



URBAN DESIGN 4 HEALTH

2019-2020 SAN JOAQUIN COUNTY HEALTH OUTCOME UPDATE & SMALL AREA FOCUS STUDIES

TASK 3: SOUTH STOCKTON PROMISE ZONE ALTERNATIVE SCENARIO DEVELOPMENT

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About this Report

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The contents of this report are the responsibility of the authors and do not necessarily represent official views of SJCOG.

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TABLE OF CONTENTS

1	Introduction	1
2	Forecasted Change in Land Use -- 2018 RTP/SCS Scenario Development Review	2
3	2020 SSPZ Scenario Development.....	9
3.1	Change by Development Type & Building Mixture	9
3.2	Change by Geography	10
3.2.1	Economic Opportunity Zones.....	11
3.3	Scenario 4 (Dense) & Scenario 5 (Densest).....	13
4	Application of the Updated Alternative Scenarios	15
4.1	Demographic & Environmental Inputs to NPHAM.....	15
4.2	Forecasted Change in Non-Land Use Characteristics.....	18
4.2.1	Green Infrastructure	18
4.2.1.1	Parks	18
4.2.1.2	Tree Canopy Coverage.....	19
4.2.2	Street Connectivity.....	22
4.2.3	Public Transit.....	22
4.2.4	Bicycle Infrastructure	25
4.2.5	Bicycle Share Program	27
4.2.6	Traffic Safety.....	27
4.2.7	Violent Crime.....	28
4.2.8	Density & Destination Indices	28
	References	31
5	Appendix A: Scenario 4 Development Placetype Characteristics	34
6	Appendix B: Scenario 5 Development Placetype Characteristics	35

FIGURES

Figure 1: Scenario 3 (focused on central Stockton) -- an example of development placetypes	6
Figure 2: Map showing Catalytic Investment Opportunity parcels within the SSPZ that provide incentives for private investment in these economic opportunity zones.....	12
Figure 3: Map of proposed increases to tree canopy coverage by block group in 2035.....	21
Figure 4: Map of anticipated increase in transit service frequency in the SSPZ in 2035.....	24
Figure 5. Existing and planned bicycle infrastructure in Stockton with smaller gaps in the network identified in circles on the map.....	26

TABLES

Table 1: Baseline (2015) land use and demographic characteristics for the SSPZ3

Table 2: Land use and demographic characteristics for each of the developed scenarios in the SSPZ 4

Table 3: Summary of development placetypes residential characteristics by scenario for the SSPZ4

Table 4: Summary of development placetypes employment (job) characteristics by scenario for the SSPZ5

Table 5: Summary of residential building type mix assigned to each development placetype.8

Table 6: Updated development placetypes with residential and commercial building mixture used for Scenario 4 and 5 10

Table 7: Estimated land use and demographic characteristics for the two new development scenarios in the SSPZ. 14

Table 8: NPHAM version 1 and 2 demographic and built environment inputs..... 16

Table 9: Description of planned parks in the SSPZ by 2035..... 19

Table 10: Summary of tiered assumed increase in tree canopy coverage for the SSPZ..... 20

Table 11: Summary of tiered assumed increase in bus-based public transit for the SSPZ..... 23

Table 12: Summary of proposed bicycle share dockings stations in the SSPZ. 27

Table 13: Summary of observed and forecasted population change for the City of Stockton, Kennedy and Taft Mosswood. 30

Table 14: Summary of residential building type mix assigned to each development placetype for Scenario 4. 34

Table 15: Summary of commercials building type mix assigned to each development placetype for Scenario 4. 34

Table 16: Summary of residential building type mix assigned to each development placetype for Scenario 5. 35

Table 17: Summary of commercials building type mix assigned to each development placetype for Scenario 5. 35

1 Introduction

Urban Design 4 Health (UD4H) is under contract to the San Joaquin Council of Governments (SJCOG) to provide assistance related to its 2018 Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS) implementation efforts. In a pilot study completed in early 2018, UD4H applied its National Public Health Assessment Model (NPHAM) to San Joaquin County. This was done to analyze the predicted current conditions of estimated public health benefits (e.g., physical activity levels, body mass index, and general good health), as well as the built, natural, and social environment metrics used as inputs to calculate those estimated benefits.¹

The current analysis uses an enhanced version of NPHAM with additional health outcomes to build upon these pilot efforts. The focus of this is on the South Stockton Promise Zone (SSPZ) subarea and a comparison with the City of Stockton overall as well as San Joaquin County. This document is the draft report for the scope expansion² sections of *Task 3: Promise Zone Focused NPHAM 2.0 Sub-Area Analysis*, and *Task 4: Translation of Health Outcome Analysis into Investment Guidance*.

The purpose of this study is to develop two alternative scenarios in addition to the three prepared for the 2018 RTP/SCS by San Joaquin County. This report is provided in partial fulfillment of the following Task 3 scope expansion tasks:

- *Task 3A: Current & Future Predicted Conditions Review*,
- *Task 3B: Development of Future Proposed Scenarios*, and
- *Task 3C: Application of Future Proposed Scenarios*.

Task 3A reviews efforts made previously to develop three alternative scenarios tested as part of the 2018 RTP/SCS process. This work is the foundation used to create the two new alternative scenarios. The second task, 3B, prepares the two new development scenarios for the SSPZ and the third task applies the scenarios and runs the latest version of the NPHAM tool to reveal updated forecasted health outcomes for the scenarios. The first two are reported here.

¹ [2018 RTP/SCS SJCOG – Public Health Analysis of Draft Scenarios](#), 2018.

² 2019 San Joaquin County Health Outcome Update & Small Area Focus Studies: C-18-019 T03 – Task 3 Scope Expansion: [SJCOG_UD4H_C-18-019_T03_Task_3_Scope_Expansion_09182019_submitted.pdf](#)

2 Forecasted Change in Land Use -- 2018 RTP/SCS Scenario Development Review

As part of the 2018 RTP/SCS development process, three 2035 scenarios were developed by SJCOG for the County.³ Scenario 2 was selected as the adopted future scenario as part of the RTP/SCS future outlook. This section reviews and summarizes baseline and future characteristics based on the 2018 RTP/SCS. This work provided the foundation from which to develop the two new alternative scenarios. The 2018 RTP/SCS process did not create a summary of the land use or demographic characteristics for the SSPZ. That information is provided in this section.

SJCOG's scenario development process used Envision Tomorrow (ET), a GIS-based scenario planning software package created by Fregonese Associates.⁴ Within ET, placetypes are assigned to each parcel or grid⁵ where a change in land use is selected to occur. Each placetype corresponds to a specific distribution of single family and multi-family residential units, households, population, and jobs by type depending on the land use classification. These factors that may contribute to growth in the SSPZ are used to calculate new values for population and employment characteristics based on assigned land use.

Table 1 shows a summary of baseline (2015) land use and demographic characteristics by parcel for the SSPZ. In the baseline year, total housing units are split between single family units (64.3%) and multi-family units (29%). Scenario 2 and Scenario 3 demonstrate an anticipated transition to an increased percentage of multi-family units and decreased for single family units over time. At baseline in the SSPZ, the majority of jobs are in the industrial sector (32.2%) followed by office, public sector, and other jobs (with approximately 20% each), and retail at 9.2%.

³ 2018 Regional Transportation Plan/Sustainable Communities Strategy, SJCOG, 2019.

⁴ [Envision Tomorrow](#), Fregonese Associates. 2019.

⁵ Five acre grids, developed by SJCOG, are used to replace large parcels mainly in undeveloped, semi-rural or rural areas as a way to provide consistent growth numbers for population and employment.

Table 1: Baseline (2015) land use and demographic characteristics for the SSPZ.

<i>Development Type</i>	<i>Variable</i>	<i>Baseline (2015)</i>	<i>Percent (%)</i>
Overall	Parcels	22,868	100.0%
Residential	Population	78,018	100.0%
	Households	22,445	100.0%
	Multi-Family Units	7,539	29.0%
	Single Family Units	16,719	64.3%
	Other Units	1,731	6.7%
	Housing Units	25,989	100.0%
Employment	Retail Jobs	3,260	9.2%
	Office Jobs	6,782	19.2%
	Industrial Jobs	11,408	32.2%
	Public Jobs	6,925	19.6%
	Other Jobs	7,033	19.9%
	Total Jobs	35,409	100.0%

Source: San Joaquin Council of Governments, 2018.

Table 2 shows a summary of the land use and demographic characteristics applied to each of the three 2018 RTP/SCS scenarios for the SSPZ. The total population was projected to increase 9.5% in Scenario 1 to around 85,000, 13.1% in Scenario 2 to more than 88,000, and 14.1% in Scenario 3 to just over 89,000 in the SSPZ. Overall, housing units were held constant for all three scenarios at a 19.2% increase over baseline. For the development of the new scenarios for the SSPZ, housing units will not be held constant for 2035. Scenario 2 and Scenario 3 provided relatively equal growth in employment at around 14%.

Table 3 provides a summary of the development placetypes for residential characteristics including total population and housing units in the SSPZ. These eighteen placetypes were used across the three scenarios to provide demographic and employment characteristics for future land use changes. The largest number of parcels was assigned to the *Compact Neighborhood Low* placetype in Scenario 1 and a balance between *Compact Neighborhood Low* and *Compact Neighborhood High* for Scenario 2 and Scenario 3. The highest density residential placetype is *Downtown Residential* slated to add nearly 2,160 units for Scenario 2 and 2,187 units for Scenario 3. These additional units provide for a population growth of nearly 3,900 on just over 800 parcels for the former and 4,500 people on 1,000 parcels for the latter. Development placetypes were applied to 20% and 30% of all SSPZ parcels, depending on the scenario. The remaining parcels/grids were left unchanged. The percent of parcels changed by scenario are: 1) Scenario 1 (23.9%), Scenario 2 (25.6%) and Scenario 3 (27.6%).

Table 4 shows a summary of the number of parcels in each development placetype and their associated job counts. The highest numbers of new employment opportunities were generated by the *Mixed-Use Corridors* followed by the *Downtown Residential* placetype.

Table 2: Land use and demographic characteristics for each of the developed scenarios in the SSPZ.

Variable	Baseline (2015)	Percent (%)	Future (2035)					
			Scenario 1	Change (%)	Scenario 2	Change (%)	Scenario 3	Change (%)
Parcels	22,868	100.0%	29,313	+28.2%	28,790	+25.9%	29,246	+27.9%
Population	78,018	100.0%	85,391	+9.5%	88,219	+13.1%	89,036	+14.1%
Households	22,445	100.0%	25,564	+13.9%	27,105	+20.8%	27,536	+22.7%
Housing Units	25,989	100.0%	30,976	+19.2%	30,976	+19.2%	30,976	+19.2%
Retail Jobs	3,260	9.2%	3,820	+17.2%	4,442	+36.2%	4,540	+39.2%
Total Jobs	35,409	100.0%	38,131	+7.7%	40,523	+14.4%	40,480	+14.3%

Source: San Joaquin Council of Governments, 2018.

Table 3: Summary of development placetypes residential characteristics by scenario for the SSPZ.

Development Type	Future (2035)								
	Scenario 1			Scenario 2			Scenario 3		
	Parcels	Population	Housing Units	Parcels	Population	Housing Units	Parcels	Population	Housing Units
Arterial Commercial	90	0	21	18	0	0	18	0	0
Compact Neighborhood High	290	291	122	1,663	1,263	531	1,952	1,362	550
Compact Neighborhood Low	3,811	4,053	2,121	1,662	2,940	1,181	1,453	2,848	1,135
Downtown	141	302	161	141	302	161	141	302	161
Downtown Residential	342	1,871	1,040	813	3,885	2,160	1,006	4,544	2,187
Hotel	9	0	0	9	0	0	9	0	0
Industrial and Warehousing	132	0	0	116	0	0	129	0	0
Large Lot Residential	50	131	0	0	0	0	0	0	0
Lower Educational	7	0	0	7	0	0	7	0	0
Mixed-Use Corridor	45	57	33	603	372	216	603	372	216
Office Park	0	0	0	47	0	0	36	0	0
Public Office	61	0	78	42	0	0	42	0	0
Small Downtown	90	18	25	0	0	0	0	0	0
Suburban Multifamily	19	117	68	36	425	246	217	576	246
Suburban Residential	99	295	107	110	329	119	110	329	119
Town Neighborhood	190	152	80	425	556	292	425	556	292
University District	95	85	54	169	128	81	169	128	81
Total	5,471	7,373	3,910	5,861	10,201	4,987	6,317	11,018	4,987

Source: San Joaquin Council of Governments, 2018.

Table 4: Summary of development placetypes employment (job) characteristics by scenario for the SSPZ.

Development Type	Future (2035)					
	Scenario 1		Scenario 2		Scenario 3	
	Parcels	Jobs	Parcels	Jobs	Parcels	Jobs
Arterial Commercial	90	44	18	36	18	36
Compact Neighborhood High	290	0	1,663	0	1,952	0
Compact Neighborhood Low	3,811	0	1,662	0	1,453	0
Downtown	141	980	141	978	141	980
Downtown Residential	342	626	813	1,299	1,006	1,519
Hotel	9	25	9	25	9	25
Industrial and Warehousing	132	539	116	364	129	513
Large Lot Residential	50	0	0	0	0	0
Lower Educational	7	17	7	15	7	17
Mixed-Use Corridor	45	242	603	1,569	603	1,569
Office Park	0	0	47	578	36	156
Public Office	61	87	42	62	42	64
Small Downtown	90	58	0	0	0	0
Suburban Multifamily	19	0	36	0	217	0
Suburban Residential	99	0	110	0	110	0
Town Neighborhood	190	16	425	58	425	58
University District	95	89	169	130	169	134
Total	5,471	2,722	5,861	5,114	6,317	5,071

Source: San Joaquin Council of Governments, 2018.

Figure 1 shows an example of development placetype assignments for central Stockton from Scenario 3. The scenario calls for a large amount of redevelopment for Downtown Stockton and nearby areas, especially northwest of Downtown where nearly all parcels are slated for redevelopment.

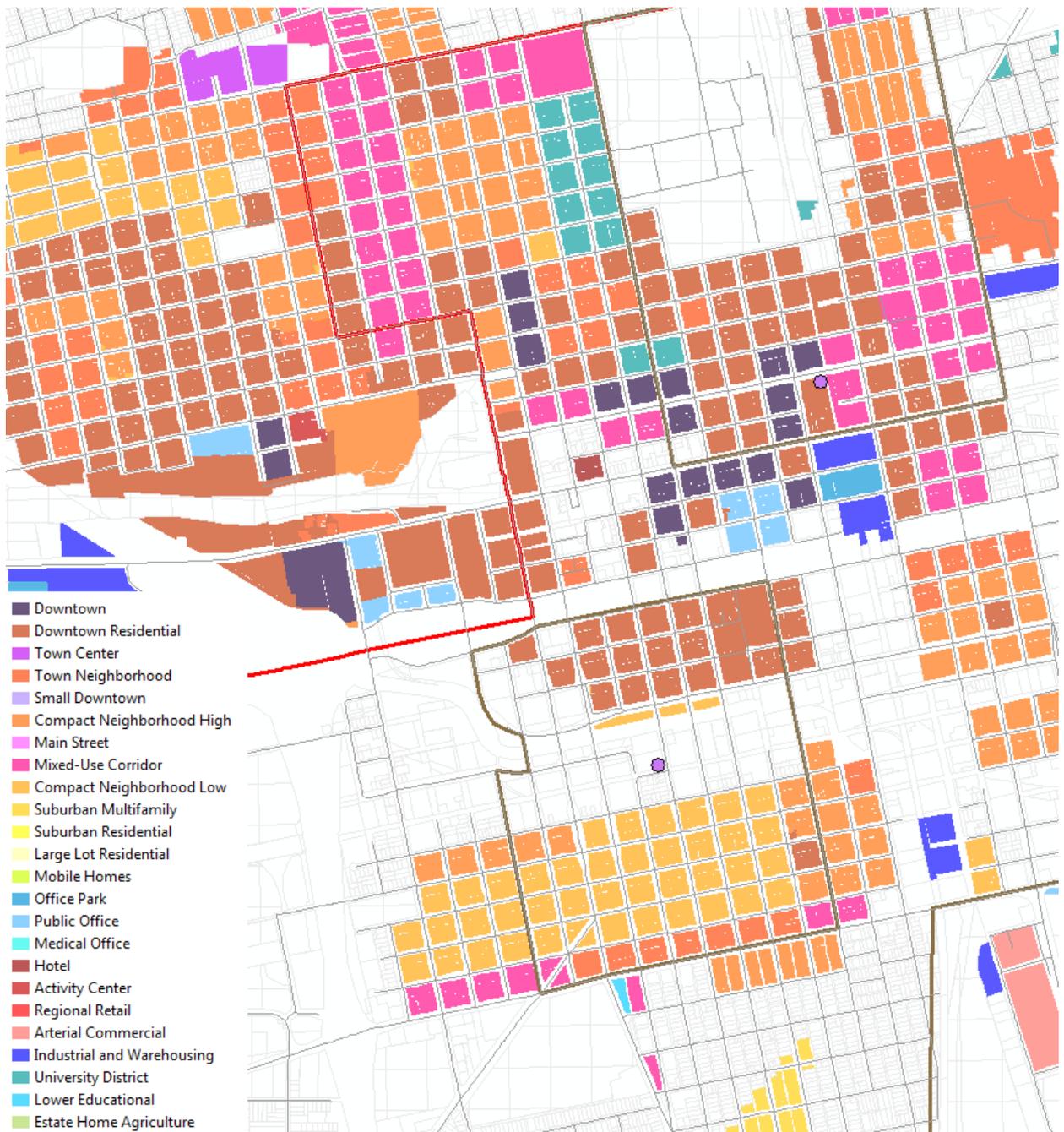


Figure 1: Scenario 3 (focused on central Stockton) -- an example of development placetypes

Placetypes are the building blocks of development. They are a blend of building typologies, e.g., residential and commercial in urbanized areas. The building mixture characterizes the scale of development anticipated to occur based on building size (e.g., height) which reflects changes in housing units, jobs, land area, floor area, floor area ratio and other metrics used to quantify development and apply growth to housing units, population and employment. Table 5 provides a summary of the residential building mix

profile for each placetype used by SJCOG for the 2018 RTP/SCS. Only two placetypes for residential units include high-density (five stories or higher) mixed-use development: *Downtown* (15% residential building mixture) and *Downtown Residential* (25% residential building mixture). Several development placetypes are residential only: Compact Neighborhood High, Compact Neighborhood Low, Suburban Multifamily, Suburban Residential, and Large Lot Residential. Other development placetypes have employment, but no residential components, including Hotels, Industrial and Warehousing, Arterial Commercial, Lower Education, Office Park, and Public Office. These placetypes were used to create new ones for use in the two new scenarios. The development of these scenarios is described in the next section.

Table 5: Summary of residential building type mix assigned to each development placetype.

Development Type	Total Residential	Total Non-Residential	Mixed-Use Residential			Multi-Family				Single Family	
			15 Story	5 Story	< 5 Story	Small Unit	Large Unit	Suburban	Duplex	Townhome	Single Family
Arterial Commercial	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Compact Neighborhood High	100%	0%	0%	0%	0%	0%	5%	10%	5%	10%	70%
Compact Neighborhood Low	100%	0%	0%	0%	0%	0%	0%	0%	5%	10%	85%
Downtown	15%	85%	5%	10%	0%	0%	0%	0%	0%	0%	0%
Downtown Residential	90%	10%	5%	20%	30%	15%	15%	5%	0%	0%	0%
Hotel	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Industrial and Warehousing	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Large Lot Residential	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
Lower Educational	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Mixed-Use Corridor	30%	70%	0%	0%	15%	5%	10%	0%	0%	0%	0%
Office Park	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Public Office	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Small Downtown	25%	75%	0%	0%	10%	0%	0%	5%	5%	5%	0%
Suburban Multifamily	100%	0%	0%	0%	0%	30%	30%	40%	0%	0%	0%
Suburban Residential	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
Town Neighborhood	95%	5%	0%	0%	5%	10%	10%	5%	10%	10%	45%
University District	35%	65%	0%	0%	10%	25%	0%	0%	0%	0%	0%

Source: San Joaquin Council of Governments, 2018.

3 2020 SSPZ Scenario Development

The two new scenarios used a methodology consistent with the 2018 RTP/SCS to create new development type characteristics and to locate them in the SSPZ. The development placetypes used for Scenario 1,2 and 3 to assign expected or forecasted land use change, served as the foundation for updated placetypes created to prepare the two new alternative scenarios (Scenario 4 and 5).

Scenario 4 is focused on an increase in residential, commercial, and mixed-use density. Scenario 5 follows the same trends as Scenario 4, but applies an even greater increase in density across the placetypes. Scenario 4 (denser) serves as a moderate increase in density. Scenario 5 (densest) presents an even larger increase in density from what was created for the 2018 RTP /SCS. The inclusion of new, denser placetypes in the alternative scenarios for the SSPZ allows for the demonstration of how more intensive and compact development, as well as mixed land uses, may produce more positive health outcomes in the future.

3.1 Change by Development Type & Building Mixture

There are two primary steps to develop scenarios with different land uses. The first is by adding new development types or placetypes to the “palette” available to “paint” potential future changes. The second is by changing the placetypes assigned to a parcel or hybrid grid in the SSPZ to a different kind.

Different placetypes have different building mixtures, densities, and development rates on greenfield land and redevelopment rates on existing developed land. Greenfield land development is building on land that was previous undeveloped, such as forest, agricultural land, open space, or vacant land. The redevelopment rate is a ratio of new development to previously existing development that remains unchanged. The redevelopment rate may be different for each placetype and reflects the likelihood or ease at which redevelopment may take place.

Nine new development placetypes were created and used for Scenario 4 and 5. Eighteen original placetypes were used for the 2018 RTP/SCS’s three alternative scenarios (Table 3). The vast majority of all parcels that changed in Scenario 1 (84.0%), Scenario 2 (80.0%), and Scenario 3 (94.1%) are also changed in Scenario 4 and 5. The remaining parcels not covered by the new development placetypes in Scenario 4 and 5 will receive the same placetype used in Scenario 2 in the original 2018 RTP/SCS development..

Table 6 summarizes the residential and commercial building mixture for each of the nine updated development placetypes used for Scenario 4 and 5. The building mixtures for residential and commercial align with the building mixtures previously used to develop Scenarios 1, 2, and 3. Among the nine development types, four are residential only, one is commercial only, and four are a mixture of residential and commercial. Redevelopment rates remained unchanged from the 2018 RTP placetype assignments. The two downtown placetypes have the highest redevelopment rates at over 20%. The *Mixed-Use Corridor's* rate is 15%. The average redevelopment rate for all development placetypes is 11%.

Table 6: Updated development placetypes with residential and commercial building mixture used for Scenario 4 and 5.

#	Development Placetype	Building Mixture		Building Total	Redevelopment Rate
		Residential	Commercial		
1	Downtown Residential	90%	10%	100%	21%
2	Downtown	25%	75%	100%	23%
3	Compact Neighborhood High	100%	0%	100%	6%
4	Compact Neighborhood Low	100%	0%	100%	5%
5	Mixed-Use Corridor	30%	70%	100%	15%
6	Town Neighborhood	75%	25%	100%	8%
7	Suburban Multifamily	100%	0%	100%	10%
8	Suburban Residential	100%	0%	100%	3%
9	Office Park	0%	100%	100%	4%

3.2 Change by Geography

In addition to changes in development placetypes for the alternative Scenarios 4 and 5, the level of growth in a given location in population, housing units and jobs from development is determined by the spatial distribution of anticipated change. The spatial distribution of this new development includes both the number of parcels or grids that are changing and determining which are being left unchanged and where they are located in the SSPZ. As a result of the considerable effort made by SJCOG to determine which parcels changed and to what development placetype (as compared to baseline) for the 2018 RTP/SCS's Scenarios 1, 2 and 3, those same parcels/grids are the ones to which updated placetypes are applied for Scenarios 4 and 5, with a limited number of exceptions confined to Catalytic Investment Opportunity parcels, which are explained below.

3.2.1 Economic Opportunity Zones

In addition to the previously identified parcels/grids as part of the 2018 RTP/SCS development, placetypes will also be applied to all parcels in the SSPZ identified as “Catalytic Investment Opportunities” by the City of Stockton within federally identified “Opportunity Zones.”⁶ These parcels have been identified by Stockton’s Economic Development Department to guide and encourage investment in these targeted areas.⁷ More information and details on these areas were provided in previously submitted deliverables (*Task 3: South Stockton Promise Zone Subarea Analysis* and *Task 4: Translation of Health Outcome Analysis into Investment Guidance*).⁸

The majority (61 of 71 parcels or 85.9%) of identified Catalytic Investment Opportunity parcels in the SSPZ were already assigned a future development placetype as part of the 2018 RTP/SCS. The remaining ten parcels will be assigned one for Scenarios 4 and 5. This mostly includes parcels along Airport Way Corridor Windstone Village and the Grand View Village project in Downtown Stockton (Figure 2). The University Park project includes almost all of the Stanislaus State Stockton Campus area slated for a variety of mixed-use development aimed at supporting the campus through residential and commercial land use. Based on guidance from University Park master plan documents⁹ and the Stanislaus State Stockton Campus Five-Year Strategic Plan: 2018-2023 for planned development,¹⁰ a combination of *Lower Educational, Office Park, Mixed-Use Corridor* development placetypes will be applied to the campus.

⁶ [Opportunity Zone Overview](#), Internal Revenue Service, 2018.

⁷ [Opportunity Zones Prospectus](#), City of Stockton, 2019.

⁸ [SJCOG RTP Stockton T3 T4 SSPZ Subarea Analysis 09262019 submitted.pdf](#)

⁹ [University Park Master Development Plan](#), City of Stockton, 2003.

¹⁰ [Five-Year Strategic Plan: 2018-2023](#), Stanislaus State Stockton Campus, 2018.

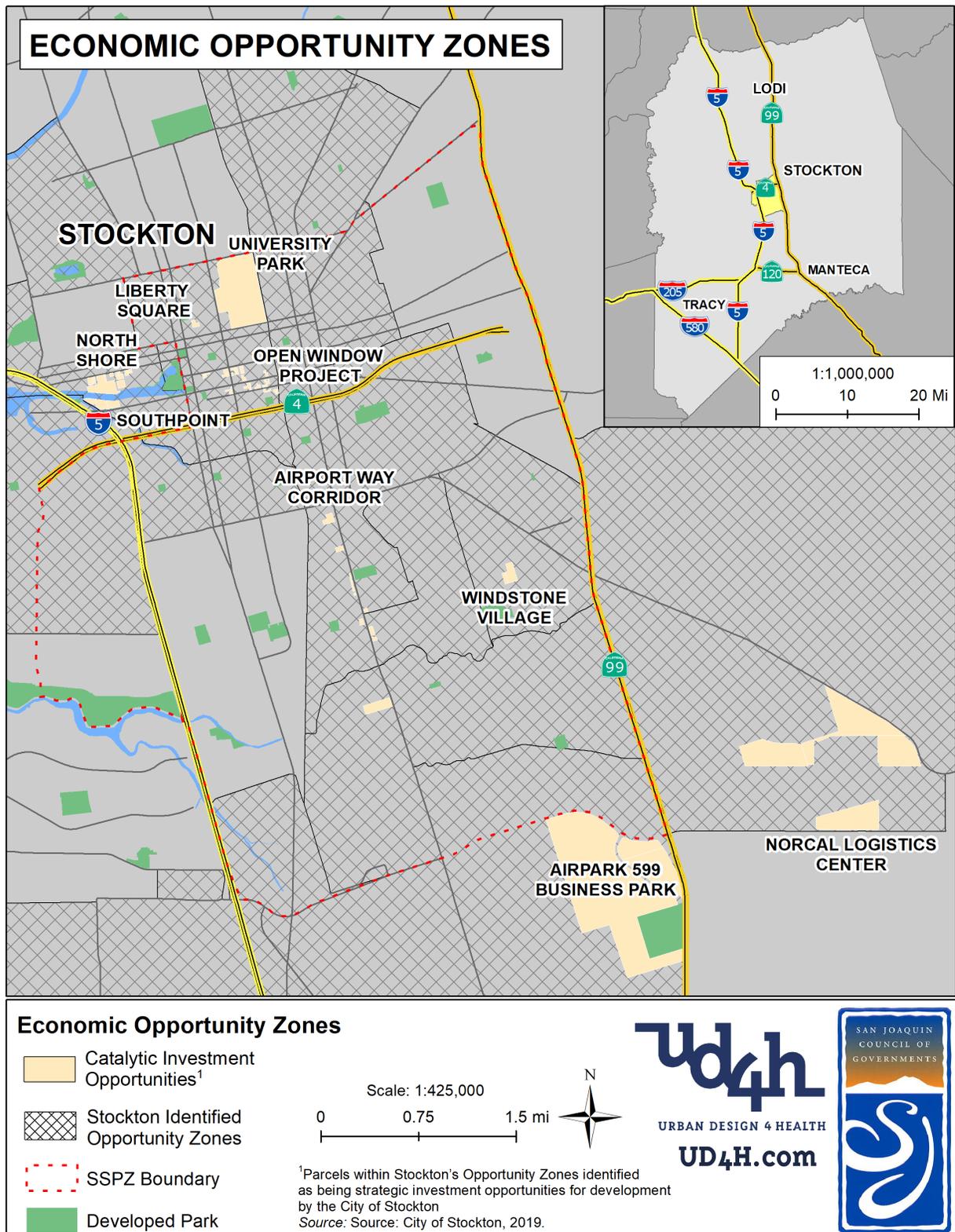


Figure 2: Map showing Catalytic Investment Opportunity parcels within the SSPZ that provide incentives for private investment in these economic opportunity zones.

3.3 Scenario 4 (Dense) & Scenario 5 (Densest)

The updated scenarios for the SSPZ provide a significant increase in the density and intensity of development as an aspirational outlook for what a future South Stockton could look like in 2035. Scenario 4 applies a substantially increased density for both residential and commercial building types beyond what was forecasted as part of the 2018 RTP/SCS for Scenario 2 or 3. Development placetypes for both scenarios are only modified for those parcels or grids located within the SSPZ. Redevelopment rates used for the development of Scenario 1, 2, and 3 for the 2018 RTP/SCS remained unchanged.¹¹

Creating the new scenarios involves working at the parcel or grid level, and shifting the percentage of building types from single family types to low-density and medium density multi-family. Low density and medium density multi-family is shifted to high density multi-family and mixed-use residential. Scenarios 4 and 5 increase the percentage of mixed used residential land use for 15 story, 5 story, and less than 5 story buildings for *Downtown Residential*, *Downtown*, *Mixed-Use Corridor*, *Town Neighborhood* and *Suburban Multifamily* placetypes.

Table 14 in Appendix A provides a summary of the residential building mixture characteristic used for Scenario 4. Table 15 in Appendix A provides a summary of the commercial building mixture characteristics used for Scenario 4.

Table 16 in Appendix B provides a summary of the residential building mixture characteristic used for Scenario 5. Table 17 in Appendix B provides a summary of the commercial building mixture characteristics used for Scenario 5.

Table 7 shows an estimated forecast of what the main demographic and employment descriptives could look like for Scenarios 4 and 5. Scenario 4's counts increase by approximately 25%. Scenario 5's counts increase by approximately 35%. These results are currently only estimated and will be updated when the final alternative scenarios are calculated in Envision Tomorrow.

¹¹ In the event that additional iterations of each scenario is required, changes will be first made to the redevelopment rates to either lower or increase them by development placetype.

Table 7: Estimated land use and demographic characteristics for the two new development scenarios in the SSPZ.

<i>Variable</i>	<i>Baseline (2015)</i>	<i>Percent (%)</i>	<i>Scenario 4</i>			<i>Scenario 5</i>		
			<i>Change</i>	<i>Total</i>	<i>Change (%)</i>	<i>Change</i>	<i>Total</i>	<i>Change (%)</i>
Parcels	22,868	100.0%	5,717	28,585	25.0%	8,004	30,872	35.0%
Population	78,018	100.0%	19,504	97,522	25.0%	27,306	105,324	35.0%
Households	22,445	100.0%	5,611	28,056	25.0%	7,856	30,301	35.0%
Housing Units	25,989	100.0%	6,497	32,486	25.0%	9,096	35,085	35.0%
Retail Jobs	3,260	9.2%	815	4,076	25.0%	1,141	4,402	35.0%
Total Jobs	35,409	100.0%	8,852	44,261	25.0%	12,393	47,802	35.0%

4 Application of the Updated Alternative Scenarios

4.1 Demographic & Environmental Inputs to NPHAM

Since the initial pilot application of the National Public Health Assessment Model (NPHAM) version 1 tool in San Joaquin County in 2017-2018, UD4H has updated its health outcome metrics. This was done with support from the U.S. Environmental Protection Agency. As part of the model improvement process, there were modifications to the demographic and environmental variables required as model inputs. These changes to input variables were determined based on an enhanced analysis of health and transportation survey data and through direction provided by the NPHAM technical advisory panel.

Table 8 shows the NPHAM version 2 demographic and built environment inputs and the expected type of change to occur in the 2035 scenario development. Sources of expected changes include the presence/absence and density of different types of developments and land uses at the parcel level. In addition, other sources of expected changes include assumptions based on an existing trend or a direction outlined in plans or policy. These assumptions are made depending on data availability and are described for each variable.

The first set of variables shown in the table (rows 1 – 11) are the individual input demographic and built environment measures used for NPHAM version 1 for the initial pilot study. These same variables are used for several different health outcomes for NPHAM version 2. One of the most important changes to the input variables for NPHAM version 2 is the creation of a series of index or composite variables comprised of the combination of several individual variables. Five new composite indices were developed to include core components of the built and natural environment: 1) density index, 2) destination index, 3) transit index, 4) park index, and 5) the bicycle/pedestrian index.

Expected new scenario alternatives changes to the component variables, which make up these indices, are described in detail in the sections that follow.

Table 8: NPHAM version 1 and 2 demographic and built environment inputs.

Type	Index	Variable	NPHAM Version 1	NPHAM Version 2	SSPZ Relevant *	Expected Change Type**
Demographics		Total Population	✓	✓	✓	Increase, Derived
		Total households	✓	✓	✓	Increase, Derived
		Average household size	✓	✓	✓	Increase, Derived
		Total employees (jobs)	✓	✓	✓	Increase, Derived
		Total workers (employed residents)	✓	✓	✓	Increase, Derived
		Percent low income households	✓	✓	✓	No Change
Built Environment		Population density (population/acre)	✓	✓	✓	Increase, Derived
		Employment density	✓	✓	✓	Increase, Derived
		Retail density	✓	✓	✓	Increase, Derived
		Employment mix (5-tiers)	✓	✓	✓	Increase, Derived
		Intersection density	✓	✓	–	No Change
		Density	Gross population density (people/acre) on unprotected land	–	✓	✓
	Total road network density		–	✓	–	No Change
	Street intersection density (weighted, auto-oriented intersections eliminated)		–	✓	–	No Change
	Gross employment density (jobs/acre) on unprotected land		–	✓	✓	Increase, Derived
	Destination	Trip productions and trip attractions equilibrium index; the closer to one, the more balanced the trip making	–	✓	✓	Increase, Derived
		8-tier employment entropy (denominator set to the static 8 employment types in the CBG)	–	✓	✓	Increase, Derived
		Gross retail (8-tier) employment density (jobs/acre) on unprotected land	–	✓	✓	Increase, Derived
	Transit	Proportion of CBG employment within ¼ mile of fixed-guideway transit stop	–	✓	✓	Increase, Derived
		Proportion of CBG employment within ½ mile of fixed-guideway transit stop	–	✓	✓	Increase, Derived
		Unbuffered rail station (any type) count	–	✓	–	No Change
		Unbuffered rail station (any type) gross density using sausage	–	✓	–	No Change

		buffer as denominator				
		Aggregate frequency of transit service within 0.25 miles of block group boundary per hour during evening peak period	–	✓	✓	Increase, Derived
		Aggregate frequency of transit service per square mile	–	✓	✓	Increase, Derived
		Distance from population weighted centroid to nearest transit stop (meters)	–	✓	✓	Increase, Derived
	Park	Gross density of any active park (developed park) within a block group population center 1km network buffers. "Solid surface" sausage buffer area used as denominator.	–	✓	✓	Increase, Derived
		Unbuffered percent tree canopy coverage	–	✓	✓	Increase, Assumed
		Unbuffered percent forest	–	✓	–	No Change
		Unbuffered percent natural land cover	–	✓	–	No Change
	Bicycle/ Pedestrian	Unbuffered sum line segment length (m) for all bike infrastructure types	–	✓	✓	Increase, Derived
		Buffered bike share facility count	–	✓	✓	Increase, Derived
		Buffered NHTSA pedestrian/bicyclist-involved fatal traffic crash rate per 1,000 persons	–	✓	–	No Change
		Unbuffered FBI violent crime rate per 100,000 persons	–	✓	–	No Change

* Denotes whether these elements are relevant in any meaningful way to the SSPZ.

** Denotes the type of change expected: 1) no or limited change expected, 2) an increased change positively associated with health is expected and it will be derived directly from changes in the built environment through the scenarios, 3) an increase or decrease change is expected, but is only assumed and not supported by change in the built environment developed through the scenarios.

4.2 Forecasted Change in Non-Land Use Characteristics

In addition to anticipated land use changes to the built environment for the future scenarios, changes are also expected from non-land use related input components to NPHAM. These aspects of the built and natural environment include street connectivity, public transit, bicycle infrastructure, traffic safety, and green infrastructure. The following sections describe the data and methods used.

A single future 2035 scenario is proposed for each of the non-land use related components used as inputs to the NPHAM models. The same future values for each of these input variables will be used for both land use scenarios developed (Scenario 4 and 5). By holding these variables constant, the differences in the resulting health outcomes will be due to the changes in land use between the two new alternative scenarios.

4.2.1 Green Infrastructure

Green infrastructure encompasses many facets of access to the natural environment. Increased green space is associated with improved general health (Maas et al., 2009), increased physical activity (Almanza et al., 2012), reduced likelihood of being overweight (Bell et al., 2008; Ellaway et al., 2005), increased social interaction (Sugiyama et al., 2008) and improved perceptions of mutual trust and willingness to help others (Cohen et al., 2008). Furthermore, green space can function as an escape from life stress, reduce depression, and improve people's ability to cope with major issues (Kuo, 2001; Branas et al., 2011; Maller et al., 2006).

Of the five variables used to calculate the **park index**, two will not change from current conditions -- forest cover or natural area coverage. Since the SSPZ is largely an urbanized area, no change is expected, although change would be expected for more rural areas in San Joaquin County. The two variables expected to change are described below.

4.2.1.1 Parks

Green spaces, such as urban parks and street trees, can also be incorporated into active transportation networks, further increasing health-related benefits from walking and biking space (National Park & Recreation Association, 2015) and helping to reduce vehicular collisions in a community (Frank et al., 2019; Besser et al., 2005; Schoner et al., 2018).

A total of 33 developed parks currently exist in the SSPZ with 47% of census block groups currently containing a park. The City of Stockton has two new phased additions to existing parks and five new parks that are planned in the City, three of which are located in the SSPZ.¹² Table 9 provides a summary of the new parks planned to be added in the SSPZ that will directly impact two neighborhoods (and their block groups) in the subarea. The addition of these parks is reflected in Scenarios 4 and 5.

Table 9: Description of planned parks in the SSPZ by 2035.

<i>Park Name</i>	<i>Neighborhood</i>	<i>Address</i>	<i>Area (acres)</i>
Missassi Park	Mariposa	1679 Madrid Way	0.73
Susan Park	Mariposa	2839 Susan Way	1.46
John Peri Park	Seaport/Van Buskirk	2920 McCloud River Rd.	5.9

Source: City of Stockton Park & Recreation, 2019.

4.2.1.2 Tree Canopy Coverage

Increasing tree canopy coverage by planting more urban street trees along streets and in parks and other locations in the public right-of-way to replace stumps or vacant planting sites is a goal for Stockton.¹³ Tree canopy, in particular, has an association with better overall health, lower prevalence of overweight and obesity and better social cohesion, reduced type 2 diabetes, high blood pressure, and asthma in communities (Ulmer et al., 2016). In addition, green infrastructure may also improve air quality (Nowak et al., 2016) and reduce asthma among children (Lovasi et al., 2008).

The City of Stockton has begun an extensive inventory of street trees to track and monitor the spatial distribution of urban greenery by species type.¹⁴ Current tree canopy coverage for the SSPZ is low, averaging only 0%-1% coverage of census block groups, with a maximum of 3.8% according to the National Land Cover Database.¹⁵ In rural areas in San Joaquin County with more natural areas and undeveloped space, tree canopy coverage increases to a maximum block-group level of 37.2%. No data is currently available for a forecasted tree canopy coverage map for the region.

Given the planned investment in urban street trees and increased tree canopy, an assumption of a moderate increase in tree canopy coverage will be applied to the future scenario for 2035. This assumption will be held constant between Scenarios 4 and 5.

¹² [Parks & Recreation Facilities](#), City of Stockton, 2019.

¹³ Stockton Rising: Strategy 7: Urban Greening & Green Infrastructure, Implementation Grant Proposal, City of Stockton Public Works, 2019.

¹⁴ [City Tree Map](#), City of Stockton, 2020.

¹⁵ [National Land Cover Database](#), U.S. Geological Survey, 2016.

Table 10 provides a summary of the assumed increase in tree canopy coverage based on a tiered range from high to low. These assumptions presume that 80% of block groups in the SSPZ will increase at least slightly in tree canopy coverage with only 30% increasing by 5.0% or more and nearly 20% receiving no change from baseline. These percentages were informed by an assumed moderate increase in the current street tree corridors in the SSPZ based on a visual examination of data from the City Tree Map inventory. In addition, the highest levels of future tree planting and park development are assumed to be concentrated into specific targeted areas. Industrial areas in the SSPZ, especially in southern sections near Arch Airport Way are expected to have little to no change in the future scenario.

Table 10: Summary of tiered assumed increase in tree canopy coverage for the SSPZ.

<i>Tier</i>	<i>Percentage Increase in 2035</i>	<i>Number of Block Groups</i>	<i>Percentage of SSPZ Block Groups</i>
High	10.0%	3	5.7%
Moderate	5.0%	13	24.5%
Low	2.5%	27	50.9%
No Change	0%	10	18.9%
Total	-	53	100.0%

Figure 3 illustrates a block group level map showing the areas with anticipated increases in tree canopy coverage in 2035. Block groups expected to show the largest increases are located in Downtown Stockton near Weber Point and the McLeod Lake waterfront, as well as South Seaport/Van Buskirk and Mariposa, as a result of new park development. Moderate increases in tree canopy coverage are shown for other areas in Downtown Stockton in addition to the Airport Way Corridor and the Dr. Martin Luther King Jr. Blvd and El Dorado corridors.

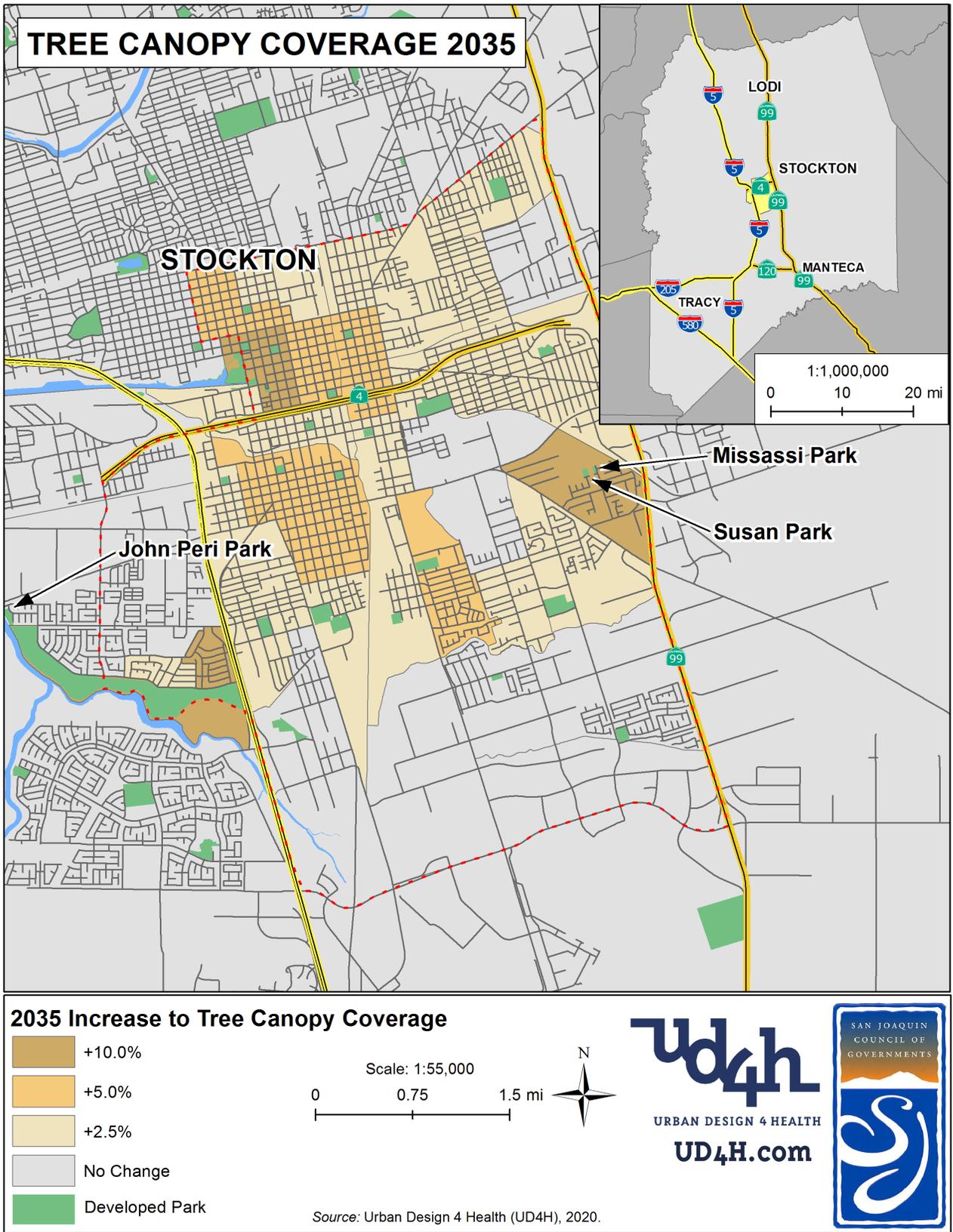


Figure 3: Map of proposed increases to tree canopy coverage by block group in 2035.

4.2.2 Street Connectivity

Limited to no change is expected to the SSPZ road network. There is no future change database to use to derive differences; therefore, there is no assumed change to the **street connectivity index**.¹⁶ This index's values will not change for the new alternative scenarios.

4.2.3 Public Transit

The **transit index** is composed of several individual rail and bus transit variables (listed in Table 8). The proposed Valley Link¹⁷ would connect Dublin/Pleasanton Bay Area Rapid Transit (BART) station in Alameda County to the North Lathrop Altamont Commuter Express (ACE) station and eventually with the Robert J. Cabral Station in Downtown Stockton. The anticipated opening date for this service is currently scheduled for late 2028. In the case that this new rail transit service was brought to San Joaquin County in the form of the Valley Link, it is not anticipated to add any net new rail stations in Stockton or the SSPZ. As a result, no change is anticipated for several of the input transit index variables related to rail service, except the proportion of employment within $\frac{1}{4}$ or $\frac{1}{2}$ mile of fixed-guideway. This is due only to anticipated placetype changes resulting in increased job counts.

Several proposed increases to the San Joaquin Regional Transit District (RTD) bus transit service in the SSPZ are slated to occur. These include reduced headways and travel times which support increased access to the SSPZ. To service this proposed increased, a series of potential bus rapid transit (BRT) lines are being planned by the San Joaquin Regional Transit District, SJCOG, and the City of Stockton.¹⁸ Targeted areas for increases in service are areas around the Downtown Transit Center, Robert J. Cabral Station, Union Transfer Station,¹⁹ and routes servicing areas nearby Dr. Martin Luther King Jr. (E Harding Way) and S. Airport Way. In addition, neighborhoods in the extreme south of the SSPZ north of Arch Airport Rd. are expected to be positively impacted by the new BRT route running east-west along this corridor.

Given these planned and proposed transit projects, transit service overall is expected to increase. Table 11 provides an overview of the tiered range in assumed increases in

¹⁶ Street connectivity variables include intersection density, road network density and street intersection density (weighted, auto-oriented intersections eliminated).

¹⁷ [Valley Link](#), Tri-Valley & San Joaquin Regional Rail Authority 2019.

¹⁸ [2035 Stockton Transit Routes](#), City of Stockton, 2007.

¹⁹ [The Future is Bright](#), San Joaquin Regional Transit District, 2019.

transit services to be applied to the two bus-related transit service frequency measures: 1) aggregate transit service frequency and 2) transit service frequency density. The aggregate transit service frequency measure is calculated as the frequency of transit service for each transit route²⁰ for the evening peak period (4:00 PM-7:00 PM weekdays) using transit schedule information.²¹ This service frequency is then aggregated for all transit routes within 0.25 miles of each block group. This metric expresses values as service frequency per hour of transit service. The aggregate transit service frequency density measure then takes the frequency of transit service measure and converts it into a density measure using the block group area as the denominator. Higher values indicate areas with increased number of transit routes and increased density of transit service frequency including reduced headways and longer operational schedules.

For these two transit service frequency measures, a percentage increase is applied to each variable individually. The individual increases in these measures are then incorporated with the other transit-related measures (which remain unchanged in the 2035 scenario) to calculate a new overall transit index. For example, if a block group along the Airport Way Corridor had a transit service frequency density of 15 per hour per square mile within a 0.25 mile distance and was increasing by 30% in 2035, the future transit service frequency would be 19.5 per hour per square mile. These percentage increases are based on future infrastructure and service investments in the targeted areas of the SSPZ discussed below.

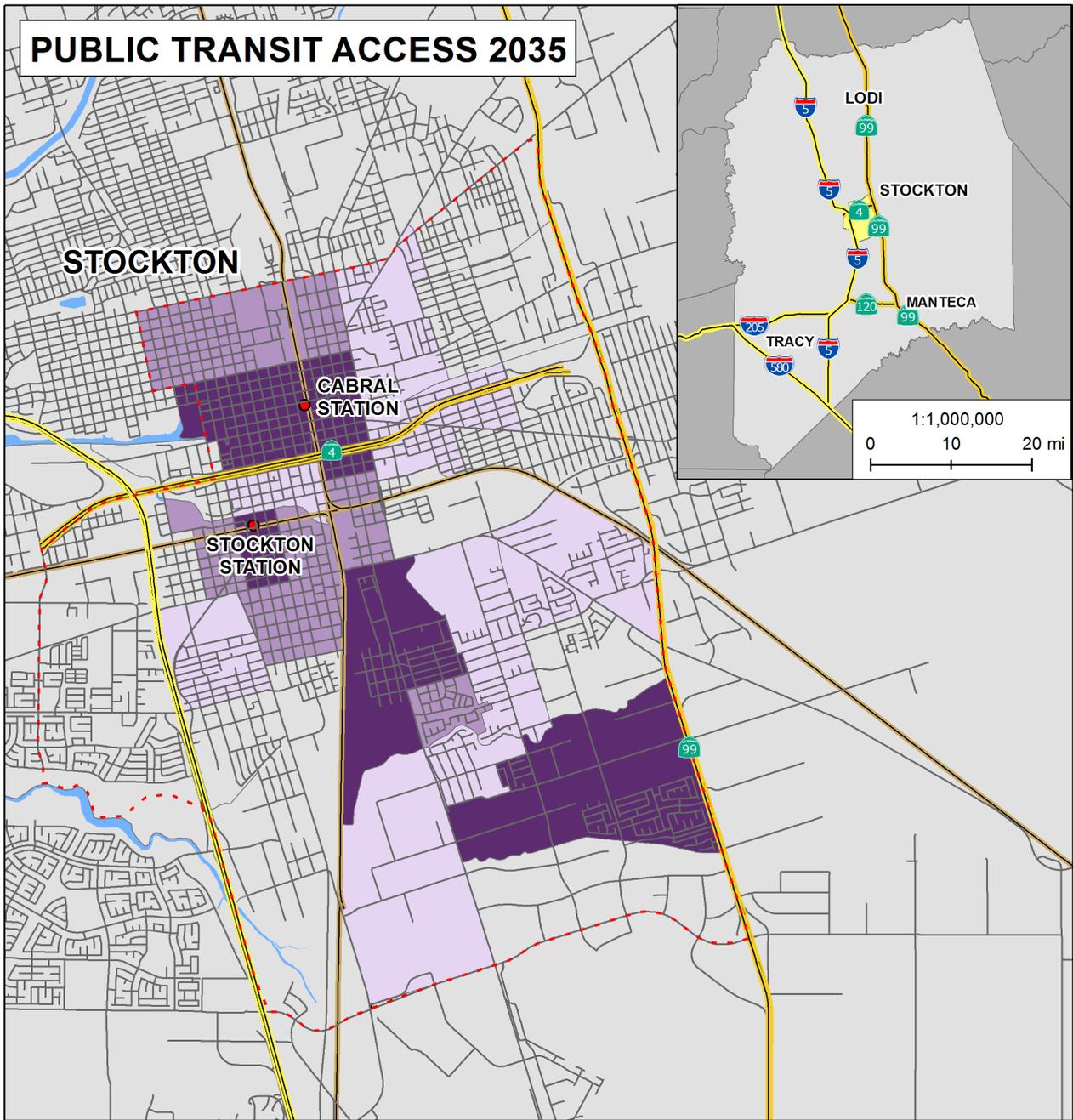
Table 11: Summary of tiered assumed increase in bus-based public transit for the SSPZ.

<i>Tier</i>	<i>Percentage Increase in 2035</i>	<i>Number of Block Groups</i>	<i>Percentage of SSPZ Block Groups</i>
High	30%	8	15.2%
Moderate	20%	11	20.8%
Low	10%	13	24.4%
No Change	0%	21	39.6%
Total	-	53	100.0%

Figure 4 shows a map of the expected increase in transit service frequency in the SSPZ in 2035. The highest concentrations of increase are anticipated for areas in Downtown Stockton near the Downtown Transit Center and Cabral Station areas, as well as along the Airport Way corridor and Dr. Martin Luther King Jr. corridor. The planned Arch Airport Rd. BRT route will also provide a significant increase to transit service frequency along this corridor in the extreme south of the SSPZ. Moderate to low increases in transit service frequency are expected in areas surrounding these key transit corridors with little to no change expected in further outlying areas.

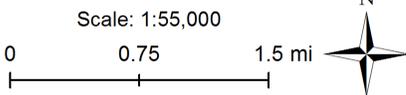
²⁰These routes consist of bus service only, including BRT and other express bus service.

²¹ Transit schedule information provided by General Transit Feed Specification (GTFS) data.



2035 Increase to Transit Access

- +30%
- +20%
- +10%
- No Change
- Commuter & Inter-City Rail



Source: Urban Design 4 Health (UD4H), 2020.

Figure 4: Map of anticipated increase in transit service frequency in the SSPZ in 2035.

4.2.4 Bicycle Infrastructure

Cities that have invested in bicycle infrastructure have higher rates of bicycle commuters compared to those with fewer bicycle facilities (Dill & Carr, 2003; Pucher et al., 2010). Bicycle infrastructure primarily includes bike paths, bike lanes, cycle tracks, but also can include sidewalks where bicycling is permitted, bike racks/storage, and specialized traffic signs and signals. Access to safe, connected bicycle networks and infrastructure can help combat perceived barriers to cycling and promote more utilitarian and recreational bicycling. For example, the presence of bicycle lanes with physical barriers between bicyclists and motor vehicle traffic has been shown to increase individuals' use of bike infrastructure (Pucher et al., 2010; Hoffman et al., 2010). On-street bicycle facilities and sidewalks are examples of traffic-calming measures which can help reduce collision frequencies and severities. Beyond the health benefits associated with increased levels of physical activity with access to bicycle infrastructure (Frank et al., 2019), bicycling infrastructure costs less to construct and implement compared to automobile infrastructure. Creating safer and more convenient infrastructure for cycling also improves mobility for all populations, reducing the need for automobile infrastructure and associated costs.

Bicycle infrastructure, in the form of multi-use pathways and on-street facilities like bike lanes and bike routes, is important for encouraging more people to cycle for leisure and utilitarian transportation. Bicycle infrastructure in the SSPZ is currently limited to about 2 miles of built network and nearly 53 miles of planned infrastructure. Figure 5 shows a map of current and planned bicycle multi-use pathways and on-street bike routes for the future. The planned bicycle infrastructure network forms the basis of the future length of bicycle facilities input variables for the **bicycle/pedestrian index** for 2035. Although this is aspirational, a large portion is currently underway and construction on many other segments is proposed for the near future. It is therefore assumed that the entire network will be constructed by 2035.

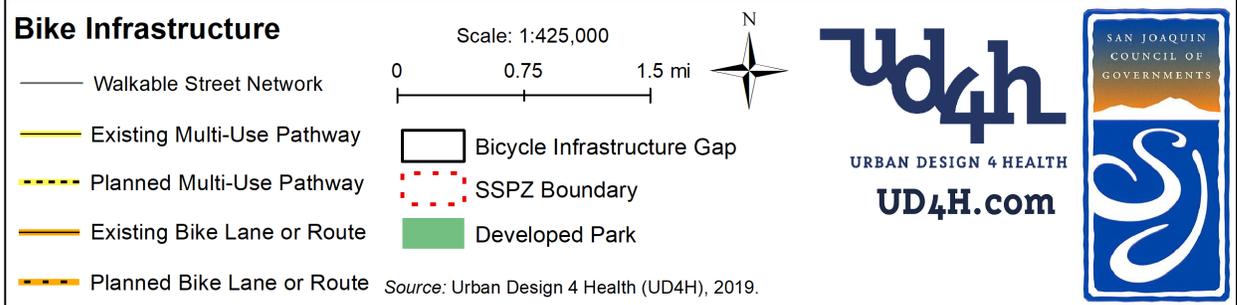
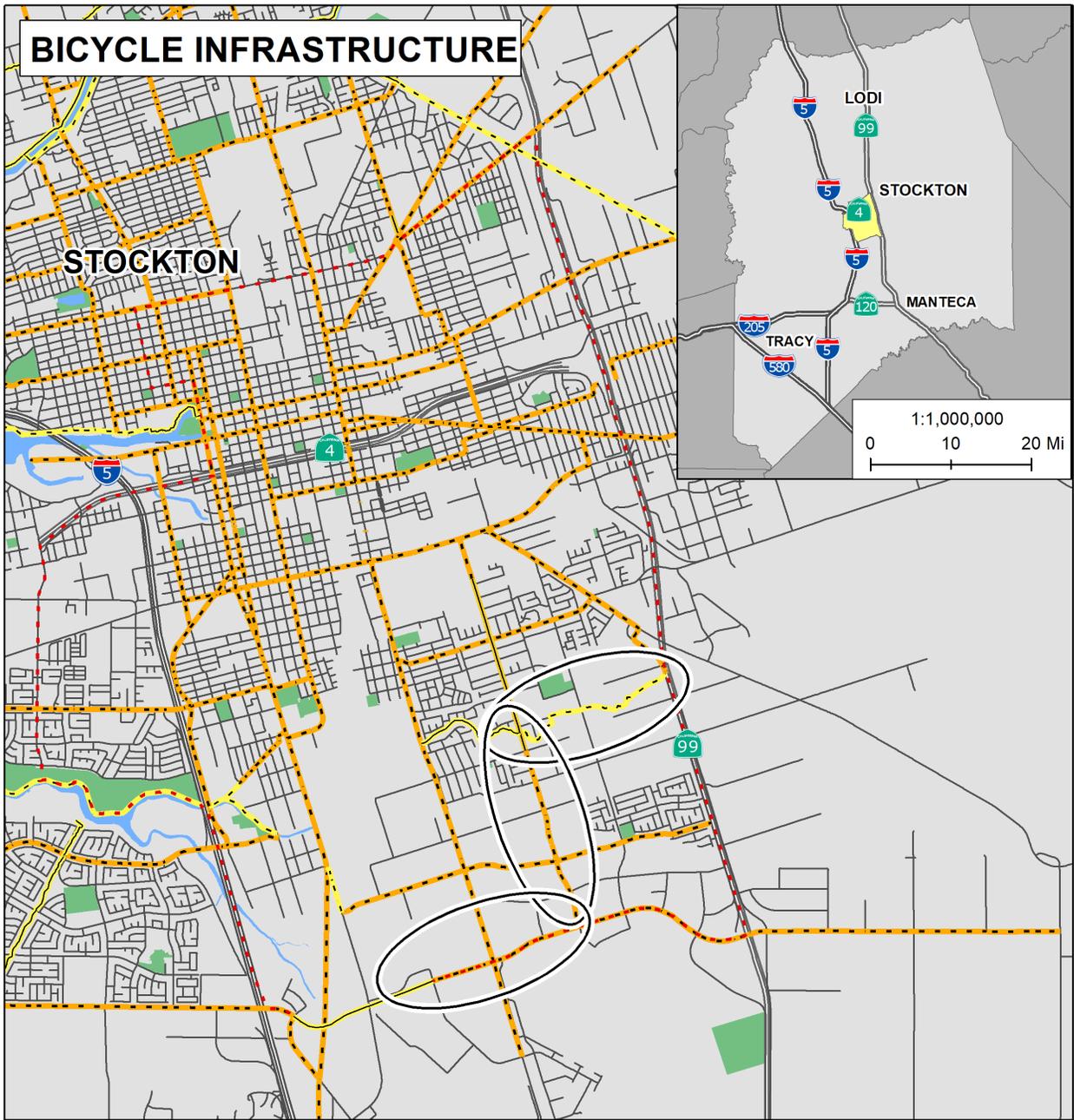


Figure 5. Existing and planned bicycle infrastructure in Stockton with smaller gaps in the network identified in circles on the map.

4.2.5 Bicycle Share Program

Lastly, there are no bicycle share facilities in Stockton currently, however, a pilot program is proposed that will be coordinated by the RTD. The bicycle share program is planned to occur in two phases with the pilot (Phase I) aimed at installing docking stations at three main locations in Downtown Stockton: 1) Weber Point, 2) the Downtown Transit Center and 3) Cabral Station (Table 12). The latter two locations will offer direct access to regional RTD bus service and commuter rail service through the ACE. The proposed Phase II expansion of the program will add bicycle docking stations to the Stockton Amtrak station, as well as the Dr. Martin Luther King Jr. corridor (RTD #49 route), the Airport Way corridor (RTD #44 route) and the Fremont St./Midtown corridor (RTD #47) in the SSPZ. Timing of implementation has not been finalized, but both the Phase I and the Phase II expansion may be delivered by 2035. As a result, all proposed docking stations have been included in Scenario 4 and 5.

Table 12: Summary of proposed bicycle share dockings stations in the SSPZ.

#	Location Name	Destination Type	Proposed Phase	Transit Access
1	Weber Point	Downtown Core	Phase I	RTD – Local Bus
2	Downtown Transit Center	Transit Hub	Phase I	RTD – Commuter/Local Bus
3	Robert Cabral Station	Multi-modal Transit Hub	Phase I	ACE – Commuter Rail
4	Stockton Amtrak Station	Multi-modal Transit Hub	Phase II	Amtrak – Intercity Rail
5	Dr. Martin Luther King Jr./Charter Way & El Dorado St./Center St.	Transit Hub	Phase II	RTD – Local Bus - #49 MLK Corridor
6	Union Transfer Station	Transit Hub	Phase II	RTD – Local Bus - #44 Airport Way Corridor
7	Fremont St. & Wilson Way	Transit Hub	Phase II	RTD – Local Bus - #47 Midtown

Source: Proposed Stockton Bicycle Share Plan, San Joaquin Regional Transit District, 2020.

4.2.6 Traffic Safety

An additional component to the **bicycle/pedestrian index** is the count of pedestrian and bicyclist-involved collisions. Safety is a key driver for changes to existing roadways and intersections. Reducing fatalities and injuries on streets requires a systems approach that includes both plans and project design (Canadian Council on Motor Transportation Administrators, 2016; Fox & Shahum, 2017). There is a growing body of evidence and resources to help mitigate the risk for injury and fatalities across all modes of transportation, especially for vulnerable pedestrians or cyclists (Urban Design 4 Health, 2013; Toronto Public Health, 2014). Some of these interventions to reduce traffic injuries focus on the alteration of environmental factors such as traffic volume and speed (Harris

et al., 2011; Miranda-Moreno et al., 2011) and for cyclists, increased separation from vehicles (Lusk et al., 2011). Pedestrians and cyclists are more likely to suffer injury or death in a collision. Pedestrians and cyclists are 1.5 times more likely than motorists to die on an average trip (Beck et al., 2007; Centers for Disease Control & Prevention, 2009), and many life-altering injuries go unreported. Moreover, traffic injury risk across modes of transportation tends to be higher for low-income populations. People with lower incomes typically have lower levels of car ownership and rely on walking or biking for transport even though they often live in places where the active transportation network is less developed (Haggerty et al., 2015; Mader et al., 2014).

Pedestrian and bicyclist-involved collisions may be due to many factors including traffic congestion, speed limit enforcement, available infrastructure such as sidewalks, protected or delineated spaces for bicycles along the road network, as well as the crossing environment at intersections. The recommended approach for adjusting the pedestrian and bicyclist-involved traffic crash rate is to compare the increased density and growth in population within the SSPZ to selected similar existing areas in the city. The current traffic crash rates for these areas of comparable density/population will be applied to the SSPZ areas for the 2035 forecasted rate.

4.2.7 Violent Crime

The violent crime rate per 100,000 persons is used as an individual variable in the **bicycle/pedestrian index**. Crime rates are tracked by the Federal Bureau of Investigation and reported annually by municipality.²² Over a ten-year period, Stockton averaged an increase of only 5.5 violent crimes per year or a +0.7% increase between 2008 and 2018. The violent crime rate in Stockton varies by location in the City, but there is currently no widely available crime data on violent crime at the address or neighborhood level. It is only available at the municipal level. Given the difficulty and uncertainty in predicting future crime rates for 2035, the violent crime rate is assumed to remain stable and will not be changed for the future alternative scenario.

4.2.8 Density & Destination Indices

The values for the individual variables that provide inputs into both the **density index** and the **destination index** composite measures will be updated for the two new future scenarios for 2035. Both indices utilize population and employment characteristics derived directly from the development placetypes that are assigned in the alternative scenarios discussed below.

²² [Uniform Crime Reporting: City of Stockton, CA](#), Federal Bureau of Investigation, 2019.

Table 13 provides a summary of population growth for the City of Stockton and the two Census designated places (CDP) of Kennedy and Taft Mosswood which encompass sections of the SSPZ. An average combined decennial growth rate of 8.2% is forecasted for a total growth of 20.5% between 2020 and 2035. The City of Stockton showed a rate of 8.4% per ten years with an increase of 10.5% for Kennedy and decrease for Taft Mosswood.

These projections are only provided to give a general idea of the population growth rate for Stockton. Population data is for the entire City of Stockton which may not grow in the same way as the SSPZ, longitudinal data is limited for the two CDPs, and growth rates are also determined by economic circumstances and other local conditions not represented in this forecast. Despite the caveats for these population projections, the total population growth by 2035 is much higher than the 9.5% presented for Scenario 1 and higher than the 13%-14% growth rate for Scenario 2 and 3 (presented in Table 2). The population and employment changes resulting from the placetypes used in Scenarios 4 and 5 will be compared to the above information. These trends will provide a context for the new values.

Table 13: Summary of observed and forecasted population change for the City of Stockton, Kennedy and Taft Mosswood.

Source	Decennial					ACS	Forecasted ²³		
	Year	1970	1980	1990	2000	2010	2017/2018 ²⁴	2020 ²⁵	2030
Stockton City Population	109,963	148,283	210,943	243,771	291,707	311,178	316,312	342,993	357,459
Population Change	+23,642	+38,320	+62,660	+32,828	+47,936	+19,471	+24,605	+26,681	+14,466
Population Change (%)	+27.4%	+34.8%	+42.3%	+15.6%	+19.7%	+6.7%	+8.4%	+8.4%	+4.2%
Kennedy CDP Population	-	-	-	3,275	3,254	3,468	3,595	3,973	4,181
Population Change	-	-	-	-	-21	214	341	377	208
Population Change (%)	-	-	-	-	-0.6%	+6.6%	10.5%	10.5%	5.2%
Taft Mosswood CDP Population	-	-	-	1,388	1,530	1,064	1,017	677	563
Population Change	-	-	-	-	142	-466	-513	-341	-113
Population Change (%)	-	-	-	-	+10.2%	-30.5%	-33.5%	-33.5%	-16.8%
Total Population	109,963	148,283	210,943	248,434	296,491	315,028	320,925	347,373	361,686
Total Population Change	+23,642	+38,320	+62,660	+37,491	+52,720	+7,956	24,434	26,448	14,314
Total Population Change (%)	+27.4%	+34.8%	+42.3%	+17.8%	+21.2%	+2.6%	8.2%	8.2%	4.1%

Source: U.S. Census Bureau, 2019.

²³ Estimated forecasts produced based on trends in annual ACS change between 2010-2018 for Stockton and 2010-2017 for Kennedy and Taft Mosswood.

²⁴ 2018 ACS population estimates only available for Stockton, Kennedy and Taft Mosswood estimates shown for 2017.

²⁵ Change in population shown in comparison to 2010.

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5 Appendix A: Scenario 4 Development Placetype Characteristics

Table 14 summarizes the proposed residential building type mix to be assigned to each development placetype for Scenario 4. Table 15 reviews the proposed commercial building type mix to be assigned to each development placetype for Scenario 4.

Table 14: Summary of residential building type mix assigned to each development placetype for Scenario 4.

#	Development Type	Total Residential	Total Non-Residential	Mixed-Use Residential			Multi-Family				Single Family	
				15 Story	5 Story	< 5 Story	Small Unit	Large Unit	Suburban	Duplex	Townhome	Single Family
1	Downtown Residential	90%	10%	15%	20%	30%	25%	-	-	-	-	-
2	Suburban Multifamily	100%	0%	-	-	20%	60%	20%	-	-	-	-
3	Suburban Residential	100%	0%	-	-	-	-	-	-	-	80%	20%
4	Compact Neighborhood High	100%	0%	-	-	-	5%	20%	5%	10%	40%	20%
5	Compact Neighborhood Low	100%	0%	-	-	-	-	5%	15%	10%	25%	45%
6	Mixed-Use Corridor	30%	70%	-	10%	15%	5%	-	-	-	-	-
7	Downtown	25%	75%	10%	15%	-	-	-	-	-	-	-
8	Office Park	0%	100%	-	-	-	-	-	-	-	-	-
9	Town Neighborhood	75%	25%	-	10%	15%	20%	10%	-	5%	10%	5%

Table 15: Summary of commercial building type mix assigned to each development placetype for Scenario 4.

#	Development Type	Total Residential	Total Non-Residential	Mixed-Use Office			Commercial			Office	
				10 Story	5 Story	2 Story	Main St. Commercial	Low Density Commercial	Large Format Retail	Low-Rise Office	Civic Office
1	Downtown Residential	90%	10%	5%	5%	-	-	-	-	-	-
2	Suburban Multifamily	100%	0%	-	-	-	-	-	-	-	-
3	Suburban Residential	100%	0%	-	-	-	-	-	-	-	-
4	Compact Neighborhood High	100%	0%	-	-	-	-	-	-	-	-
5	Compact Neighborhood Low	100%	0%	-	-	-	-	-	-	-	-
6	Mixed-Use Corridor	30%	70%	10%	20%	25%	15%	-	-	-	-
7	Downtown	25%	75%	25%	30%	20%	-	-	-	-	-
8	Office Park	0%	100%	5%	25%	50%	20%	-	-	-	-
9	Town Neighborhood	75%	25%	-	10%	5%	10%	-	-	-	-

6 Appendix B: Scenario 5 Development Placetype Characteristics

Table 16 summarizes the proposed residential building type mix to be assigned to each development placetype for Scenario 5. Table 17 reviews the proposed commercial building type mix to be assigned to each development placetype for Scenario 5.

Table 16: Summary of residential building type mix assigned to each development placetype for Scenario 5.

#	Development Type	Total Residential	Total Non-Residential	Mixed-Use Residential			Multi-Family				Single Family	
				15 Story	5 Story	< 5 Story	Small Unit	Large Unit	Suburban	Duplex	Townhome	Single Family
1	Downtown Residential	90%	10%	30%	35%	15%	10%	-	-	-	-	-
2	Suburban Multifamily	100%	0%	-	10%	40%	45%	5%	-	-	-	-
3	Suburban Residential	100%	0%	-	-	-	-	-	5%	10%	75%	10%
4	Compact Neighborhood High	100%	0%	-	-	-	10%	35%	5%	10%	30%	10%
5	Compact Neighborhood Low	100%	0%	-	-	-	-	10%	15%	15%	30%	30%
6	Mixed-Use Corridor	30%	70%	-	20%	10%	-	-	-	-	-	-
7	Downtown	25%	75%	15%	10%	-	-	-	-	-	-	-
8	Office Park	0%	100%	-	-	-	-	-	-	-	-	-
9	Town Neighborhood	75%	25%	-	25%	25%	10%	5%	-	5%	5%	-

Table 17: Summary of commercial building type mix assigned to each development placetype for Scenario 5.

#	Development Type	Total Residential	Total Non-Residential	Mixed-Use Office			Commercial			Office	
				10 Story	5 Story	2 Story	Main St. Commercial	Low Density Commercial	Large Format Retail	Low-Rise Office	Civic Office
1	Downtown Residential	90%	10%	10%	-	-	-	-	-	-	-
2	Suburban Multifamily	100%	0%	-	-	-	-	-	-	-	-
3	Suburban Residential	100%	0%	-	-	-	-	-	-	-	-
4	Compact Neighborhood High	100%	0%	-	-	-	-	-	-	-	-
5	Compact Neighborhood Low	100%	0%	-	-	-	-	-	-	-	-
6	Mixed-Use Corridor	30%	70%	30%	25%	5%	10%	-	-	-	-
7	Downtown	25%	75%	40%	25%	10%	-	-	-	-	-
8	Office Park	0%	100%	15%	40%	35%	10%	-	-	-	-
9	Town Neighborhood	75%	25%	5%	10%	-	10%	-	-	-	-