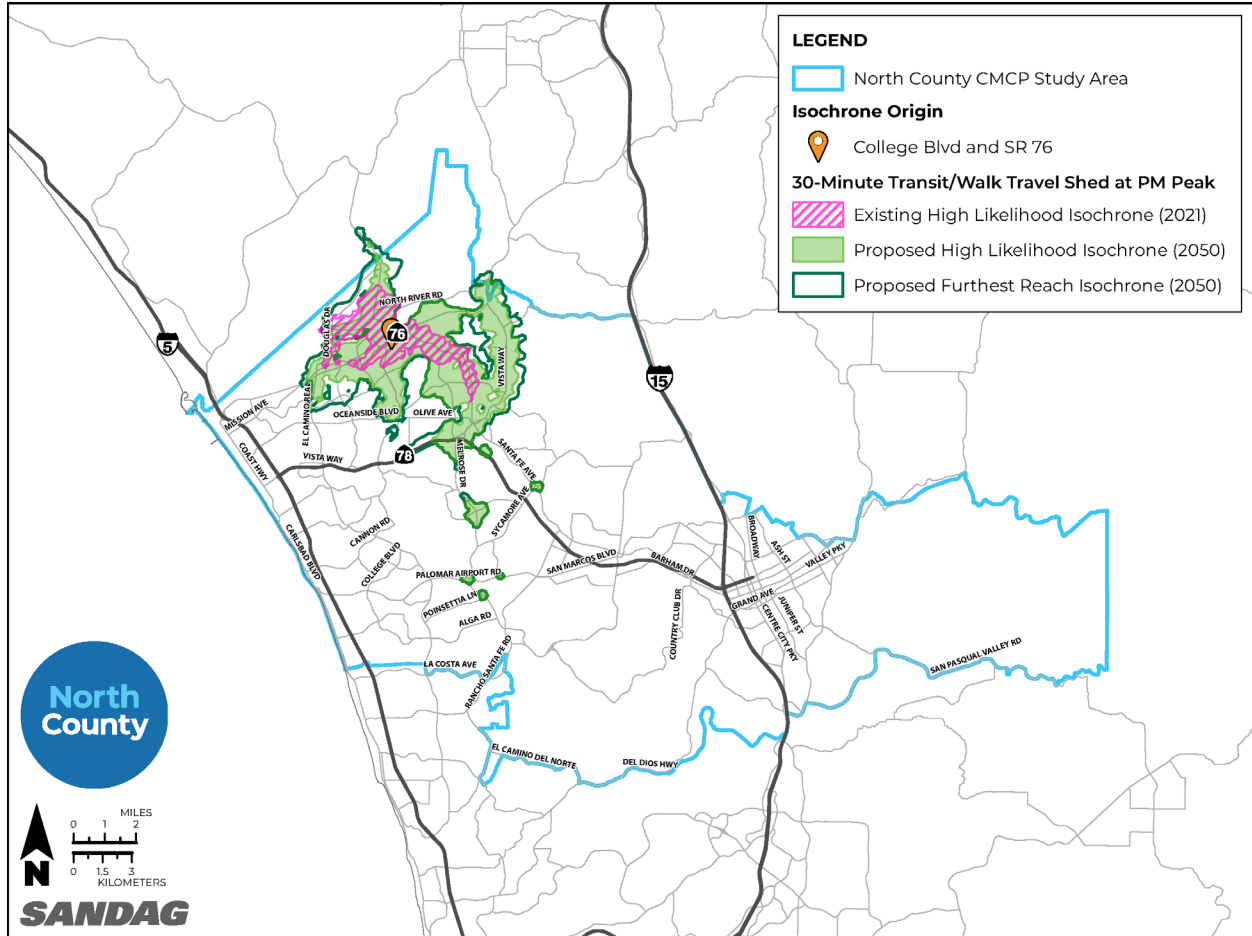


Table 6: Isochrone Summary - College Blvd and SR 76 (30-Minute)

Characteristics Within Travel Shed	Proposed Likelihood Isochrone	Existing High Likelihood Isochrone	% Change from Existing High Likelihood Access
Destinations <sup>1</sup>	157	30	423.3%
ACS/LEHD Lodes Estimates – Characteristic Within Travel Shed	ACS/LEHD Lodes Estimates – Proposed High Likelihood Isochrone	ACS/LEHD Lodes Estimates – Existing High Likelihood Isochrone	ACS/LEHD Lodes Estimates – % Change from Existing High Likelihood Access
Housing Units <sup>2</sup>	24,179	7,490	222.8%
Jobs <sup>3</sup>	17,616	3,953	345.6%
Low-Income <sup>2*</sup>	6,837	1,384	394.0%
Senior (65+) <sup>2</sup>	8,928	2,733	226.7%
Senior (75+) <sup>2</sup>	3,458	975	254.7%
People of Color <sup>2</sup>	47,964	17,376	176.0%
Total Population <sup>2</sup>	74,798	26,112	186.5%
DS39 Estimates <sup>4</sup> – Characteristic Within Travel Shed	DS39 Estimates <sup>4</sup> – Proposed High Likelihood Isochrone	DS39 Estimates <sup>4</sup> – Existing High Likelihood Isochrone	DS39 Estimates <sup>4</sup> – % Change from Existing High Likelihood Access
Housing Units	25,719	9,394	173.8%
Jobs	19,962	4,130	383.3%
Low-Income	26,484	8,420	214.5%
Senior (75+)	4,260	1,540	176.6%
People of Color	46,076	16,859	173.3%
Total Population	79,508	27,823	185.8%
DS38 2050 Estimates <sup>4</sup> – Characteristic Within Travel Shed	DS38 2050 Estimates <sup>4</sup> – Proposed High Likelihood Isochrone	DS38 2050 Estimates <sup>4</sup> – Existing High Likelihood Isochrone	DS38 2050 Estimates <sup>4</sup> – % Change from Existing High Likelihood Access
Housing Units	28,107	9,414	198.6%
Jobs	22,495	4,653	383.5%
Low-Income	20,128	4,528	344.5%
Senior (75+)	8,592	2,255	281.0%
People of Color	54,533	13,702	298.0%
Total Population	79,609	25,295	214.7%

Notes: <sup>1</sup>Reach analysis only uses data from the San Diego region, data for auto isochrones extending beyond the region's boundary was not included

\*Low-Income ACS data collected at the household level.

Source: (1) SANGIS/Places Shapefile (2) LEHD LODES Dataset (2018) (3) SANDAG DS39 Forecast Estimates 2016 Baseline (2021).

# FARADAY AVE AND EL CAMINO REAL

Figure 5: Faraday Ave and El Camino Real, 30-Minute Travel Sheds at PM Peak

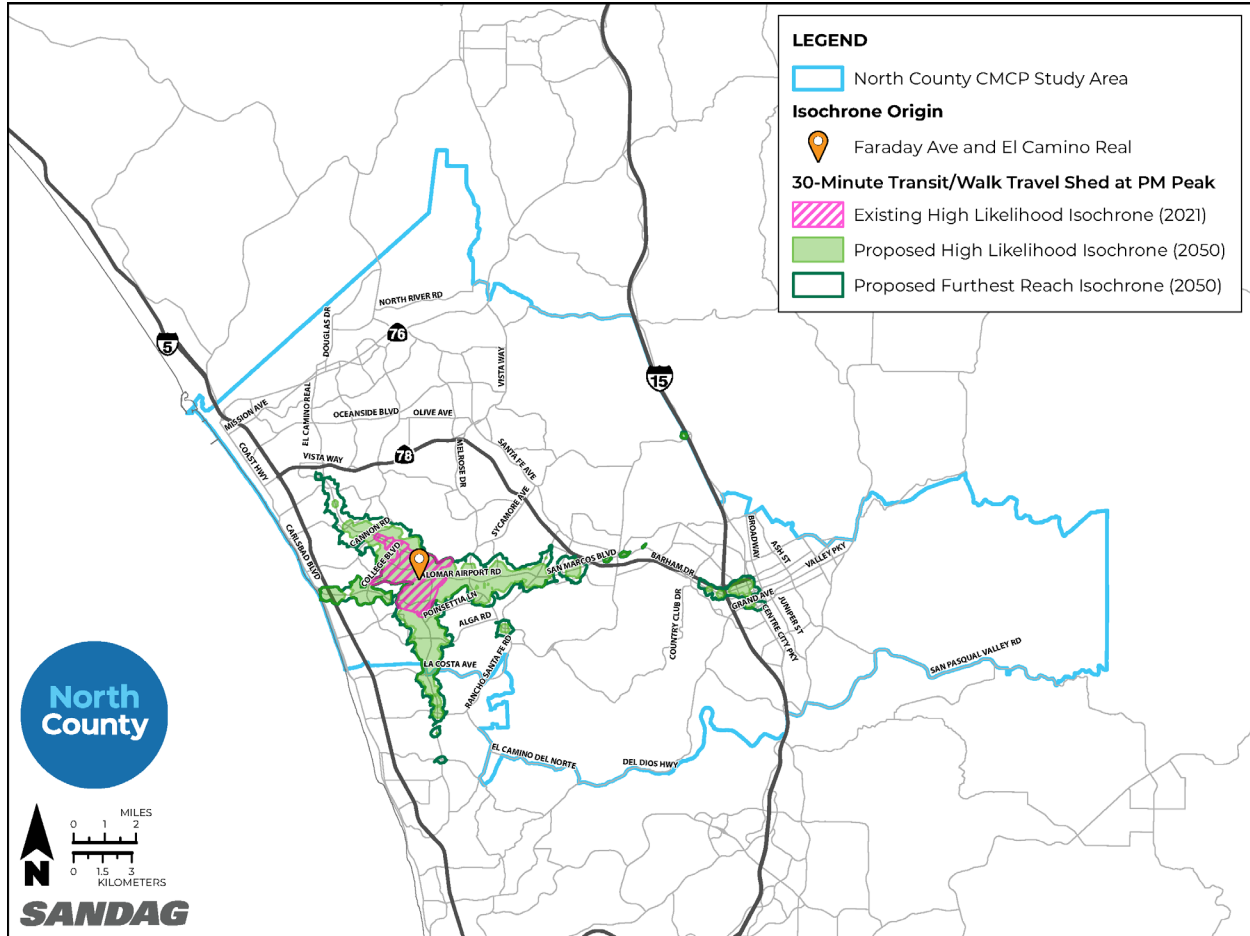


Table 7: Isochrone Summary - Faraday Ave and El Camino Real (30-Minute)

Characteristics Within Travel Shed	Proposed Likelihood Isochrone	Existing High Likelihood Isochrone	% Change from Existing High Likelihood Access
Destinations <sup>1</sup>	86	35	145.7%
ACS/LEHD Lodes Estimates – Characteristic Within Travel Shed	ACS/LEHD Lodes Estimates – Proposed High Likelihood Isochrone	ACS/LEHD Lodes Estimates – Existing High Likelihood Isochrone	ACS/LEHD Lodes Estimates – % Change from Existing High Likelihood Access
Housing Units <sup>2</sup>	3,574	1,399	155.5%
Jobs <sup>3</sup>	41,726	22,844	82.7%
Low-Income <sup>2*</sup>	1,213	504	140.7%
Senior (65+) <sup>2</sup>	2,033	308	560.1%
Senior (75+) <sup>2</sup>	1,106	146	657.5%
People of Color <sup>2</sup>	4,585	2,494	83.8%
Total Population <sup>2</sup>	9,044	3,911	131.2%
DS39 Estimates <sup>4</sup> – Characteristic Within Travel Shed	DS39 Estimates <sup>4</sup> – Proposed High Likelihood Isochrone	DS39 Estimates <sup>4</sup> – Existing High Likelihood Isochrone	DS39 Estimates <sup>4</sup> – % Change from Existing High Likelihood Access
Housing Units	8,527	252	3283.7%
Jobs	43,035	25,305	70.1%
Low-Income	5,226	131	3889.3%
Senior (75+)	1,534	44	3386.4%
People of Color	8,692	195	4357.4%
Total Population	22,456	628	3475.8%
DS38 2050 Estimates <sup>4</sup> – Characteristic Within Travel Shed	DS38 2050 Estimates <sup>4</sup> – Proposed High Likelihood Isochrone	DS38 2050 Estimates <sup>4</sup> – Existing High Likelihood Isochrone	DS38 2050 Estimates <sup>4</sup> – % Change from Existing High Likelihood Access
Housing Units	14,291	988	1346.5%
Jobs	53,163	30,375	75.0%
Low-Income	9,243	320	2788.4%
Senior (75+)	4,393	289	1420.1%
People of Color	23,603	1,454	1523.3%
Total Population	35,489	2,269	1464.1%

Notes: <sup>1</sup>Reach analysis only uses data from the San Diego region, data for auto isochrones extending beyond the region's boundary was not included

<sup>\*</sup>Low-Income ACS data collected at the household level.

Source: (1) SANGIS/Places Shapefile (2) LEHD LODES Dataset (2018) (3) SANDAG DS39 Forecast Estimates 2016 Baseline (2021).

# FELICITA AVE AND CENTRE CITY PKWY

Figure 6: Felicita and Centre City Pkwy, 30-Minute Travel Sheds at PM Peak

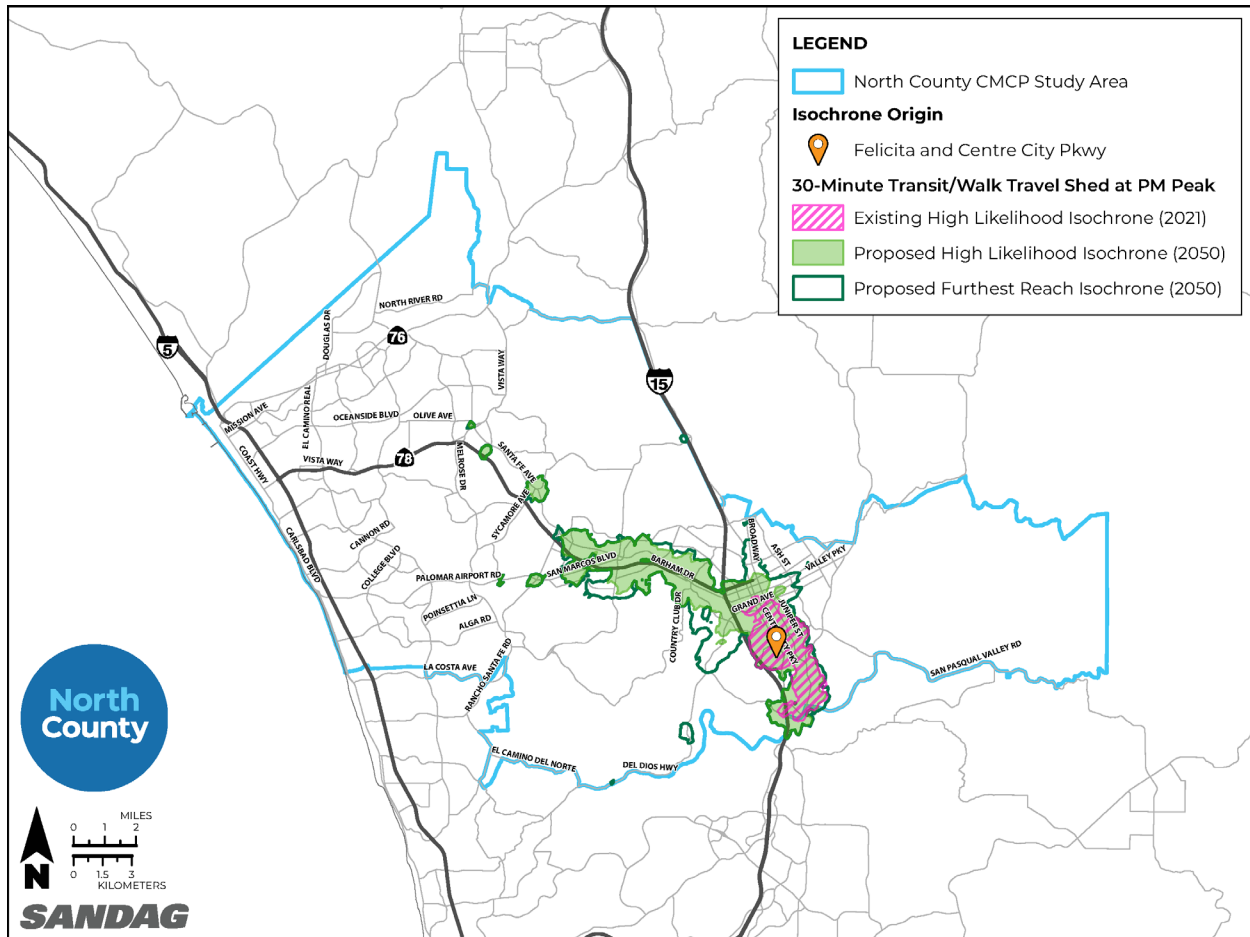


Table 8: Isochrone Summary - Felicita Ave and Centre City Pkwy (30-Minute)

Characteristics Within Travel Shed	Proposed Likelihood Isochrone	Existing High Likelihood Isochrone	% Change from Existing High Likelihood Access
Destinations <sup>1</sup>	196	66	197.0%
ACS/LEHD Lodes Estimates – Characteristic Within Travel Shed	ACS/LEHD Lodes Estimates – Proposed High Likelihood Isochrone	ACS/LEHD Lodes Estimates – Existing High Likelihood Isochrone	ACS/LEHD Lodes Estimates – % Change from Existing High Likelihood Access
Housing Units <sup>2</sup>	17,296	7,749	123.2%
Jobs <sup>3</sup>	55,286	11,312	388.7%
Low-Income <sup>2*</sup>	6,339	2,634	140.7%
Senior (65+) <sup>2</sup>	5,304	2,220	138.9%
Senior (75+) <sup>2</sup>	2,263	1,001	126.1%
People of Color <sup>2</sup>	38,036	16,750	127.1%
Total Population <sup>2</sup>	54,509	24,830	119.5%
DS39 Estimates <sup>4</sup> – Characteristic Within Travel Shed	DS39 Estimates <sup>4</sup> – Proposed High Likelihood Isochrone	DS39 Estimates <sup>4</sup> – Existing High Likelihood Isochrone	DS39 Estimates <sup>4</sup> – % Change from Existing High Likelihood Access
Housing Units	19,902	6,901	188.4%
Jobs	63,869	12,530	409.7%
Low-Income	27,971	8,530	227.9%
Senior (75+)	3,040	1,045	190.9%
People of Color	39,957	13,712	191.4%
Total Population	63,753	21,996	189.8%
DS38 2050 Estimates <sup>4</sup> – Characteristic Within Travel Shed	DS38 2050 Estimates <sup>4</sup> – Proposed High Likelihood Isochrone	DS38 2050 Estimates <sup>4</sup> – Existing High Likelihood Isochrone	DS38 2050 Estimates <sup>4</sup> – % Change from Existing High Likelihood Access
Housing Units	35,940	10,269	250.0%
Jobs	85,463	14,608	485.0%
Low-Income	42,406	9,844	330.8%
Senior (75+)	10,731	3,156	240.0%
People of Color	79,666	22,397	255.7%
Total Population	105,906	29,473	259.3%

Notes: <sup>1</sup>Reach analysis only uses data from the San Diego region, data for auto isochrones extending beyond the region's boundary was not included

<sup>\*</sup>Low-Income ACS data collected at the household level.

Source: (1) SANGIS/Places Shapefile(3) LEHD LODES Dataset (2018) (4) SANDAG DS39 Forecast Estimates 2016 Baseline (2021).



# MAPLE ST AND GRAND AVE

Figure 7: Maple St and W Grand Ave, 30-Minute Travel Sheds at PM Peak

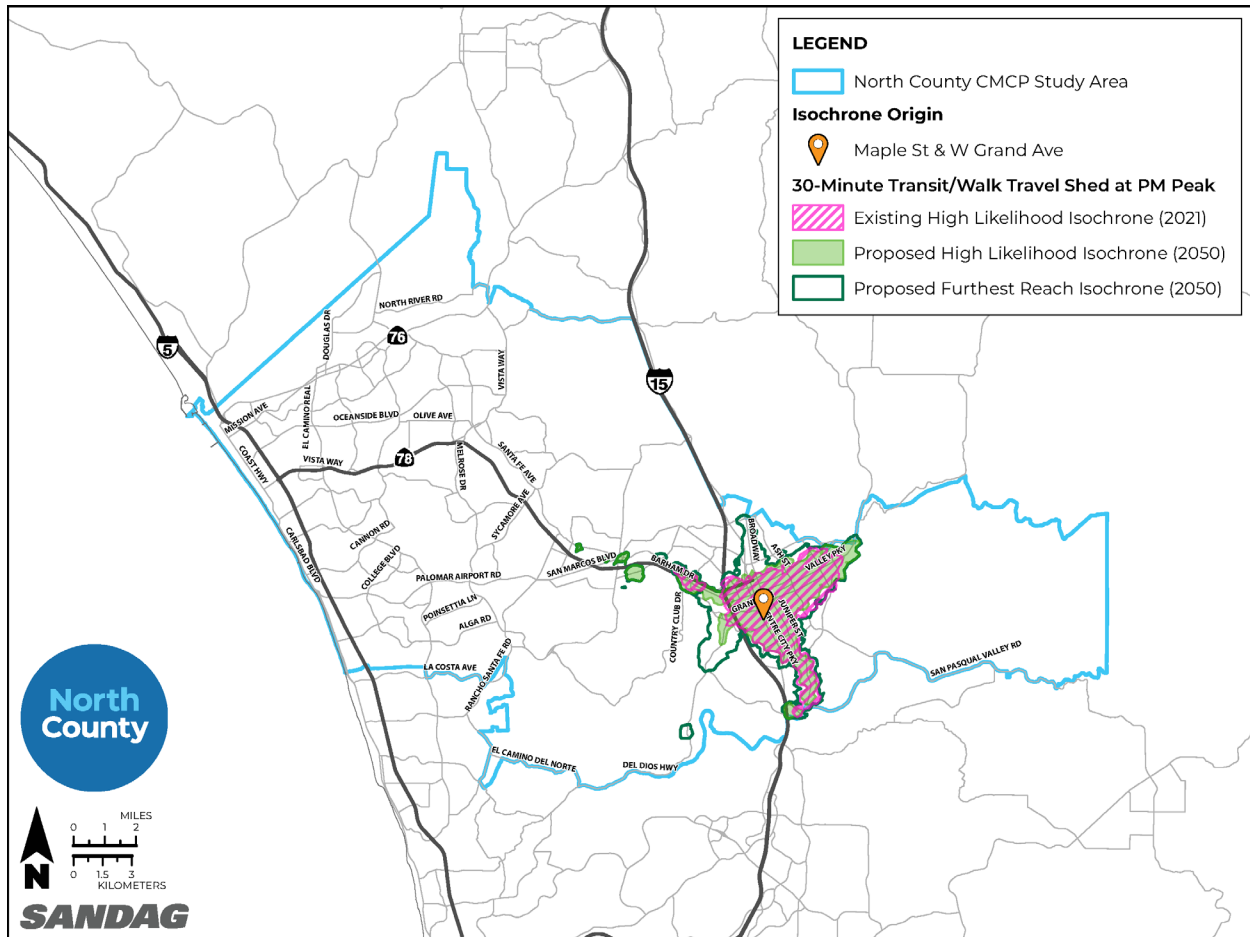


Table 9: Isochrone Summary - Maple St and W Grand Ave (30-Minute)

Characteristics Within Travel Shed	Proposed Likelihood Isochrone	Existing High Likelihood Isochrone	% Change from Existing High Likelihood Access
Destinations <sup>1</sup>	154	136	13.2%
ACS/LEHD Lodes Estimates – Characteristic Within Travel Shed	ACS/LEHD Lodes Estimates – Proposed High Likelihood Isochrone	ACS/LEHD Lodes Estimates – Existing High Likelihood Isochrone	ACS/LEHD Lodes Estimates – % Change from Existing High Likelihood Access
Housing Units <sup>2</sup>	20,689	20,974	-1.4%
Jobs <sup>3</sup>	34,226	26,937	27.1%
Low-Income <sup>2*</sup>	9,100	9,357	-2.7%
Senior (65+) <sup>2</sup>	5,988	6,115	-2.1%
Senior (75+) <sup>2</sup>	2,883	2,893	-0.3%
People of Color <sup>2</sup>	50,190	52,275	-4.0%
Total Population <sup>2</sup>	67,064	68,945	-2.7%
DS39 Estimates <sup>4</sup> – Characteristic Within Travel Shed	DS39 Estimates <sup>4</sup> – Proposed High Likelihood Isochrone	DS39 Estimates <sup>4</sup> – Existing High Likelihood Isochrone	DS39 Estimates <sup>4</sup> – % Change from Existing High Likelihood Access
Housing Units	22,322	22,861	-2.4%
Jobs	34,469	31,788	8.4%
Low-Income	37,915	38,509	-1.5%
Senior (75+)	3,363	3,499	-3.9%
People of Color	52,108	53,319	-2.3%
Total Population	74,234	74,351	-0.2%
DS38 2050 Estimates <sup>4</sup> – Characteristic Within Travel Shed	DS38 2050 Estimates <sup>4</sup> – Proposed High Likelihood Isochrone	DS38 2050 Estimates <sup>4</sup> – Existing High Likelihood Isochrone	DS38 2050 Estimates <sup>4</sup> – % Change from Existing High Likelihood Access
Housing Units	33,133	33,522	-1.2%
Jobs	40,392	36,944	9.3%
Low-Income	41,449	39,744	4.3%
Senior (75+)	9,972	10,125	-1.5%
People of Color	76,618	76,940	-0.4%
Total Population	99,623	98,782	0.9%

Notes: <sup>1</sup>Reach analysis only uses data from the San Diego region, data for auto isochrones extending beyond the region's boundary was not included

\*Low-Income ACS data collected at the household level.

Source: (1) SANGIS/Places Shapefile (3) LEHD LODES Dataset (2018) (4) SANDAG DS39 Forecast Estimates 2016 Baseline (2021).

# OCEANSIDE BLVD AND AVENIDA DEL ORO

Figure 8: Oceanside Blvd and Avenida del Oro, 30-Minute Travel Sheds at PM Peak

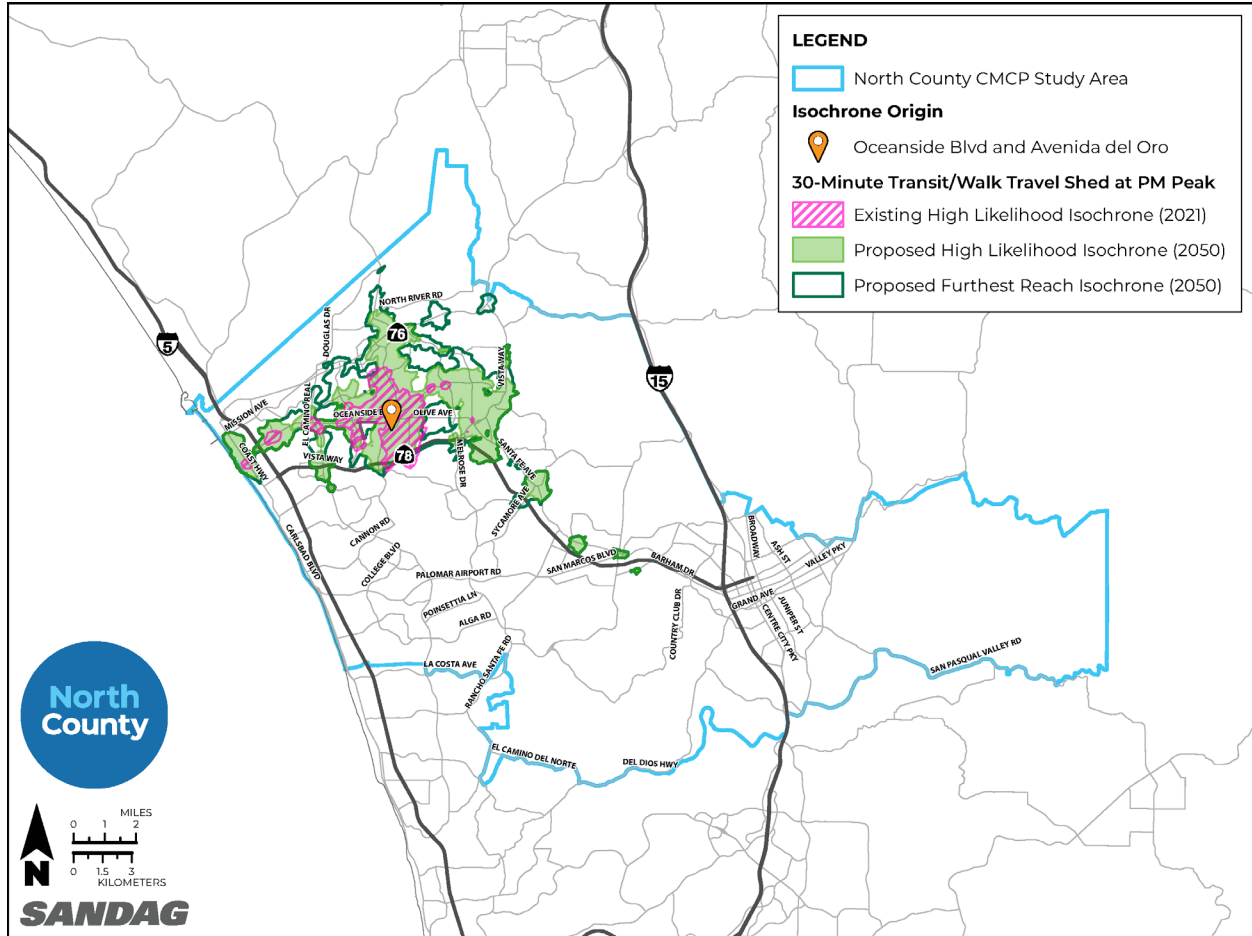


Table 10: Isochrone Summary - Oceanside Blvd and Avenida del Oro (30-Minute)

Characteristics Within Travel Shed	Proposed Likelihood Isochrone	Existing High Likelihood Isochrone	% Change from Existing High Likelihood Access
Destinations <sup>1</sup>	188	56	235.7%
ACS/LEHD Lodes Estimates – Characteristic Within Travel Shed	ACS/LEHD Lodes Estimates – Proposed High Likelihood Isochrone	ACS/LEHD Lodes Estimates – Existing High Likelihood Isochrone	ACS/LEHD Lodes Estimates – % Change from Existing High Likelihood Access
Housing Units <sup>2</sup>	26,230	4,804	446.0%
Jobs <sup>3</sup>	39,541	13,645	189.8%
Low-Income <sup>2*</sup>	7,494	1,282	484.6%
Senior (65+) <sup>2</sup>	8,545	1,589	437.8%
Senior (75+) <sup>2</sup>	2,971	739	302.0%
People of Color <sup>2</sup>	52,876	10,146	421.2%
Total Population <sup>2</sup>	81,739	15,852	415.6%
DS39 Estimates <sup>4</sup> – Characteristic Within Travel Shed	DS39 Estimates <sup>4</sup> – Proposed High Likelihood Isochrone	DS39 Estimates <sup>4</sup> – Existing High Likelihood Isochrone	DS39 Estimates <sup>4</sup> – % Change from Existing High Likelihood Access
Housing Units	29,927	7,010	326.9%
Jobs	36,615	15,961	129.4%
Low-Income	34,570	7,928	336.0%
Senior (75+)	4,546	1,059	329.3%
People of Color	55,153	13,611	305.2%
Total Population	90,914	21,226	328.3%
DS38 2050 Estimates <sup>4</sup> – Characteristic Within Travel Shed	DS38 2050 Estimates <sup>4</sup> – Proposed High Likelihood Isochrone	DS38 2050 Estimates <sup>4</sup> – Existing High Likelihood Isochrone	DS38 2050 Estimates <sup>4</sup> – % Change from Existing High Likelihood Access
Housing Units	37,508	8,056	365.6%
Jobs	40,283	16,304	147.1%
Low-Income	30,927	6,317	389.6%
Senior (75+)	11,833	2,522	369.2%
People of Color	74,795	16,648	349.3%
Total Population	105,267	23,235	353.1%

Notes: <sup>1</sup>Reach analysis only uses data from the San Diego region, data for auto isochrones extending beyond the region's boundary was not included

\*Low-Income ACS data collected at the household level.

Source: (1) SANGIS/Places Shapefile (3) LEHD LODES Dataset (2018) (4) SANDAG DS39 Forecast Estimates 2016 Baseline (2021).

# POINSETTIA AVE AND BUSINESS PARK DR

Figure 9: Poinsettia Ave and Business Park Dr, 30-Minute Travel Sheds at PM Peak

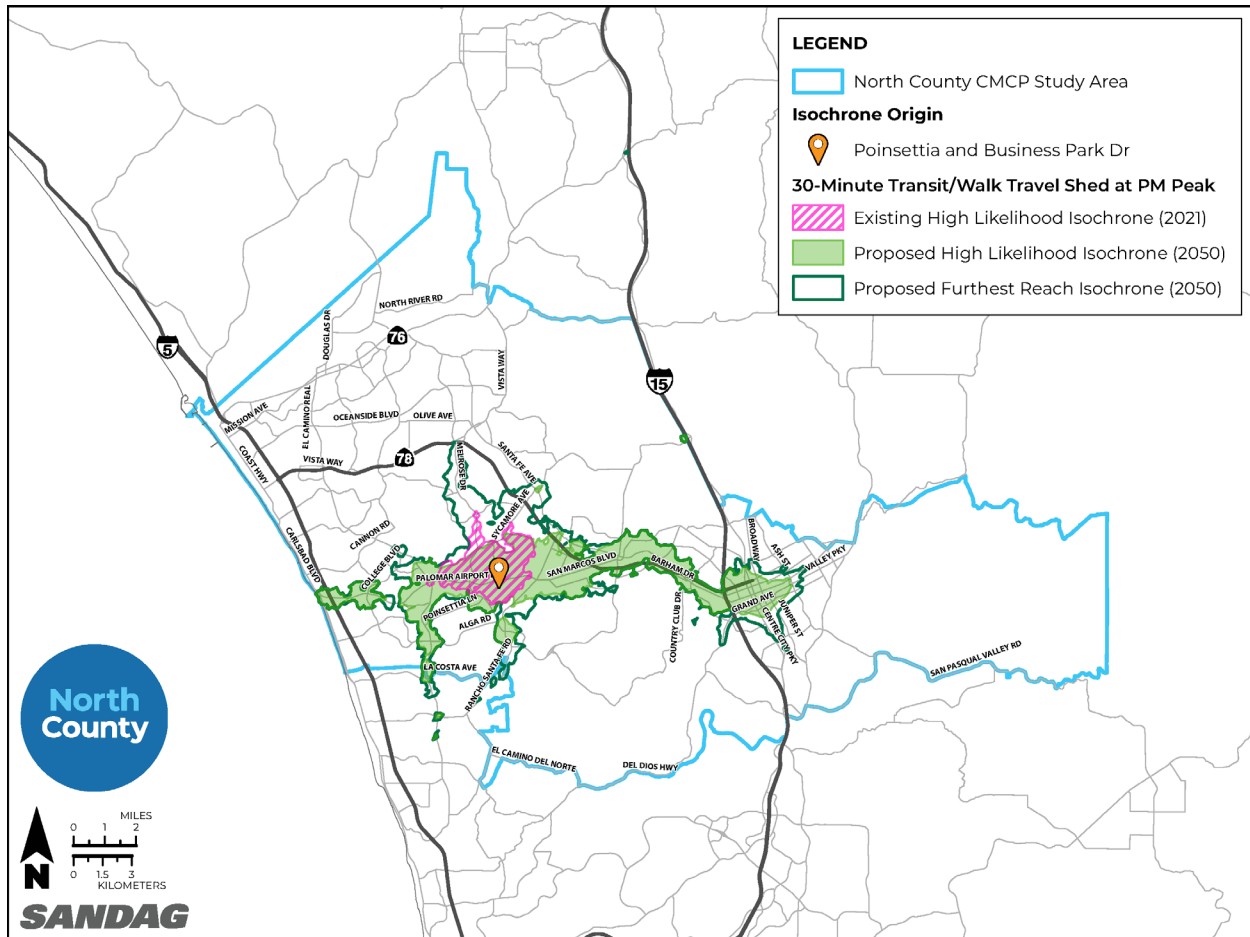


Table 11: Isochrone Summary - Poinsettia Ave and Business Park Dr (30-Minute)

Characteristics Within Travel Shed	Proposed Likelihood Isochrone	Existing High Likelihood Isochrone	% Change from Existing High Likelihood Access
Destinations <sup>1</sup>	204	29	603.4%
ACS/LEHD Lodes Estimates – Characteristic Within Travel Shed	ACS/LEHD Lodes Estimates – Proposed High Likelihood Isochrone	ACS/LEHD Lodes Estimates – Existing High Likelihood Isochrone	ACS/LEHD Lodes Estimates – % Change from Existing High Likelihood Access
Housing Units <sup>2</sup>	20,478	3,636	463.2%
Jobs <sup>3</sup>	72,991	21,485	239.7%
Low-Income <sup>2*</sup>	7,856	989	694.3%
Senior (65+) <sup>2</sup>	7,649	2,060	271.3%
Senior (75+) <sup>2</sup>	3,194	730	337.5%
People of Color <sup>2</sup>	39,689	2,785	1325.1%
Total Population <sup>2</sup>	61,657	9,434	553.6%
DS39 Estimates <sup>4</sup> – Characteristic Within Travel Shed	DS39 Estimates <sup>4</sup> – Proposed High Likelihood Isochrone	DS39 Estimates <sup>4</sup> – Existing High Likelihood Isochrone	DS39 Estimates <sup>4</sup> – % Change from Existing High Likelihood Access
Housing Units	18,843	1,866	909.8%
Jobs	82,038	21,742	277.3%
Low-Income	26,001	1,220	2031.2%
Senior (75+)	3,374	301	1020.9%
People of Color	35,778	2,299	1456.2%
Total Population	57,444	5,202	1004.3%
DS38 2050 Estimates <sup>4</sup> – Characteristic Within Travel Shed	DS38 2050 Estimates <sup>4</sup> – Proposed High Likelihood Isochrone	DS38 2050 Estimates <sup>4</sup> – Existing High Likelihood Isochrone	DS38 2050 Estimates <sup>4</sup> – % Change from Existing High Likelihood Access
Housing Units	36,123	1,991	1714.3%
Jobs	98,935	25,870	282.4%
Low-Income	40,671	924	4301.6%
Senior (75+)	10,584	658	1508.5%
People of Color	76,789	3,536	2071.6%
Total Population	101,205	5,015	1918.0%

Notes: <sup>1</sup>Reach analysis only uses data from the San Diego region, data for auto isochrones extending beyond the region's boundary was not included

<sup>\*</sup>Low-Income ACS data collected at the household level.

Source: (1) SANGIS/Places Shapefile (3) LEHD LODES Dataset (2018) (4) SANDAG DS39 Forecast Estimates 2016 Baseline (2021).

# VIA VERA CRUZ AND SAN MARCOS BLVD

Figure 10: Via Vera Cruz and San Marcos Blvd, 30-Minute Travel Sheds at PM Peak

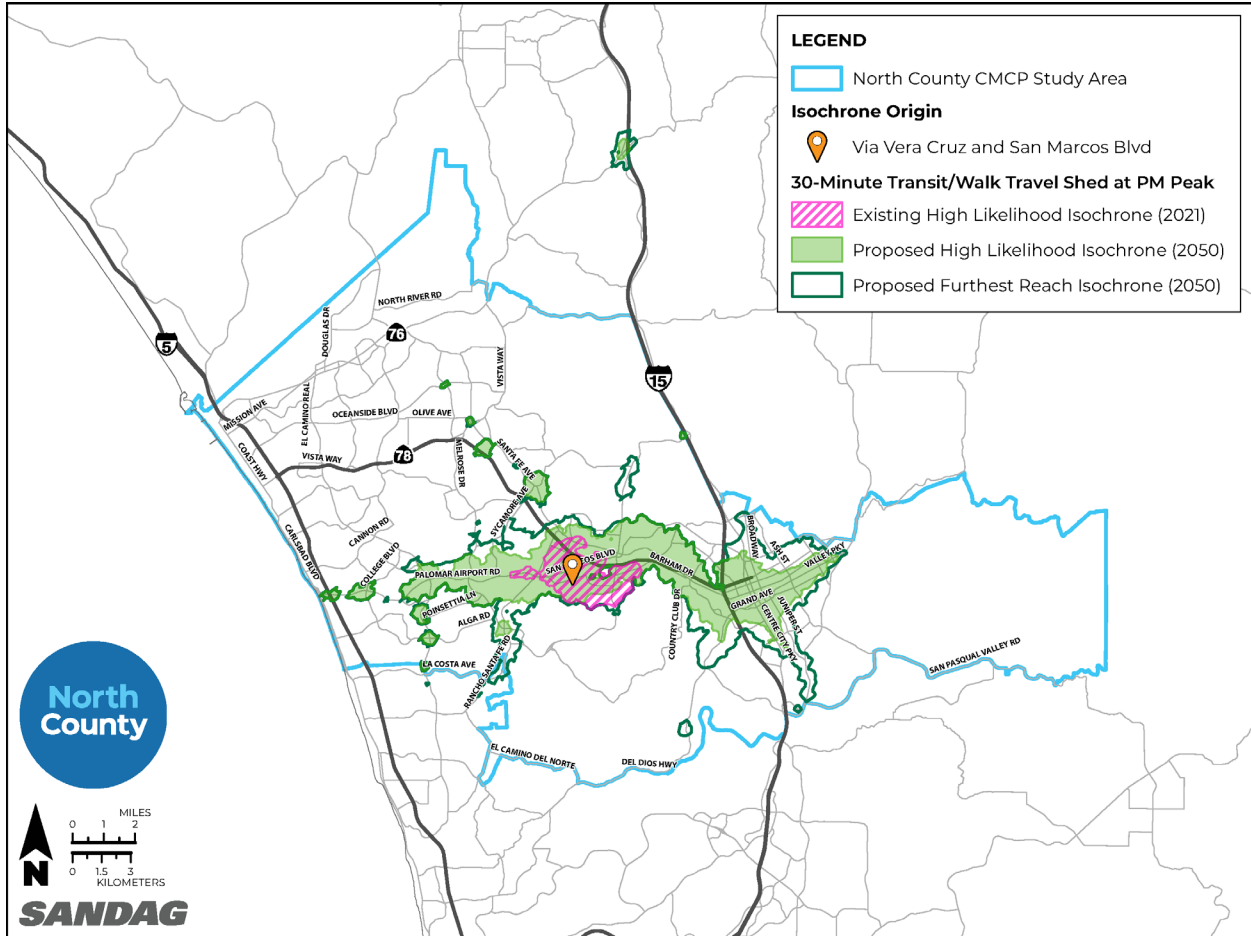




Table 12: Isochrone Summary - Via Vera Cruz and San Marcos Blvd (30-Minute)

Characteristics Within Travel Shed	Proposed Likelihood Isochrone	Existing High Likelihood Isochrone	% Change from Existing High Likelihood Access
Destinations <sup>1</sup>	263	65	304.6%
ACS/LEHD Lodes Estimates – Characteristic Within Travel Shed	ACS/LEHD Lodes Estimates – Proposed High Likelihood Isochrone	ACS/LEHD Lodes Estimates – Existing High Likelihood Isochrone	ACS/LEHD Lodes Estimates – % Change from Existing High Likelihood Access
Housing Units <sup>2</sup>	33,239	3,507	847.8%
Jobs <sup>3</sup>	92,324	16,048	475.3%
Low-Income <sup>2*</sup>	13,579	1,388	878.3%
Senior (65+) <sup>2</sup>	12,345	1,126	996.4%
Senior (75+) <sup>2</sup>	5,706	531	974.6%
People of Color <sup>2</sup>	65,968	5,801	1037.2%
Total Population <sup>2</sup>	98,633	9,116	982.0%
DS39 Estimates <sup>4</sup> – Characteristic Within Travel Shed	DS39 Estimates <sup>4</sup> – Proposed High Likelihood Isochrone	DS39 Estimates <sup>4</sup> – Existing High Likelihood Isochrone	DS39 Estimates <sup>4</sup> – % Change from Existing High Likelihood Access
Housing Units	37,489	5,911	534.2%
Jobs	96,548	16,259	493.8%
Low-Income	52,669	7,609	592.2%
Senior (75+)	6,333	1,046	505.4%
People of Color	73,052	9,003	711.4%
Total Population	116,968	17,992	550.1%
DS38 2050 Estimates <sup>4</sup> – Characteristic Within Travel Shed	DS38 2050 Estimates <sup>4</sup> – Proposed High Likelihood Isochrone	DS38 2050 Estimates <sup>4</sup> – Existing High Likelihood Isochrone	DS38 2050 Estimates <sup>4</sup> – % Change from Existing High Likelihood Access
Housing Units	57,199	12,973	340.9%
Jobs	121,942	30,291	302.6%
Low-Income	63,598	17,031	273.4%
Senior (75+)	17,385	3,774	360.7%
People of Color	123,531	27,376	351.2%
Total Population	165,723	38,766	327.5%

Notes: <sup>1</sup>Reach analysis only uses data from the San Diego region, data for auto isochrones extending beyond the region's boundary was not included

\*Low-Income ACS data collected at the household level.

Source: (1) SANGIS/Places Shapefile(3) LEHD LODES Dataset (2018) (4) SANDAG DS39 Forecast Estimates 2016 Baseline (2021).

# VISTA VILLAGE DR AND SANTA FE AVE

Figure 11: Vista Village Dr and Santa Fe Ave, 30-Minute Travel Sheds at PM Peak

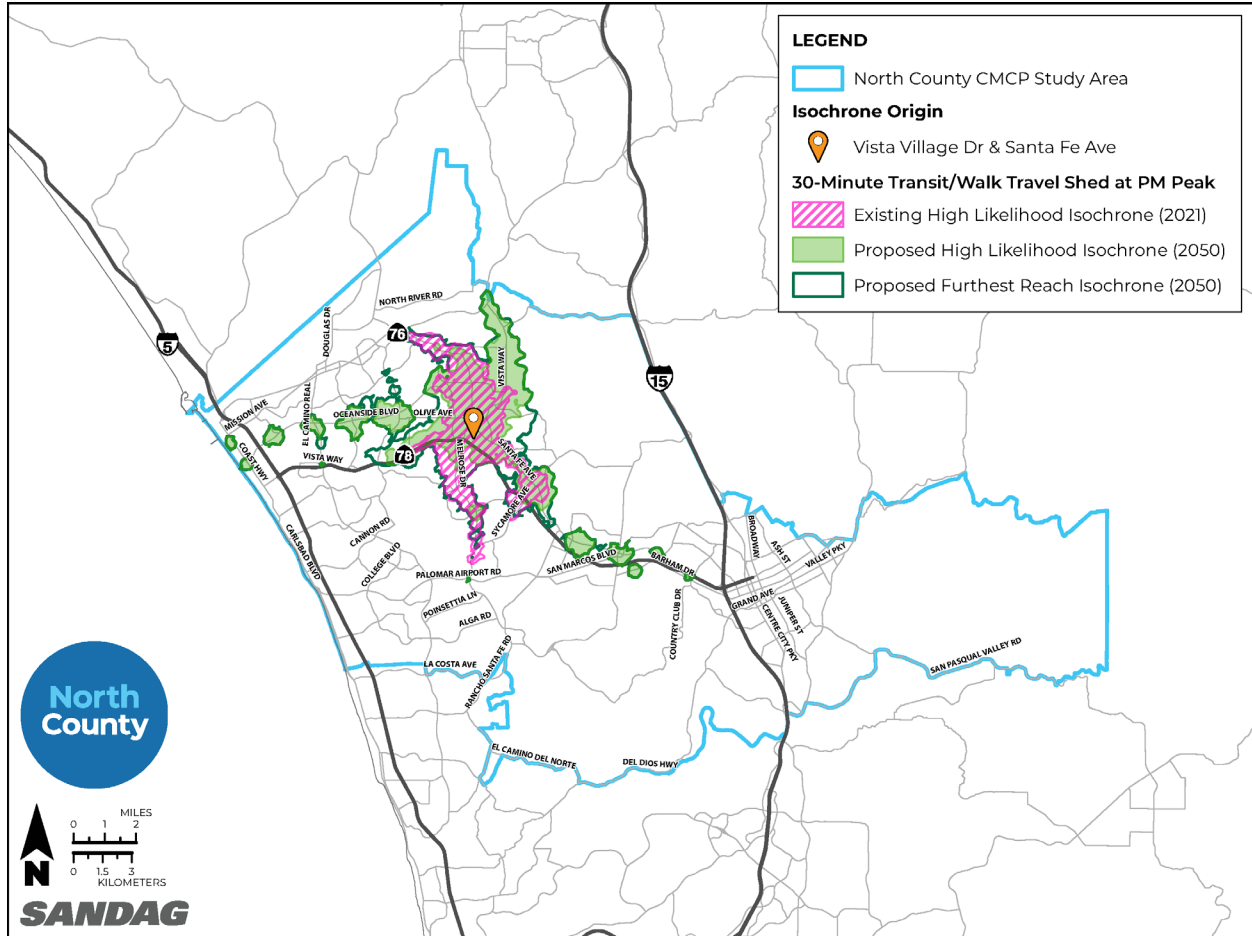


Table 13: Isochrone Summary - Vista Village Dr and Santa Fe Ave (30-Minute)

Characteristics Within Travel Shed	Proposed Likelihood Isochrone	Existing High Likelihood Isochrone	% Change from Existing High Likelihood Access
Destinations <sup>1</sup>	196	139	41.0%
ACS/LEHD Lodes Estimates – Characteristic Within Travel Shed	ACS/LEHD Lodes Estimates – Proposed High Likelihood Isochrone	ACS/LEHD Lodes Estimates – Existing High Likelihood Isochrone	ACS/LEHD Lodes Estimates – % Change from Existing High Likelihood Access
Housing Units <sup>2</sup>	21,587	17,099	26.2%
Jobs <sup>3</sup>	32,571	15,140	115.1%
Low-Income <sup>2*</sup>	6,717	4,933	36.2%
Senior (65+) <sup>2</sup>	6,026	4,913	22.7%
Senior (75+) <sup>2</sup>	2,312	1,960	18.0%
People of Color <sup>2</sup>	53,624	36,730	46.0%
Total Population <sup>2</sup>	74,484	56,779	31.2%
DS39 Estimates <sup>4</sup> – Characteristic Within Travel Shed	DS39 Estimates <sup>4</sup> – Proposed High Likelihood Isochrone	DS39 Estimates <sup>4</sup> – Existing High Likelihood Isochrone	DS39 Estimates <sup>4</sup> – % Change from Existing High Likelihood Access
Housing Units	25,479	15,787	61.4%
Jobs	33,907	16,663	103.5%
Low-Income	34,844	21,107	65.1%
Senior (75+)	4,043	2,498	61.8%
People of Color	53,231	33,092	60.9%
Total Population	84,139	51,837	62.3%
DS38 2050 Estimates <sup>4</sup> – Characteristic Within Travel Shed	DS38 2050 Estimates <sup>4</sup> – Proposed High Likelihood Isochrone	DS38 2050 Estimates <sup>4</sup> – Existing High Likelihood Isochrone	DS38 2050 Estimates <sup>4</sup> – % Change from Existing High Likelihood Access
Housing Units	31,406	19,420	61.7%
Jobs	40,593	20,456	98.4%
Low-Income	31,049	16,667	86.3%
Senior (75+)	9,858	6,079	62.2%
People of Color	69,085	42,300	63.3%
Total Population	96,291	58,762	63.9%

Notes: <sup>1</sup>Reach analysis only uses data from the San Diego region, data for auto isochrones extending beyond the region's boundary was not included

\*Low-Income ACS data collected at the household level.

Source: (1) SANGIS/Places Shapefile (2) LEHD LODES Dataset

# WEST LAKE DR AND SAN MARCOS BLVD

Figure12: West Lake Dr and San Marcos Blvd: 30-Minute Travel Sheds at PM Peak

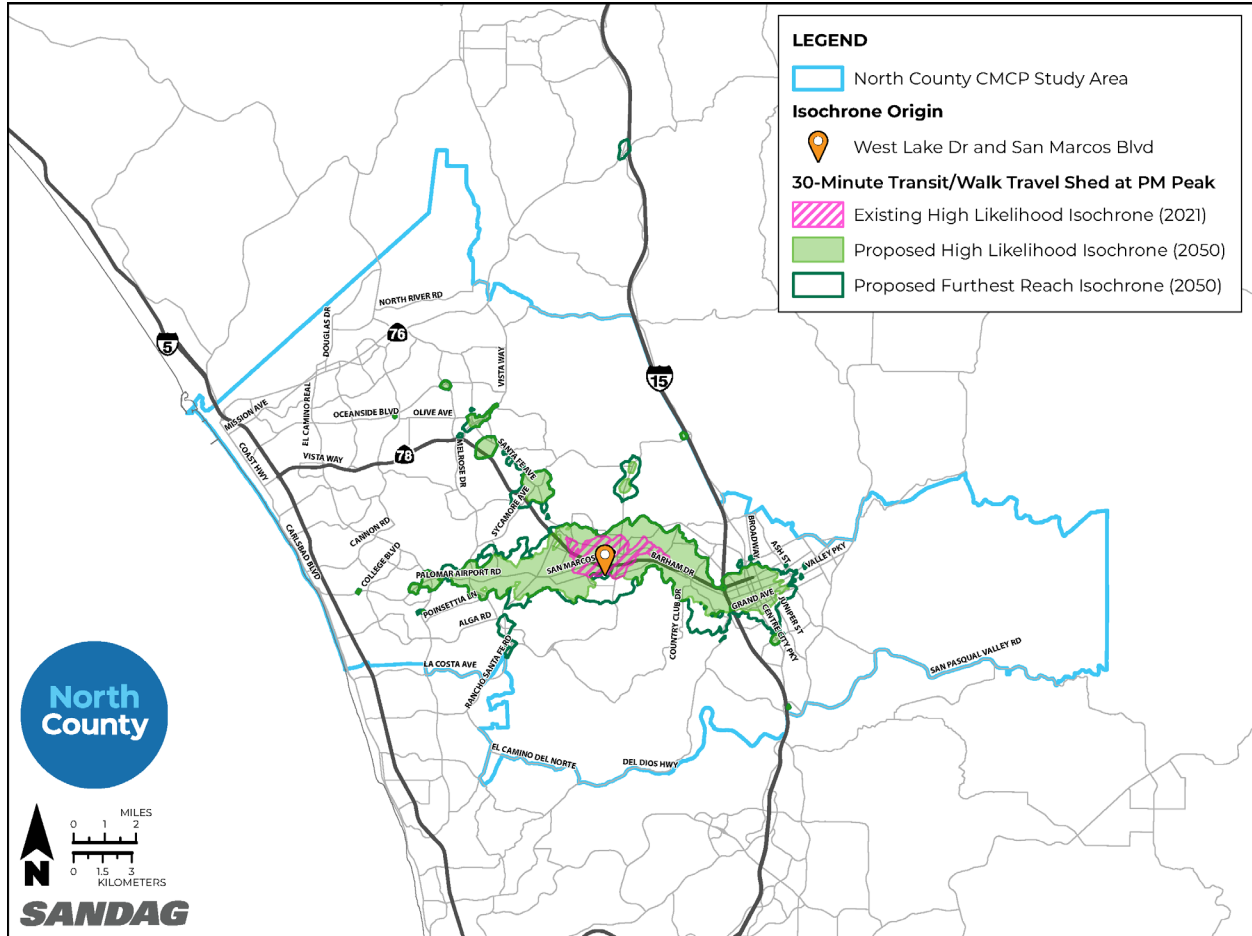


Table 14. Isochrone Summary - West Lake Dr and San Marcos Blvd (30-Minute)

Characteristics Within Travel Shed	Proposed Likelihood Isochrone	Existing High Likelihood Isochrone	% Change from Existing High Likelihood Access
Destinations <sup>1</sup>	201	39	415.4%
ACS/LEHD Lodes Estimates – Characteristic Within Travel Shed	ACS/LEHD Lodes Estimates – Proposed High Likelihood Isochrone	ACS/LEHD Lodes Estimates – Existing High Likelihood Isochrone	ACS/LEHD Lodes Estimates – % Change from Existing High Likelihood Access
Housing Units <sup>2</sup>	18,304	3,122	486.3%
Jobs <sup>3</sup>	64,206	16,653	285.6%
Low-Income <sup>2*</sup>	7,496	1,236	506.5%
Senior (65+) <sup>2</sup>	7,003	616	1036.9%
Senior (75+) <sup>2</sup>	3,185	254	1153.9%
People of Color <sup>2</sup>	38,683	10,157	280.9%
Total Population <sup>2</sup>	55,320	11,675	373.8%
DS39 Estimates <sup>4</sup> – Characteristic Within Travel Shed	DS39 Estimates <sup>4</sup> – Proposed High Likelihood Isochrone	DS39 Estimates <sup>4</sup> – Existing High Likelihood Isochrone	DS39 Estimates <sup>4</sup> – % Change from Existing High Likelihood Access
Housing Units	25,205	3,433	634.2%
Jobs	69,726	13,199	428.3%
Low-Income	34,725	6,135	466.0%
Senior (75+)	4,444	480	825.8%
People of Color	48,161	9,451	409.6%
Total Population	78,488	11,678	572.1%
DS38 2050 Estimates <sup>4</sup> – Characteristic Within Travel Shed	DS38 2050 Estimates <sup>4</sup> – Proposed High Likelihood Isochrone	DS38 2050 Estimates <sup>4</sup> – Existing High Likelihood Isochrone	DS38 2050 Estimates <sup>4</sup> – % Change from Existing High Likelihood Access
Housing Units	43,553	8,395	418.8%
Jobs	89,304	17,099	422.3%
Low-Income	50,241	9,001	458.2%
Senior (75+)	13,097	2,340	459.7%
People of Color	95,046	18,178	422.9%
Total Population	126,951	23,950	430.1%

Notes: <sup>1</sup>Reach analysis only uses data from the San Diego region, data for auto isochrones extending beyond the region's boundary was not included

\*Low-Income ACS data collected at the household level.

Source: (1) SANGIS/Places Shapefile (3) LEHD LODES Dataset (2018) (4) SANDAG DS39 Forecast Estimates 2016 Baseline (2021).

# WISCONSIN AVE AND COAST HIGHWAY

Figure 13: Wisconsin Ave and Coast Highway, 30-Minute Travel Sheds at PM Peak

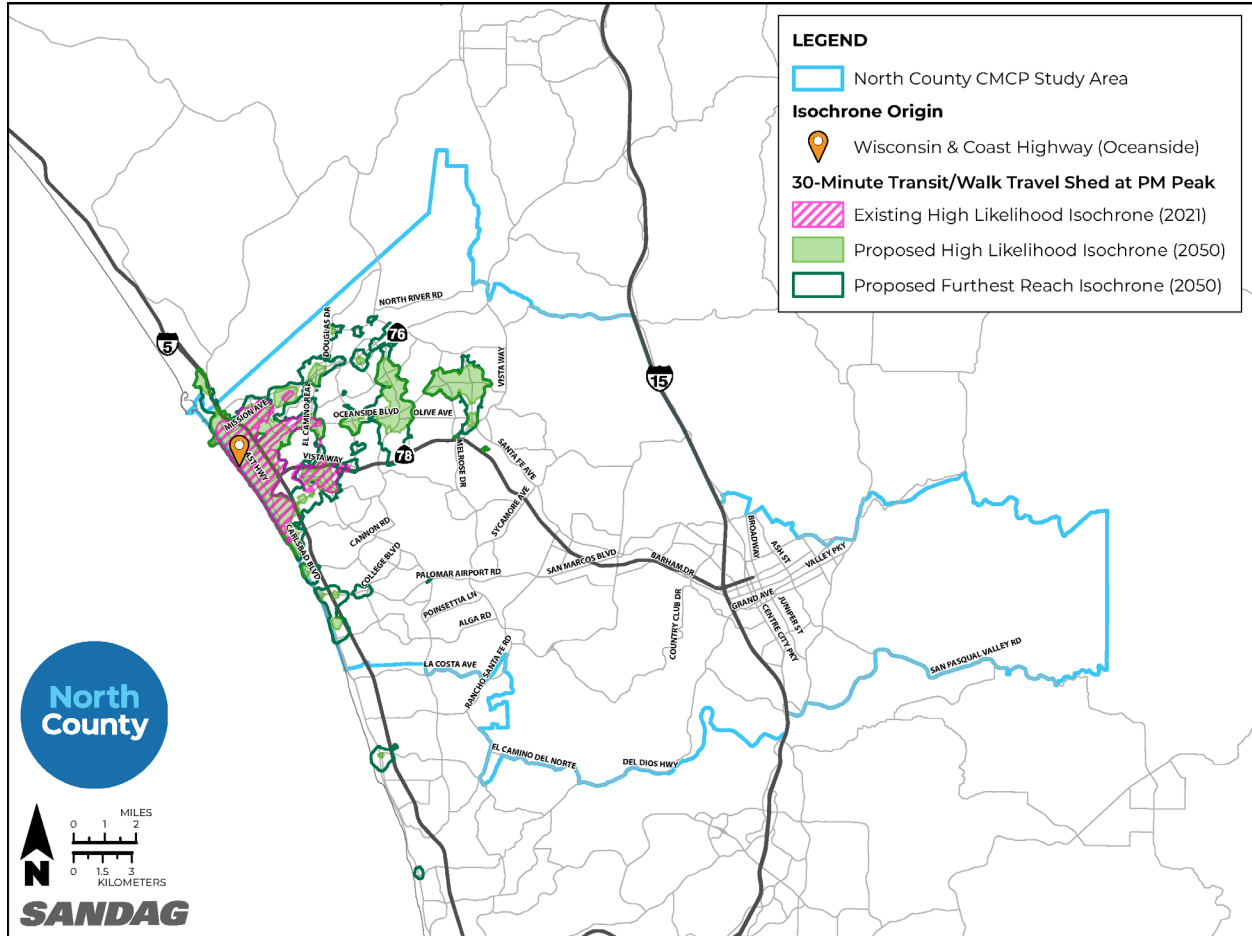


Table 29: Isochrone Summary - Wisconsin Ave and Coast Highway (30-Minute)

Characteristics Within Travel Shed	Proposed Likelihood Isochrone	Existing High Likelihood Isochrone	% Change from Existing High Likelihood Access
Destinations <sup>1</sup>	163	115	41.7%
ACS/LEHD Lodes Estimates – Characteristic Within Travel Shed	ACS/LEHD Lodes Estimates – Proposed High Likelihood Isochrone	ACS/LEHD Lodes Estimates – Existing High Likelihood Isochrone	ACS/LEHD Lodes Estimates – % Change from Existing High Likelihood Access
Housing Units <sup>2</sup>	20,281	13,974	45.1%
Jobs <sup>3</sup>	28,438	19,959	42.5%
Low-Income <sup>2*</sup>	6,213	4,206	47.7%
Senior (65+) <sup>2</sup>	6,192	4,116	50.4%
Senior (75+) <sup>2</sup>	2,364	1,692	39.7%
People of Color <sup>2</sup>	25,974	12,680	104.8%
Total Population <sup>2</sup>	47,076	27,906	68.7%
DS39 Estimates <sup>4</sup> – Characteristic Within Travel Shed	DS39 Estimates <sup>4</sup> – Proposed High Likelihood Isochrone	DS39 Estimates <sup>4</sup> – Existing High Likelihood Isochrone	DS39 Estimates <sup>4</sup> – % Change from Existing High Likelihood Access
Housing Units	26,171	17,153	52.6%
Jobs	29,893	19,716	51.6%
Low-Income	23,074	14,364	60.6%
Senior (75+)	3,841	2,406	59.6%
People of Color	34,425	19,763	74.2%
Total Population	66,647	40,435	64.8%
DS38 2050 Estimates <sup>4</sup> – Characteristic Within Travel Shed	DS38 2050 Estimates <sup>4</sup> – Proposed High Likelihood Isochrone	DS38 2050 Estimates <sup>4</sup> – Existing High Likelihood Isochrone	DS38 2050 Estimates <sup>4</sup> – % Change from Existing High Likelihood Access
Housing Units	32,287	21,628	49.3%
Jobs	33,389	22,000	51.8%
Low-Income	23,828	15,676	52.0%
Senior (75+)	9,782	6,564	49.0%
People of Color	50,169	30,781	63.0%
Total Population	81,694	53,061	54.0%

Notes: \*Low-Income ACS data collected at the household level.

Sources: (1) SANGIS/Places Shapefile (2) LEHD LODES Dataset (2018) (3) SANDAG DS39 Forecast Estimates 2016 Baseline (2021).