Blueprint SD Initiative

including

Blueprint SD
General Plan Amendment

University
Community Plan Update

and

Hillcrest
Focused Plan Amendment

Vehicle Miles Traveled Analysis

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TABLE OF CONTENTS

APPENDICES

LIST OF TABLES

1.0 INTRODUCTION

1.1 Purpose of the Report

This Vehicle Miles Traveled (VMT) Analysis Technical Report serves to identify and document potential California Environmental Quality Act (CEQA) transportation impacts related to VMT of the Proposed Project which includes the following key components: the Blueprint SD Initiative, the University Community Plan and Local Coastal Plan Update (CPU) (hereinafter referred to as the "University CPU"), and the Hillcrest Focused Plan Amendment (FPA) to the Uptown Community Plan (hereinafter referred to as the "Hillcrest FPA").

This report has been prepared in accordance with the City of San Diego (City's) compliance with Senate Bill (SB) 743 legislation specified by the Governor's Office of Planning and Research (OPR). SB 743 removes vehicular Level of Service (LOS) as a metric for determining significant environmental impacts for transportation and replaces it with VMT as the primary measure of transportation impacts for CEQA. Operational analyses of the University CPU and Hillcrest FPA proposed mobility networks will be provided in separate reports and/or memorandums.

1.2 Report Organization

The remainder of this report is organized into the following chapters:

- ***2.0 Project Description*** – Summarizes the project's components.
- ***3.0 Analysis Methodology*** – Describes the methodologies and standards utilized to analyze the CEQA transportation impacts related to VMT for all scenarios.
- ***4.0 Project Impacts*** – Discusses the VMT analysis and potential CEQA transportation impacts of the Proposed Project.

2.0 PROJECT DESCRIPTION

The project analyzed in this VMT Analysis Technical Report includes the following:

- "Blueprint SD Initiative" which includes adoption of a General Plan amendment and associated discretionary actions.
- The Hillcrest Focused Plan Amendment (FPA) to the Uptown Community Plan (hereinafter referred to as the "Hillcrest FPA"), rezones, amendments to the City's Land Development Code (LDC), and associated discretionary actions.
- The University Community Plan and Local Coastal Plan Update (CPU) (hereinafter referred to as the "University CPU"), rezones, amendments to the LDC, and associated discretionary actions.

Please refer to Chapter 3, Project Description, of the Blueprints SD Initiative, Hillcrest FPA, and University CPU Program Environmental Impact Report (PEIR) for the detailed project description.

2.1 Land Use Changes

Blueprint SD Initiative Climate Smart Village Areas

The Blueprint SD Initiative Climate Smart Village Areas are areas within the City with a village propensity value between 7 and 14 as identified in the Village Climate Goal Propensity Map (see Figure 3-1a through e from the PEIR). Future opportunities for homes and jobs are anticipated to be focused in these Climate Smart Village Areas as these areas have good access to homes, jobs, and mixed use-destinations; are in proximity to high-frequency transit services based on the 2050 regional transportation network, have competitive transit access to job centers based on the 2050 regional transportation network, and provide good connections between transit and destinations.

University Community Plan Update

The changes proposed to the University CPU land use plan address the demand for homes and jobs and reflect the recent extension of the University of California San Diego (UCSD) Metropolitan Transit System (MTS) Blue Line Trolley service to UCSD and other existing and planned transit services. Table 3-5 of the PEIR identifies the existing, adopted plan and proposed plan non-residential build-out square footage for the University CPU area. Table 3-6 of the PEIR identifies the total number of existing homes by type and the total number of homes that could be built for the adopted University Community Plan and proposed University CPU. The proposed University CPU land use map is depicted on Figure 3-19 of the PEIR.

Hillcrest Focused Plan Amendment

The Hillcrest FPA would increase the allowable development intensity and residential density within approximately 380 acres of the Hillcrest and Medical Complex neighborhoods allowing for additional homes and jobs to be near sustainable transportation options. Generally, higher intensity development would be allowed along primary transit corridors, increasing opportunities for mixed-use commercial and employment districts. Table 3-2 of the PEIR identifies the existing, adopted plan and proposed plan non-residential build-out square footage for the Hillcrest FPA area. Table 3-1 of the PEIR identifies the total number of existing homes by type and the total number of homes that could be built for the Hillcrest FPA. The proposed Uptown Community Plan land use map is depicted on Figure 3-8a through 3-8c of the PEIR.

2.2 Multi-Modal Changes

Future modeling scenarios used the planned regional mobility network/investments/policies from the San Diego Association of Government's (SANDAG's) 2021 Regional Plan 2023 Amendment. Information on the proposed mobility system and multi-modal improvements for the University CPU are described in Section 3.5.3.1.c. of the PEIR. Information on the proposed mobility system and improvements for the Hillcrest FPA are described in Section 3.5.2.2 of the PEIR. Operational analyses of the proposed mobility system for the University CPU and Hillcrest FPA will be provided in separate reports.

3.0 ANALYSIS METHODOLOGY

This chapter describes the methodology for the CEQA VMT impact analysis that was prepared in accordance with the City's compliance with the SB 743 legislation and the CEQA review process.

3.1 Data Sources and Methods

VMT data was obtained from SANDAG's Series 14 Activity Based Model (ABM2+). The ABM is a travel demand forecasting model that incorporates census data and travel surveys to inform the algorithms of the model's projections. It uses a simulated population based on existing and projected demographics to match residents to employment and forecasts the daily travel on the regional transportation network. In addition, the model is able to estimate the daily travel behavior of individuals in the simulated population, including origins, destinations, travel distances and mode choices.

For the Proposed Project, SANDAG's 2016 Base Year forecast was used to determine the VMT metrics for residents and employees for the baseline condition.

The Project developed a Citywide Village Climate Goal Propensity Map (see Figure 3-1a through e of the PEIR) and subsequently identified areas with a village propensity value between 7 and 14 as Climate Smart Village Areas. Future opportunities for homes and jobs are anticipated to be focused in these Climate Smart Village Areas as they have good access to homes, jobs, and mixed use-destinations; are in proximity to high-frequency transit services and would have competitive transit access to job centers based on the 2050 regional transportation network, and provide good connections between transit and destinations. For additional information on the Village Climate Goal Propensity Map and Climate Smart Village Areas see ***Appendix A***.

To evaluate the VMT impact that could potentially arise from the implementation of the Blueprint SD Initiative, the City worked with its transportation modeling consultant and SANDAG to develop model inputs that would best represent the future conditions which resulted in 3 modeling scenarios as described in Section 1.2 of this document. From these scenarios, SANDAG generated VMT Reports that were used to determine the VMT impact(s) of the Project, these reports are contained in ***Appendix F***.

Activity Based Model (ABM) Background

The ABM is a complex travel demand model that can track the characteristics of each simulated traveler and can analyze the travel patterns of a wide area throughout an entire day. When simulating a person's travel patterns, the ABM takes into consideration a multitude of personal and household attributes to ensure that people move from one place to another in a realistic manner. Each model run "scenario" can reflect a specific year, land use scenario, and/or transportation network. After an ABM scenario is constructed, it produces a loaded roadway network that provides projected daily vehicle volumes on each link in the network with additional reports on mode share, VMT and other transportation metrics that can be generated for analysis. Additional technical information on the SANDAG ABM can be found at: https://github.com/SANDAG/ABM/wiki.

Village Climate Goal Propensity Map

For the Blueprint SD Initiative, a land use modeling effort was used to locate homes and jobs within areas near high frequency transit, with the goal of supporting a shift in mode share from single occupancy vehicles to other non-vehicular models of travel including walking, biking, and transit. Refer to *Appendix A* for the description of the methodology used in the development of the Blueprint SD Initiative Climate Goal Propensity Map. Future homes and jobs within the Climate Smart Village Areas would be further defined as part of future CPUs, Specific Plans, and/or FPAs.

Model Input Development

To model the Project within SANDAG's ABM 2+, the proposed Village Climate Goal Propensity Map and Climate Smart Village Areas were converted into model inputs that are representative of the Proposed Project. With its consultant, the City estimated the overall increased Citywide housing capacity that the Blueprint SD Initiative would allow, ranging from low to high intensity. The increased capacities where then distributed to the Climate Smart Village Areas. To evaluate the full effect of the project, two model runs would be used to represent the low and high intensity capacities which are Model Run 1 and Model Run 3, respectively.

For the University CPU and Hillcrest FPA, a third model run, Model Run 2 was developed that was built off Model Run 1 with modifications to incorporate the University CPU and Hillcrest FPA land uses.

The detailed methodology of how the model inputs were developed can be found in ***Appendix B-1***. Summaries of the land use inputs citywide for Model Runs 1, 2 and 3 are provided in ***Appendix C***. More detailed land use inputs for the University CPU and Hillcrest FPA areas are provided in ***Appendix D*** and ***Appendix E***, respectively.

SB 743 VMT Reports

SANDAG is able to extract various transportation metrics from completed model via post processing methods. SB 743 VMT reports are based on the resident model of the Activity Based Model and do not account for VMT from other sources such as visitors/tourist or goods movement. The ABM can track the tours of all the residents of the region by purpose and calculate their daily VMT. The SB 743 VMT report focuses on two VMT efficiency metrics:

- VMT per capita represents the average amount of personal, non-commercial, vehicle travel made on an average weekday by each resident who lives within that geographic boundary. In practice this metric is typically applied to residential land use projects.
- VMT per employee represents the average amount of personal, non-commercial, vehicle travel made on an average weekday by each resident employee whose employment/work location is within that geographic boundary. In practice this metric is typically applied to commercial employment land use projects.

The VMT metrics can be reported on any specific geographic boundary within the region. For this project, the geographic boundaries used were:

- Region: San Diego Region
- City: City of San Diego
- Study Areas:
    - University Community Plan Area Boundary
    - Hillcrest Focused Plan Amendment Area Boundary

Additional details on SANDAG SB 743 post-processing can be found here:

https://sandag.maps.arcgis.com/sharing/rest/content/items/f85d3ffea0394f298af2462c9fbfe724/data

SANDAG VMT reports utilized for this project are found in ***Appendix F***.

Modeling Scenarios

SANDAG's ABM was used to determine the project's VMT. The proposed land uses and Regional Plan mobility network/investments/policies were inputs to the model to develop future travel forecasts and

VMT. For the project's VMT analysis the following modelling scenarios were utilized:

- Base Year (2016) – The 14.3.0 version of the 2021 Regional Plan Base Year (2016)
- City of San Diego Blueprint SD Model Run 1 (2050) – Is the low estimate density for the Blueprint SD Initiative Climate Smart Village Areas, which are areas with a village propensity value of 7 through 14, with the proposed regional mobility network/investments/policies from the 2021 Regional Plan 2023 Amendment.
- City of San Diego Blueprint SD Model Run 2 (2050) – Incorporates proposed land uses from the University CPU and Hillcrest FPA with the proposed regional mobility network/investments/policies from the 2021 Regional Plan 2023 Amendment.
- City of San Diego Blueprint SD Model Run 3 (2050) – Is the high estimate density for Blueprint SD Initiative Climate Smart Village Areas with the proposed regional mobility network/investments/policies from the 2021 Regional Plan 2023 Amendment.

All scenarios were modeled using the SANDAG ABM 2+, Series 14 Regional Model and assume the Regional Plan's 2023 Amendment transportation network for 2050. For the Blueprint SD GPU, Model Run 1 and Model Run 3 serve as the low and high residential land use scenarios, respectively, proposed by the Blueprint SD Initiative. Model Run 2 Citywide land uses fall between Model Runs 1 and 3 and incorporate the proposed land uses for the University CPU and Hillcrest FPA.

For the purpose of the VMT transportation impact study, a Plan-to-Ground analysis was conducted by comparing the Proposed Project to the Base Year (2016), which is representative of baseline conditions.

3.2 Determination of CEQA Transportation Significant Impact for VMT

On September 27, 2013, Governor Jerry Brown signed SB 743 into law and started a process intended to fundamentally change transportation impact analysis under CEQA. The Office of Planning and Research (OPR) published its latest recommended Technical Advisory on Evaluating Transportation Impacts in CEQA in December 2018. This Technical Advisory provides recommendations on how to evaluate transportation impacts under SB 743. The OPR guidance covers specific changes to the CEQA guidelines and recommends elimination of auto delay for CEQA purposes and the use of VMT as the preferred CEQA transportation metric.

VMT is positively correlated with growth and as the region is expected to grow, VMT is also expected to increase. How and where growth occurs plays a significant role in determining how much VMT will increase. Growth areas are projected to be more VMT efficient with the following: high quality transit service, a complete active transportation network, and complementary land use mixes.

Consistent with OPR's Technical Advisory on Evaluating Transportation Impacts in CEQA (December 2018), the City updated the transportation thresholds in their CEQA Significance Determination Thresholds and adopted the Transportation Study Manual (TSM) in 2020 (updated in 2022) that requires the use of the following VMT metrics for determining CEQA transportation impacts of land use projects:

- For residential uses, the recommended efficiency metric is Resident VMT per Capita;
- For employment uses, the recommended efficiency metric is Employee VMT per Employee.
- For retail uses, the recommended metric is a net change of total area VMT due to the nature of retail trips typically redistributing shopping trips rather than creating new trips.

From Table 3 of the TSM, Significance Thresholds for VMT by land use type are shown in **Table 3-1**.

Table 3-1: Significance Thresholds for VMT Impacts

Table 3-1 Significance Thresholds for VMT Impacts	
Land Use Type (See TSM Appendix B for Specific Land Use Designations)	Threshold for Determination of a Significant Transportation VMT Impact**
Residential	15% below regional mean* VMT per Capita
Commercial Employment	15% below regional mean* VMT per Employee
Industrial and Agricultural Employment	Regional mean* VMT per Employee
Regional Retail	Zero net increase in total regional VMT*
Hotel	See Commercial Employment
Regional Recreational	See Regional Retail
Regional Public Facilities	See Regional Retail
Mixed-Use	Analyze each land use individually per above categories
Redevelopment	Apply the relevant threshold based on proposed land use (ignore the existing land use)
Transportation Projects	Zero net increase in total regional VMT*
* The regional mean and total regional VMT are determined using the SANDAG Regional Travel Demand Model. The specific model version and model year will be identified by the Development Services Department's Transportation Development Section. ** Projects that exceed these thresholds would have a significant impact.	

While the metrics and thresholds in **Table 3-1**, Significance Thresholds for VMT Impacts, are appropriate at the project level, both OPR and the City recognize that for large land use plans such as the General Plan and Community Plans, proposed new residential, office and retail land uses should be considered in aggregate (OPR, 2018). Locally serving retail land uses are presumed to have a less than significant impact on VMT. However, it is not possible at the program level to isolate the components of citywide proposed retail land uses that may be regionally serving which may have a significant VMT impact verses those that are locally serving and would be presumed to have a less than significant VMT impact. In addition, it is not possible to isolate the component of VMT attributable only to proposed retail land uses because net regional VMT changes referred to in **Table 3-1** and provided by the transportation forecasts include those caused by population and employment growth as well as proposed land use, transportation network, and policy changes. For retail land uses it is more appropriate to identify VMT impacts and potential mitigation measures at the project level.

Project-specific significance thresholds for the Proposed Project (Blueprint SD Initiative, University CPU, and Hillcrest FPA) have been developed to guide programmatic analysis for the Proposed Project.

*Table 3-2: Project Specific Significance Threshold for VMT Impacts by Land Use**

Table 3-2 Project Significance Thresholds for VMT Impacts by Land Use*	
Land Use Type	Threshold for Determination of a Significant Transportation VMT Impact
Residential	15% below regional mean** VMT per Capita
Commercial Employment	15% below regional mean** VMT per Employee
Regional Retail	Net increase in total base year regional VMT**
*The thresholds included in this table are for the pertinent land use types of the Proposed Project. Other land use thresholds (e.g., hotel, institutional, mixed-use, etc.) have been excluded as those thresholds are more land use specific and for project- level analyses. ** The regional mean and total VMT are determined using the Base Year (2016) of the current version of the SANDAG Regional Travel Demand Model	

The VMT thresholds provided in **Table 3-2** were developed based on SB 743 legislation, the City's TSM and OPR's Technical Advisory on Evaluating Transportation Impacts in CEQA, which covers specific changes to the CEQA guidelines and contains OPR's technical recommendations related to the use of VMT, as the preferred CEQA transportation metric.

VMT per capita represents the average amount of personal, non-commercial, vehicle travel made on an average weekday by each resident who lives within that geographic boundary.

VMT per employee represents the average amount of personal, non-commercial, vehicle travel made on an average weekday by each resident employee whose employment/work location is within that geographic boundary.

4.0 IMPACT ANALYSIS

This chapter presents the assessment of VMT impacts resulting from the Proposed Project.

4.1 Vehicle Miles Traveled – SB 743 Analysis

As described in ***Chapter 3***, SANDAG's Activity Based Model (ABM) was used to calculate the Proposed Project's VMT. The proposed land uses were inputs to the model with the proposed regional mobility network/investments/policies from the 2021 Regional Plan 2023 Amendment to develop future roadway volumes and VMT. VMT Reports from the modeling scenarios (described in ***Chapter 3***) by study area are contained in ***Appendix F.***

Blueprint SD Initiative VMT Analysis

Residential and Employment VMT

Table 4-1 presents the City of San Diego resident and employee VMT efficiency metrics for Base Year conditions. Under Base Year conditions, the City is above the threshold of 85 percent of the regional mean for both efficiency metrics at 92 percent and 104 percent of the Base Year regional means for both VMT per Capita (Residents) and VMT per Employee (Employment), respectively.

Table 4-1: Citywide Base Year VMT Metrics

Table 4-1 Base Year VMT Metrics			
		2016 Base Year	
	2016 Regional Mean[1]	Citywide Mean[2]	Percent of 2016 Regional Mean
VMT per Capita (Residents)	19.1	17.6	92%
VMT per Employee (Employment)	19.1	19.8	104%
[1] Source: SANDAG ABM 2+ RP 2021, 2016 Base Year Scenario, VMT Report Scenario ID 186 [2] Source: SANDAG ABM 2+ RP 2021, 2016 Base Year Scenario, VMT Report Scenario ID 186 See Appendix F for VMT Reports			

By 2050, under the Blueprint SD Initiative, the VMT efficiency substantially improves. **Table 4-2** presents the Blueprint SD Initiative 2050 resident and employee VMT for the City of San Diego. Under the Blueprint SD Initiative, the City is projected to have VMT per Capita between 13.3 - 14.4 and VMT per Employee between 13.2 - 14.2, which are 70 - 75 percent and 69 - 74 percent, respectively, of the Base Year regional means. VMT associated with the residential and employment land uses would not exceed the thresholds and would be less than significant assuming full implementation of the Blueprint SD Initiative and the SANDAG 2021 Regional Plan. However, at a programmatic level of analysis, we cannot ensure full implementation of the Regional Plan's transportation investments. Therefore, residential and employment VMT impacts would be considered significant.

Table 4-2: Citywide CEQA VMT Analysis for Blueprint SD

Table 4-2 VMT CEQA Analysis for Blueprint SD				
		2050 Blueprint SD		
	2016 Regional Mean[1]	**Citywide Mean[2]**	**Percent of 2016 Regional Mean**	**Exceeds Threshold[3]** (Y/N)
VMT per Capita (Residents)	19.1	13.3 - 14.4	70% - 75%	NO
VMT per Employee (Employment)	19.1	13.2 - 14.2	69% - 74%	NO

[1] Source for 2016 Regional Mean is SANDAG ABM 2+ RP 2021, 2016 Base Year Scenario, VMT Report Scenario ID 186
[2] Sources for Citywide mean are SANDAG ABM 2+, Blueprint Model Run 3 Scenario - SB 743 VMT Report, Scenario ID 321 and SANDAG ABM 2+, Blueprint Model Run 1 Scenario - SB 743 VMT Report, Scenario ID 319
[3] Threshold is 85% of the 2016 Regional Mean VMT per Capita or VMT per Employee, respectively.
See Appendix F for VMT Reports

Retail VMT

While the metrics and thresholds in **Table 3-1**, Significance Thresholds for VMT Impacts are appropriate at the project level, both OPR and the City recognize that for large land use plans such as the General Plan and Community Plans, proposed new residential, office and retail land uses should be considered in aggregate (OPR, 2018). Locally serving retail land uses are presumed to have a less than significant impact on VMT. However, it is not possible at the program level to isolate the components of citywide proposed retail land uses that may be regionally serving which may have a significant VMT impact verses those that are locally serving and would be presumed to have a less than significant VMT impact. In addition, it is not possible to isolate the component of VMT attributable only to proposed retail land uses because net regional VMT changes provided by the transportation forecasts include those caused by population and employment growth as well as proposed land use, transportation network, investment, and policy changes. For retail land uses it is more appropriate to identify VMT impacts and potential mitigation measures at the project level. In addition, at this programmatic analysis it is not possible to ensure full implementation of the Regional Plan's transportation investments to support access to retail land uses. Therefore, impacts would be considered significant.

University Community Plan Update VMT Analysis

Residential and Employment VMT

Table 4-3 presents the University CPU resident and employee VMT efficiency metrics for Base Year conditions. Under Base Year conditions, the University CPU exceeds the thresholds by being above 85 percent of the regional means for both VMT per Capita (Residents) and VMT per Employee (Employment) at 90 percent and 126 percent of the Base Year regional means, respectively.

Table 4-3: University CPU Base Year VMT Metrics

Table 4-3 Base Year VMT Metrics – University Community Plan Update			
		2016 Base Year	
	2016 Regional Mean[1]	University Community Plan Area Mean[2]	Percent of 2016 Regional Mean
VMT per Capita (Residents)	19.1	17.1	90%
VMT per Employee (Employment)	19.1	24.0	126%
[1] Source: SANDAG ABM 2+ RP 2021, 2016 Base Year Scenario, VMT Report Scenario ID 186 [2] Source: SANDAG ABM 2+ RP 2021, 2016 Base Year Scenario, TFIC SB 743 VMT Maps Scenario ID 458 See Appendix F for VMT Reports and SANDAG Traffic Forecast Information Center (TFIC) data			

By 2050, with the implementation of the University CPU, the VMT efficiency substantially improves. **Table 4-4** presents the University CPU resident and employee VMT for 2050 which is projected to have a VMT per Capita at 11.5 and an VMT per Employee at 16.3, which are 60 percent and 85.3 percent, respectively, of the Base Year regional means. With implementation of the SANDAG Regional Plan, VMT associated with the residential land uses would not exceed the 85 percent thresholds at buildout of the University CPU and would be less than significant However, for the purpose of this programmatic analysis, it cannot be ensured that full implementation of the Regional Plan's transportation investments will occur. Therefore, residential VMT impacts would be considered significant. VMT associated with employment land uses would exceed the 85 percent threshold at buildout of the University CPU and would be considered significant.

Table 4-4: University CPU Resident and Employee VMT Analysis

Table 4-4 Resident and Employee VMT - University Community Plan Update				
		2050 University CPU		
	2016 Regional Mean[1]	University CPA Mean[2]	Percent of 2016 Regional Mean	Exceeds Threshold[3] (Y/N)
VMT per Capita (Residents)	19.1	11.5	60%	NO
VMT per Employee (Employment)	19.1	16.3	85.3%	**YES**
[1] Source: SANDAG ABM 2+ RP 2021, 2016 Base Year Scenario, VMT Report Scenario ID 186 [2] Source: SANDAG ABM 2+, Blueprint Model Run 2 Scenario - SB 743 VMT Report, Scenario ID 320 [3] Threshold is 85% of the 2016 Regional Mean VMT per Capita or VMT per Employee, respectively. See Appendix F for VMT Reports				

Retail VMT

While the metrics and thresholds in **Table 3-1**, Significance Thresholds for VMT Impacts, are appropriate at the project level, both OPR and the City recognize that for large land use plans such as the General Plan and Community Plans, proposed new residential, office and retail land uses should be considered in aggregate. Locally serving retail land uses are presumed to have a less than significant impact on VMT.

Due to the presence of the University Towne Centre Mall in the University CPU area, it is not possible at the program level to isolate proposed retail land uses that may be regionally serving, and which may have a significant VMT impact versus those that are locally serving and would be presumed have a less than significant VMT impact. In addition, it is not possible to isolate the component of VMT attributable solely to proposed retail land uses due to net regional VMT changes reflecting those caused by population and employment growth as well as proposed land use, transportation network, and policy changes. For retail land uses, it is more appropriate to identify VMT impacts and potential mitigation measures at the project level. At this programmatic level of analysis, the retail land uses in University CPU would have a significant VMT impact.

Hillcrest Focused Plan Amendment VMT Analysis

Residential and Employment VMT

Table 4-5 presents the Hillcrest FPA resident and employee VMT efficiency metrics for Base Year conditions. Under Base Year conditions, the Hillcrest FPA is below the threshold for the VMT per Capita (Residents) metric at 75 percent of the Base Year regional mean while VMT per Employee (Employment) for the Hillcrest FPA is 87 percent of the Base Year regional averages, which exceeds the threshold.

Table 4-5: Hillcrest FPA Base Year VMT Metrics

Table 4-5
Base Year VMT Metrics – Hillcrest FPA

		2016 Base Year	
	2016 Regional Mean[1]	**HC FPA Mean[2]**	**Percent of 2016 Regional Mean**
VMT per Capita (Residents)	19.1	14.2	75%
VMT per Employee (Employment)	19.1	16.5	87%

[1] Source: SANDAG ABM 2+ RP 2021, 2016 Base Year Scenario, VMT Report Scenario ID 186
[2] Source: SANDAG ABM 2+ RP 2021, 2016 Base Year Scenario, VMT Report Scenario ID 186
See Appendix F for VMT Reports

By 2050 with the implementation of the Hillcrest FPA, the VMT efficiency substantially improves. **Table 4-6** presents the Hillcrest FPA resident and employee VMT for 2050 which is projected to have a Resident VMT per Capita at 5.7 and an Employee VMT per Employee at 9.4, which are 30 percent and 50 percent, respectively, of the Base Year regional averages. VMT associated with the residential and employment land uses would not exceed the 85 percent thresholds at buildout of the Hillcrest FPA and would be less than significant based on the Hillcrest FPA land uses and the implementation of the SANDAG 2021 Regional Plan. However, at this programmatic level of analysis, it cannot be ensured that implementation of the Regional Plan's transportation investments will occur. Therefore, residential and employment VMT impacts would be considered significant.

Table 4-6: Hillcrest FPA Resident and Employee VMT Analysis

Table 4-6 Resident and Employee VMT for Hillcrest Focused Plan Amendment				
		2050 Hillcrest Focused Plan Amendment Buildout		
	2016 Regional Mean[1]	Hillcrest FPA Mean[2]	Percent of 2016 Regional Mean	Exceeds Threshold[3] (Y/N)
VMT per Capita (Residents)	19.1	5.7	30%	NO
VMT per Employee (Employment)	19.1	9.4	50%	NO
[1] Source: SANDAG ABM 2+ RP 2021, 2016 Base Year Scenario, VMT Report Scenario ID 186 [2] Source: SANDAG ABM 2+, Blueprint Model Run 2 Scenario - SB 743 VMT Report, Scenario ID 320 [3] Threshold is 85% of the 2016 Regional Mean VMT per Capita or VMT per Employee, respectively. See Appendix F for VMT Reports				

Retail VMT

Although total VMT generated by all land uses is expected to increase under future buildout of the Hillcrest FPA, it is anticipated that further redevelopment would maintain and possibly expand neighborhood and community-serving retail. Per the City's TSM and OPR's Technical Advisory "local-serving retail development tends to shorten trips and reduce VMT. Thus, lead agencies generally may presume such development creates a less-than significant transportation impact." Consistent with the City's TSM and OPR's Technical Advisory, impacts related to VMT for retail land uses would be considered to be less than significant.

4.2 Significance of Impacts

Vehicle Miles Traveled per Capita – SB 743 Analysis

The project would have a significant VMT impact at the program level due to residential, employment, and retail VMT for the Blueprint SD Initiative and University CPU. Residential and employment VMT impacts under the Hillcrest FPA would also be significant; however, retail VMT impacts under the Hillcrest FPA would be less than significant.

Appendices

Table of Contents

Appendix A:

Blueprint Methodology Documentation

MEMO

TO: City of San Diego

FROM: Rick Curry, Sara Khoeini

SUBJECT: Blueprint Methodology Documentation

DATE: October 5, 2022

PROJECT SUMMARY

The City of San Diego's Climate Action Plan is oriented towards dramatically reducing Greenhouse Gas emissions from all energy sectors within the City of San Diego. On-road transportation related emissions account for approximately 40 percent of GHG emissions in the city of San Diego. The City of San Diego, through a variety of planning and policy documents, has focused transportation related reductions on reducing auto trip distances and mode shift to non-auto travel modes.

The goal of this project is to develop a data-driven planning process for the City of San Diego to maximize weekday daily alternative transport mode use such as walking, biking, micro-mobility, and transit. The final output map of this process highlights areas in the City of San Diego that are receptive to future housing and retail development through the forecasting year of 2050 that would help achieve the mode share goals.

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The main benefit of this planning process compared to traditional scenario planning (based on the SANDAG travel demand model) is the time saving of running the entire ABM2+ model in addition to the revisions required from SANDAG Service Bureau. Furthermore, scenario planning itself is an iterative process that involves thoughtful consideration to suggest reasonable scenarios for testing with the model and it is not guaranteed that the suggested scenarios will include the best possible scenario. The SANDAG ABM2+ is very good at answering questions of "what will it be" and "what if" questions such as "what will the mode share be in 2050 based on the existing general plan land use?" or "what will the transit mode share be if we added a new transit line?". The advantage of the Metamodel optimization process is that it helps to answer questions on "how do we" such as "how do we minimize auto mode share?".

The Metamodel estimated in this process uses the zonal data from ABM2+ to relate land use densities and transit attributes to alternative transportation mode use. The latter step of the process uses the estimated model to optimize alternative transport mode use as a function of zonal attributes. The Metamodel provides a much faster trial/testing process for scenarios from which insights may be gleaned to refine assumptions and develop a preferred scenario with the most desired outcomes. This memo explains the data-driven planning process for the City of San Diego and includes three main steps of model estimation (Section 1), application (Section 2), and visualization (Section 3). The Section 4 explains the technical requirement to run the entire process and Section 5 provides a glossary of technical terms.

SECTION 1: MODEL ESTIMATION

The input data for this project comes from various sources from the SANDAG 2021 Regional Plan including the SANDAG regional travel demand model inputs and outputs, Transit Priority Area (TPA) planned stops, and residential, retail, and mixed-use densities. The unit of analysis in this project is the SANDAG defined Master Geographic Reference Area (MGRA) which is the smallest zoning system of SANDAG's travel demand model (ABM2+). The model has been estimated for the ABM2+ base year of 2016. The dependent variable of the model, which comes from the SANDAG ABM2+, is the share of trips at each MGRA that use alternative transport modes (non-auto modes including walk, bike, micro-mobility, and transit) called "non-auto propensity".

The variables that are significant in explaining non-auto propensity at each MGRA are dwelling unit density, retail employment density, mixed-use density, the competitiveness of transit services for work commute travel, proximity to TPA high-quality transit stops, and household vehicle ownership. The estimated coefficients for all the variables reflect an increasing relationship with the response variable except for vehicle ownership. In other words, increasing dwelling, retail, and mixed-use densities will increase non-auto propensity, while having a higher rate of average vehicle

ownership decreases the non-auto propensity. The model goodness of fit was high at 0.72 and the least square linear regression has been used for model estimation.

SECTION 2: MODEL APPLICATION

The estimated model has been used in the model application step to maximize non-auto propensity and predict the most receptive locations to add residential units and retail development in future years. In the residential and retail optimization step, a ranking score was given to each MGRA based on optimizing non-auto propensity in the estimated model. This ranking score was then aggregated with transit and mixed-use score to calculate the final prioritization score of each MGRA for future residential and retail developments. The transit score was based on transit accessibility to job locations out of SANDAG ABM2+ as well as closeness to TPA high-quality transit stops (with higher weights for rail and BRT stops) using the SANDAG 2021 Regional Plan 2050 Vision transit network and stops. The mixed-use score is calculated based on the following formula[1]:

$$Mix\ Score = \frac{Intersections * (DU\ Density * F1) * (Retail\ Employment\ Density * F2)}{Intersections + (DU\ Density * F1) + (Retail\ Employment\ Density * F2)}$$

Where:

$$F1 = {Mean\ Intersections}/{Mean\ DU\ Density}$$

$$F2 = {Mean\ Intersections}/{Mean\ Retail\ Employment\ Density}$$

Intersection Count in the mixed-density formulation explains urban form and walkability. The final combined prioritization score divided the MGRAs into 14 groups with a higher score indicating higher priority for future developments.

Locations outside the jurisdiction of the City of San Diego or areas not considered for redevelopment during the Blueprint process have been excluded from the model applications. These exclusion areas include Port of SD, airports, Airport Land Use Compatibility Plan safety zones exclusions, cemeteries, military establishments, attractions, hiking trails, golf courses, conservation/non-development land, schools and universities, large medical facilities, government/public land, federal land, parks, and industrial/research and development land uses.

[1] Equation based on previous work by SANDAG and Portland Metro.
SANDAG 4D Model Development, published March 2010:
https://www.sandag.org/uploads/publicationid/publicationid_1602_13320.pdf, page 12
Metro Travel Forecasting Trip Model Methodology Report. Metro Planning Department, Travel Forecasting Division, 2001.

[2] ArcGIS Desktop Help 9.2 - Implementing Inverse Distance Weighted (IDW) (esri.com)

SECTION 3: VISUALIZATION

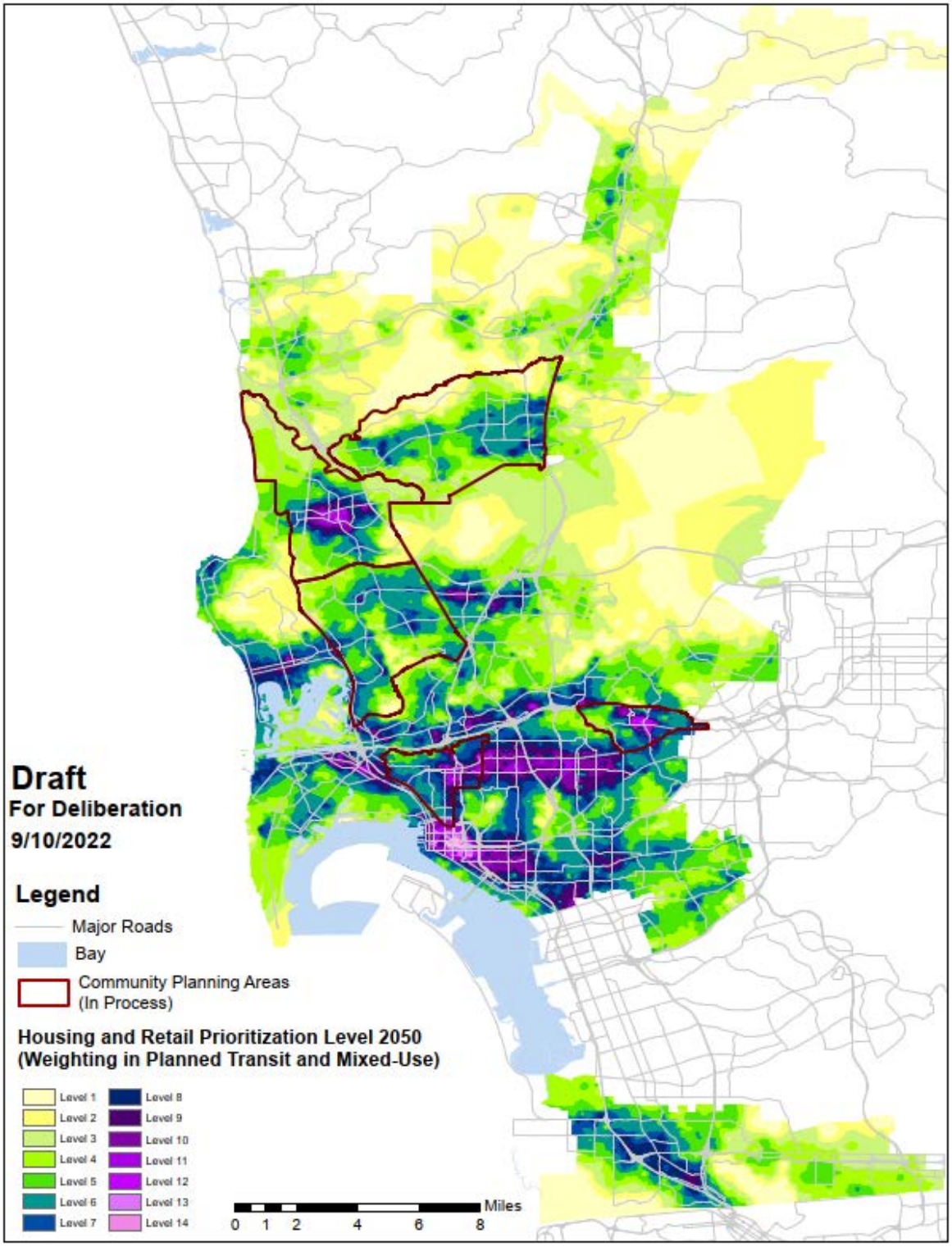
While the ranking scores were calculated at the MGRA level, the optimization results were mapped in a heatmap format using the Inverse Weighted Distance function[2] in ArcGIS to enhance the visualization. The heatmap generation process considers the exclusion areas meaning that the ranking score for the exclusion zones were considered as zero, but the blending of values often shades them as a low-level score.

The final combined prioritization scores (14 levels) of MGRAs are visualized in Figure 1. Levels 1 to 3 are color-coded in yellow representing the areas with very low recommendation for future developments. Starting from level 4 to level 6 where the green color pops up, the map highlights the areas with low-medium priority for developments. Level 7 (blue) to 9 (dark purple) highlights areas with medium priority for development considering all the interacting factors. At level 10 (dark purple) to level 14 (light purple**),** the areas with the highest receptiveness for future developments to maximize non-auto propensity are illustrated. Areas with existing or predicted transit accessibility, residential-commercial mixed-use development, and walkability are very well highlighted with higher ranks in the map and future developments in these areas have the higher potential to maximize the use of alternative transportation modes and contribute to sustainability goals of the Blueprint Plan.

SECTION 4: TECHNICAL PROCESS

The model estimation and application steps have all been scripted in Python using Jupyter Notebook and stored in a GitHub repository. The script reads the ABM2+ outputs shared by SANDAG, implements data cleaning and compilation steps to prepare the estimation and application variables into a feather file and then estimate the model. Using the same python scripting system, the model application step produces the optimized scores. Input data, such as transit and mixed-use variables, have been calculated in QGIS and ArcGIS and imported into the Python script. The final map visualization (heat map) has been prepared in ArcGIS using the Spatial Analyst extension.

Figure 1: Blueprint Draft Map (produced by WSP)



SECTION 5: GLOSSARY OF TECHNICAL TERMS

ABM2+ is the most recent version of the SANDAG Activity-based Model used within the 2021 Regional Plan. (https://www.sandag.org/index.asp?subclassid=120&fuseaction=home.subclasshome)
ArcGIS is the main Esri Software for analyzing Geographic Information Systems. (https://www.esri.com/en-us/home)
GitHub is a distributed version control for various programming languages. (https://github.com/)
GitHub repository is a location in the GitHub platform where the files and codes corresponding to the projects and their respective versions as a part of revision history are stored, managed, and used.
Goodness of fit of a statistical model describes how well it fits a set of observations.
Jupyter Notebook is an open-source web application that you can use to create and share documents that contain live code, equations, visualizations, and text. Jupyter Notebook is maintained by the people at Project Jupyter. (https://jupyter.org/)
Least square linear regression method is a form of regression analysis that establishes the relationship between the dependent and independent variables along a linear line.
Python is a programming language that lets you work quickly and integrate systems more effectively. (https://www.python.org/)
QGIS is a free and open-source cross-platform desktop geographic information system (GIS) application that supports viewing, editing, printing, and analysis of geospatial data. (https://www.qgis.org/en/site/)
Spatial Analyst extension is an extension for ArcGIS that provides advanced spatial modeling and analysis capabilities for both raster and feature data. (https://www.esri.com/en-us/arcgis/products/arcgis-spatial-analyst/overview)

Appendix B:

Blueprint SD Activity Based Model (ABM) Inputs Development Memos

B-1 Conversion of Blueprint SD Land Use to SANDAG Model Run Inputs

B-2 Summary of Updates in Three Model Run Inputs

MEMO

TO: City of San Diego

FROM: WSP (Sara Khoeini, Rick Curry, and Xianting Huang)

SUBJECT: Conversion of Blueprint Land Use to SANDAG Model Run Inputs (H197127)

DATE: 1/17/2024

Introduction

This memo details the construction of three Blueprint scenario input files for the SANDAG (San Diego Association of Governments) Activity-Based Model 2+ (ABM 2+) model run based on the forecasts of growth in recently completed community plan updates (CPUs) and specific Master-Geographic Reference Area (MGRA) inputs for a few upcoming and draft CPUs. To augment these Blueprint inputs, we also incorporated data from additional sources including the Regional Land Use and Dwelling Unit Inventory (LUDU) for the year 2022, Series 14 Sustainable Communities Strategy (SCS) land use pattern (DS-42) for the year 2050, and Series 14 General Plan (DS-41) land use pattern for the year 2050, applying specific conditions to refine our final input estimates for the model run.

The calculations were carried out across three Excel Worksheets, each associated with a specific blueprint scenario. This document articulates the assumptions and rationales behind these calculations, while a separate slide deck will provide detailed documentation of all tabs and columns in the spreadsheets. The scope of this document is limited to the MGRAs within the City of San Diego and excludes any areas, termed as exclusion zones, where the City has no land use control, which are regulated due to law, or which are unlikely to change due to existing use of the land. For MGRAs outside the City of San Diego limits, the model utilizes data from SCS 2050.

Methodology of Model Inputs Calculation

This section outlines the methodology employed for calculating the Blueprint-related inputs for each model run. Table 1 presents a comprehensive overview of the attributes associated with each model run. This includes a comparison of the additional dwelling units relative to the Series 14 General Plan 2050 (GP-14 2050), highlighting the variations across different model runs. Additionally, the table provides specific insights into four selected Community Planning Areas (CPAs) which have CPUs in progress: University, Hillcrest, College Area, and Clairemont Mesa, demonstrating how the model's inputs differ in these areas. Blueprint changes only those areas identified as being advantageous to addressing climate and mobility goals. All other areas in the City of San Diego are assumed to remain consistent with the GP-14 2050.

Model run 1 serves as the base Blueprint scenario, featuring 255,963 additional dwelling units in comparison to LUDU 2022. In contrast, model run 3 intensifies the growth level by a factor of 1.6 across all city Blueprint zones uniformly. Meanwhile, model run 2 functions as a calibration model,

incorporating customized inputs specifically for the four selected CPUs - University, Hillcrest FPA, College Area, and Clairemont Mesa. For the remaining CPAs, model run 2 maintains the unit growth from model run 1.

Table 1 Model Run Inputs by Geography (City of SD)

	Model Run 1	Model Run 2	Model Run 3
Model Year	2050	2050	2050
Transportation Network	2050 SCS Build	2050 SCS Build	2050 SCS Build
Model Version	14.3.0	14.3.0	14.3.0
Additional City of SD DU (2022 to 2050) compared to LUDU2022	255,963	312,895	414,650
Remainder Region	SCS	SCS	SCS
University Growth (DU) (2022 to 2050)	20,555	32,655	32,246
Uptown Growth (DUs) (2022 to 2050)	12,566	33,448 (31,430 in Hillcrest)	22,247
College Area Growth (DUs) (2022 to 2050)	13,352	27,976	22,018

For estimating the count of override dwelling units by unit type (single-family, multi-family, and mobile home), we first uniformly downscale the unconstrained Blueprint dwelling units, to constrained Blueprint dwelling units based on the anticipated overall growth in the entire city of San Diego (refer to Table 1). After a uniform downscale, we found that the estimated growth values in a few CPAs are not coordinated with the CPA-level planned growth. To accommodate CPA-level planned growth as well the overall city-level growth, we added some CPA-level factors to a few CPAs. The final MGRA-level constrained Blueprint dwelling units then served as the foundational basis for estimating the number of dwelling units in each MGRA, categorized by unit type, as explained in the steps below.

1. **Number of multi-family dwelling units per MGRA**

The number of multi-family dwelling units in each MGRA is determined by taking the maximum value of multi-family units among the Blueprint (BP) base constrained value, the LUDU 2022, and the GP-14 2050.

2. **Number of single-family dwelling units per MGRA**

We include single-family dwelling units in each MGRA in addition to multi-family dwelling units only if the existing or planned single-family dwelling units is more than the constrained Blueprint dwelling units. Under this condition, the number of single-family dwelling units is determined by selecting the higher value between the LUDU 2022 and the GP-14 2050.

3. **Number of mobile homes per MGRA**

The count of Blueprint mobile homes is set to match the number of mobile homes from the GP-14 2050, but only under the condition that the total unit count from GP-14 2050 exceeds the aggregate of the Blueprint-calculated single-family and multi-family units determined in

the previous steps. If this condition is not met, the number of mobile homes is considered to be zero.

4. Number of employees and school enrollment per MGRA by category (non-retail)

Although the Blueprint primarily addresses dwelling unit inputs, it is necessary to proportionally augment employment and enrollment figures to prevent an imbalance in trip frequency and length to access life opportunities for the additional population. The increase in employment and enrollment in the Blueprint model run inputs should be calibrated to maintain a consistent ratio of opportunities to the population as established in the GP-14 2050 data. All employment categories and school enrollments will undergo proportional adjustments using a unified coefficient. However, the adjustment for retail employment will be uniquely guided by specific recommendations from the City of San Diego which are explained below.

5. Number of retail employments per MGRA

The calculation of updated retail employees in each MGRA is based on the specific retail index value assigned to each MGRA. The designation of a retail index value for each MGRA was based on inputs from the City of San Diego planners. The implications of these retail index values are as follows.

- Retail Index Equals Zero: This indicates that the retail employee count in the respective MGRA should remain at zero.
- Retail Index Equals One: This suggests that retail presence is permissible in the MGRA, with the flexibility to increase the employee count as necessary.
- Retail Index Equals Two: This implies that the retail employee count should be maintained at the level specified in the GP-14 2050, with no increases. All exclusion zones (zones that were excluded from Blueprint due to residential building constraints) are in this group.

The number of retail employees in the MGRAs permitted by their respective retail index values will be increased. This adjustment is made to ensure that the ratio of retail units to population in the entire city of San Diego remains consistent with the same ratio derived from the GP-14 2050. Localized MGRA adjustments with respect to population in the area allowed for addressing areas that may be underserved with the hope to create shorter trips and more active transportation friendly trips.

Data Summary by Model Run

Following the application of the outlined calculations across the three spreadsheets corresponding to the three model runs, we have computed the input values for each model run. These values include single-family dwelling units, multi-family dwelling units, mobile homes, retail employment, other employment categories, and school enrollment figures for each MGRA within the City of San Diego. Table 2 provides a comprehensive summary, showcasing the total number of dwelling units and retail employment figures for each model run. Additionally, it presents a comparison with the total figures from the LUDU 2022 and the GP-14 2050.

Table 2 Dwelling Units and Retail Employment Summary by Model Run

Model Run	Source	Single-family	Multi-family	Mobile home	Retail Employment	Total Dwelling Units
Model Run 1	LUDU22	288,146	260,067	4,872	N/A	553,085
	GP-14 2050	304,367	377,812	4,962	196,551	687,141
	BP 2050	**278,790**	**526,577**	**3,681**	**229,930**	**809,048**
Model Run 2	LUDU22	288,146	260,067	4,872	N/A	553,085
	GP-14 2050	304,367	377,812	4,962	196,551	687,141
	BP 2050	**273,388**	**589,850**	**2,742**	**243,908**	**865,980**
Model Run 3	LUDU22	288,146	260,067	4,872	N/A	553,085
	GP-14 2050	304,367	377,812	4,962	196,551	687,141
	BP 2050	**252,295**	**713,014**	**2,426**	**255,348**	**967,735**

Standardizing the Model Inputs for SANDAG Service Bureau

1. Creation of Client Project Input Files for Land Use Deltas

Using the client land-use form template, three model-run spreadsheets were transformed into three long-formatted tables as model-run inputs via Python code. The model run inputs comprise of four columns where changes were made: lu_code, LU Description, MGRA, and Dwelling Unit. Note that the Dwelling Unit column represents the delta value, calculated as the difference between calculated override dwelling units and the dwelling units from the SCS 2050.

While the SANDAG client land-use form uses the term “dwelling unit” it is actually referring to households. The dwelling unit/household input value is used in the generation of the synthetic population for the zone. Dwelling units and households are not equivalent as the SANDAG forecast includes typical occupancy levels by area. Occupancy levels reflect the number of units available for sale or rent including short-term vacation rentals which are prevalent in beach communities and Downtown. While the BP process is determining future unit totals by type the SANDAG land use override process is treating them as households.

Considering the disparity between housing structure (hs) and household (hh) in the baseline forecast, it is important to make sure that, when preparing the input spreadsheet, the values under hh_ (sf, mf, mh) are considered and cannot go below the baseline values. Taking MGRA 46 as an example, where hs_sf is 19, and hh_sf is 18 in the original file, we first attempted to remove 19 single-family households based on the calculation spreadsheets. However, this resulted in negative household values, risking a crash in the conversion tool. Therefore, adjustments to the delta value are necessary, and in this case, the delta DU should change from -19 to -18. Log files have been prepared to document all MGRAs where delta values were modified (refer to Figure 1) due to household issues, ultimately resulting in a slight discrepancy in total dwelling units (refer to Table 3) compared to the original override DU presented in Table 2. The final step for the input spreadsheet is splitting it into two files: one for all negative deltas and another for all positive deltas. The land use converter will be executed twice per SANDAG’s updated procedures.

Figure 1 Log File Example

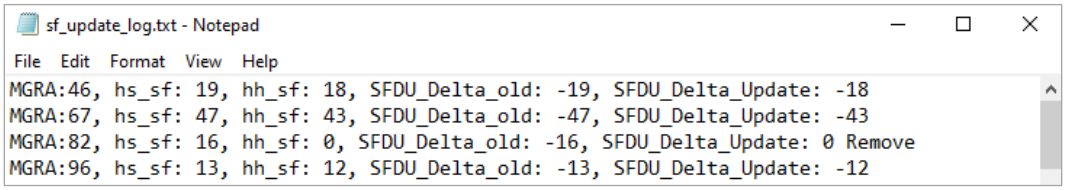


Table 3 Dwelling Units Final Input Summary by Model Run

Model Run	Single-family	Multi-family	Mobile home	Total Dwelling Units
Model Run 1	280,267	532,392	3,716	**816,375**
Model Run 2	274,910	595,367	2,808	**873,085**
Model Run 3	255,081	717,410	2,497	**974,988**

2. Update of MGRA Based Input Files for Employment and Enrollment

After receiving the MGRA-based synthetic population files from SANDAG, we proceeded to update columns related to employment and school enrollment. In the case of non-retail and school enrollment, we adjusted their values to align with the added population to keep the city-level ratio of the resource to population the same. We added additional amounts of non-retail employment and school enrollment only in MGRAs with existing similar resources. Table 4 shows the updated employment and enrollment data resulting from Model Run 2.

To calculate the revised number of retail employees two key measures were considered: the overall ratio of retail to housing units, and a retail index variable to ensure that any increase in retail units aligns with the City's community plans. More detailed information about the retail index variable is available in the “Model Run Input Update_Draft Final Memo”.

Table 4 Updated Employment and Enrollment Data for Model Run 2

	#/hs	Additional Amounts	New Total	Growth
Grade School K-8 enrollment	0.21	36,930	178,824	1.26
Grade School 9-12 enrollment	0.10	17,383	84,172	1.26
Major College enrollment	0.15	26,907	130,290	1.26
Other College enrollment	0.15	26,383	127,753	1.26
Adult School enrollment	0.04	7,991	38,696	1.26
Non-Retail Employees	1.32	236,466	1,145,022	1.26
Retail Employees	0.28	51,555	247,706	1.26

Acronyms & Glossary

ABM – Activity Based Model – type of travel demand model used by SANDAG

BP - Blueprint - an approach for the City of San Diego's General Plan and community planning that will align with climate and housing goals and promote sustainable growth

CPA - Community Planning Area

DU – Dwelling unit; Equivalent to Housing Structure

GP - General Plan – as referenced in this document refers to the zoning and land use provided by the City of San Diego to SANDAG for development of the SANDAG General Plan land use pattern.

HH – Household

HS – Housing Structure

LU – Land Use

LUDU - Land Use and Dwelling Unit Inventory – developed by SANDAG to be an inventory of existing conditions

MF – Multi-Family

MGRA – Master Geographic Reference Areas – Aggregations of parcels; smallest unit of geography in the SANDAG ABM; developed by SANDAG; aka Micro Analysis Zones (MAZ)

MH – Mobile Home

SCS - Sustainable Communities Strategy – as referenced in this document refers to the land use pattern developed by SANDAG for their SCS submittal to CARB

SF – Single Family

MEMO

TO: City of San Diego

FROM: WSP (Sara Khoeini, Rick Curry, and Xianting Huang)

SUBJECT: Summary of Updates in Three Model Run Inputs (H197127)

DATE: 01/17/2024

Introduction

The objective of this task order is to reconstruct the three Blueprint input files for the SANDAG (San Diego Association of Governments) ABM (Activity-Based Model) run. This reconstruction is necessitated by discrepancies identified in the base General Plan land use data, initially provided by SANDAG to WSP for the calculation of the input files, and the handling of group quarters within the input files. An additional request was made to conduct a thorough review of all final inputs at the MGRA level to ensure that the inputs for the final model run are in alignment with the City of San Diego's CPA (Community Plan Area)-level plans. This memo explains all the updates taken to the input file generated in the previous task order. If further information is needed related to the entire process of converting the Blueprint land uses to SANDAG ABM model run inputs, please refer to the memo entitled "Conversion of Blueprint Land Use to SANDAG Model Run Inputs" dated January 17, 2024.

Update Description

1. **Update the base data from Series 14 DS-39 to DS-41 for forecast year 2050**

The base data, encompassing single-family units, multi-family units, and mobile homes, has been utilized in tandem with Blueprint inputs. This approach ensures that where the base data exceeds the Blueprint unit estimates, the base data is preferentially used. Additionally, this base data has been instrumental in the update of employment and enrollment forecasts to align with housing estimates. A comprehensive explanation detailing the application of the Series 14 DS-41 year 2050 forecast pattern in the model input calculations is provided in the memo entitled "Conversion of Blueprint Land Use to SANDAG Model Run Inputs" dated January 17, 2024.

2. **Update the number of retail employees**

   To calculate the revised number of retail employees after updating residential dwelling units based on Blueprint inputs, two key measures were considered. Firstly, the overall ratio of retail to housing units was maintained at a constant level (number of retail employees to number of housing units equals 0.28), in line with the base data (DS-41 Year 2050). Secondly, a retail index variable was developed to ensure that any increase in retail units aligns with the City's community plans. Below is the definition of values assigned to the retail index of each MGRA and reviewed by City of San Diego staff.

   - A retail Index of zero means there should be no retail.

- Retail Index of one means there is retail today and/or in the future and can grow more than DS-41 year 2050 Retail based on blueprint residential units override.
- Retail Index of two means retail should be kept at DS-41 year 2050 and no extra retail should be added. All exclusion zones (zones that were excluded from Blueprint due to residential building constraints) are in this group.

3. Decrease in total dwelling units in Hillcrest from ~39,000 to ~31,000 in Model Run 2

City staff requested a reduction in the total number of additional residential dwelling units (DUs) in Hillcrest, decreasing from approximately 39,000 to about 31,000, in alignment with the Hillcrest Draft Focused Plan Amendment. Table 1 presents a comprehensive breakdown of the Blueprint residential units by geographical area for each model run after all the updates have been made.

Table 1 Model run inputs residential units by geography

	Model Run 1	Model Run 2	Model Run 3
Model Year	2050	2050	2050
Transportation Network	2050 SCS Build	2050 SCS Build	2050 SCS Build
Model Version	14.3.0	14.3.0	14.3.0
Additional City of SD DU (2022 to 2050) compared to LUDU2022	255,963	312,895	414,650
Remainder Region	SCS	SCS	SCS
University Growth (DU) (2022 to 2050)	20,555	32,655	32,246
Uptown Growth (DUs) (2022 to 2050)	12,566	33,448 (31,430 in Hillcrest)	22,247
College Area Growth (DUs) (2022 to 2050)	13,352	27,976	22,018
Clairemont Mesa Growth (DUs) (2022 to 2050)	12,627	24,182	19,624

4. Generate online maps for visualization of model inputs

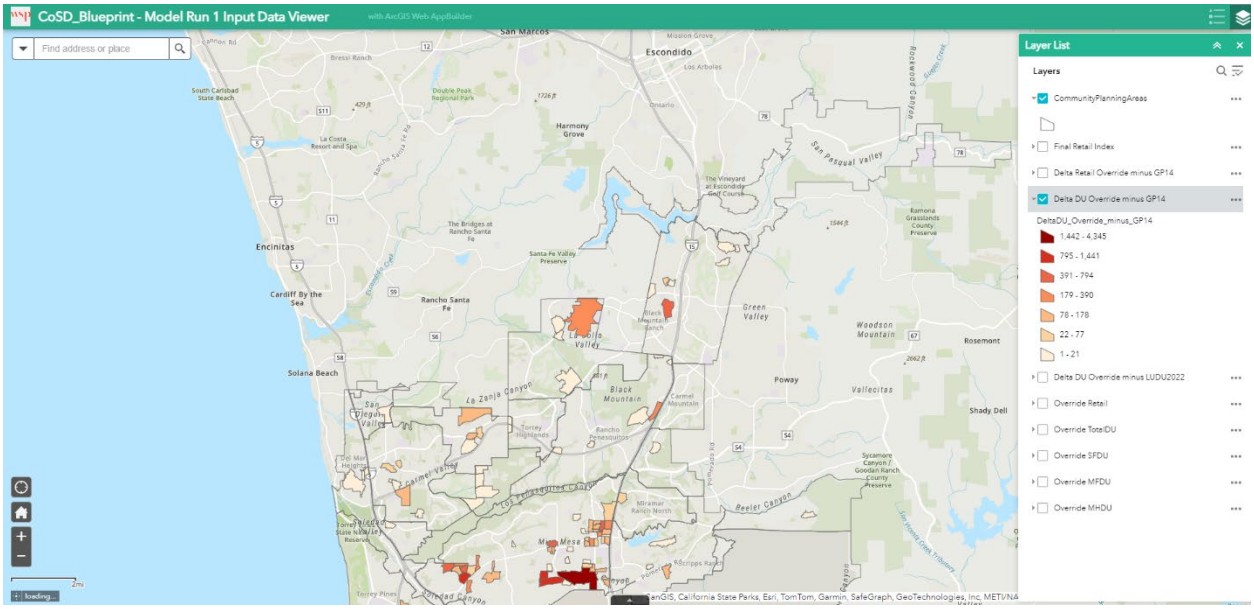
WSP utilized online interactive GIS tools to visualize the inputs for the model run, thereby facilitating the City's review process. The online maps feature three delta layers: dwelling unit override minus GP14, dwelling unit override minus LUDU22, and retail override minus GP14. Additionally, they display the retail index, total override dwelling units (Single-Family Dwelling Units [SFDU], Multi-Family Dwelling Units [MFDU], Mobile Home Dwelling Units [MHDU]), and total override retail units. Links to these online maps are provided below. Please be aware that some final adjustments may have been made subsequent to the creation of these maps.

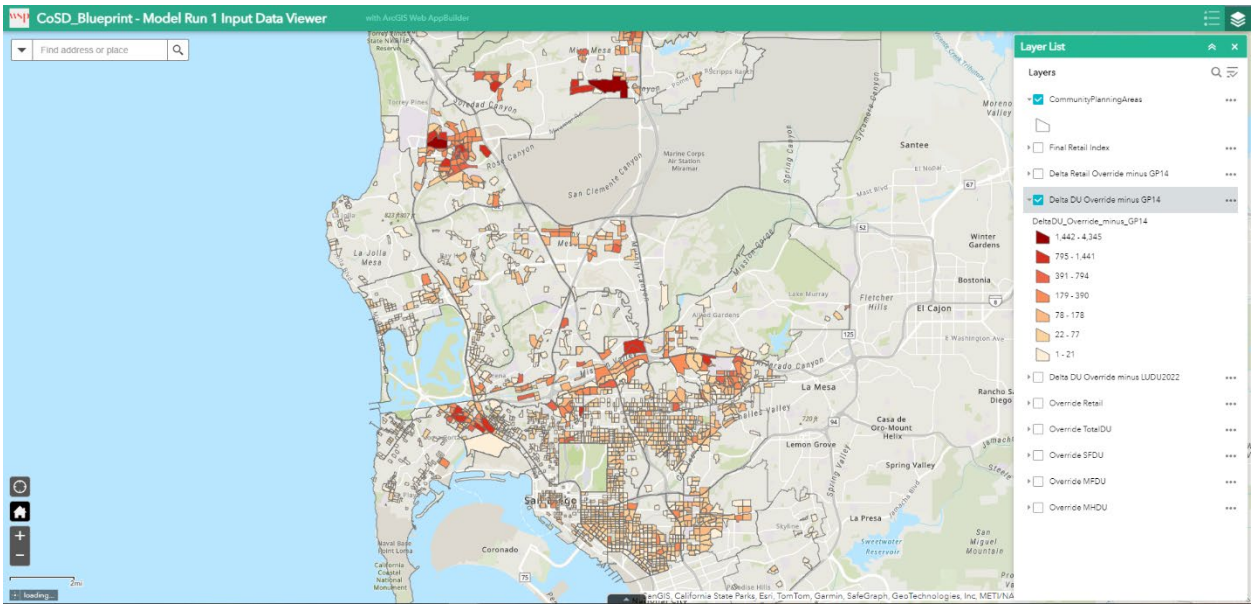
- Link to model run 1 inputs visualization: MR1
- Link to model run 2 inputs visualization: MR2
- Link to model run 3 inputs visualization: MR3

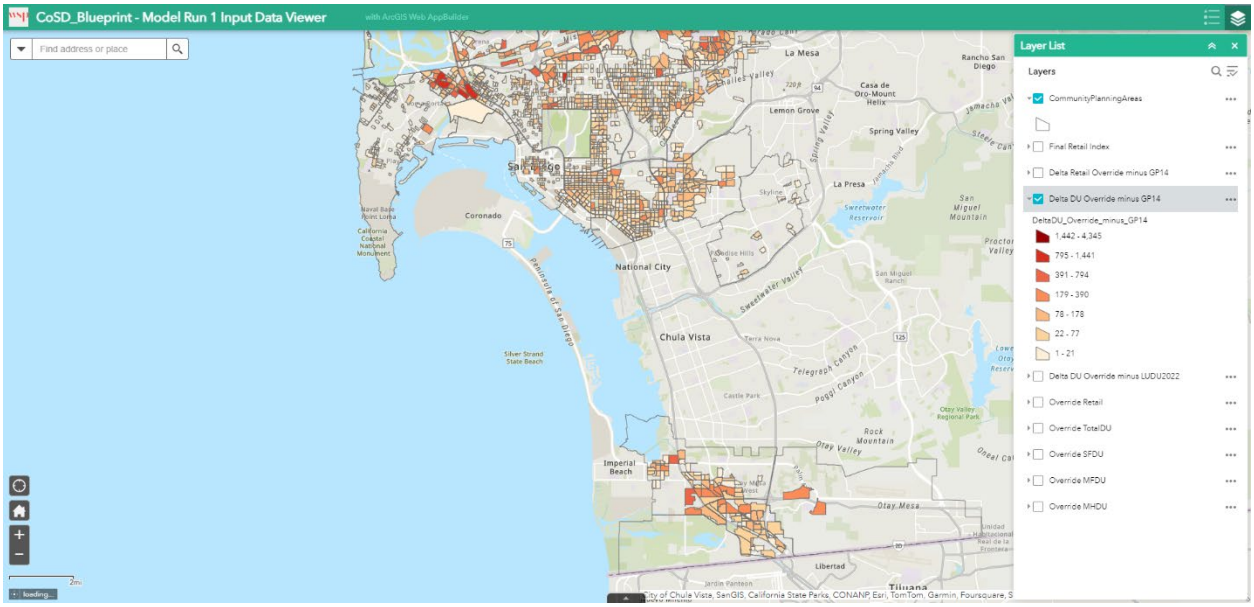
5. Update the preparation of the input file for SANDAG

The preparation of model run inputs, formatted according to SANDAG's specifications, has been executed using a Python script. This script processes the final override dwelling units from the Blueprint final outputs. In this iteration, instead of providing specific residential unit counts by type (Single-Family Dwelling Units [SFDU], Multi-Family Dwelling Units [MFDU], and Mobile Homes [MH]), we have supplied the deltas, i.e., the positive and negative differences. These deltas represent the total Blueprint dwelling units in SFDU and MFDU minus the DS-42 Build SCS data for all Major Geographic Reporting Areas (MGRAs) in the City of San Diego. Rows exhibiting zero deltas were eliminated. This approach preserves any group quarter values in the model run input file, a notable improvement from previous methods where overriding total dwelling units led to the exclusion of group quarters. Additionally, we incorporated a new check to ensure that the reduction of dwelling units in any MGRA does not exceed the total number of households in that area. Where this was the case, the number of removed dwelling units was capped at the total household count for each MGRA.

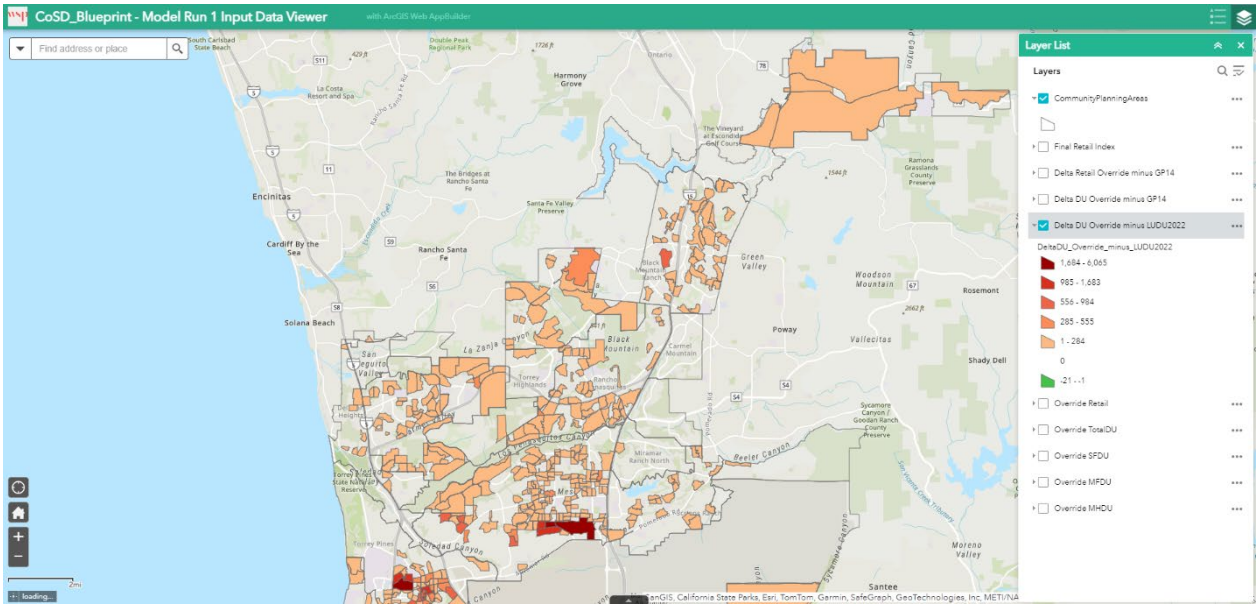
Draft Blueprint Model Run 1 Dwelling Unit (DU) Override minus SANDAG Series 14 General Plans DU

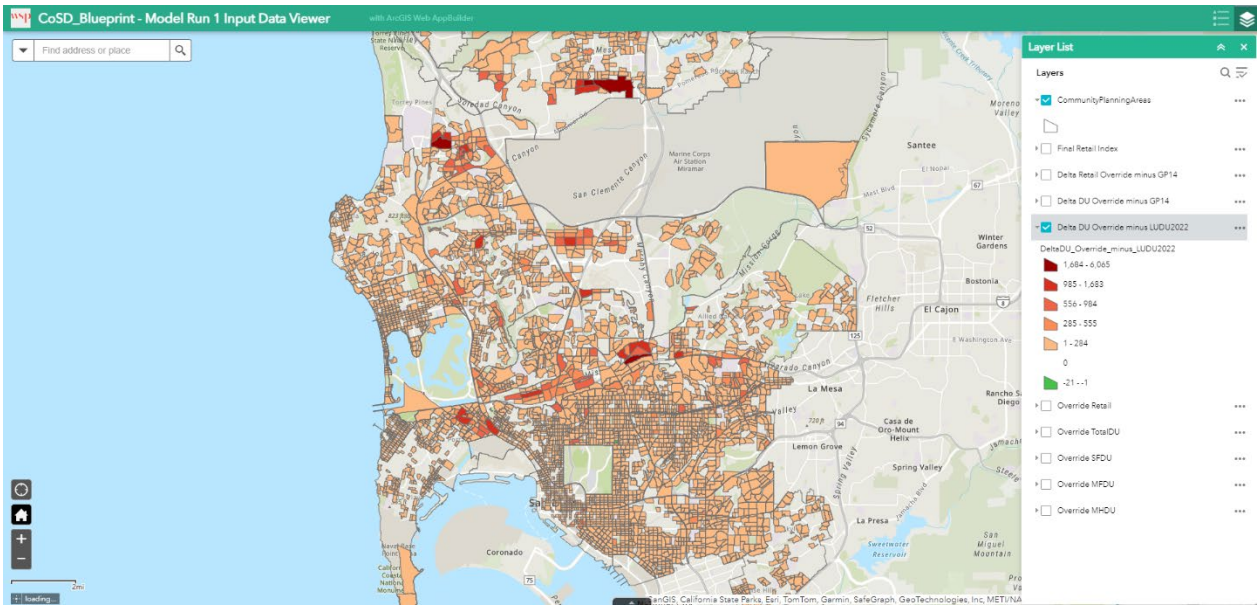


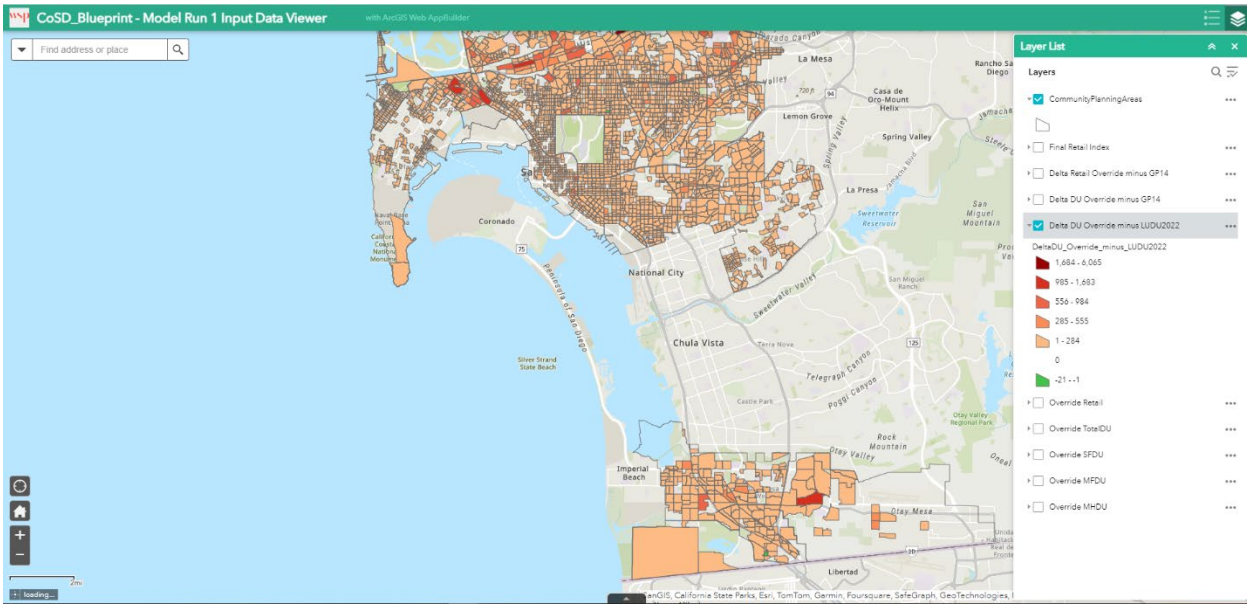




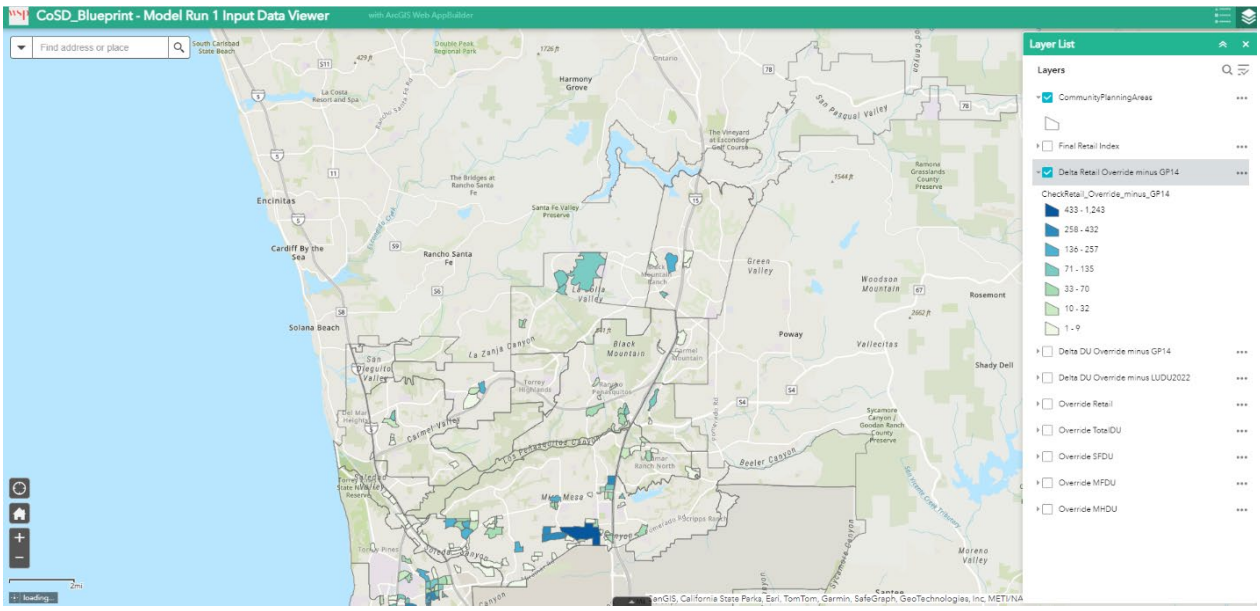
Draft Blueprint Model Run 1 Dwelling Unit (DU) Override minus 2022 DU



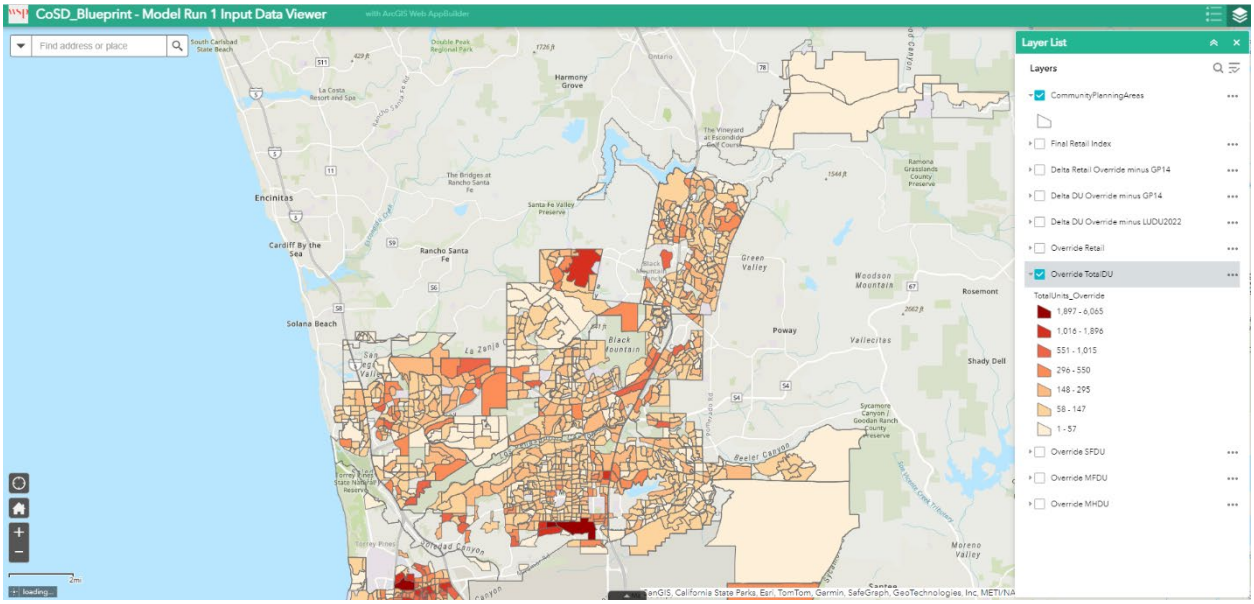


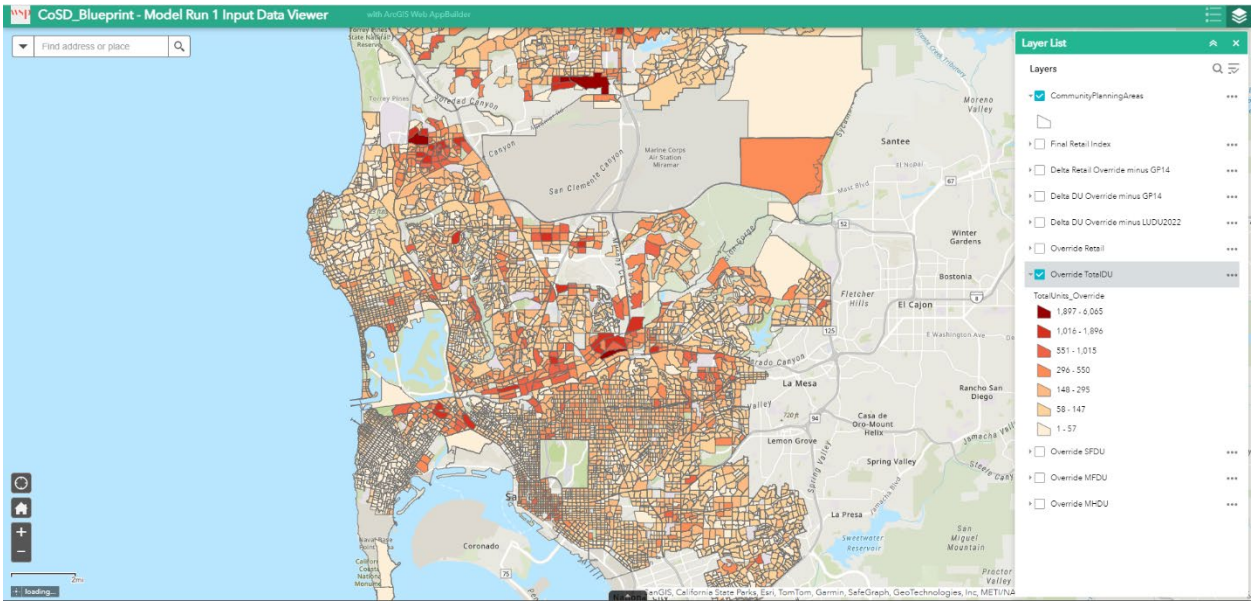


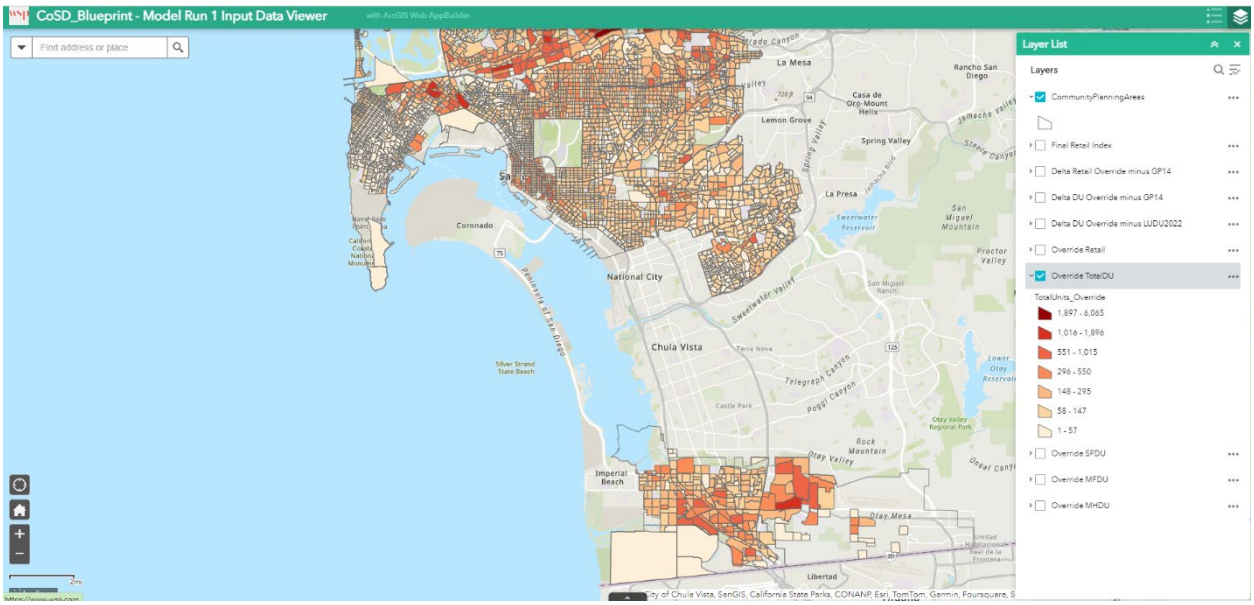
Draft Blueprint Model Run 1 Retail Override minus SANDAG Series 14 General Plans



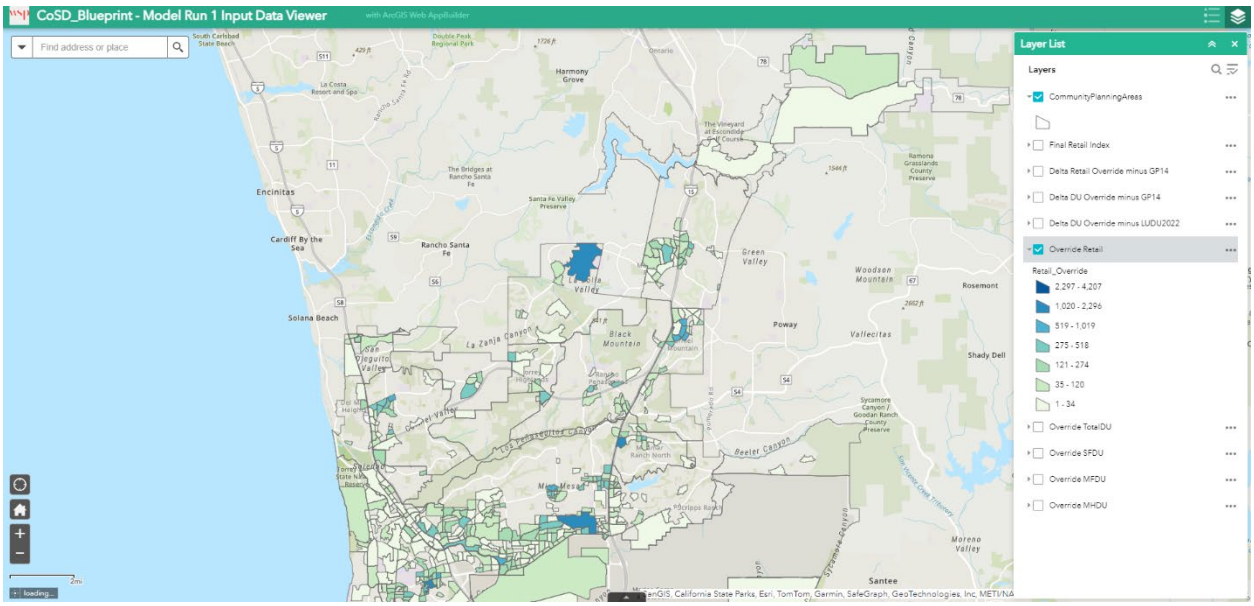
Draft Blueprint Model Run 1 Dwelling Units (DUs)

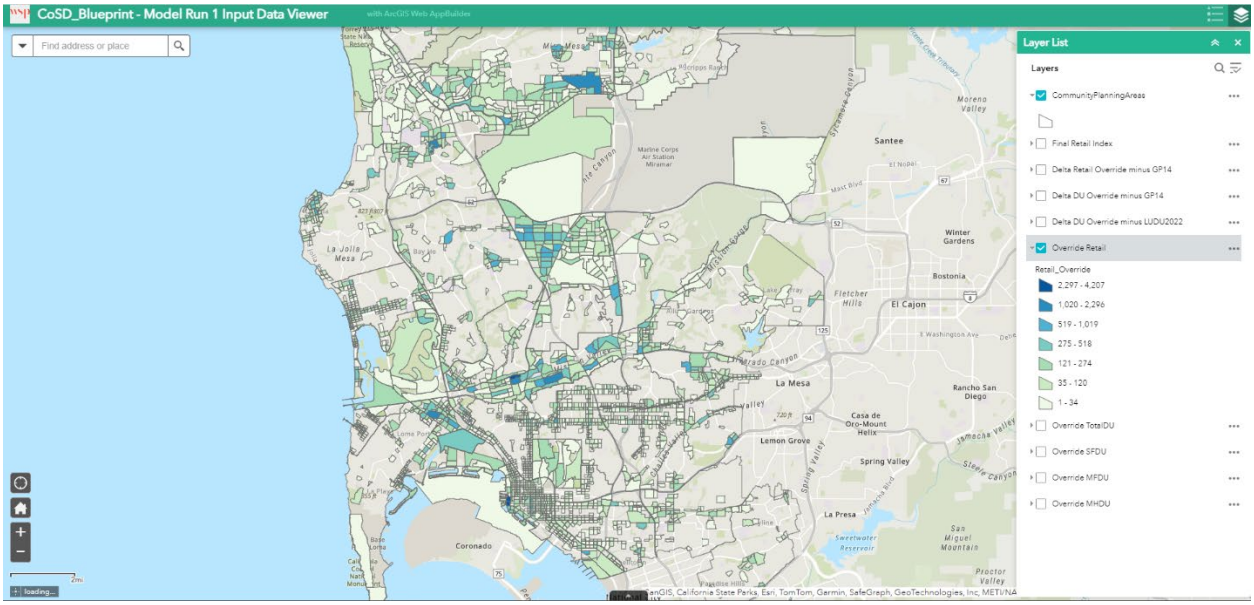


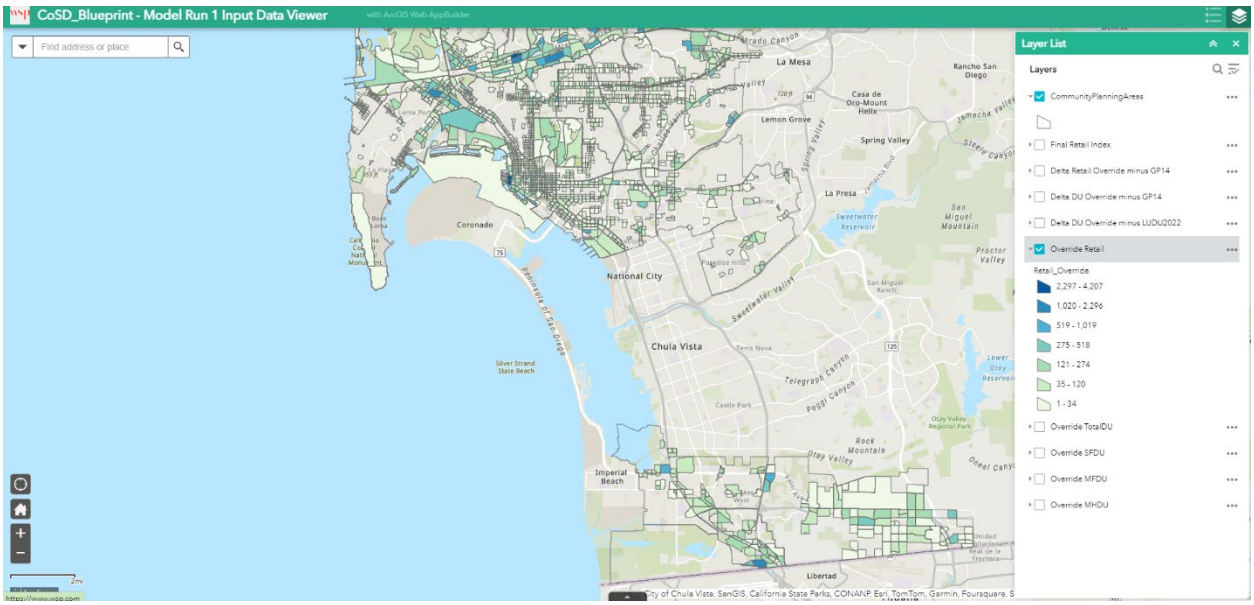




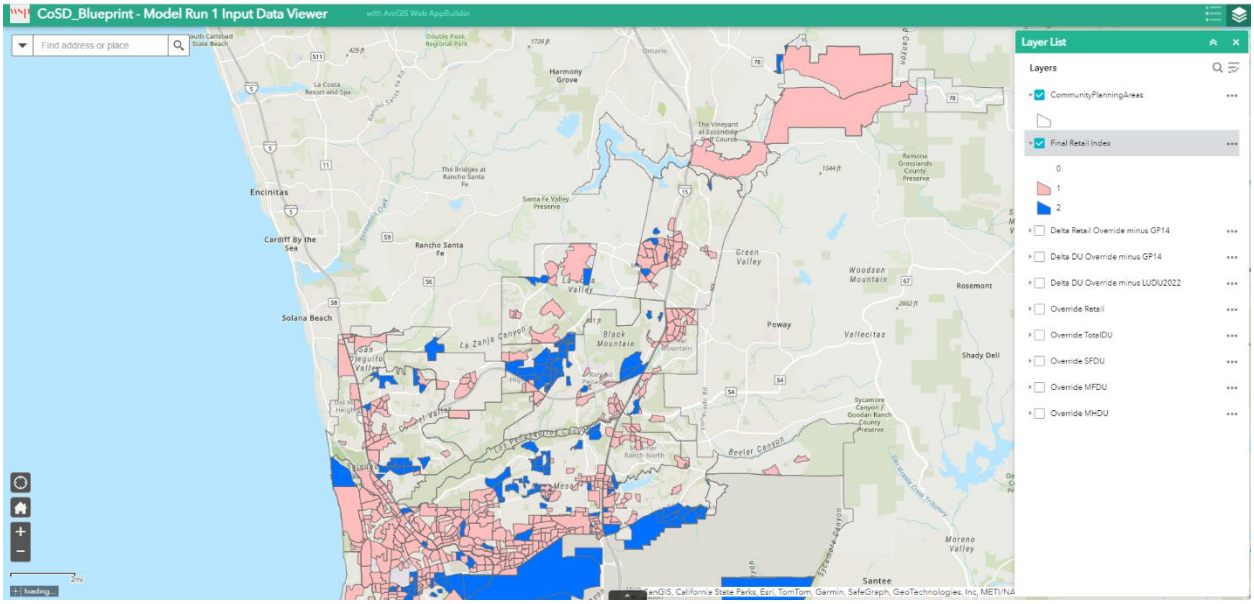
Draft Blueprint Model Run 1 Retail

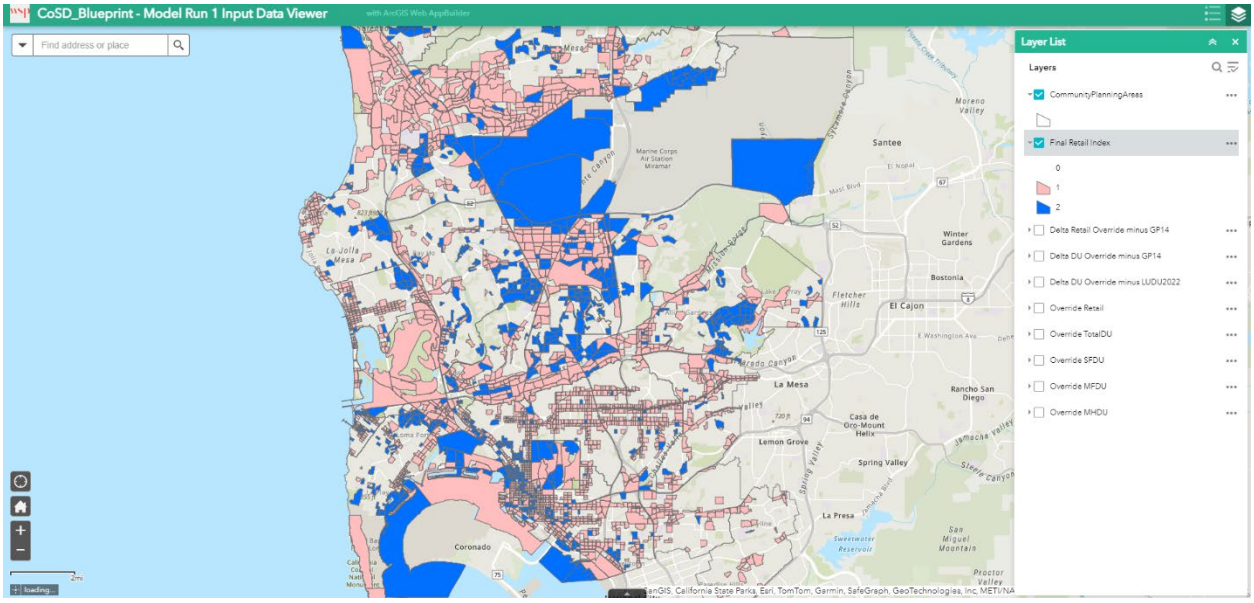


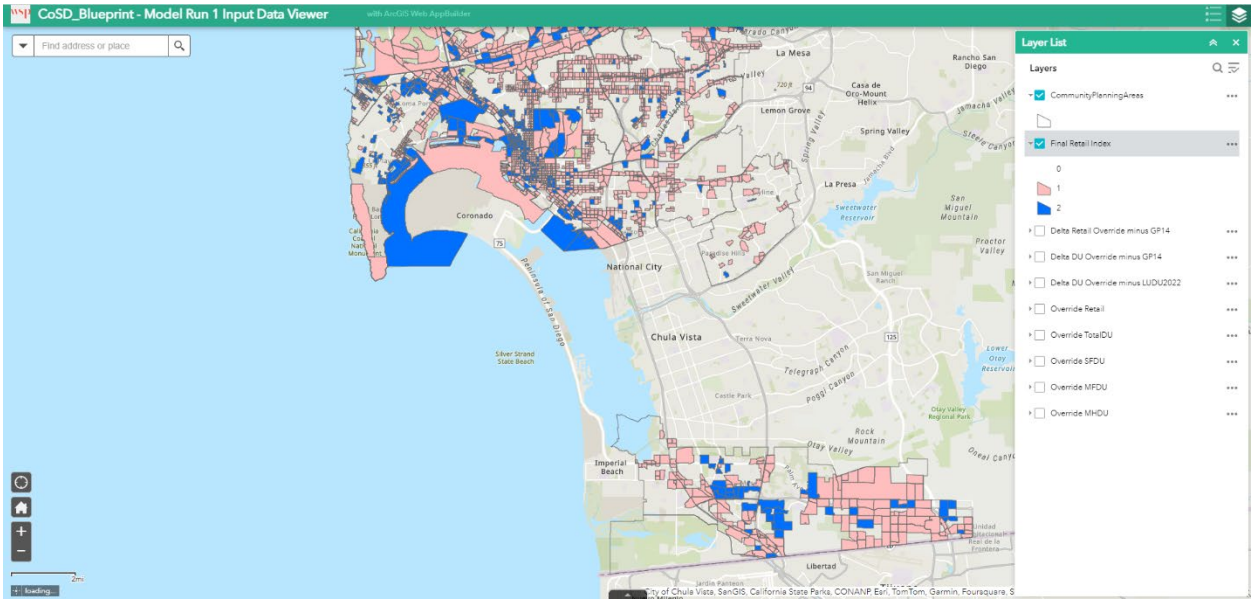




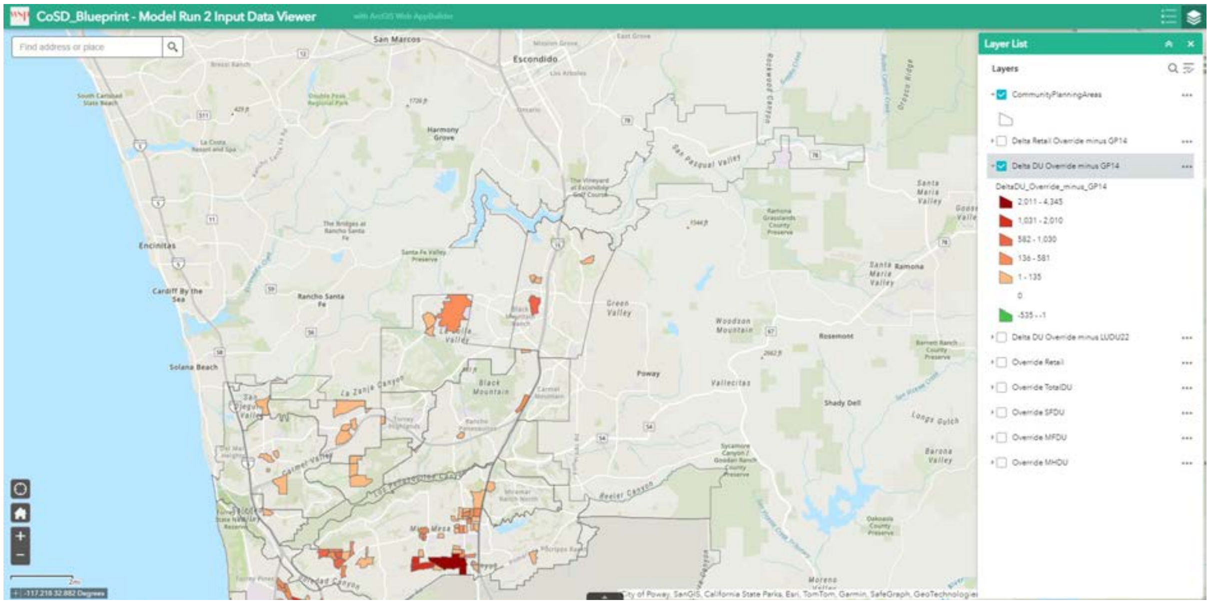
Draft Blueprint Model Runs 1, 2, and 3 Retail Index

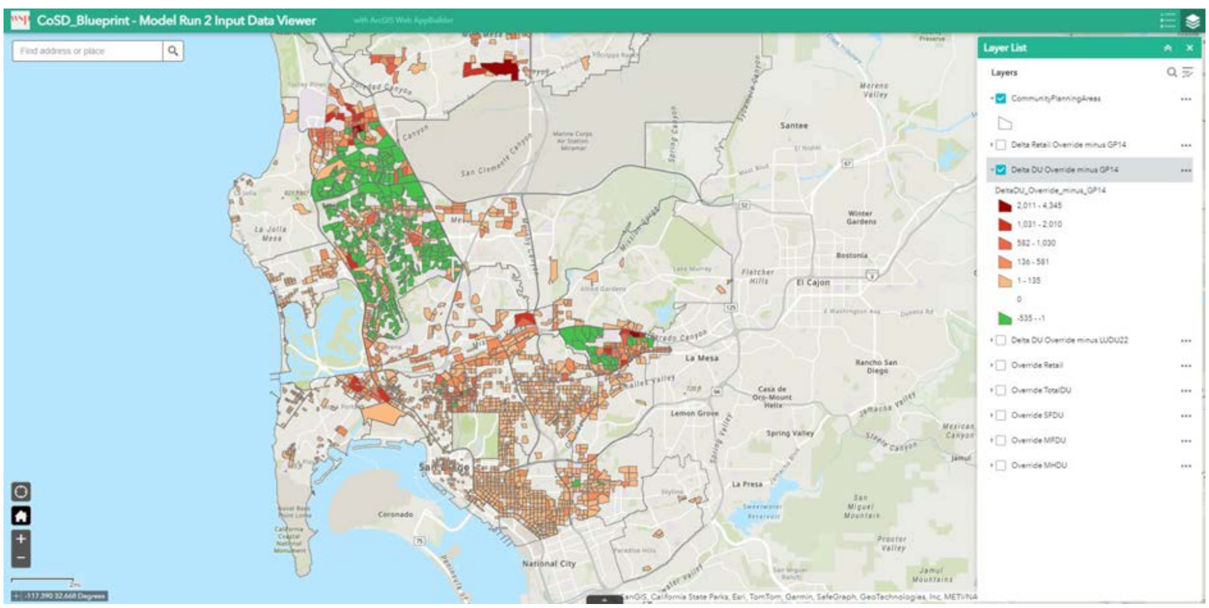


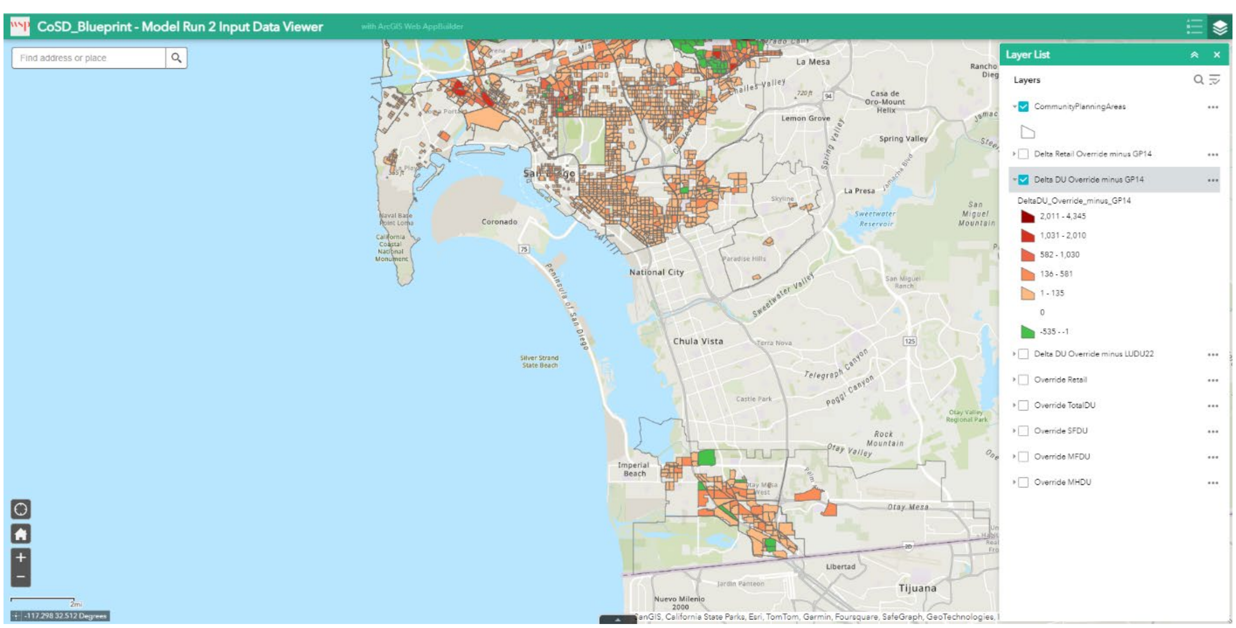




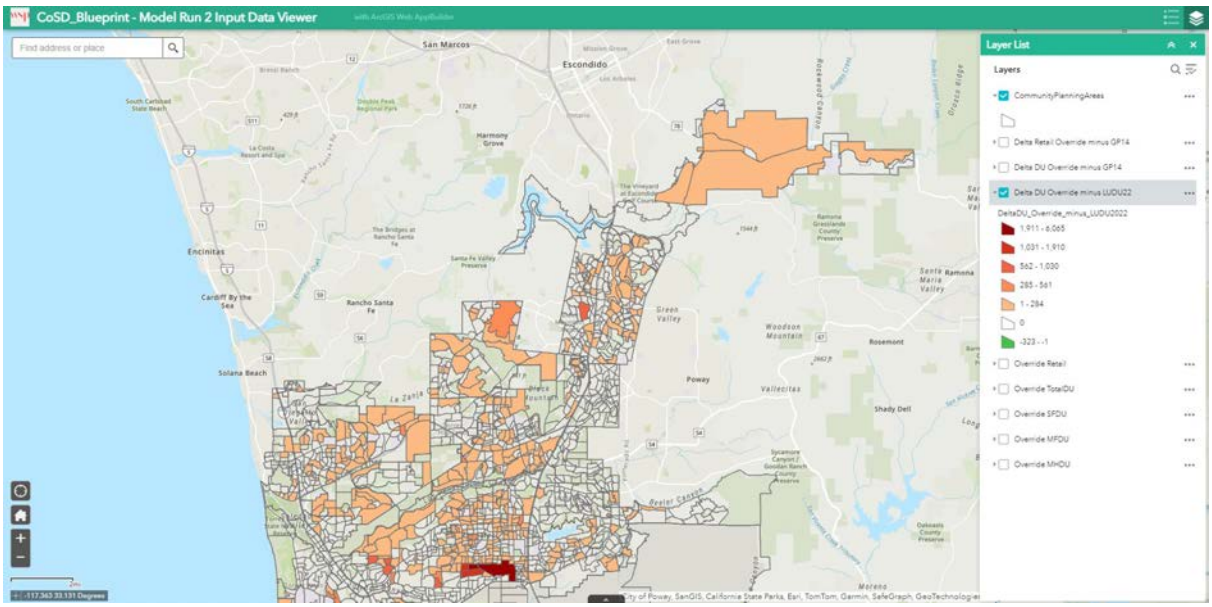
Draft Blueprint Model Run 2 Dwelling Unit (DU) Override minus SANDAG Series 14 General Plans DU

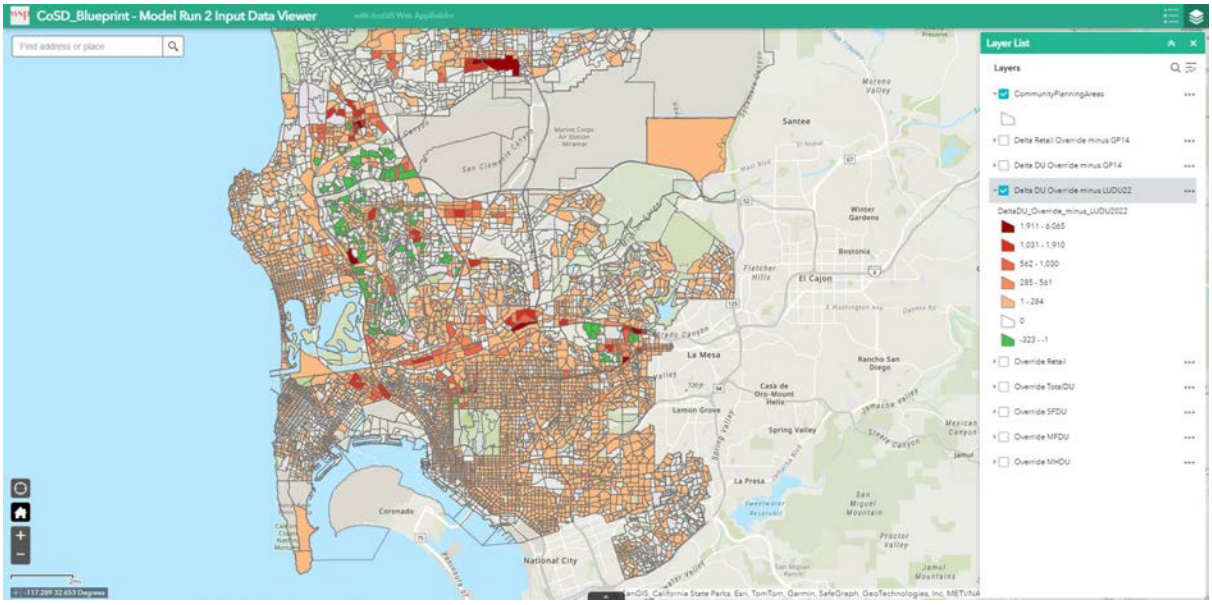


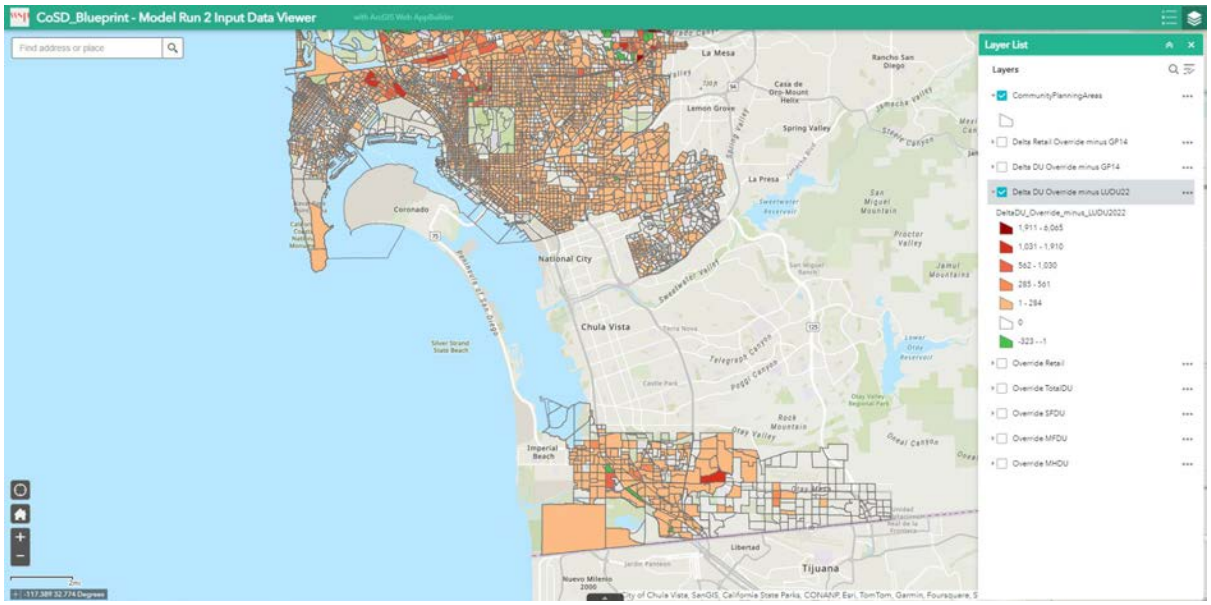




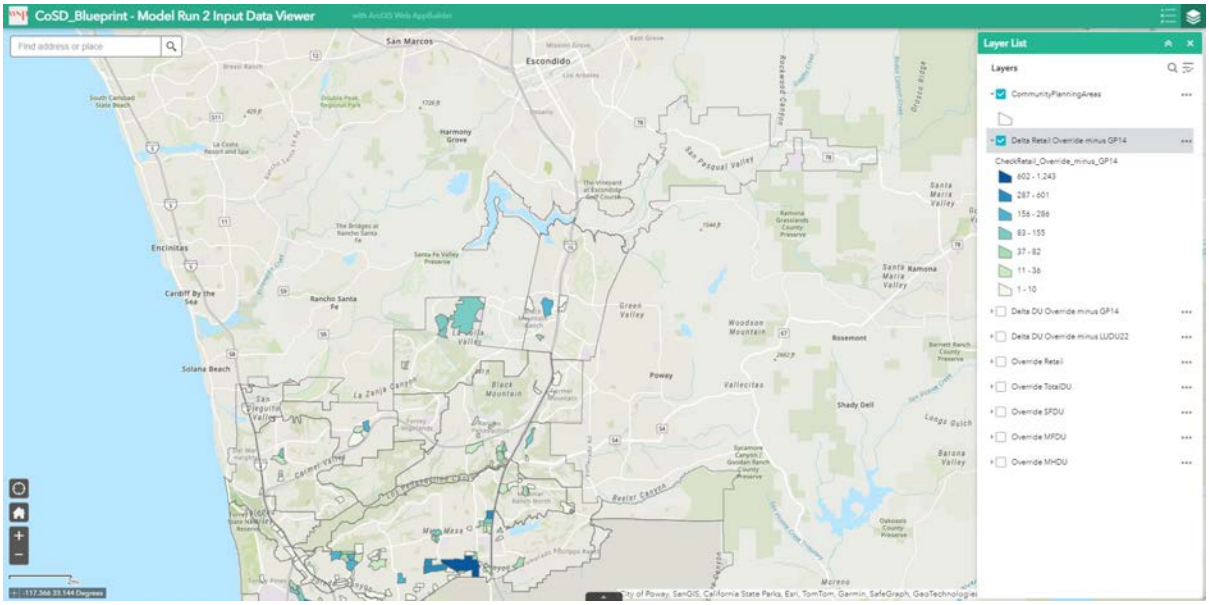
Draft Blueprint Model Run 2 Dwelling Unit (DU) Override minus 2022 DU

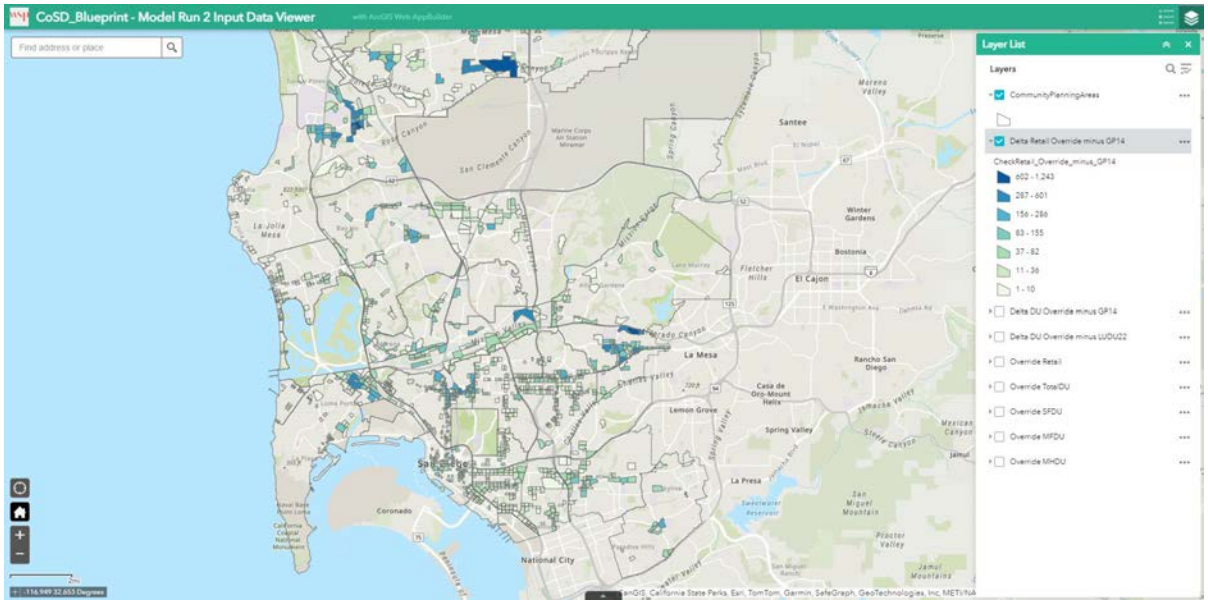


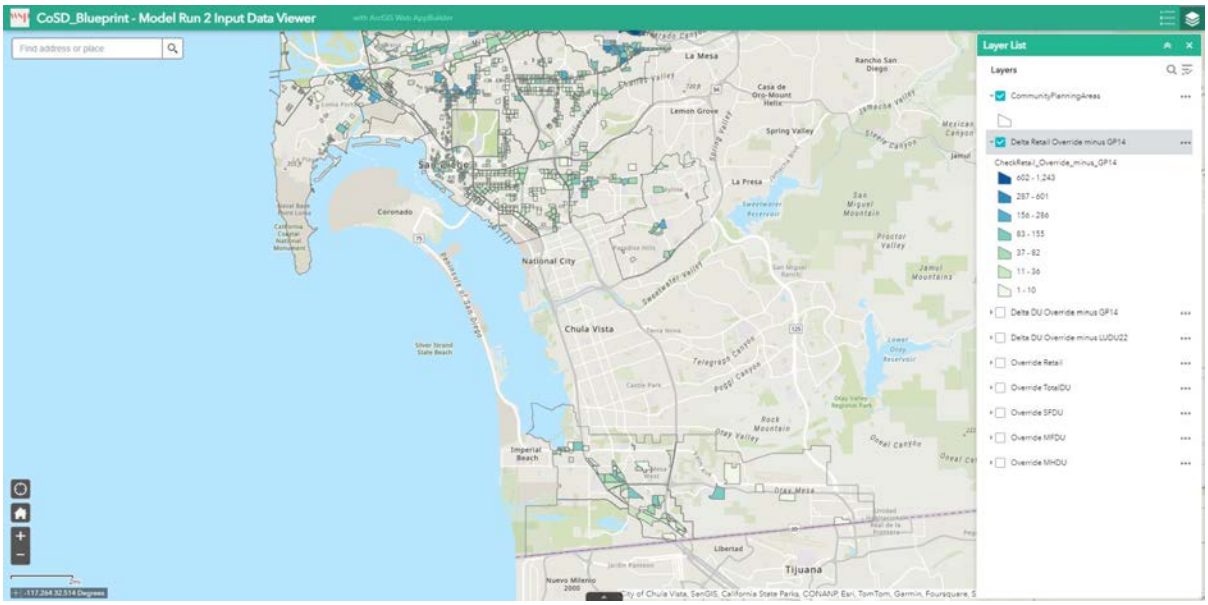




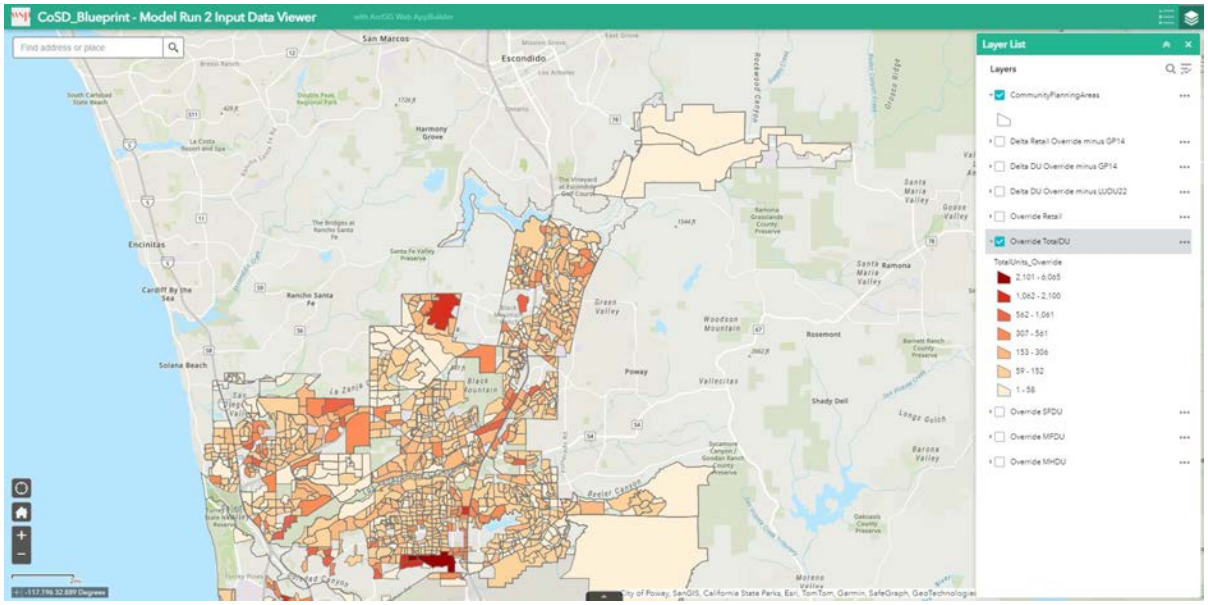
Draft Blueprint Model Run 2 Retail Override minus SANDAG Series 14 General Plans

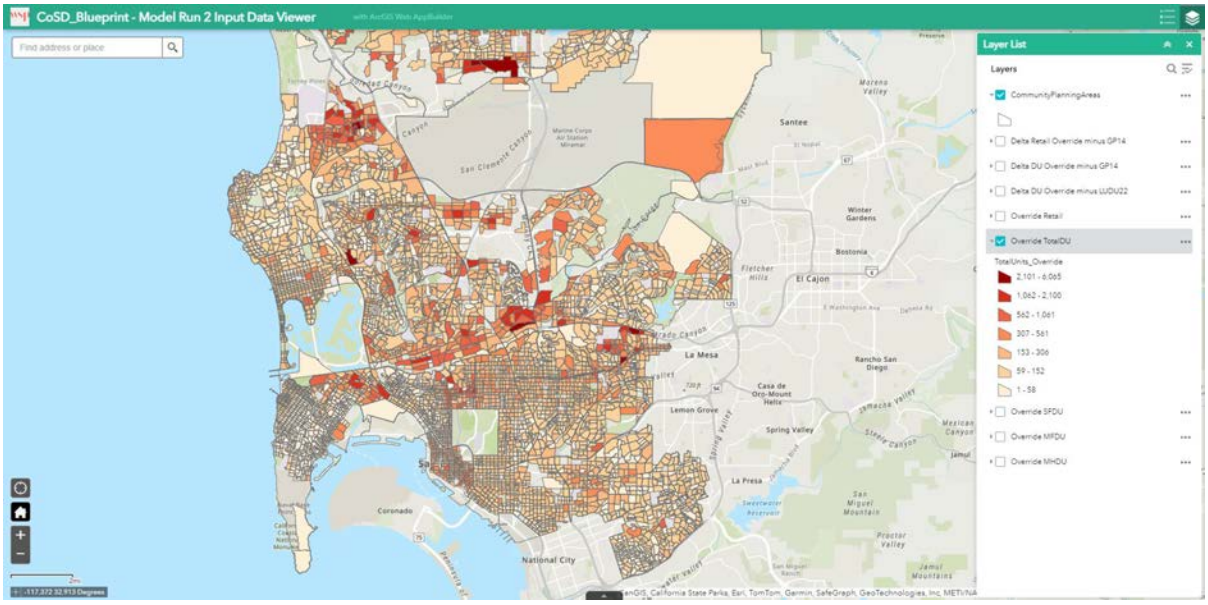


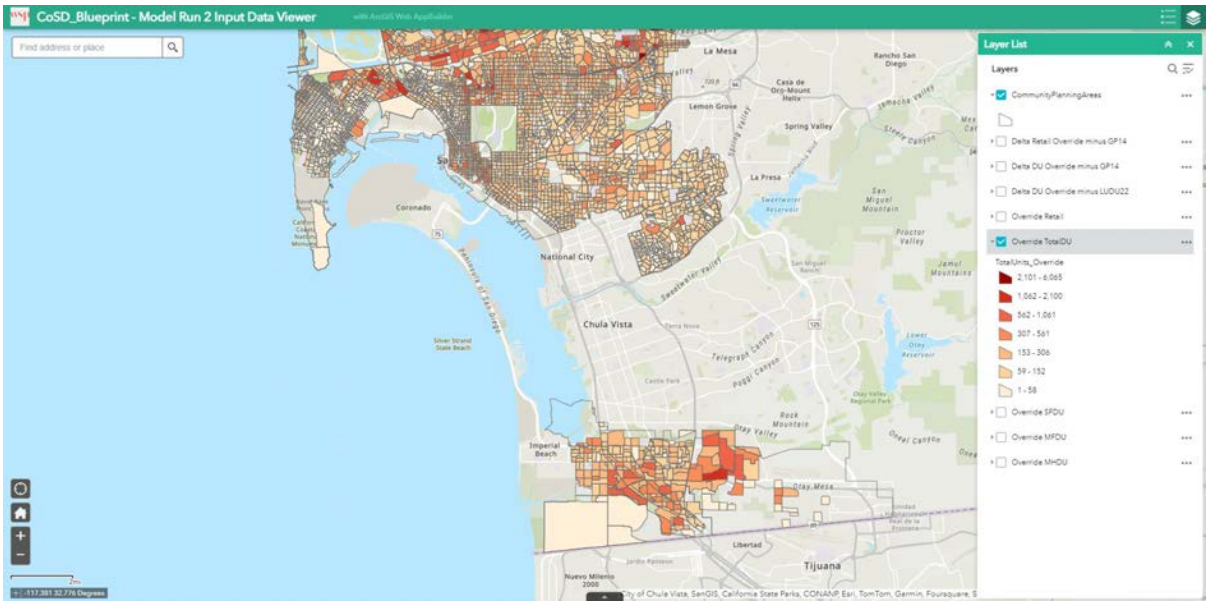




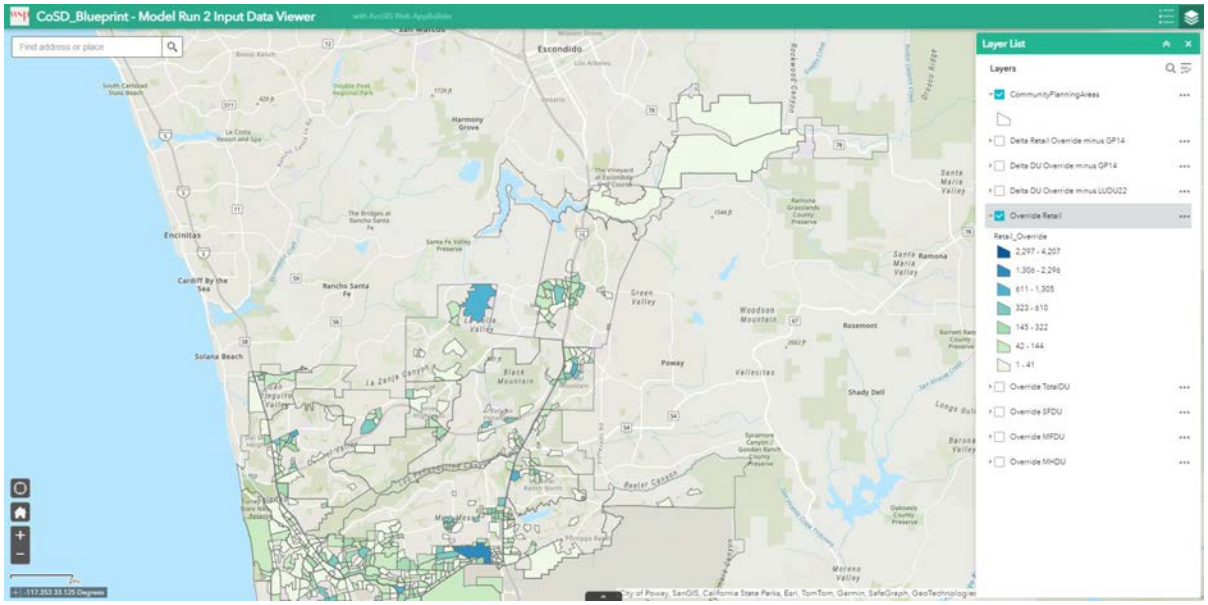
Draft Blueprint Model Run 2 Dwelling Units (DUs)

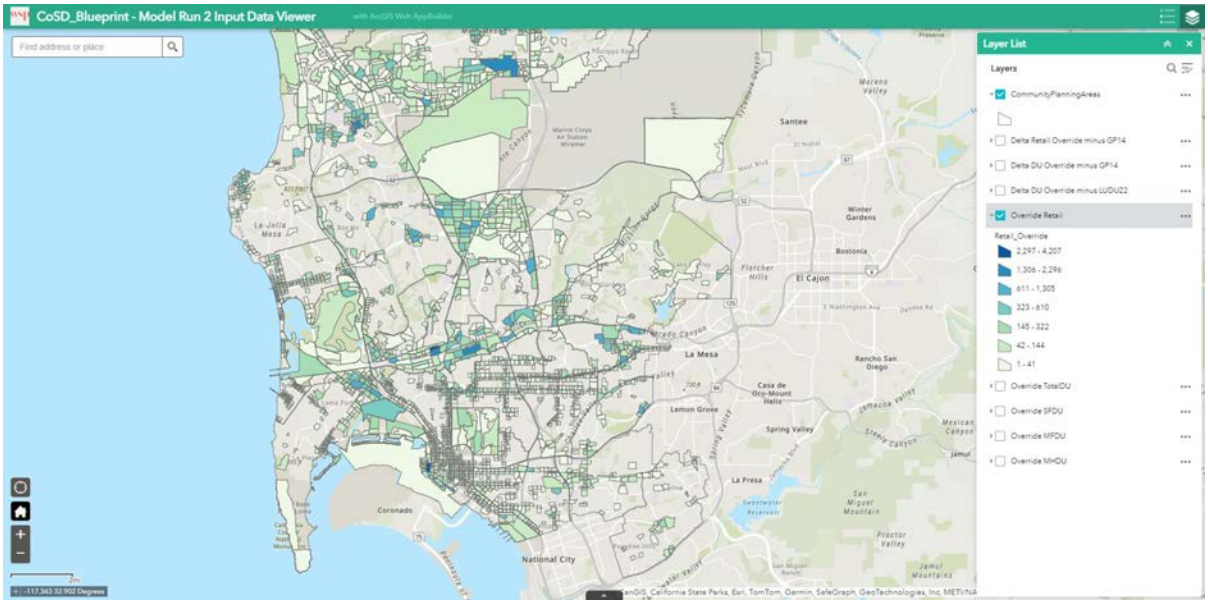


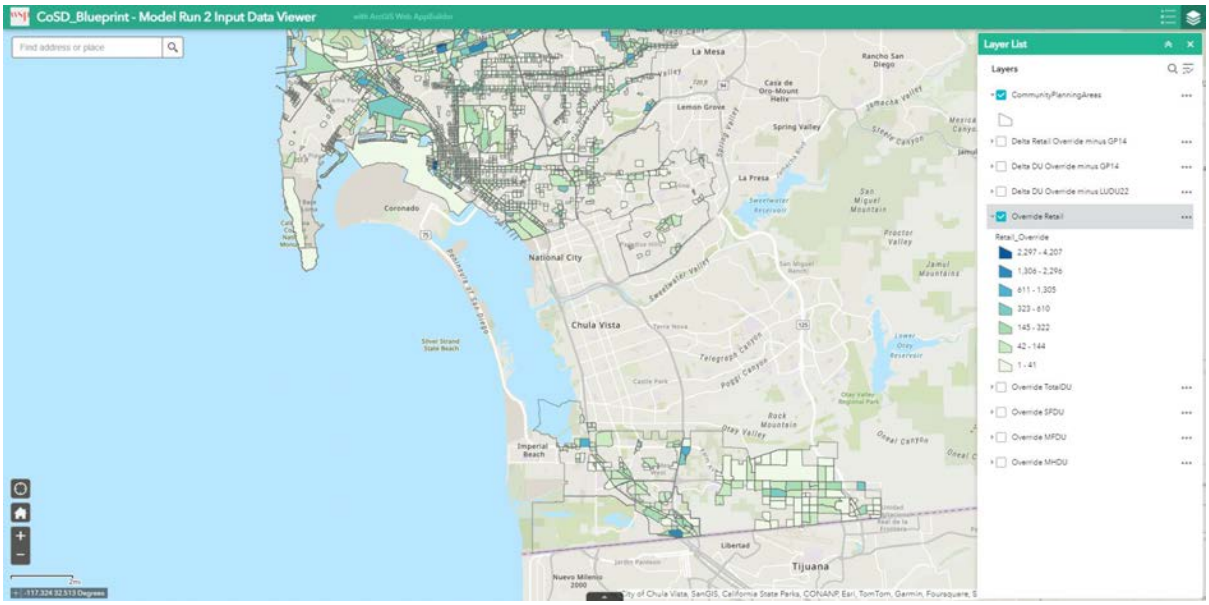




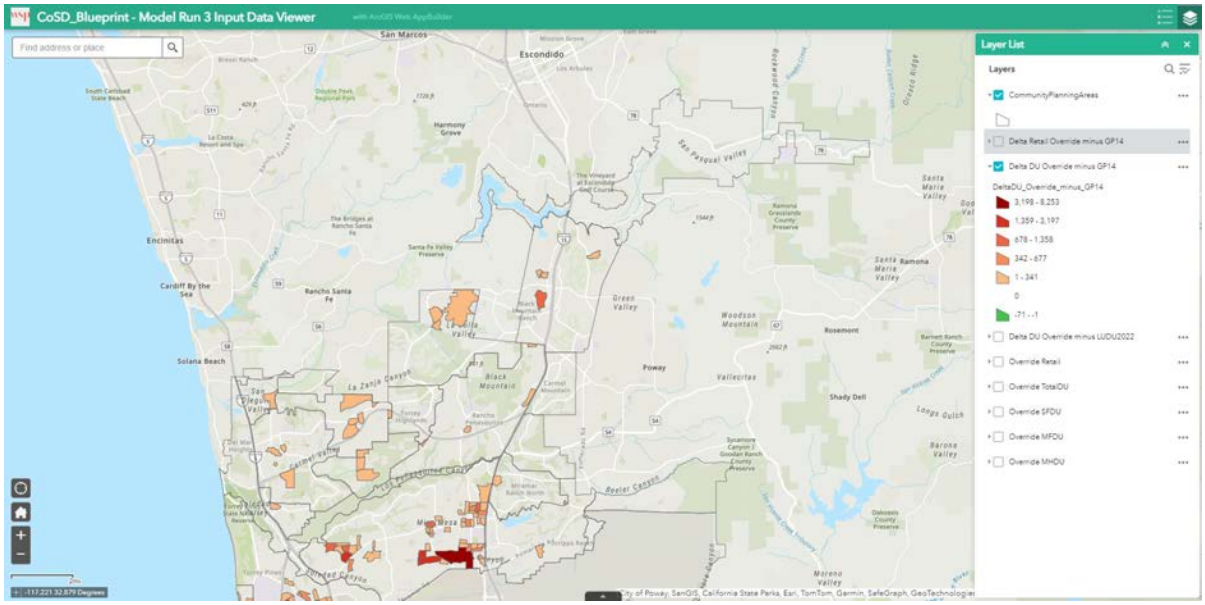
Draft Blueprint Model Run 2 Retail



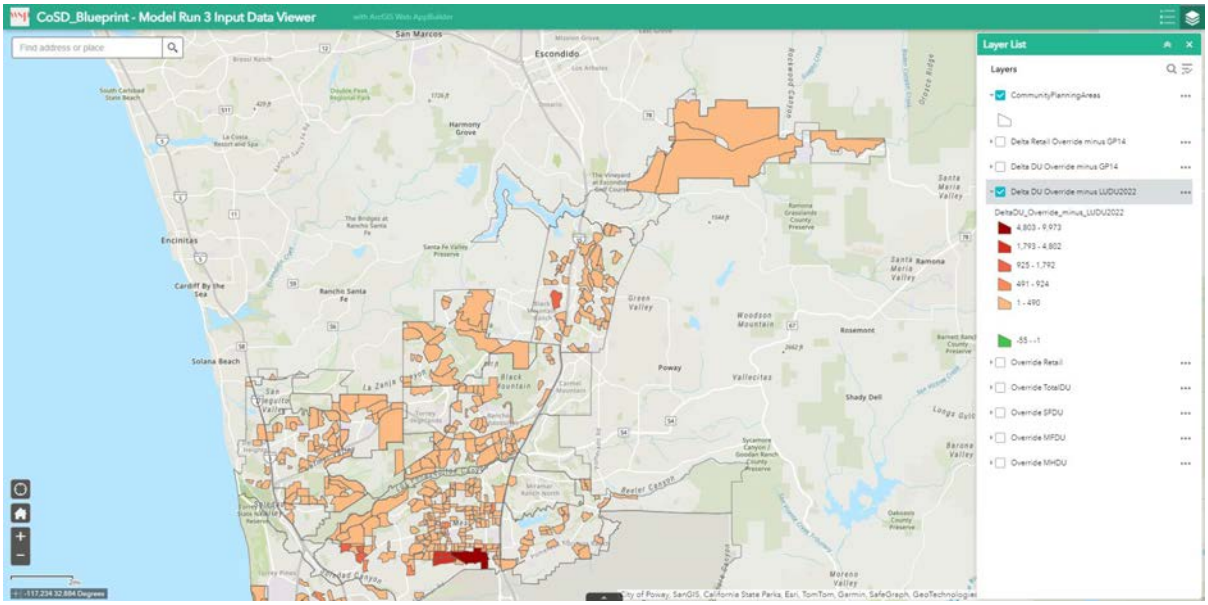


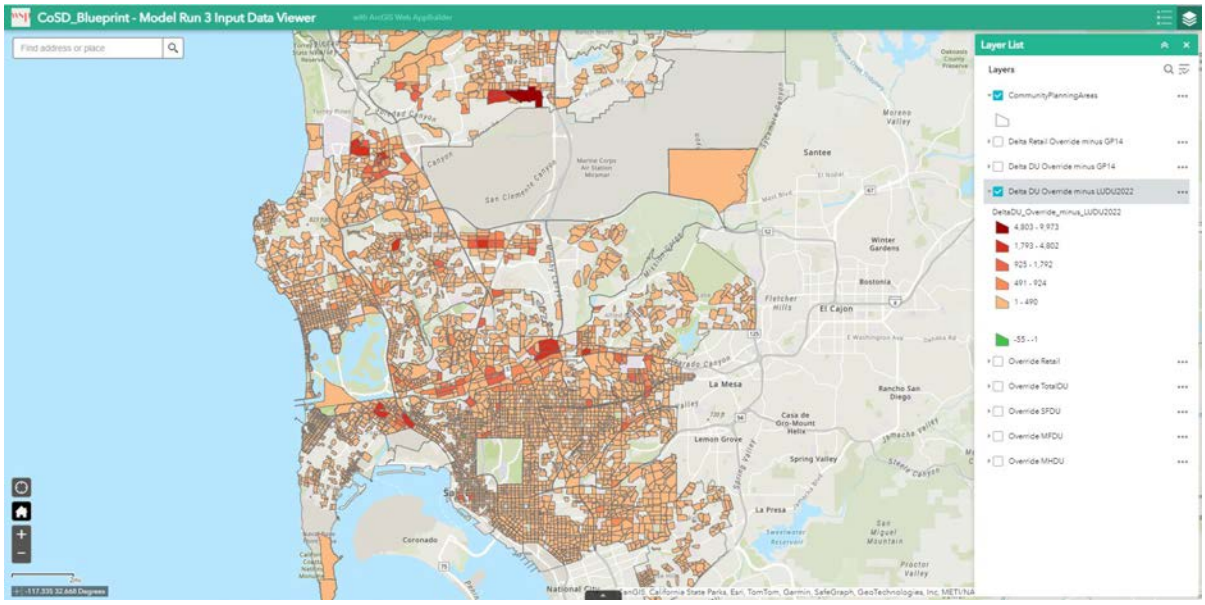


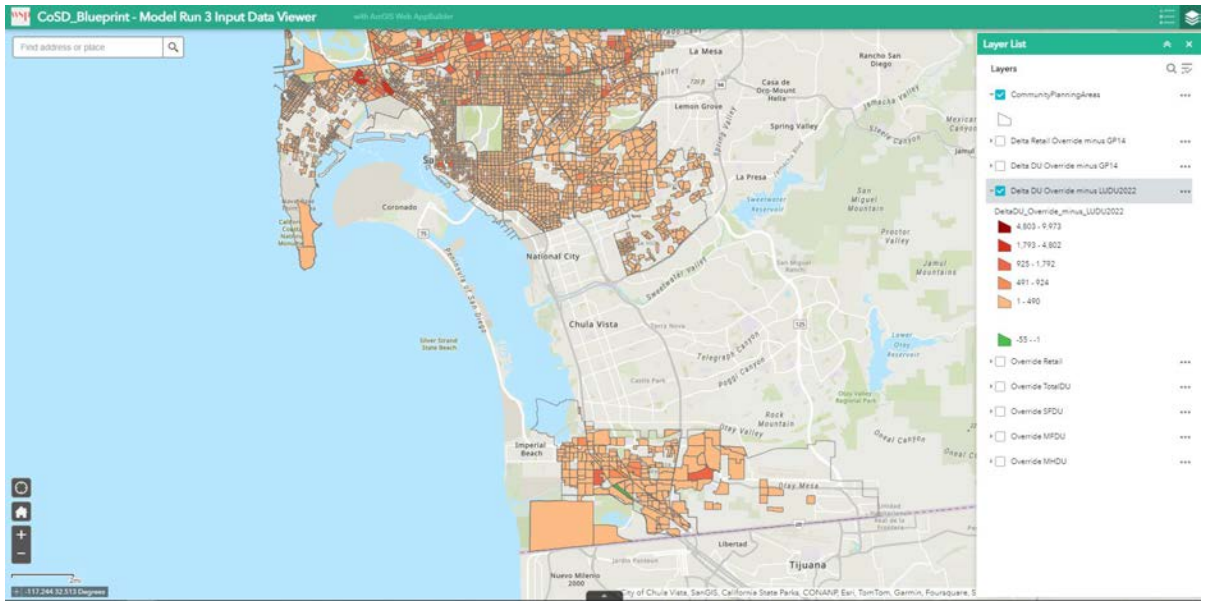
Draft Blueprint Model Run 3 Dwelling Unit (DU) Override minus SANDAG Series 14 General Plans DU



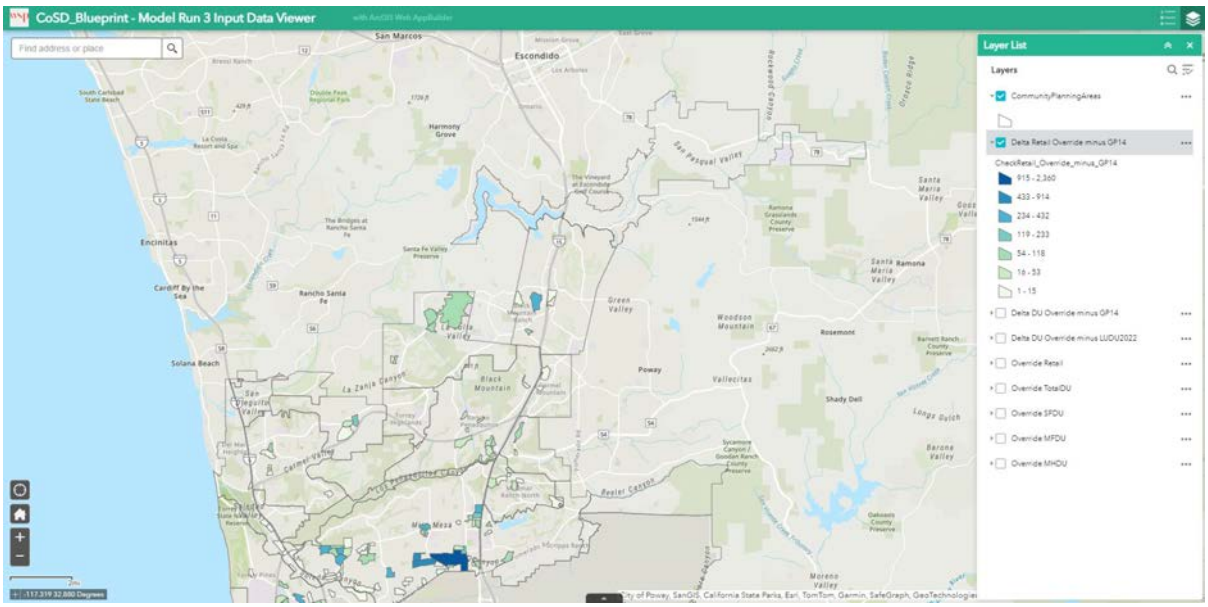
Draft Blueprint Model Run 3 Dwelling Unit (DU) Override minus 2022 DU

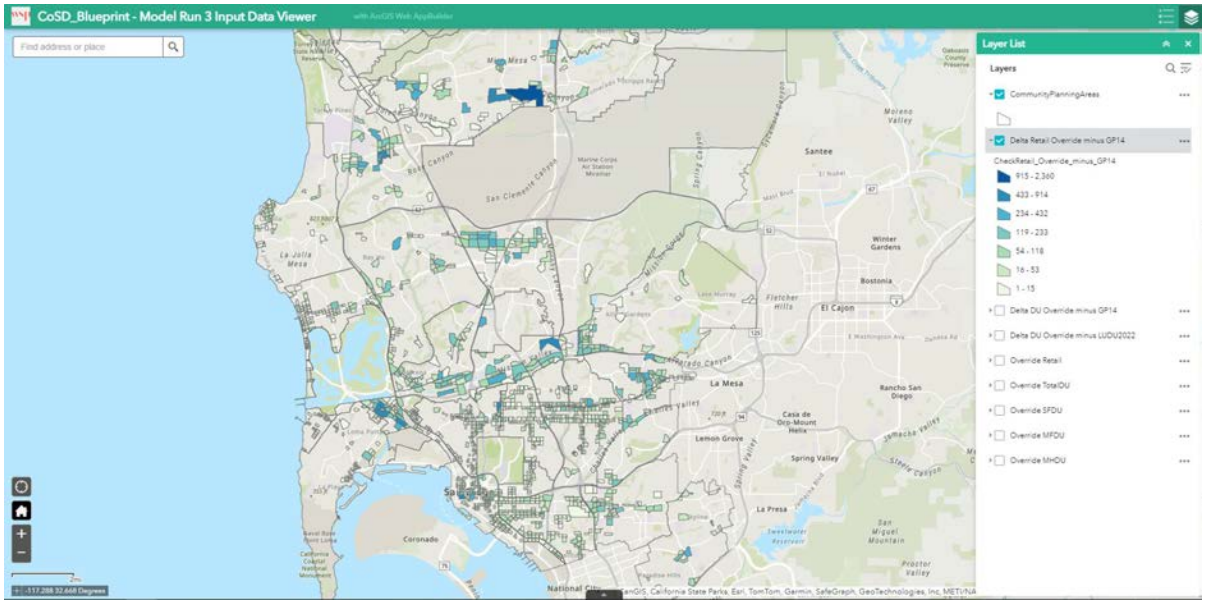


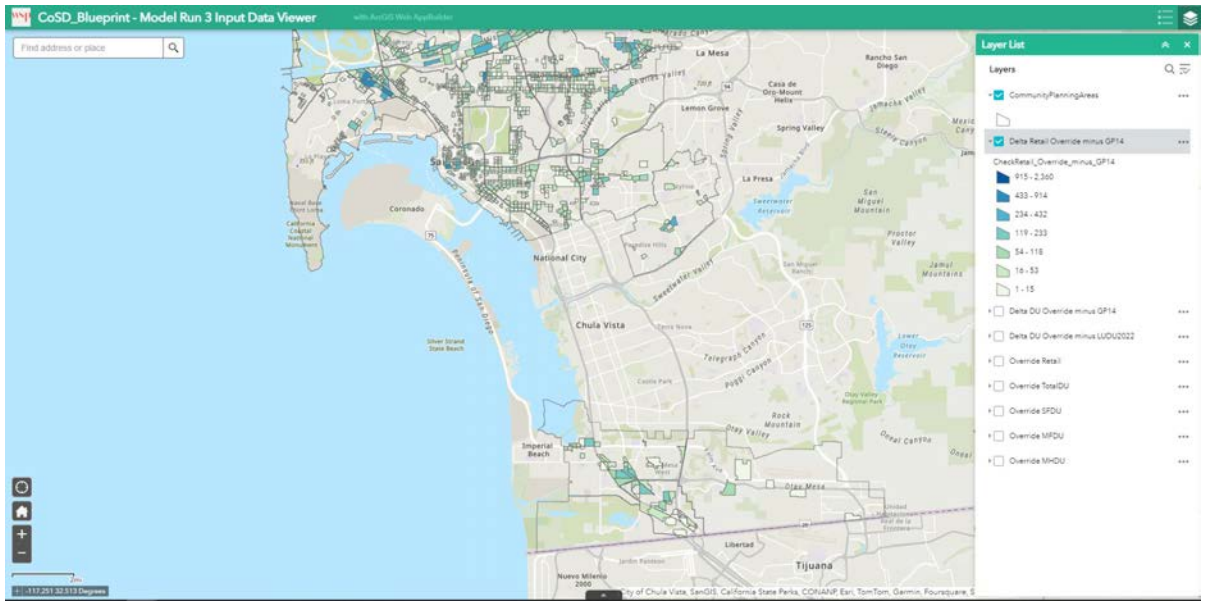




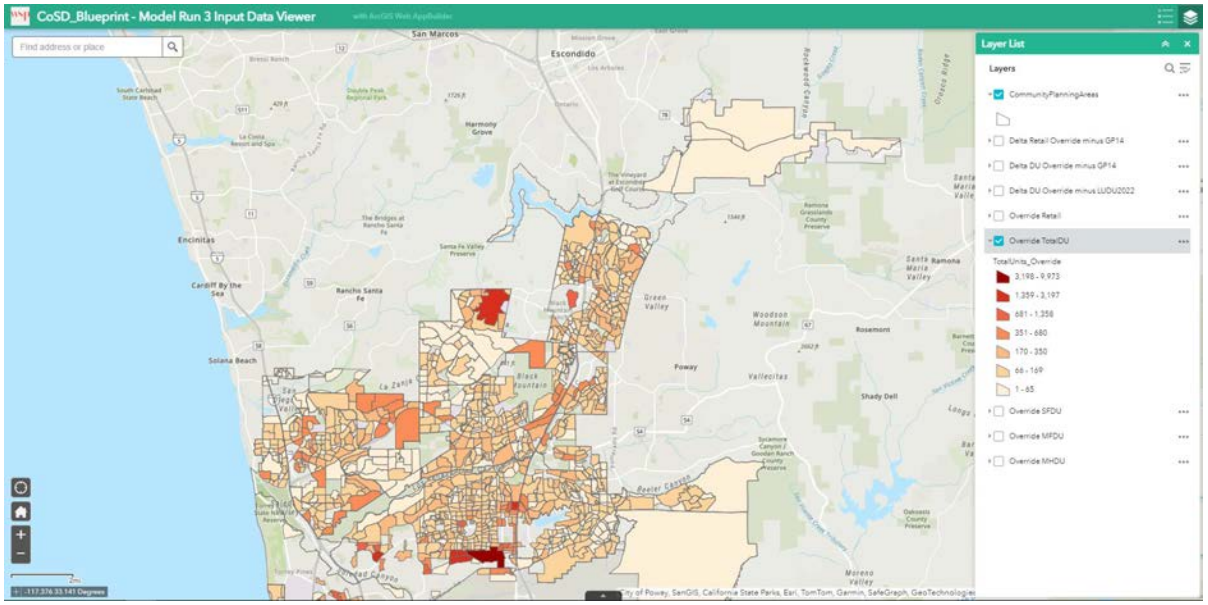
Draft Blueprint Model Run 3 Retail Override minus SANDAG Series 14 General Plans



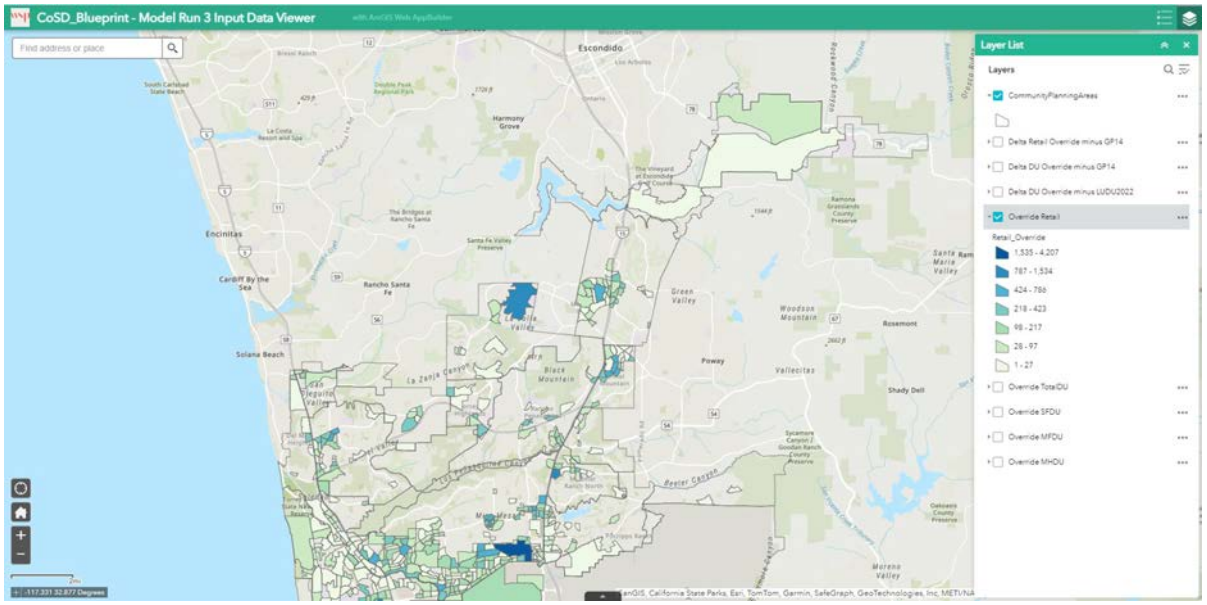


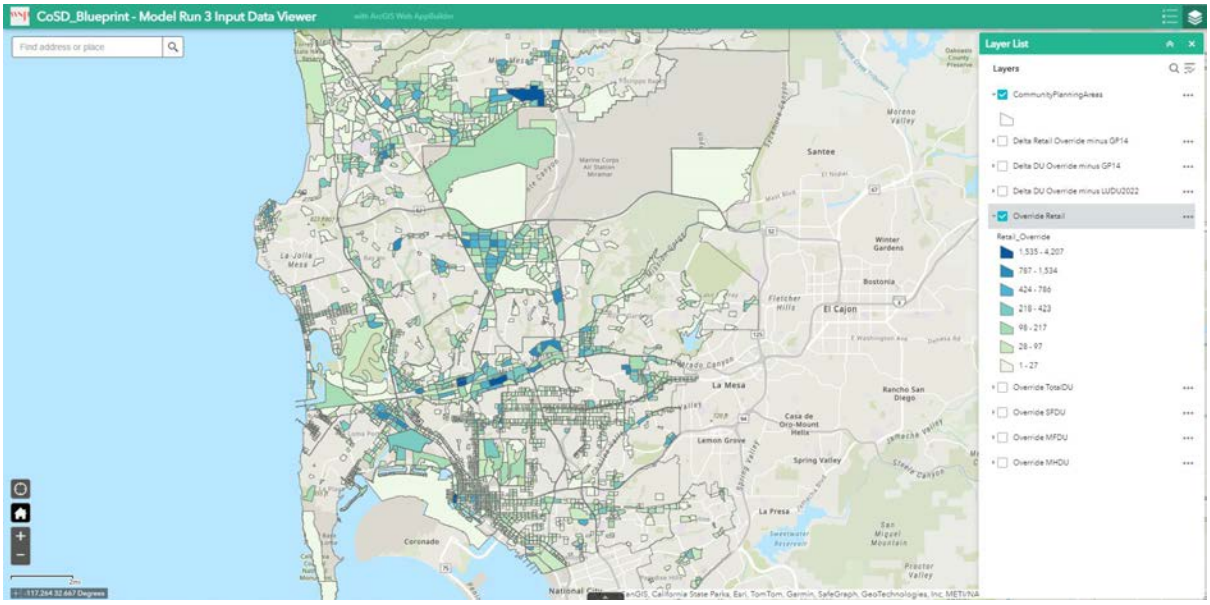


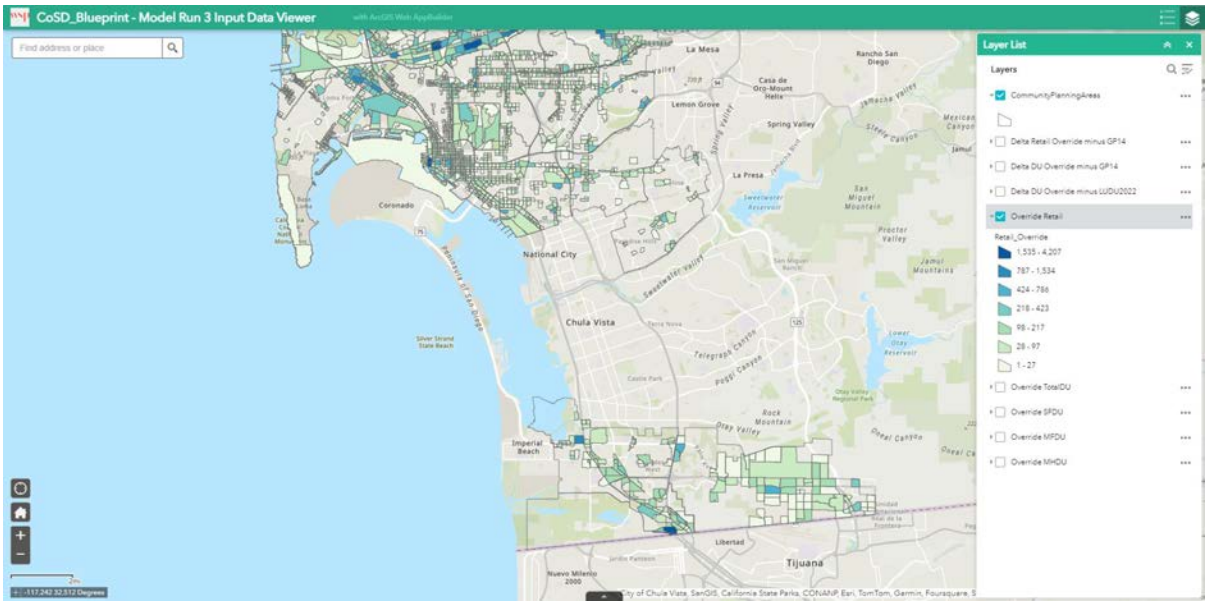
Draft Blueprint Model Run 3 Dwelling Units (DUs)



Draft Blueprint Model Run 3 Retail







Appendix C:

Blueprint SD Model Run Citywide Land Use Inputs Summaries

C-1 Blueprint SD Model Run 1

C-2 Blueprint SD Model Run 2

C-3 Blueprint SD Model Run 3

Appendix C-1: Blueprint Model Run 1 - Citywide Land Use Inputs Summary

City of San Diego (All)	SFDUs	MFDUs	MHs	RetEmp	GP14GQ (2050)_civ	GP14GQ (2050)_mil	Total
LUDU22	288,146	260,067	4,872				553,085
2050 GP series 13	294,142	411,766	4,962				710,870
2050 GP series 14	304,367	377,812	4,962	196,551	46,214	22,316	687,141
Override BP 2050	**278,790**	**526,577**	**3,681**	**229,930**			**809,048**
Growth		266,510					255,963

City of San Diego (BP)	SFDUs	MFDUs	MHs	RetEmp	GP14GQ (2050)_civ	GP14GQ (2050)_mil	Total
LUDU22	80,702	189,775	3,223				273,700
2050 GP series 13	86,927	314,434	3,313				404,674
2050 GP series 14	91,104	288,432	3,313	119,030	21,139		382,849
BP Override 2050	**63,789**	**435,672**	**2,032**	**148,648**			**501,493**
	Growth	245,897					227,793

City of San Diego (Non-BP)	SFDUs	MFDUs	MHs	RetEmp	GP14GQ (2050)_civ	GP14GQ (2050)_mil	Total
LUDU22	207,444	70,292	1,649				279,385
2050 GP series 13	207,215	97,332	1,649				306,196
2050 GP series 14	213,263	89,380	1,649	77,521	25,075	22,316	304,292
Non-BP Override 2050	**215,001**	**90,905**	**1,649**	**81,282**			**307,555**
	Growth	20,613					28,170

Appendix C-2: Blueprint Model Run 2 - Citywide Land Use Inputs Summary

City of San Diego (All)	SFDUs	MFDUs	MHs	Retail	Total
LUDU22	288,146	260,067	4,872		553,085
2050 GP series 13	294,142	411,766	4,962		710,870
2050 GP series 14	304,367	377,812	4,962	196,551	687,141
Override BP 2050	**273,388**	**589,850**	**2,742**	**243,908**	**865,980**
	Growth	329,783			312,895
City of San Diego (BP)	SFDUs	MFDUs	MHs	Retail	Total
LUDU22	80,702	189,775	3,223		273,700
2050 GP series 13	86,927	314,434	3,313		404,674
2050 GP series 14	91,104	289,014	3,313	120,772	383,431
BP Override 2050	**82,971**	**508,227**	1,093	164,535	**592,291**
	Growth	318,452			318,591
City of San Diego (Non-BP)	SFDUs	MFDUs	MHs	Retail	Total
LUDU22	207,444	70,292	1,649		279,385
2050 GP series 13	207,215	97,332	1,649		306,196
2050 GP series 14	213,263	88,798	1,649	75,779	303,710
Non-BP Override 2050	**190,417**	**81,623**	**1,649**	**79,373**	**273,689**
	Growth	11,331			(5,696)

Appendix C-3: Blueprint Model Run 3 - Citywide Land Use Inputs Summary

City of San Diego (All)	SFDUs	MFDUs	MHs	Retail	Total
LUDU22	288,146	260,067	4,872		553,085
2050 GP series 13	294,142	411,766	4,962		710,870
2050 GP series 14	304,367	377,812	4,962	196,551	687,141
Override BP 2050	**252,295**	**713,014**	**2,426**	**255,348**	**967,735**
	Growth	452,947			414,650
City of San Diego (BP)	SFDUs	MFDUs	MHs	Retail	Total
LUDU22	80,702	189,775	3,223		273,700
2050 GP series 13	86,927	314,434	3,313		404,674
2050 GP series 14	92,567	289,014	3,313	119,030	384,894
BP Override 2050	**37,294**	**622,109**	**777**	174,066	**660,180**
	Growth	432,334			386,480
City of San Diego (Non-BP)	SFDUs	MFDUs	MHs	Retail	Total
LUDU22	207,444	70,292	1,649		279,385
2050 GP series 13	207,215	97,332	1,649		306,196
2050 GP series 14	211,800	88,798	1,649	77,521	302,247
Non-BP Override 2050	**215,001**	**90,905**	**1,649**	**81,282**	**307,555**
	Growth	20,613			28,170

Appendix D:

University CPU Model Run Land Use Inputs Extract from Blueprint Model Run 2

University Community Plan Update
Land Use Inputs Extract From Blueprint SD Model Run 2

mgra	City	CPA	taz	hs	hs_sf	hs_mf	hs_mh	gq_civ	gq_mil	pop	emp_prof_bus_svcs	subtotal_emp_retail_rest_bar_personal_svcs	emp_total	subtotal_enrollgradekto12	subtotal_postkto12enroll	hotelroomtotal
4170	14	1441	2199	0	0	0	0	5496	0	5496	54	24	16141	0	19553	0
4171	14	1441	2204	0	0	0	0	0	0	0	77	14	1319	0	0	0
4172	14	1441	2215	0	0	0	0	4930	0	4930	159	14	8887	0	8712	0
4173	14	1441	2239	0	0	0	0	3008	0	3008	120	48	7486	0	8712	0
4174	14	1441	2215	0	0	0	0	0	0	0	48	0	292	0	8712	0
4175	14	1441	2248	0	0	0	0	0	0	0	3	26	7115	0	6534	0
4176	14	1441	2247	0	0	0	0	0	0	0	260	17	4894	0	0	0
4177	14	1441	2218	0	0	0	0	0	0	0	52	14	1769	0	0	0
4178	14	1441	2228	143	0	143	0	0	0	317	55	53	530	0	436	0
4179	14	1441	2228	0	0	0	0	0	0	0	59	5	545	0	0	0
4180	14	1441	2234	0	0	0	0	0	0	0	0	0	542	1364	0	0
4181	14	1441	2249	700	0	700	0	3517	0	5298	3	0	15	10	0	0
4182	14	1441	2249	123	3	120	0	0	0	281	1	0	15	0	0	0
4183	14	1441	2228	0	0	0	0	0	0	0	42	0	453	1028	273	0
4184	14	1441	2228	39	0	39	0	0	0	84	165	17	1464	0	0	0
4185	14	1441	2228	1307	0	1307	0	0	0	2864	0	0	129	0	0	0
4186	14	1441	2228	1220	0	1220	0	0	0	2740	605	0	924	0	0	0
4187	14	1441	2341	106	106	0	0	0	0	227	0	0	3	0	0	0
4188	14	1441	2341	17	17	0	0	0	0	37	1	0	2	0	0	0
4189	14	1441	2341	160	127	33	0	0	0	338	3	39	46	0	0	0
4190	14	1441	2387	19	19	0	0	0	0	39	0	0	0	0	0	0
4191	14	1441	2387	74	74	0	0	0	0	151	3	0	9	0	0	0
4192	14	1441	2387	79	79	0	0	0	0	170	0	0	5	0	0	0
4193	14	1441	2387	61	61	0	0	0	0	137	0	0	1	0	0	0
4194	14	1441	2387	73	73	0	0	0	0	157	11	0	23	0	0	0
4195	14	1441	2387	80	80	0	0	0	0	186	16	0	36	0	0	0
4196	14	1441	2341	169	143	26	0	0	0	383	13	25	59	0	0	0
4197	14	1441	2341	72	72	0	0	0	0	155	4	0	8	0	0	0
4198	14	1441	2341	8	8	0	0	0	0	18	0	23	31	0	0	0
4199	14	1441	2387	176	176	0	0	0	0	426	0	0	4	0	0	0
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4204	14	1441	2387	21	21	0	0	0	0	37	1	0	4	0	0	0
4205	14	1441	2387	16	16	0	0	0	0	29	0	0	0	0	0	0
4206	14	1441	2387	26	26	0	0	0	0	59	4	0	8	0	0	0
4207	14	1441	2379	154	146	8	0	0	0	379	0	0	3	0	0	0
4208	14	1441	2379	32	32	0	0	0	0	82	0	0	0	0	0	0
4209	14	1441	2379	27	27	0	0	0	0	60	5	0	10	0	0	0
4210	14	1441	2379	140	140	0	0	6	0	333	0	0	3	0	0	0

University Community Plan Update
Land Use Inputs Extract From Blueprint SD Model Run 2

mgra	City	CPA	taz	hs	hs_sf	hs_mf	hs_mh	gq_civ	gq_mil	pop	emp_prof_bus_svcs	subtotal_emp_retail_rest_bar_personal_svcs	emp_total	subtotal_enrollgradekto12	subtotal_postkto12enroll	hotelroomtotal
4211	14	1441	2315	110	110	0	0	6	0	279	0	0	3	0	0	0
4212	14	1441	2315	110	110	0	0	6	0	261	3	0	27	0	0	0
4213	14	1441	2315	60	0	60	0	0	0	141	0	0	1	0	0	0
4214	14	1441	2315	154	154	0	0	0	0	388	28	0	60	0	0	0
4215	14	1441	2315	45	45	0	0	0	0	103	5	0	9	0	0	0
4216	14	1441	2315	160	129	31	0	14	0	410	8	15	77	0	0	0
4217	14	1441	2315	67	67	0	0	0	0	143	16	0	23	0	0	0
4218	14	1441	2315	106	106	0	0	0	0	258	3	0	9	0	0	0
4219	14	1441	2315	242	0	242	0	0	0	536	49	195	397	0	0	0
4220	14	1441	2356	174	0	174	0	0	0	427	0	43	50	0	0	0
4221	14	1441	2356	10	10	0	0	0	0	29	0	0	115	1358	0	0
4222	14	1441	2356	92	6	86	0	0	0	198	0	0	7	0	0	0
4223	14	1441	2379	0	0	0	0	0	0	0	0	7	91	790	0	0
4224	14	1441	2379	0	0	0	0	0	0	0	0	0	0	0	0	0
4225	14	1441	2356	127	127	0	0	0	0	304	6	0	18	0	0	0
4226	14	1441	2356	50	0	50	0	0	0	115	0	0	1	0	0	0
4227	14	1441	2379	49	49	0	0	0	0	119	8	0	9	0	0	0
4305	14	1441	2034	0	0	0	0	0	0	0	0	0	0	0	0	0
4306	14	1441	2034	0	0	0	0	0	0	0	0	80	607	0	0	0
4307	14	1441	2034	0	0	0	0	0	0	0	14	18	368	0	0	741
4308	14	1441	2163	0	0	0	0	0	0	0	1094	28	3233	0	0	0
4309	14	1441	2185	0	0	0	0	0	0	0	43	0	43	0	0	0
4310	14	1441	2163	52	0	52	0	0	0	38	136	25	333	0	0	0
4311	14	1441	2185	0	0	0	0	0	0	0	373	6	749	0	436	0
4312	14	1441	2185	49	0	49	0	0	0	3	43	2	92	0	436	0
4313	14	1441	2185	0	0	0	0	0	0	0	6	47	129	0	0	0
4644	14	1441	2034	0	0	0	0	0	0	0	0	0	0	0	0	0
4645	14	1441	2084	4	4	0	0	0	0	8	353	4	1594	0	0	0
4646	14	1441	2084	0	0	0	0	0	0	0	431	47	1081	0	0	0
4647	14	1441	2130	0	0	0	0	0	0	0	123	0	196	0	0	0
4648	14	1441	2130	0	0	0	0	0	0	0	97	13	957	0	0	0
4649	14	1441	2149	0	0	0	0	0	0	0	0	0	0	0	0	0
4650	14	1441	2130	0	0	0	0	0	0	0	52	24	168	0	0	0
4651	14	1441	2149	0	0	0	0	0	0	0	438	15	1362	0	0	0
4652	14	1441	2160	0	0	0	0	0	0	0	830	30	3173	0	0	0
4653	14	1441	2149	0	0	0	0	0	0	0	635	11	1393	0	0	0
4654	14	1441	2160	0	0	0	0	0	0	0	0	0	76	0	0	0
4655	14	1441	2173	0	0	0	0	0	0	0	435	150	1305	0	0	0
4656	14	1441	2149	0	0	0	0	0	0	0	241	49	852	0	0	0
4657	14	1441	2173	0	0	0	0	0	0	0	26	12	742	0	0	0
4658	14	1441	2160	11	0	11	0	0	0	43	445	0	1539	0	0	0

University Community Plan Update
Land Use Inputs Extract From Blueprint SD Model Run 2

mgra	City	CPA	taz	hs	hs_sf	hs_mf	hs_mh	gq_civ	gq_mil	pop	emp_prof_bus_svcs	subtotal_emp_retail_rest_bar_personal_svcs	emp_total	subtotal_enrollgradekto12	subtotal_postkto12enroll	hotelroomtotal
4659	14	1441	2173	157	0	157	0	0	0	205	210	45	469	0	0	0
4660	14	1441	2149	0	0	0	0	0	0	0	0	0	0	0	0	0
4661	14	1441	2202	0	0	0	0	0	0	0	1079	25	2342	0	0	0
4662	14	1441	2173	514	0	514	0	0	0	1161	100	146	323	0	0	0
4663	14	1441	2213	10	0	10	0	0	0	88	3059	0	3572	0	0	0
4664	14	1441	2213	0	0	0	0	0	0	0	310	8	794	0	0	0
4665	14	1441	2213	118	0	118	0	0	0	96	210	22	491	0	0	0
4666	14	1441	2202	1	0	1	0	0	0	15	1133	0	1331	0	0	0
4667	14	1441	2202	62	0	62	0	0	0	137	440	17	1197	0	0	0
4668	14	1441	2213	0	0	0	0	0	0	0	0	0	0	0	0	0
4669	14	1441	2202	1471	0	1471	0	0	0	3416	29	0	63	0	0	0
4670	14	1441	2213	380	0	380	0	0	0	775	794	0	1682	0	0	0
4671	14	1441	2202	44	44	0	0	0	0	96	0	0	1	0	0	0
4672	14	1441	2202	365	0	365	0	0	0	892	0	0	11	0	0	0
4673	14	1441	2236	73	0	73	0	0	0	125	441	21	850	0	0	0
4674	14	1441	2236	175	0	175	0	0	0	499	326	77	1193	0	0	0
4675	14	1441	2242	1174	0	1174	0	0	0	2399	501	361	1343	0	0	0
4676	14	1441	2242	1673	0	1673	0	0	0	3550	412	486	1413	0	0	0
4677	14	1441	2236	648	0	648	0	0	0	1522	687	55	1580	0	0	0
4678	14	1441	2250	255	0	255	0	0	0	589	0	256	415	0	0	440
4679	14	1441	2236	307	0	307	0	0	0	685	750	842	3231	0	0	0
4680	14	1441	2252	456	0	456	0	0	0	993	451	447	1104	0	0	0
4681	14	1441	2252	773	0	773	0	0	0	1714	640	431	1288	0	0	0
4682	14	1441	2173	342	0	342	0	0	0	787	2146	97	4434	0	0	0
4683	14	1441	2270	49	0	49	0	0	0	115	4	0	8	0	0	0
4684	14	1441	2270	923	0	923	0	0	0	2067	11	0	52	0	0	0
4685	14	1441	2270	0	0	0	0	0	0	0	0	0	0	0	0	0
4686	14	1441	2280	256	0	256	0	0	0	536	108	7	334	0	0	0
4687	14	1441	2289	325	0	325	0	0	0	745	13	0	27	0	0	0
4688	14	1441	2289	391	0	391	0	0	0	882	0	0	14	0	0	0
4689	14	1441	2258	1238	0	1238	0	0	0	2682	0	144	162	0	0	0
4690	14	1441	2258	3167	0	3167	0	0	0	6653	40	922	1030	0	0	0
4691	14	1441	2258	1762	0	1762	0	0	0	3822	15	170	319	0	0	0
4692	14	1441	2275	56	56	0	0	0	0	133	3	0	8	0	0	0
4693	14	1441	2275	298	4	294	0	0	0	673	0	0	5	0	0	0
4694	14	1441	2254	1780	0	1780	0	0	0	4046	152	0	308	0	0	0
4695	14	1441	2254	1030	0	1030	0	0	0	2235	1861	93	3078	0	0	0
4696	14	1441	2257	423	0	423	0	0	0	933	609	119	1603	49	0	0
4697	14	1441	2257	329	0	329	0	0	0	743	10	0	26	0	0	0
4698	14	1441	2270	165	0	165	0	0	0	350	0	0	12	0	0	0
4699	14	1441	2270	318	0	318	0	0	0	660	5	0	18	0	0	0

University Community Plan Update
Land Use Inputs Extract From Blueprint SD Model Run 2

mgra	City	CPA	taz	hs	hs_sf	hs_mf	hs_mh	gq_civ	gq_mil	pop	emp_prof_bus_svcs	subtotal_emp_retail_rest_bar_personal_svcs	emp_total	subtotal_enrollgradekto12	subtotal_postkto12enroll	hotelroomtotal
4700	14	1441	2285	340	0	340	0	0	0	742	92	36	244	0	0	0
4701	14	1441	2270	340	2	338	0	0	0	738	0	0	1	0	0	0
4702	14	1441	2285	644	0	644	0	0	0	1432	0	0	28	0	0	0
4703	14	1441	2265	241	0	241	0	0	0	535	436	144	1685	0	0	551
4704	14	1441	2265	501	0	501	0	0	0	1136	3	110	123	0	0	0
4705	14	1441	2272	575	0	575	0	0	0	1299	4	0	21	0	0	0
4706	14	1441	2272	542	0	542	0	0	0	1214	9	0	57	0	0	0
4707	14	1441	2265	541	0	541	0	0	0	1192	330	7	632	0	0	0
4708	14	1441	2272	346	0	346	0	0	0	802	0	0	5	0	0	0
4709	14	1441	2246	153	0	153	0	0	0	266	72	305	620	0	0	0
4710	14	1441	2253	775	0	775	0	0	0	1687	14	83	166	0	0	0
4711	14	1441	2253	359	0	359	0	0	0	794	314	117	745	0	0	0
4712	14	1441	2253	463	0	463	0	0	0	916	100	18	481	0	0	473
4713	14	1441	2264	556	0	556	0	0	0	1188	0	102	111	0	0	0
4714	14	1441	2264	1164	0	1164	0	0	0	2629	63	0	95	0	0	0
4715	14	1441	2264	525	0	525	0	382	0	1363	30	252	352	0	0	0
4716	14	1441	2264	630	0	630	0	0	0	1415	68	0	587	0	0	0
4717	14	1441	2286	682	0	682	0	0	0	1408	14	10	99	0	0	0
4718	14	1441	2292	240	0	240	0	0	0	551	29	0	188	930	0	0
4719	14	1441	2292	163	0	163	0	0	0	377	0	0	4	0	0	0
4720	14	1441	2292	213	0	213	0	5	0	493	3	0	17	0	0	0
4721	14	1441	2292	339	0	339	0	0	0	804	0	0	16	0	0	0
4722	14	1441	2292	127	0	127	0	0	0	332	1	0	11	0	0	0
4723	14	1441	2292	2100	0	2100	0	0	0	4647	0	0	13	0	0	0
4724	14	1441	2302	257	257	0	0	5	0	655	32	0	72	0	0	0
4725	14	1441	2308	103	103	0	0	0	0	253	4	0	11	0	0	0
4726	14	1441	2308	0	0	0	0	0	0	0	0	0	325	2267	1200	0
4727	14	1441	2308	53	53	0	0	0	0	129	0	0	1	0	0	0
4728	14	1441	2328	145	145	0	0	0	0	334	18	0	40	0	0	0
4729	14	1441	2328	110	0	110	0	0	0	259	0	32	107	759	0	0
4730	14	1441	2328	57	57	0	0	0	0	116	0	0	1	0	0	0
4731	14	1441	2302	0	0	0	0	0	0	0	10	0	44	0	0	0
4732	14	1441	2308	114	114	0	0	0	0	265	4	0	31	0	0	0
4733	14	1441	2302	80	80	0	0	0	0	177	9	0	20	0	0	0
4734	14	1441	2302	132	132	0	0	0	0	300	0	0	14	0	0	0
4735	14	1441	2302	56	56	0	0	0	0	126	4	0	12	0	0	0
4736	14	1441	2328	15	15	0	0	0	0	32	0	0	0	0	0	0
4737	14	1441	2302	48	48	0	0	0	0	118	0	0	14	0	0	0
4738	14	1441	2302	47	47	0	0	3	0	108	0	0	12	0	0	0
4739	14	1441	2302	100	100	0	0	0	0	225	8	0	17	0	0	0
4740	14	1441	2342	402	0	402	0	0	0	857	697	126	1445	0	0	0

University Community Plan Update
Land Use Inputs Extract From Blueprint SD Model Run 2

mgra	City	CPA	taz	hs	hs_sf	hs_mf	hs_mh	gq_civ	gq_mil	pop	emp_prof_bus_svcs	subtotal_emp_retail_rest_bar_personal_svcs	emp_total	subtotal_enrollgradekto12	subtotal_postkto12enroll	hotelroomtotal
4741	14	1441	2342	456	0	456	0	0	0	967	1023	142	1679	0	0	0
4742	14	1441	2342	634	0	634	0	0	0	1352	731	201	2175	19	0	0
4743	14	1441	2364	59	5	54	0	0	0	125	0	0	5	0	0	0
4744	14	1441	2364	106	106	0	0	0	0	253	10	0	22	0	0	0
4745	14	1441	2364	827	0	827	0	0	0	1778	0	0	7	0	0	0
4746	14	1441	2364	164	164	0	0	0	0	394	8	0	151	0	0	0
4747	14	1441	2357	10	10	0	0	0	0	26	0	0	4	0	0	0
4748	14	1441	2357	20	20	0	0	0	0	40	0	0	0	0	0	0
4749	14	1441	2364	72	0	72	0	0	0	160	0	0	5	0	0	0
4750	14	1441	2357	21	21	0	0	0	0	41	5	0	6	0	0	0
4751	14	1441	2364	172	0	172	0	0	0	430	35	0	79	0	0	0
4752	14	1441	2357	24	24	0	0	0	0	59	0	0	0	0	0	0
4753	14	1441	2357	88	12	76	0	0	0	171	0	0	47	0	0	0
4754	14	1441	2357	52	0	52	0	0	0	106	0	0	1	0	0	0
4755	14	1441	2357	681	0	681	0	0	0	1498	59	420	633	0	0	0
4756	14	1441	2357	63	63	0	0	0	0	127	0	0	1	0	0	0
4757	14	1441	2357	6	6	0	0	0	0	10	0	0	0	0	0	0
4758	14	1441	2357	106	106	0	0	0	0	234	0	0	7	0	0	0
4759	14	1441	2357	131	131	0	0	0	0	284	5	0	59	0	0	0
4760	14	1441	2357	24	24	0	0	0	0	58	0	0	0	0	0	0
4952	14	1441	2210	0	0	0	0	0	0	0	20	0	205	0	0	0
4953	14	1441	2210	0	0	0	0	0	0	0	130	8	378	0	0	0
4954	14	1441	2210	0	0	0	0	0	0	0	25	4	471	0	0	0
4955	14	1441	2222	2	2	0	0	0	0	4	295	72	1021	0	0	0
4956	14	1441	2210	0	0	0	0	0	0	0	112	4	509	0	0	0
4957	14	1441	2210	45	0	45	0	0	0	4	231	113	791	0	0	0
4958	14	1441	2210	0	0	0	0	0	0	0	8	16	228	0	0	0
4959	14	1441	2222	0	0	0	0	0	0	0	152	0	368	0	0	0
4960	14	1441	2222	0	0	0	0	0	0	0	204	31	1070	0	0	0
4961	14	1441	2233	0	0	0	0	0	0	0	0	0	0	0	0	0
4962	14	1441	2233	0	0	0	0	0	0	0	0	0	0	0	0	0
4963	14	1441	2222	0	0	0	0	0	0	0	372	24	685	0	0	0
4964	14	1441	2222	20	0	20	0	0	0	59	87	81	369	0	0	0
4965	14	1441	2222	0	0	0	0	0	0	0	39	26	158	0	0	0
4966	14	1441	2222	11	0	11	0	0	0	74	64	149	597	0	0	0
5179	14	1441	2266	602	0	602	0	0	0	1181	29	263	584	0	0	331
5180	14	1441	2269	535	0	535	0	0	0	1122	0	153	289	0	0	379
5181	14	1441	2269	758	0	758	0	0	0	1637	15	195	245	0	0	0
5182	14	1441	2266	729	0	729	0	0	0	1575	79	368	547	0	0	0
5183	14	1441	2269	667	0	667	0	0	0	1448	4	0	17	0	0	0
5184	14	1441	2269	256	0	256	0	0	0	564	6	0	23	0	0	0

University Community Plan Update
Land Use Inputs Extract From Blueprint SD Model Run 2

mgra	City	CPA	taz	hs	hs_sf	hs_mf	hs_mh	gq_civ	gq_mil	pop	emp_prof_bus_svcs	subtotal_emp_retail_rest_bar_personal_svcs	emp_total	subtotal_enrollgradekto12	subtotal_postkto12enroll	hotelroomtotal
5185	14	1441	2300	548	0	548	0	0	0	1176	32	0	42	0	0	0
5186	14	1441	2284	833	0	833	0	0	0	1781	115	365	545	0	0	0
5187	14	1441	2284	374	0	374	0	0	0	792	6	0	16	0	0	0
5188	14	1441	2311	310	0	310	0	0	0	649	0	0	5	0	0	0
5189	14	1441	2284	249	0	249	0	0	0	542	5	0	19	0	0	0
5190	14	1441	2311	318	0	318	0	0	0	609	9	0	26	0	0	0
5191	14	1441	2284	230	0	230	0	0	0	467	0	0	8	0	0	0
5192	14	1441	2311	467	0	467	0	0	0	939	11	0	31	0	0	0
5193	14	1441	2283	712	0	712	0	0	0	1631	5	0	14	0	0	0
5194	14	1441	2283	1390	0	1390	0	0	0	3182	13	0	95	0	0	0
5195	14	1441	2283	651	0	651	0	0	0	1495	91	0	104	0	0	0
5196	14	1441	2283	436	0	436	0	0	0	962	55	219	327	0	0	0
5197	14	1441	2303	244	0	244	0	0	0	558	0	0	12	0	0	0
5198	14	1441	2303	123	0	123	0	0	0	287	3	0	18	0	0	0
5199	14	1441	2303	102	102	0	0	0	0	237	11	0	18	0	0	0
5200	14	1441	2329	146	146	0	0	0	0	340	30	0	41	0	0	0
5201	14	1441	2282	466	0	466	0	0	0	1032	14	0	29	0	0	0
5202	14	1441	2282	383	0	383	0	0	0	863	1	0	22	0	0	0
5203	14	1441	2303	338	0	338	0	0	0	753	0	0	9	0	0	0
5204	14	1441	2303	75	75	0	0	0	0	184	1	0	7	0	0	0
5205	14	1441	2282	767	0	767	0	0	0	1624	86	2	215	0	0	0
5206	14	1441	2282	641	0	641	0	0	0	676	32	0	41	0	0	0
5207	14	1441	2303	13	0	13	0	0	0	27	0	0	0	0	0	0
5208	14	1441	2329	214	0	214	0	0	0	488	0	0	15	0	0	0
5209	14	1441	2329	92	0	92	0	0	0	211	3	0	9	0	0	0
6268	14	1441	2222	0	0	0	0	0	0	0	1	0	2	0	0	0
6269	14	1441	2222	0	0	0	0	0	0	0	0	0	0	0	0	0
6270	14	1441	2233	0	0	0	0	0	0	0	0	0	0	0	0	0
6271	14	1441	2233	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix E:

Hillcrest FPA Model Run Land Use Inputs Extract from Blueprint Model Run 2

Hillcrest Focused Plan Amendment
Land Use Inputs Extract From Blueprint SD Model Run 2

mgra	City	CPA	taz	hs	hs_sf	hs_mf	hs_mh	gq_civ	gq_mil	pop	emp_prof_bus_svcs	subtotal_emp_retail_rest_bar_personal_svcs	emp_total	subtotal_enrollgradekto12	subtotal_postkto12enroll
149	14	1442	3510	109	0	109	0	0	0	224	47	12	82	0	0
154	14	1442	3516	456	0	456	0	0	0	860	4	195	210	0	0
155	14	1442	3516	619	0	619	0	3	0	1184	37	293	349	0	0
156	14	1442	3522	623	1	622	0	0	0	1217	0	191	205	0	0
157	14	1442	3522	468	28	440	0	0	0	945	0	160	174	0	0
158	14	1442	3547	361	0	361	0	0	0	739	0	192	192	0	0
160	14	1442	3551	416	0	416	0	0	0	859	69	119	350	0	0
161	14	1442	3547	861	0	861	0	0	0	1650	13	385	443	0	0
162	14	1442	3547	353	0	353	0	2	0	708	74	117	530	0	0
163	14	1442	3515	475	0	475	0	0	0	958	33	681	731	0	0
164	14	1442	3515	818	0	818	0	0	0	1684	30	284	314	0	0
165	14	1442	3515	316	0	316	0	3	0	652	28	78	133	0	0
166	14	1442	3515	453	61	392	0	0	0	930	10	63	90	0	0
167	14	1442	3515	134	3	131	0	0	0	289	6	38	48	0	0
168	14	1442	3515	323	0	323	0	0	0	593	5	143	2052	20	0
169	14	1442	3573	579	0	579	0	0	0	1215	13	224	314	0	0
170	14	1442	3573	211	0	211	0	0	0	424	9	143	162	0	0
171	14	1442	3573	51	0	51	0	0	0	119	19	5	34	0	0
172	14	1442	3608	224	0	224	0	0	0	444	47	76	158	0	0
173	14	1442	3608	800	0	800	0	0	0	1625	320	223	835	0	0
174	14	1442	3608	96	1	95	0	0	0	184	20	16	55	0	0
179	14	1442	3571	387	3	384	0	35	0	828	32	64	130	0	0
181	14	1442	3609	435	0	435	0	153	0	1055	23	125	917	0	0
193	14	1442	3325	132	0	132	0	80	0	344	16	0	152	0	0
194	14	1442	3362	1144	0	1144	0	0	0	2425	8	0	96	0	0
195	14	1442	3420	133	0	133	0	0	0	272	0	38	39	0	0
196	14	1442	3420	156	0	156	0	0	0	331	10	0	17	0	0
197	14	1442	3425	27	0	27	0	1	0	54	69	14	2145	0	0
198	14	1442	3420	135	0	135	0	0	0	287	0	39	56	0	0
199	14	1442	3420	150	0	150	0	0	0	312	0	23	35	0	0
200	14	1442	3450	505	0	505	0	0	0	993	13	179	244	0	0
201	14	1442	3450	741	0	741	0	0	0	1527	208	231	788	0	0
202	14	1442	3325	166	68	98	0	0	0	354	0	47	48	0	0
203	14	1442	3425	81	0	81	0	0	0	194	0	23	67	0	0
204	14	1442	3425	72	0	72	0	0	0	151	15	21	36	0	0
205	14	1442	3427	750	0	750	0	114	0	1702	26	182	801	0	0
206	14	1442	3472	159	0	159	0	0	0	332	0	57	74	0	0
207	14	1442	3472	278	0	278	0	1	0	599	8	30	42	0	0
208	14	1442	3472	540	1	539	0	0	0	1116	29	143	376	0	0
209	14	1442	3472	485	0	485	0	0	0	1033	25	125	225	0	0
210	14	1442	3472	865	0	865	0	0	0	1775	94	665	824	0	0

Hillcrest Focused Plan Amendment
Land Use Inputs Extract From Blueprint SD Model Run 2

mgra	City	CPA	taz	hs	hs_sf	hs_mf	hs_mh	gq_civ	gq_mil	pop	emp_prof_bus_svcs	subtotal_emp_retail_rest_bar_personal_svcs	emp_total	subtotal_enrollgradekto12	subtotal_postkto12enroll
211	14	1442	3483	217	4	213	0	0	0	444	34	158	217	0	0
212	14	1442	3484	52	0	52	0	0	0	105	0	15	53	307	0
213	14	1442	3484	220	0	220	0	0	0	446	3	55	60	0	0
214	14	1442	3485	700	1	699	0	0	0	1373	20	119	180	0	0
215	14	1442	3485	893	0	893	0	0	0	1797	20	581	725	0	0
216	14	1442	3472	81	0	81	0	79	0	205	111	107	450	0	0
217	14	1442	3484	87	0	87	0	0	0	177	32	25	58	0	0
219	14	1442	3325	1000	0	1000	0	99	0	2125	0	288	11484	0	0
221	14	1442	3325	9	0	9	0	0	0	20	0	2	39	0	0
222	14	1442	3419	37	0	37	0	0	0	86	0	8	25	0	0
223	14	1442	3419	151	1	150	0	0	0	315	14	57	83	0	0
226	14	1442	3419	115	10	105	0	0	0	230	0	33	45	0	0
228	14	1442	3449	160	1	159	0	0	0	349	0	56	76	0	0
229	14	1442	3451	130	0	130	0	1	0	279	74	95	206	0	0
230	14	1442	3451	153	2	151	0	0	0	319	285	13	374	0	0
231	14	1442	3449	451	0	451	0	0	0	906	63	191	268	0	0
265	14	1442	3389	631	1	630	0	66	0	1339	0	241	250	0	0
266	14	1442	3389	569	0	569	0	25	0	1190	0	163	249	43	0
267	14	1442	3389	292	17	275	0	0	0	595	40	83	132	0	0
268	14	1442	3389	243	0	243	0	0	0	499	0	76	87	0	0
269	14	1442	3444	782	0	782	0	0	0	1604	0	287	308	0	0
270	14	1442	3462	311	0	311	0	2	0	719	0	0	6	0	0
271	14	1442	3444	638	8	630	0	4	0	1241	0	192	268	0	0
272	14	1442	3444	536	18	518	0	0	0	1120	24	153	186	0	0
273	14	1442	3462	1179	0	1179	0	0	0	2437	32	396	537	0	0
274	14	1442	3444	1253	0	1253	0	0	0	2580	23	1114	1935	0	0
275	14	1442	3444	906	0	906	0	3	0	1779	59	343	577	0	0
276	14	1442	3462	662	0	662	0	0	0	1372	8	464	526	0	0
277	14	1442	3512	403	0	403	0	0	0	796	93	237	381	0	0
278	14	1442	3512	561	0	561	0	0	0	1163	0	241	271	0	0
279	14	1442	3512	155	13	142	0	0	0	322	28	45	102	0	0
280	14	1442	3512	244	36	208	0	0	0	518	6	0	27	0	0
281	14	1442	3512	304	60	244	0	0	0	635	0	0	15	0	0
286	14	1442	3513	710	26	684	0	0	0	1403	125	315	464	0	0
287	14	1442	3513	389	3	386	0	0	0	803	0	92	107	0	0
288	14	1442	3513	652	5	647	0	0	0	1193	44	75	166	0	0

Appendix F:

SANDAG VMT Reports and Traffic Forecast Information Center (TFIC) Maps

F-1 SANDAG SB 743 VMT Report: 2016 Base Year, Scenario 186 – Regionwide, Citywide and Hillcrest FPA

F-2 SANDAG SB 743 VMT Report: BP Model Run 1, Scenario 319 – Regionwide, Citywide and Hillcrest FPA

F-3 SANDAG SB 743 VMT Report: BP Model Run 2, Scenario 320 – Regionwide, Citywide and Hillcrest FPA

F-4 SANDAG SB 743 VMT Report: BP Model Run 2, Scenario 320 – Regionwide, Citywide and University CPU

F-5 SANDAG SB 743 VMT Report: BP Model Run 3, Scenario 321 – Regionwide, Citywide and Hillcrest FPA

F-6 SANDAG TFIC SB 743 VMT per Capita Map: 2016 Base Year, Scenario 458 – University

F-7 SANDAG TFIC SB 743 VMT per Employee Map: 2016 Base Year, Scenario 458 – University

Appendix F-1

SB 743 VMT Report

Report Generated	ABM Version	Scenario ID	Scenario Name
12/13/2023	version_14_3_0	186	2016

Purple dashed line indicates 85th percentile of regional per resident/per worker VMT.

SANDAG

Residents

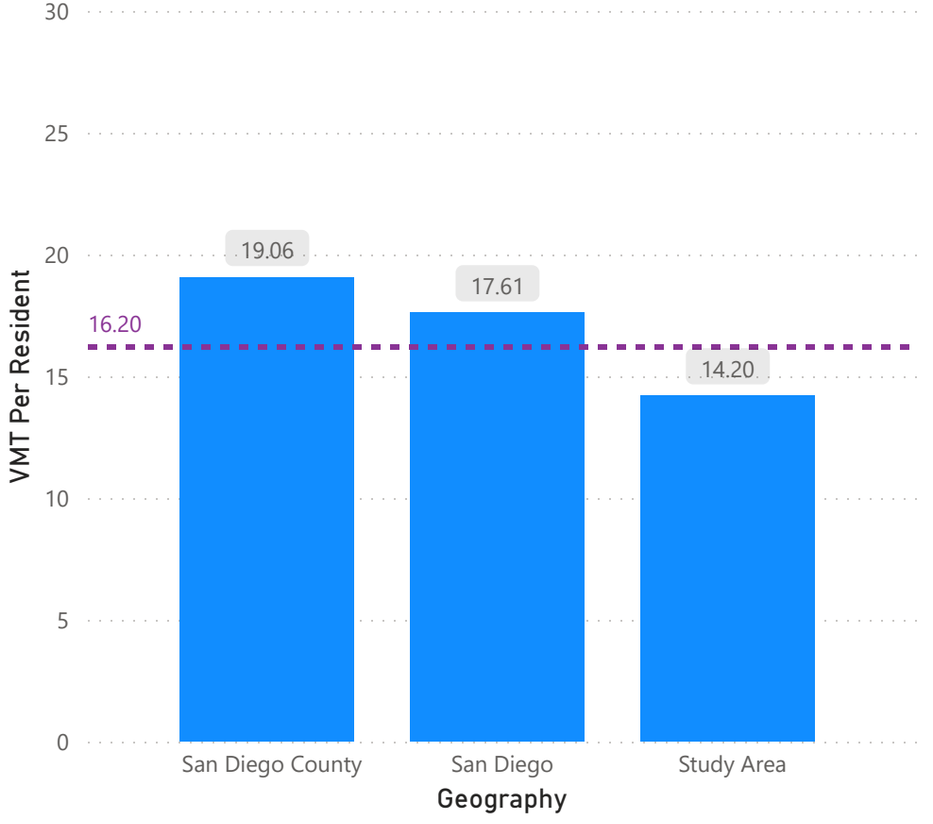
Regionwide Resident VMT Metrics

62,255,823
VMT

19.06
VMT Per Resident

Geography	Number of Residents
San Diego County	3,265,488
San Diego	1,381,156
Study Area	13,536

VMT Per Resident by Geography



Workers

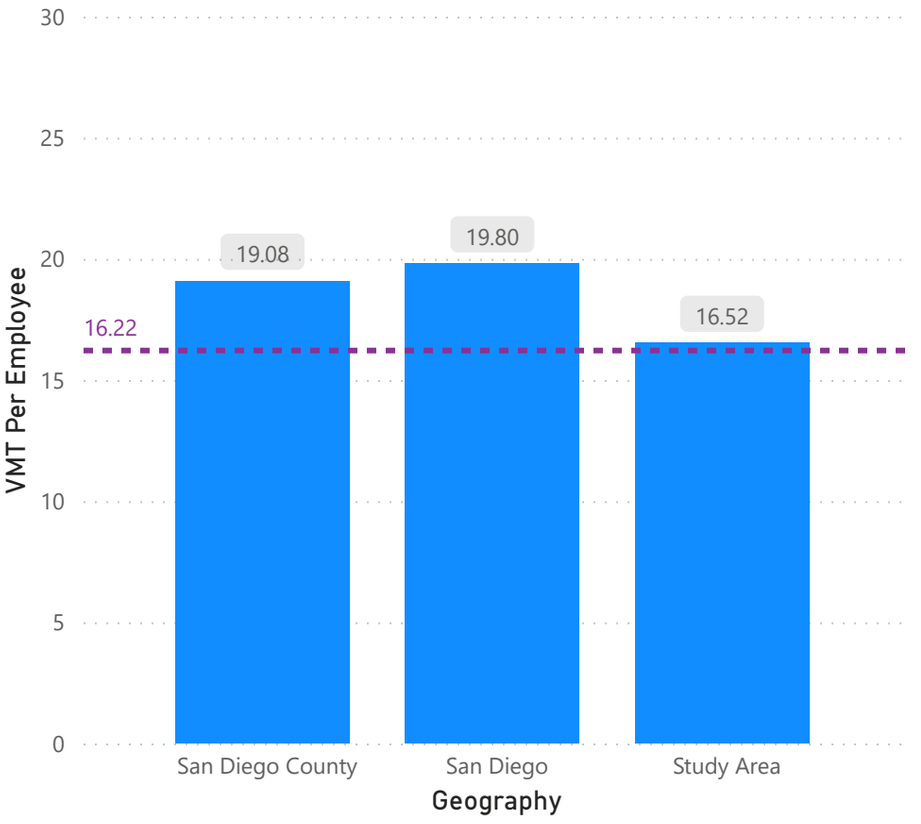
Regionwide Employee VMT Metrics

29,342,797
VMT

19.08
VMT Per Employee

Geography	Number of Employees
San Diego County	1,538,159
San Diego	821,715
Study Area	21,552

VMT Per Employee by Geography



TAZs in Study Area

(Hillcrest FPA)

TAZ
3325
3362
3373
3389
3419
3420
3425
3427
3444
3449
3450
3451
3462
3472
3483
3484
3485
3510
3512
3513
3515
3516
3522
3547

Appendix F-2

SB 743 VMT Report

The original SANDAG-created report was modified to add the 85th percentile lines for Year 2016 (Appendix F-1) for comparative purposes.

Report Generated	ABM Version	Scenario ID	Scenario Name
12/6/2023	version_14_3_0	319	mr1v2_final_2050

Purple dashed lines indicate 85th percentile of regional per resident/per worker VMT.

SANDAG

Residents

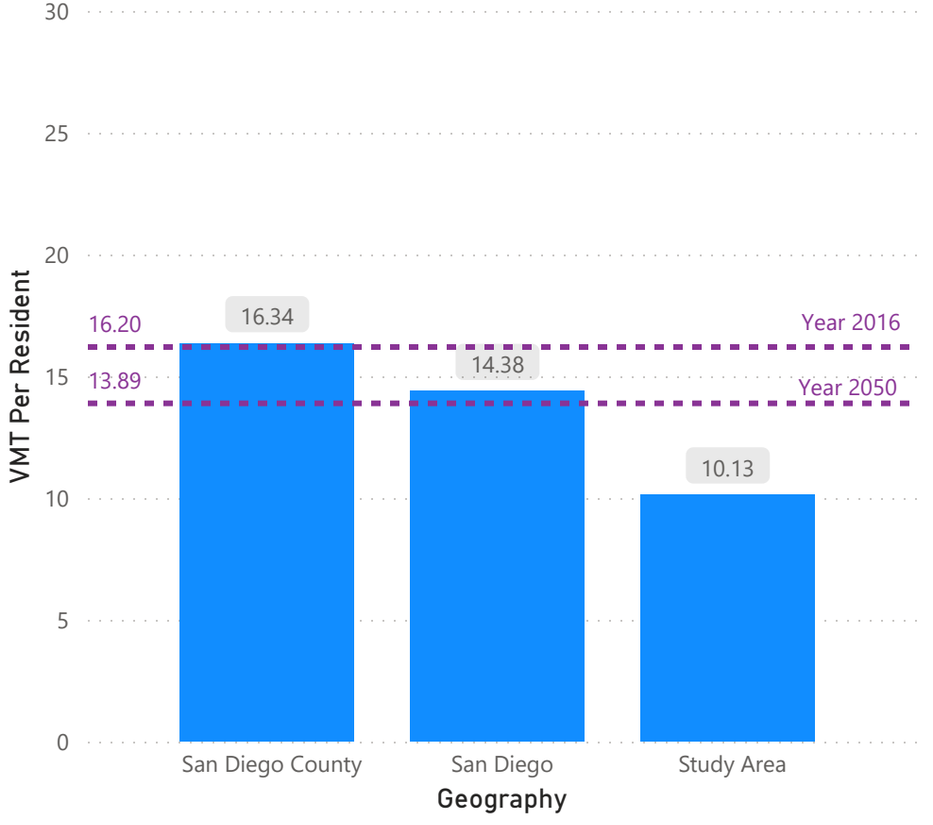
Regionwide Resident VMT Metrics

64,245,602
VMT

16.34
VMT Per Resident

Geography	Number of Residents
San Diego County	3,931,399
San Diego	1,863,747
Study Area	30,042

VMT Per Resident by Geography



Workers

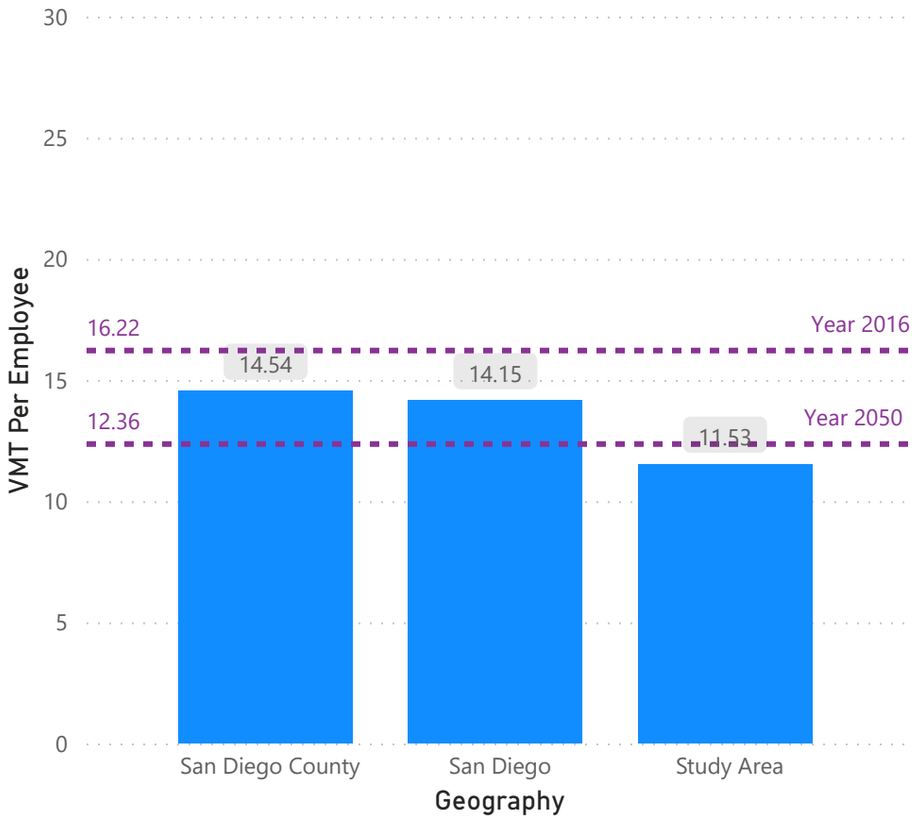
Regionwide Employee VMT Metrics

26,864,550
VMT

14.54
VMT Per Employee

Geography	Number of Employees
San Diego County	1,847,339
San Diego	1,049,631
Study Area	23,001

VMT Per Employee by Geography



TAZs in Study Area

(Hillcrest FPA)

TAZ
3325
3362
3373
3389
3419
3420
3425
3427
3444
3449
3450
3451
3462
3472
3483
3484
3485
3510
3512
3513
3515
3516
3522
3547

Appendix F-3

SB 743 VMT Report

The original SANDAG-created report was modified to add the 85th percentile lines for Year 2016 (Appendix F-1) for comparative purposes.

Report Generated	ABM Version	Scenario ID	Scenario Name
12/12/2023	version_14_3_0	320	MR2v2_Final_2050

Purple dashed line indicates 85th percentile of regional per resident/per worker VMT.

SANDAG

Residents

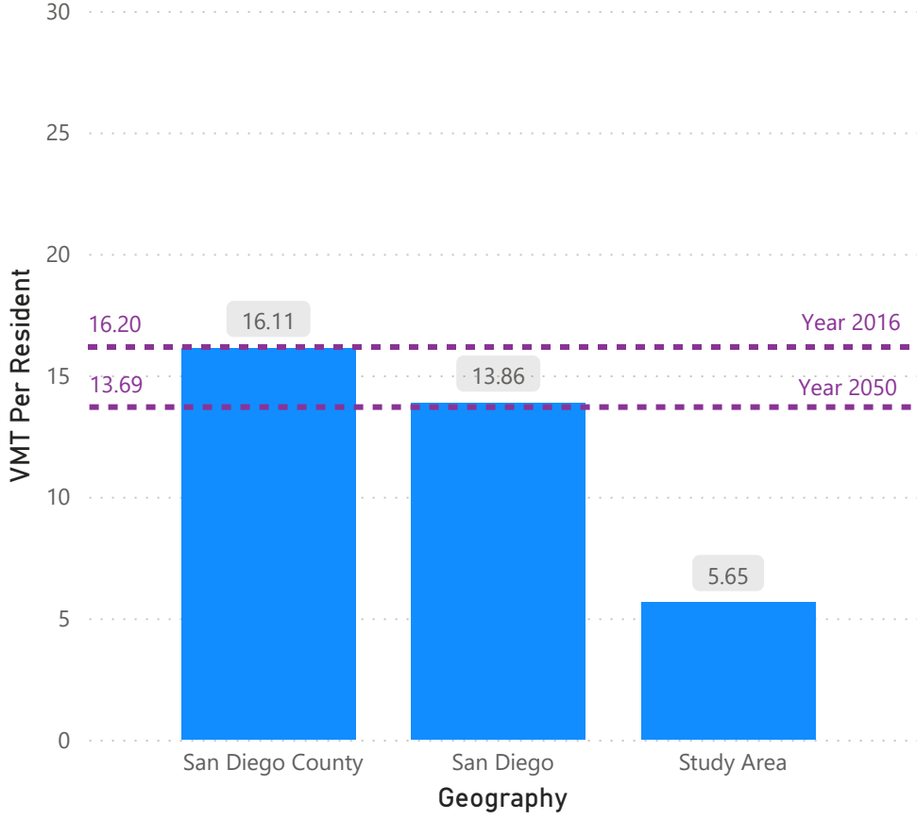
Regionwide Resident VMT Metrics

65,256,570
VMT

16.11
VMT Per Resident

Geography	Number of Residents
San Diego County	4,051,560
San Diego	1,983,908
Study Area	70,442

VMT Per Resident by Geography



Workers

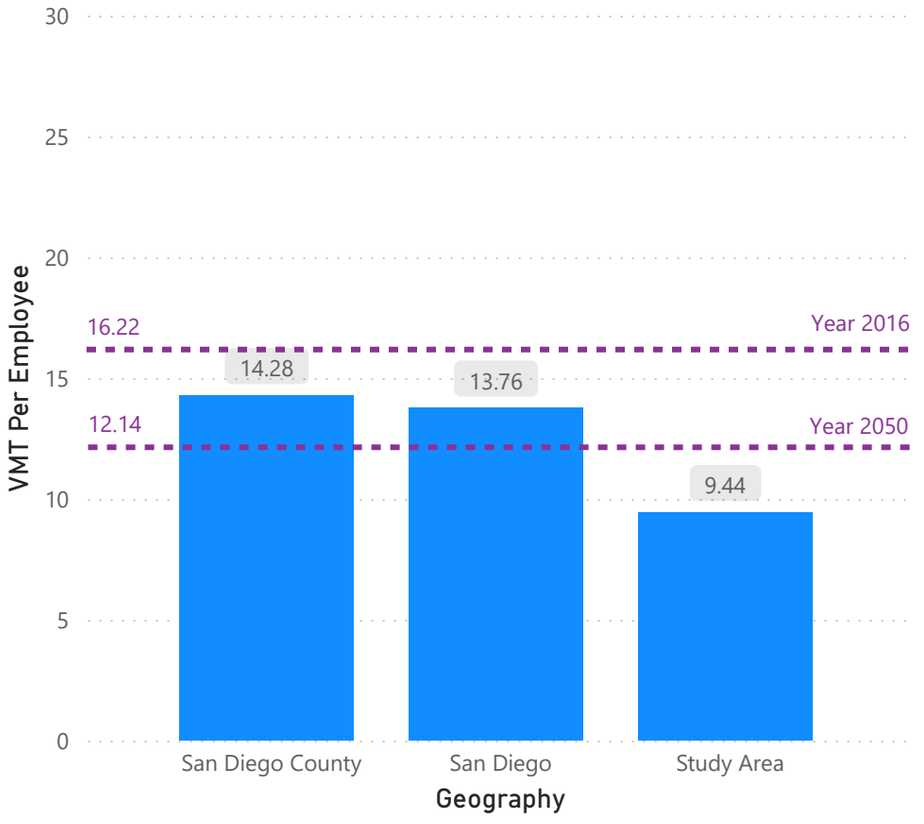
Regionwide Employee VMT Metrics

27,209,992
VMT

14.28
VMT Per Employee

Geography	Number of Employees
San Diego County	1,905,457
San Diego	1,112,581
Study Area	30,453

VMT Per Employee by Geography



TAZs in Study Area

(Hillcrest FPA)

TAZ
3325
3362
3373
3389
3419
3420
3425
3427
3444
3449
3450
3451
3462
3472
3483
3484
3485
3510
3512
3513
3515
3516
3522

Appendix F-4

SB 743 VMT Report

The original SANDAG-created report was modified to add the 85th percentile lines for Year 2016 (Appendix F-1) for comparative purposes.

Report Generated	ABM Version	Scenario ID	Scenario Name
12/12/2023	version_14_3_0	320	MR2v2_Final_2050

Purple dashed line indicates 85th percentile of regional per resident/per worker VMT.

SANDAG

Residents

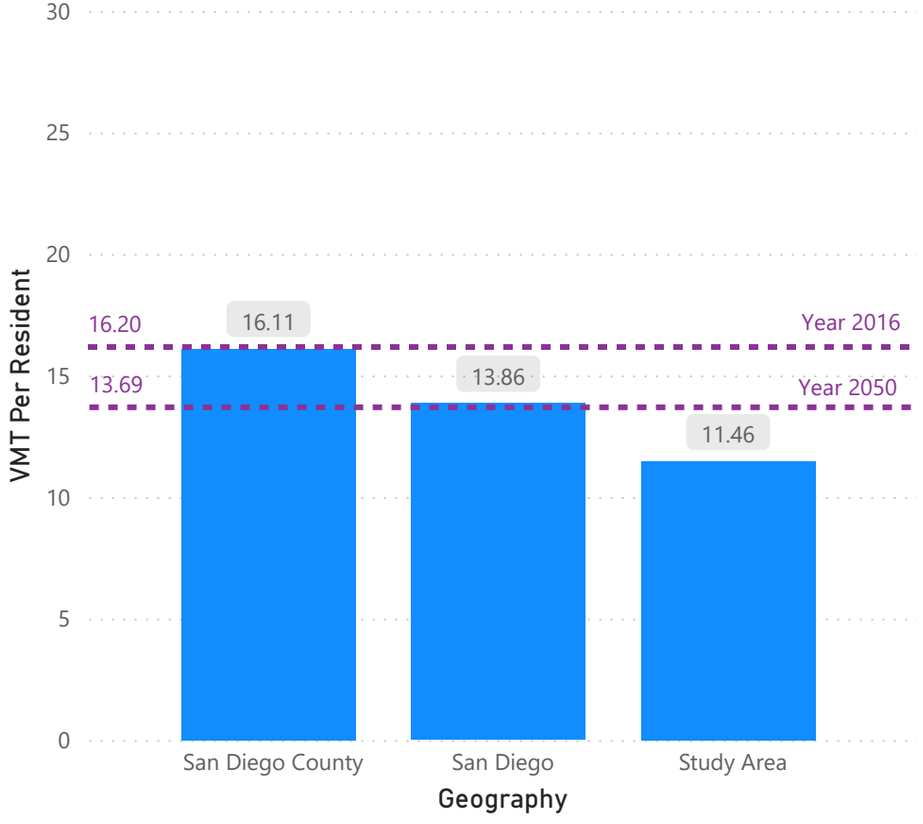
Regionwide Resident VMT Metrics

65,256,570
VMT

16.11
VMT Per Resident

Geography	Number of Residents
San Diego County	4,051,560
San Diego	1,983,908
Study Area	148,192

VMT Per Resident by Geography



Workers

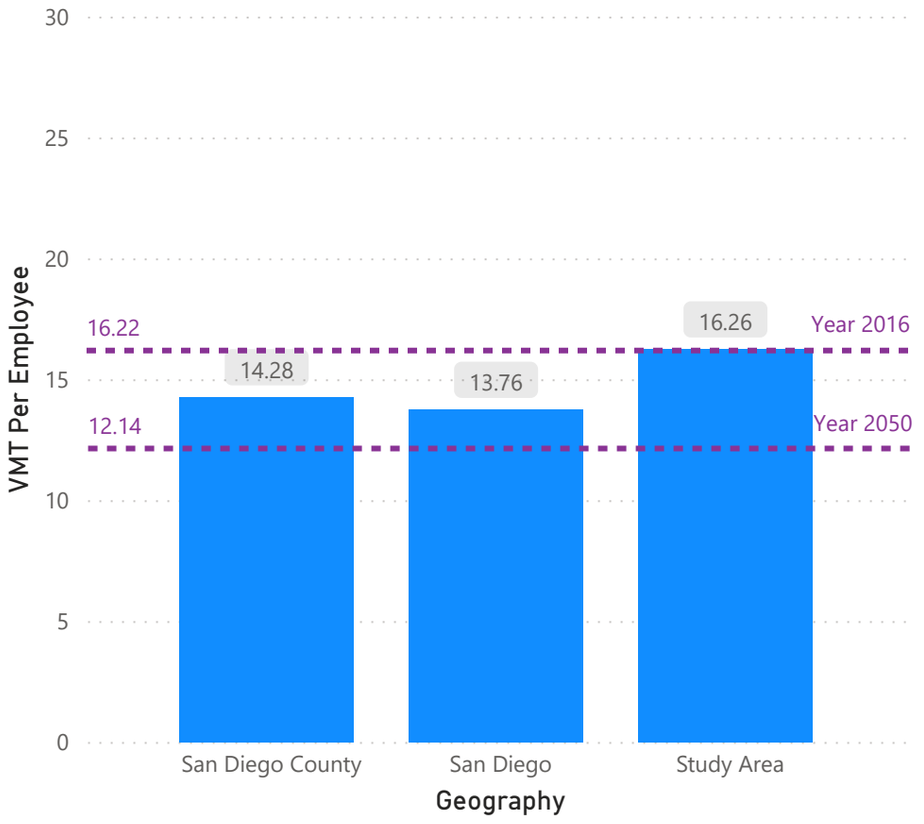
Regionwide Employee VMT Metrics

27,209,992
VMT

14.28
VMT Per Employee

Geography	Number of Employees
San Diego County	1,905,457
San Diego	1,112,581
Study Area	106,568

VMT Per Employee by Geography



TAZs in Study Area

(University CPU)

TAZ
2034
2084
2130
2149
2160
2163
2173
2185
2199
2202
2204
2210
2213
2215
2218
2222
2228
2233
2234
2236
2239
2242
2246
2247

Appendix F-5

SB 743 VMT Report

The original SANDAG-created report was modified to add the 85th percentile lines for Year 2016 (Appendix F-1) for comparative purposes.

Report Generated	ABM Version	Scenario ID	Scenario Name
12/13/2023	version_14_3_0	321	MR3v2_Final_2050

Purple dashed line indicates 85th percentile of regional per resident/per worker VMT.

SANDAG

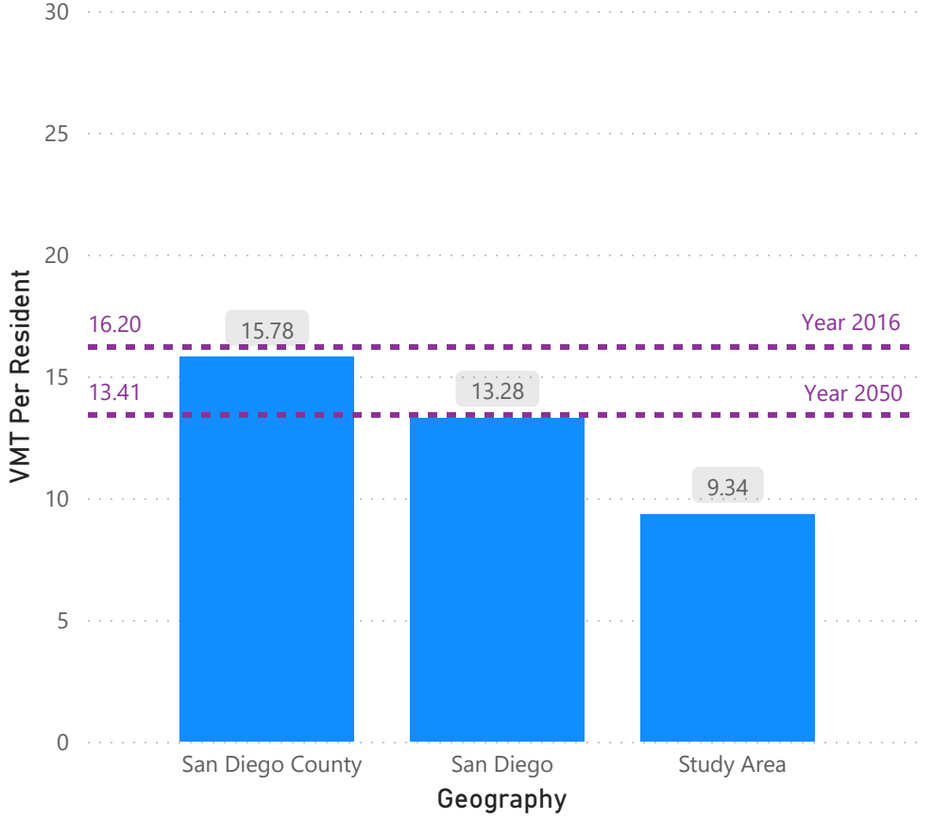
Residents

Regionwide Resident VMT Metrics

67,400,917	15.78
VMT	VMT Per Resident

Geography	Number of Residents
San Diego County	4,271,898
San Diego	2,204,246
Study Area	40,378

VMT Per Resident by Geography



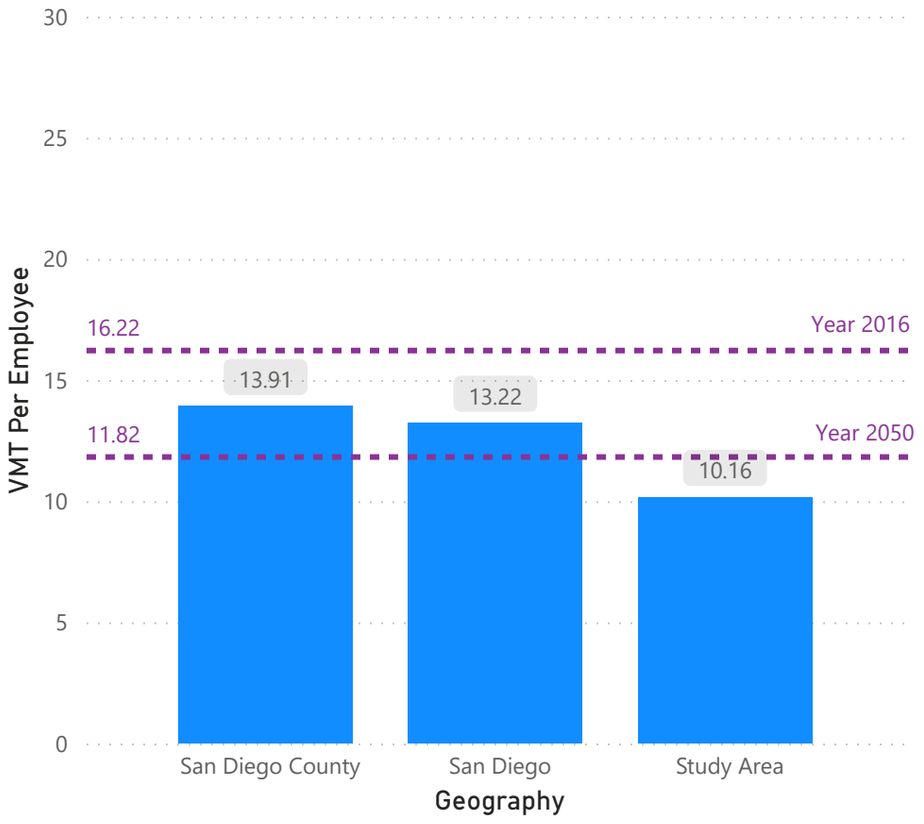
Workers

Regionwide Employee VMT Metrics

27,965,442	13.91
VMT	VMT Per Employee

Geography	Number of Employees
San Diego County	2,010,266
San Diego	1,218,295
Study Area	27,766

VMT Per Employee by Geography



TAZs in Study Area

(Hillcrest FPA)

TAZ
3325
3362
3373
3389
3419
3420
3425
3427
3444
3449
3450
3451
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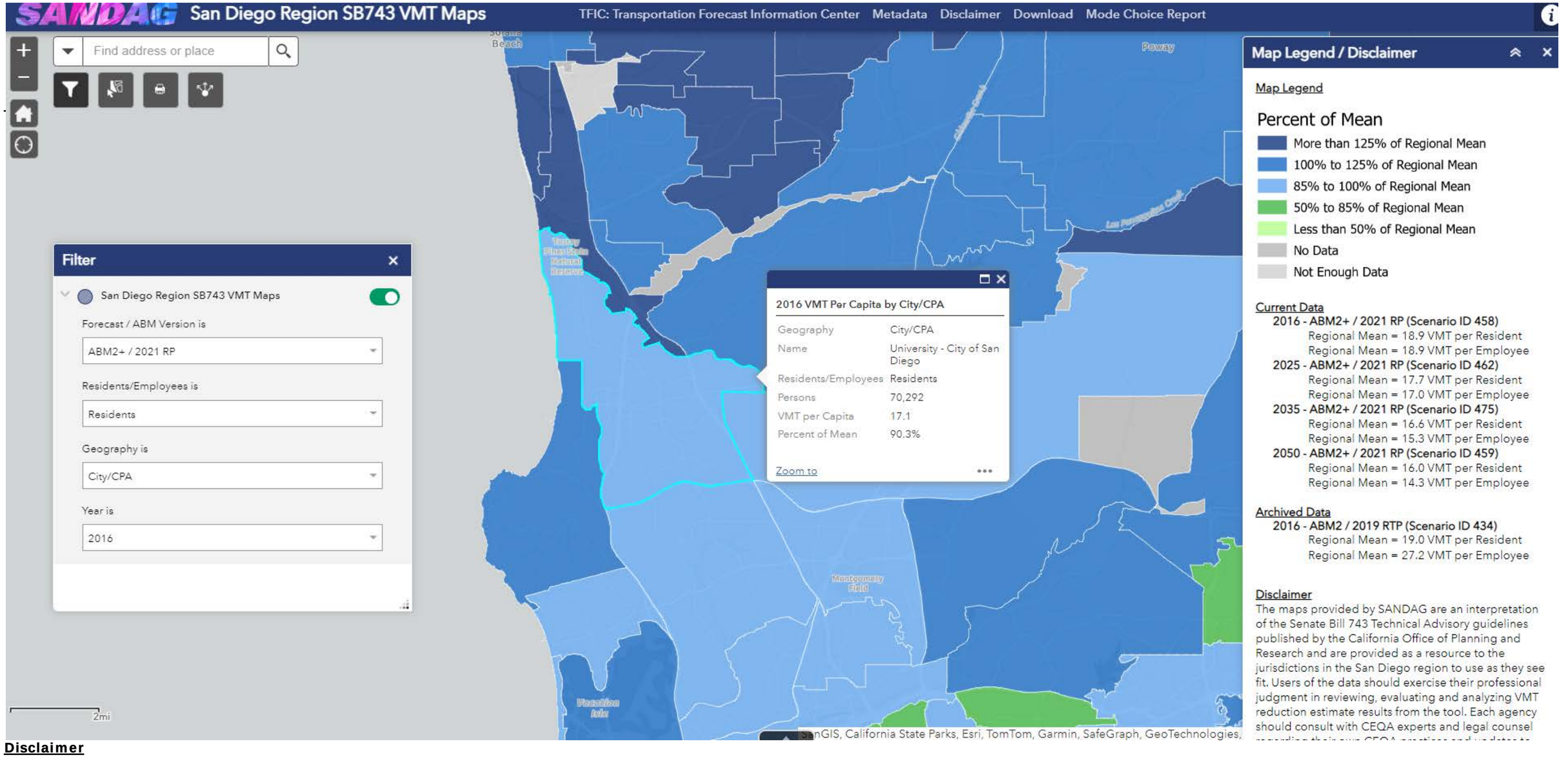
3515
3516
3522
3547



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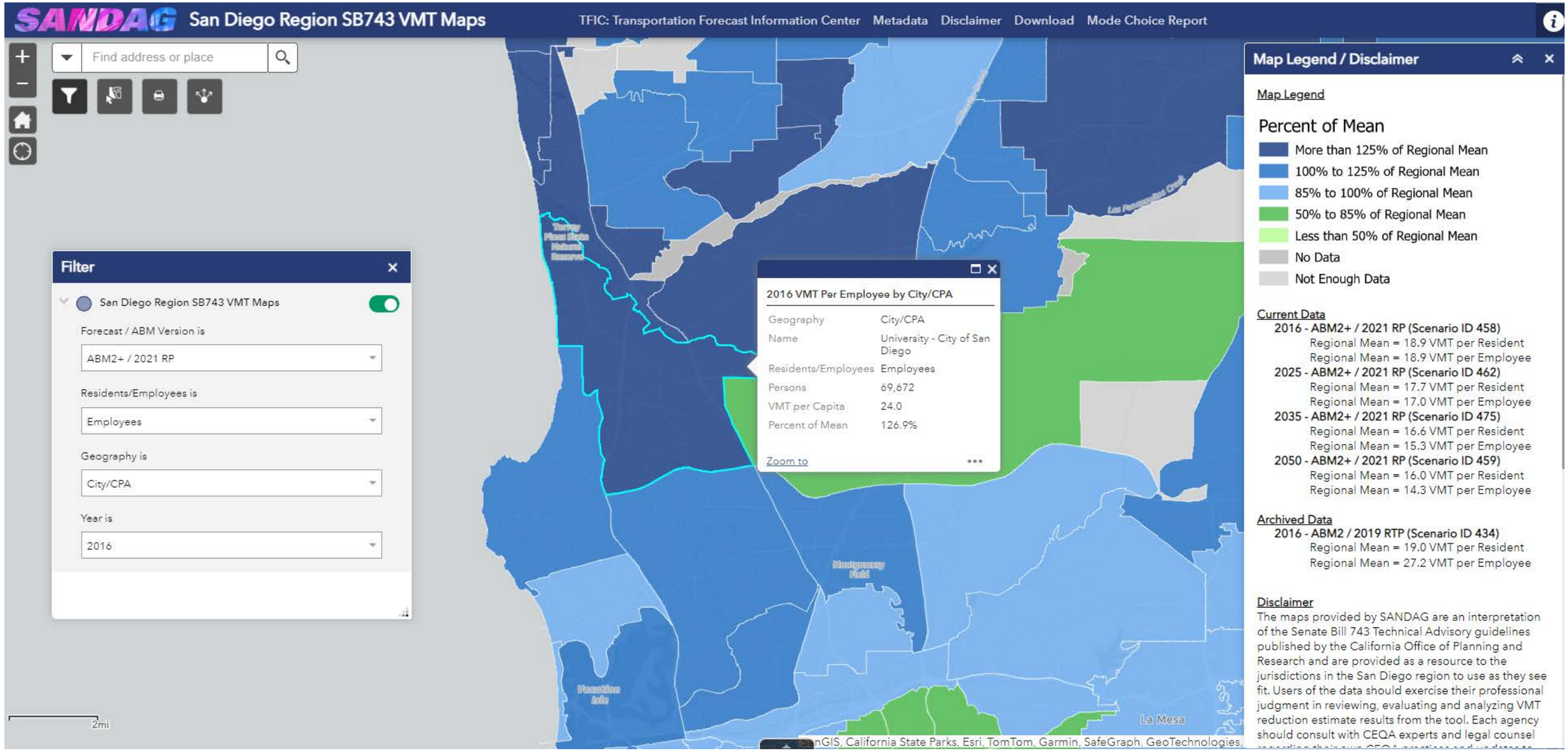

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