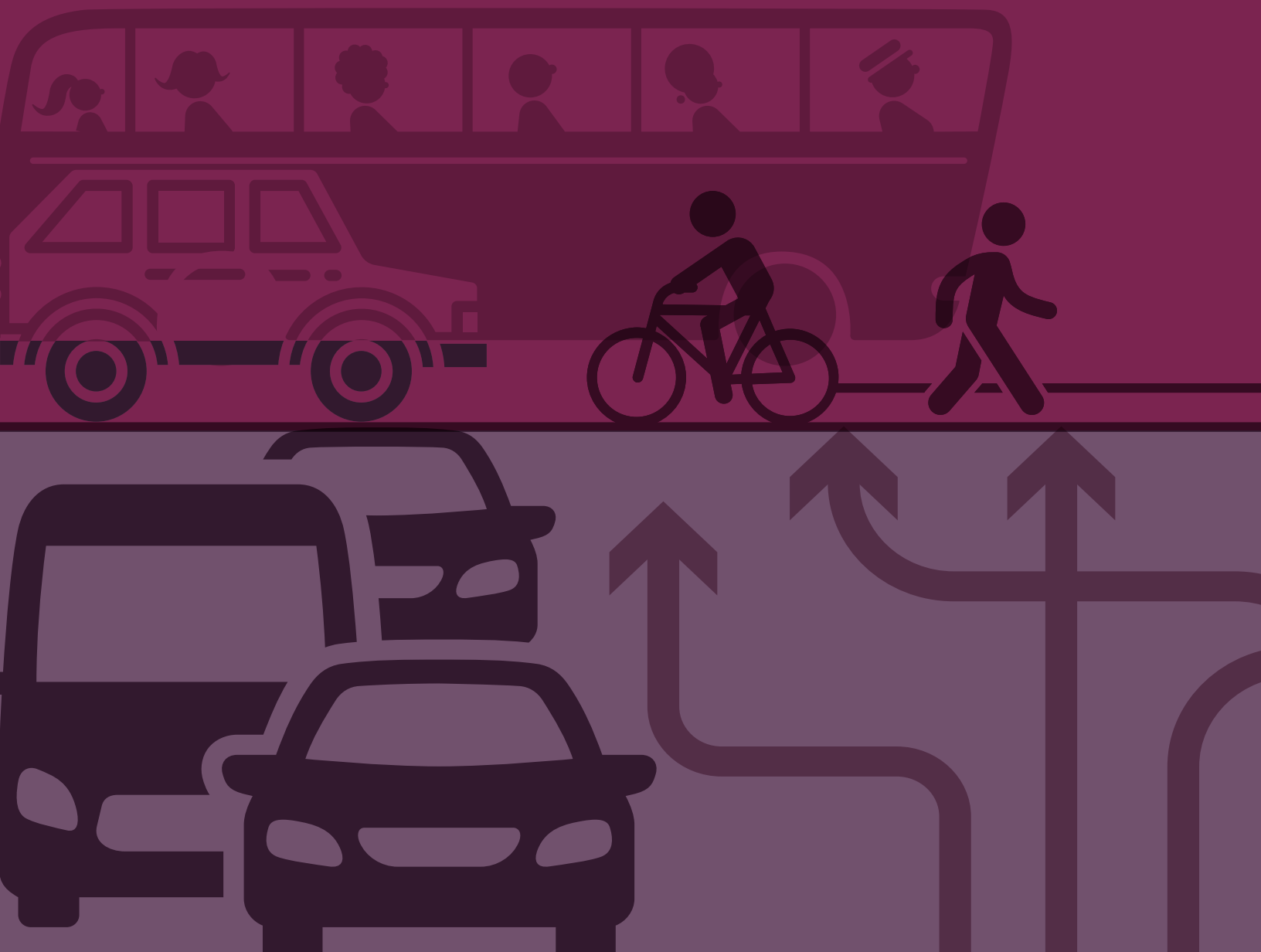
Appendix D:
Regional Forecasts (Planning Variables)



PLANNING VARIABLES
METHODOLOGY AND DEVELOPMENT

Regional Transportation Commission
Of Southern Nevada (RTC)
Metropolitan Planning Organization
600 South Grand Central Parkway, Suite 350
Las Vegas, Nevada 89106

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Acknowledgement

The Planning Variable (PV) projections are the results of the collaborative efforts of the Land Use Working Group (LUWG) and the RTC of Southern Nevada (RTC). The LUWG includes the following organizations:

Clark County Comprehensive Planning Department
City of Las Vegas Planning and Development Department
City of North Las Vegas Planning and Development Department
City of Henderson Community Development Department
City of Boulder City
City of Mesquite
Clark County School District
Harry Reid International Airport
Nellis Air Force Base
Southern Nevada Water Authority
Las Vegas Valley Water District
Clark County Water Reclamation District

RTC wishes to recognize and extend its appreciation to the above organizations for their valuable assistance in the development of PV projections. RTC would also like to express its appreciations to the LUWG, the following LUWG members and individuals for their input and participation in the planning process:

LUWG Members
Martin Gies, Michael Homa: Clark County
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Nathan Goldberg: Transportation Planning Manager
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Table of Contents

LIST OF TABLES

LIST OF FIGURES

LIST OF MAPS

Executive Summary

The Travel Demand Model (TDM) is an essential tool used by the Regional Transportation Commission (RTC) to forecast future regional travel conditions and estimate future transportation system needs that guide the development of the Regional Transportation Plan (RTP).

Socioeconomic data, called Planning Variables or PV in TDM, is one of the most important elements in TDM development. To determine the TDM's input projections, one has to:

1) Determine the current and future land use development patterns and.
2) Convert the land use patterns into PV variables.

The Southern Nevada Regional Planning Coalition (SNRPC) formed a Land Use Working Group (LUWG) at the request of RTC 10 years ago. With the establishment of Southern Nevada Strong (SNS), RTC now facilitates the LUWG. The LUWG's goals are tackling the land use forecasting challenges and providing forecasted land use activity for RTC's TDM through collective and collaborative efforts of the LUWG and RTC. The LUWG consists of planning staff from Clark County, City of Las Vegas, City of North Las Vegas, City of Henderson and from other planning entities.

For RTC's 2025-2050 Regional Transportation Plan (RTP), the LUWG has developed forecasts for the years of 2025, 2030, 2035, 2040, 2045 and 2050. The allocation of the growth is based on the available vacant land identified in Clark County Assessor's 2022 parcel database (July 2022). The PV variables are developed based on Clark County's Geographic Integrated Land Use Information System (GILIS) 2022, the planned land use polices for 2025-2050 and Clark County total population and employment forecasts made by Center of Business and Economic Research (CBER) at University of Nevada, Las Vegas (UNLV).

This report documents the methodologies and procedures used in the development of PV variables and the results of the PV variables for the RTC TDM that will be used for RTC's 2025-2050 RTP.

The executive summary includes the following three tables from this document. These tables summarize the projected total residences (also called dwelling units), total occupied dwelling units, population, and employment by entity.

Table 7 Projected Populations by Entity

Year	Entity	Dwelling Unit	Occ. Dwelling Unit	Population	Group Quarters Population	Total Population
2022	Boulder City	7,209	6,632	14,612	360	14,972
	Unincorporated CC	413,425	384,122	1,008,387	15,506	1,023,893
	Las Vegas	260,019	246,978	654,616	4,620	659,236
	N. Las Vegas	92,632	88,649	276,699	1,234	277,933
	Henderson	140,952	133,224	332,500	1,253	333,753
	Mesquite	11,994	10,159	21,925	221	22,146
	Total	926,231	869,765	2,308,740	23,194	2,331,934
2025	Boulder City	7,317	6,732	14,831	360	15,191
	Unincorporated CC	429,016	398,899	1,049,916	15,506	1,065,422
	Las Vegas	272,204	258,638	688,528	4,620	693,148
	N. Las Vegas	97,417	93,159	290,119	1,234	291,353
	Henderson	149,065	140,798	351,358	1,253	352,611
	Mesquite	13,343	11,302	24,392	221	24,613
	Total	968,362	909,529	2,419,145	23,194	2,442,339
2030	Boulder City	7,500	6,900	15,202	360	15,562
	Unincorporated CC	438,482	407,825	1,074,622	15,506	1,090,128
	Las Vegas	285,919	271,647	724,179	4,620	728,799
	N. Las Vegas	105,910	101,215	314,408	1,234	315,642
	Henderson	164,408	155,092	387,633	1,253	388,886
	Mesquite	15,845	13,421	28,966	221	29,187
	Total	1,018,064	956,100	2,545,010	23,194	2,568,204
2035	Boulder City	7,688	7,073	15,582	360	15,942
	Unincorporated CC	443,024	411,973	1,086,577	15,506	1,102,083
	Las Vegas	309,173	293,315	778,305	4,617	782,922
	N. Las Vegas	111,968	107,010	330,364	1,234	331,598
	Henderson	179,274	168,870	423,112	1,253	424,365
	Mesquite	18,816	15,937	34,397	221	34,618
	Total	1,069,943	1,004,178	2,668,337	23,191	2,691,528
2040	Boulder City	7,880	7,249	15,972	360	16,332
	Unincorporated CC	445,868	414,575	1,094,085	15,506	1,109,591
	Las Vegas	335,032	317,165	838,497	4,455	842,952
	N. Las Vegas	119,468	114,142	350,635	1,234	351,869
	Henderson	191,940	180,331	452,363	1,253	453,616
	Mesquite	22,344	18,926	40,846	221	41,067
	Total	1,122,532	1,052,388	2,792,398	23,029	2,815,427
2045	Boulder City	8,077	7,431	16,371	360	16,731
	Unincorporated CC	446,085	414,785	1,094,637	15,506	1,110,143
	Las Vegas	358,714	338,622	888,562	4,096	892,658
	N. Las Vegas	128,115	122,287	375,203	1,234	376,437
	Henderson	205,574	193,062	485,345	1,253	486,598
	Mesquite	26,534	22,474	48,505	221	48,726
	Total	1,173,099	1,098,661	2,908,623	22,670	2,931,293
2050	Boulder City	8,279	7,616	16,780	360	17,140
	Unincorporated CC	446,167	414,861	1,094,855	15,506	1,110,361
	Las Vegas	380,779	358,714	935,677	3,909	939,586
	N. Las Vegas	135,347	129,081	395,738	1,234	396,972
	Henderson	220,787	207,376	523,086	1,253	524,339
	Mesquite	31,509	26,688	57,599	221	57,820
	Total	1,222,867	1,144,336	3,023,736	22,483	3,046,219

Table 17 Projected Total Employment by Entity (Constrained)

Jurisdiction	2022	2025	2030	2035	2040	2045	2050
Boulder City	3,367	3,427	3,577	3,620	3,636	3,641	4,008
CC Unincorporated	560,221	580,012	615,109	632,220	652,267	667,144	681,306
Las Vegas	205,836	218,728	248,578	261,133	265,662	270,351	277,070
North Las Vegas	86,138	93,865	115,742	132,266	149,313	168,447	183,168
Henderson	99,301	109,197	125,394	130,719	144,080	152,612	160,710
Mesquite	6,686	6,810	7,711	7,820	7,879	8,013	8,120
Total	961,549	1,012,039	1,116,111	1,167,779	1,222,837	1,270,208	1,314,382

Table 18 Projected Total Employment by Entity (Unconstrained)

Jurisdiction	2022	2025	2030	2035	2040	2045	2050
Boulder City	3,367	3,427	3,577	3,620	3,636	3,641	4,008
CC Unincorporated	560,221	580,012	615,109	641,384	666,057	683,847	701,313
Las Vegas	205,836	218,728	248,578	261,133	265,662	269,804	276,522
North Las Vegas	86,138	93,865	115,742	132,269	149,093	168,091	182,688
Henderson	99,301	109,197	125,394	130,720	143,369	151,368	159,071
Mesquite	6,686	6,810	7,711	7,820	7,879	7,949	8,055
Total	961,549	1,012,039	1,116,111	1,176,947	1,235,696	1,284,700	1,331,657

1. INTRODUCTION

This document provides the methodology and procedures used in the development of the RTC's PV's for the travel demand mode (TDM). Socioeconomic data is one of the most important elements in TDM development. To determine the TDM's land use forecast, one has to:

1) Determining the current and future land use development patterns and
2) Converting the land use patterns to the PV variables that are required by the TDM.

Land use forecasting is a complicated process. All of the land use models currently in use in the United States, from the most sophisticated to the simplified, leave substantial uncertainty in their forecasts. It requires careful attention, the introduction of expert knowledge, and the expenditure of significant amounts of time.

The RTC facilitates the LUWG and the RTC Board of Commissioners approves the population and employment forecasts that are used in Let's Go 2050. LUWG's goals are tackling the land use forecasting challenges and providing forecasted land use activity for RTC's TDM. The LUWG consists of planning staff from Clark County and the City of Las Vegas, City of North Las Vegas, City of Henderson and other planning entities.

The RTC provides a consensus methodology for population and housing unit projections. The methodology was developed by LUWG in 2003. LUWG also identified planned land development in 5-year increments using LUWG-defined land use classifications in order to address the data needs of TDM development.

For RTC's 2025-2050 Regional Transportation Plan (RTP), LUWG has developed the forecast for the years of 2025, 2030, 2035, 2040, 2045 and 2050. The allocation of the growth is based on the available vacant land identified in Clark County Assessor's 2022 parcel database (July 2022). The PV variables are developed based on GILIS 2022 and the planned land use polices for 2025-2050.

2. DATA NEEDED FOR PV VARIBLES CREATION

2.1 Data Source for PV Variables Development

The PV variables tables are developed using the sources listed below.

1) Base Year Land Use: Clark County Department of Comprehensive Planning's 2022 GILIS Data (July 1, 2022, as cut-off date),
2) 2017-2022 5-year American Community Survey,
3) Future Year Land Use: LUWG developed land use growth plans in 5-year increments from year 2025 through year 2050, which is briefly described in the future land use forecast section,
4) Land Use Classification: Current Clark County Department of Comprehensive Planning's 2022 Geographically Integrated Land Use Information System (GILIS) table (table 2),
5) Planned Land Use Classification: LUWG defined future planned land-use category (table 4),
6) Employment Data: Nevada State Department of Employment, Training and Rehabilitation (DETR) 2022 2nd Quarter employer data,
7) Population and Employment Control Totals: Population Forecasts: Long-Term Projections for Clark County, Nevada 2023-2080, May 2023,
8) Data from various agencies/institutions' staff and web sites, including Nellis Air Force Base (NAFB), Creech Air Force Base, Harry Reid International Airport, University of Nevada at Las Vegas (UNLV), Nevada State University (NSU), College of Southern Nevada (CSN), Clark County School District (CCSD),
9) Aerial photographs from Clark County Geographic Information System Management Office (GISMO).

2.2 Data Structure of PV variables

PV variables are the land use input for Travel Demand Model (TDM). RTC's TDM requirements dictate inputs identified in the PV variable's structure. The PV variables are aggregated to the Traffic Analysis Zones (TAZs) which were developed for travel demand forecasting purposes. Table 1 lists the current required structure. This document focuses on the development of population and employment which are the major components in the model input.

Table 1 Planning Variable Data Structure

Field	Description
TAZ	Traffic Analysis Zones
GroupQuarterPopulation	Population in Group Quarters
Population	Population without Group Quarters
Occupied_HH	Occupied Dwelling Units
K12Enrollment	Total K - 12 Enrollment
CollegeEnrollment	Sum of UNLV Enrollment, CSN Enrollment and NSU Enrollment
UNLVEnrollment	UNLV Enrollment
CSNEnrollment	CSN Enrollment
NSCEnrollment	NSU Enrollment
UNLVDorms	Numbers of UNLV Students living in the Dorms
NSCDorms	Numbers of NSU Students living in the Dorms
UNLVStudents	Numbers of Students Attending UNLV
NSCStudents	Numbers of Students Attending NSU
CONV_SPACE	Convention Space in Square Feet
TerminalTime	Origin and Destination Terminal Time
Hotel_Rooms	Numbers of Hotel Rooms
Avg Median_Income	Average Median Income
AcresManWar	Manufacturing/Warehouse Acres
AcresOthInd	Other Industrial Acres
UnivGQ	1 if TAZ Houses University Dorm Residents
UnivTAZ	TAZ Destination of University
University	University That Houses Dorm Residents
NAFB_Emp	Nellis (or Other Air Force) Employment
MIA_Emp	Harry Reid Airport Employment
MIA_Pass	Harry Reid Airport Average Daily Passengers
IVPH_Emp	Southern Nevada Supplemental Airport Employment
IVPH_Pass	Southern Nevada Supplemental Airport Average Daily Passengers
HSR_Pass	High Speed Rail Average Daily Passengers
HSR_District	Flag for HSR district

Table 1 Planning Variable Data Structure (Continued)

Field	Description
EMP_NAICS_11	Number of jobs in NAICS sector 11 (Agriculture, Forestry, Fishing and Hunting)
EMP_NAICS_21	Number of jobs in NAICS sector 21 (Mining, Quarrying, and Oil and Gas Extraction)
EMP_NAICS_22	Number of jobs in NAICS sector 22 (Utilities)
EMP_NAICS_23	Number of jobs in NAICS sector 23 (Construction)
EMP_NAICS_31-33	Number of jobs in NAICS sector 31-33 (Manufacturing)
EMP_NAICS_42	Number of jobs in NAICS sector 42 (Wholesale Trade)
EMP_NAICS_44-45	Number of jobs in NAICS sector 44-45 (Retail Trade)
EMP_NAICS_48-49	Number of jobs in NAICS sector 48-49 (Transportation and Warehousing)
EMP_NAICS_51	Number of jobs in NAICS sector 51 (Information)
EMP_NAICS_52	Number of jobs in NAICS sector 52 (Finance and Insurance)
EMP_NAICS_53	Number of jobs in NAICS sector 53 (Real Estate and Rental and Leasing)
EMP_NAICS_54	Number of jobs in NAICS sector 54 (Professional, Scientific, and Technical Services)
EMP_NAICS_55	Number of jobs in NAICS sector 55 (Management of Companies and Enterprises)
EMP_NAICS_56	Number of jobs in NAICS sector 56 (Administrative and Support and Waste Management and Remediation Services)
EMP_NAICS_61	Number of jobs in NAICS sector 61 (Educational Services)
EMP_NAICS_62	Number of jobs in NAICS sector 62 (Health Care and Social Assistance)
EMP_NAICS_71	Number of jobs in NAICS sector 71 (Arts, Entertainment, and Recreation)
EMP_NAICS_72	Number of jobs in NAICS sector 72 (Accommodation and Food Services)
EMP_NAICS_81	Number of jobs in NAICS sector 81 (Other Services [except Public Administration])
EMP_NAICS_92	Number of jobs in NAICS sector 92 (Public Administration)
EMP_NAICS_99	Number of jobs in NAICS sector 92 (Nonclassifiable Establishments)
Emp_Agriculture	EMP_NAICS_11
Emp_Manufacturing	EMP_NAICS_21 + EMP_NAICS_31-33
Emp_Wholesale	EMP_NAICS_42
Emp_Retail	EMP_NAICS_44-45
Emp_TransportConstruction	EMP_NAICS_23+EMP_NAICS_22+EMP_NAICS_48-49+EMP_NAICS_56
Emp_FinanceRealEstate	EMP_NAICS_51-55
Emp_Education	EMP_NAICS_61
Emp_HealthCare	MP_NAICS_62
Emp_Services	EMP_NAICS_71-72 + EMP_NAICS_81
Emp_Public	EMP_NAICS_92
Emp_CasinoHotel	Casino Hotel Employment NAICS 721120
Emp_NonCasinoHotel	NonCasino Hotel Employment NAICS 721110
Emp_CasinoGaming	Casino Employment (Except Casino Hotels NAICS 713210)
Emp_Casino	Emp_CasinoHotel + Emp_CasinoGaming
EMP_NAICS_71_MinusCasinos	Arts, Entertainment, and Recreation minus Casino Employment
EMP_NAICS_72_MinusCasino	Accommodation and Food Services minus Casino Hotel Employment
Emp_OtherRetail	Retail EMP_NAICS_44-45 in TAZs that also have Emp_Casino employment
Emp_FoodandDrink	Food and Drink employment (NAICS 722)
Emp_servicesMinusCasino	Services Employment (NAICS 71, 72, 81) minus Emp_Casino

3. DEVELOPMENT OF POPULATION

In the RTC's PV variables development process, GILIS 2022 parcel land use data and planned future land use for 2025-2050 were converted to PV variables (see table 1 for details) for the base year and the future year inputs except the base year employment. The base year employment is processed from DETR 2022 2nd Quarter employer data.

RTC's PV variables development process includes:

1) Obtain and process the base year population from GILIS 2022 parcel data provided by Clark County Department of Comprehensive Planning,
2) Obtain and process future land use 2025-2050 forecasts through working with LUWG,
3) Establish jobs/acreage conversion method and factors,
4) Develop PV variables, and
5) Validate PV variables. Post processes such as control total benchmark and LUWG review/quality control were performed as necessary.

PV variables inputs that not based on the land use policies are acquired through other data sources. Additional data sources include Nellis Air Force Base (NAFB), Creech Air Force Base, Harry Reid International Airport, University of Nevada at Las Vegas (UNLV), Nevada State University (NSU), and College of Southern Nevada (CSN) as they are treated as special generators in TDM. Their employments are not included in the employment categories in PV variables creation process. The method to derive special generators' relevant employment/passengers is described in the next section. The school enrollment is discussed in the section entitled CCSD SCHOOL ENROLLMENT.

Methodology and procedures of developing population and employment are listed below.

3.1 Base Year Land Use and Population

In June every year, Clark County's Assessor's Office releases an official version (closed roll) of parcel geography along with AoExt (the parcel attributes database) for the year. The version is submitted to the State of Nevada and then certified by the state.

The current base year land use data is Clark County Assessor's 2022 closed roll parcel. It contains two elements: the parcel geography and AoExt. AoExt is a parcel attribute database which includes land use codes. A copy of AoExt, called GILIS database, is maintained by Clark County Comprehensive Planning Department. It contains verified Assessor's parcel information and some additional information for other planning purposes. The GILIS 2022 data is developed by keeping the Assessor's parcel geography and some attributes. The parcel geography is linked to the AoExt data through the parcel numbers. During the GILIS data creation process, information such as zip codes and census tract numbers are added to the parcel attributes table. The units for condominium (an example of the one-to-many relationship among parcel geography and GILIS database) are calculated by assigning total units to the corresponding single parcel's capacity in parcel geography.

RTC's base year PV variables are developed using the GILIS 2022 data. Each parcel in the parcel geography is assigned to a TAZ. The parcel capacity in GILIS data is the number of residential dwelling units. Number of dwelling units, occupied dwelling units and population obtained using GILIS land use code, then they were aggregated to the TAZ level.

Table 2 GILIS Land Use Code

GILIS LAND USE CODE		PRIMARY USE DESCRIPTION
From	To	
00.000	19.000	Vacant
20.110	26.110	Residential
27.100	27.195	Single Family Common Area
28.199	36.100	Residential Minor Improvements. Enclosed Structures
37.100	37.100	Multi Family Common Area
39.100	39.100	Residential
40.230	40.399	General Commercial
41.335	41.460	Offices, Professional and Business Services
42.310	42.325	Casino or Hotel Casino
43.178	43.321	Commercial Living Accommodations
44.470	44.470	Commercial Recreation. Non-Profit Entertainment and Rec Facilities
45.346	45.349	Golf Course
46.300	46.300	Commercial - Auxiliary Area
47.395	47.395	Commercial - Common Area
48.399	48.730	Minor Improvements on Commercial zoned land
49.330	49.335	Mixed Use with General & prof & Business Services Commercial as primary use
50.210	50.240	Light Manufacturing
51.200	51.250	Commercial Industrial
52.210	52.210	Heavy Manufacturing
57.200	57.200	Industrial - Common Area
58.730	58.730	Industrial Minor Improvements
59.200	59.200	Mixed Use with Industrial as primary use
60.510	60.520	Agricultural; Qualified.
61.500	61.500	Agricultural; Not qualified
62.999	62.999	Open Space
70.620	70.630	Operating Communication, Transportation & Utility (state)
71.630	71.630	Communication, Transportation and Utility (local). Utilities
72.610	72.630	Communication, Transportation and Utilities
73.630	73.630	Alternative Energy
78.630	78.630	Locally Assessed Utility Use with Minor Improvements
80.220	80.220	Mining Properties (local)
81.220	81.220	Mining Properties (state)
84.221	84.221	Aggregates, Quarries (local)
90.440	90.440	Parks for Public Use
91.330	91.330	Cemeteries
92.335	92.335	Hospitals & skilled nursing homes
93.420	93.470	Special Purpose, Limited-Market Properties (Library, Museums and Government Facilities, etc.)
98.400	98.400	Special Purpose Minor Improvements

Table 2 presents the GILIS land use codes and their corresponding definition. Table 3 provides the

summary of dwelling units and population for year 2022 by Entity. Figure 1 illustrates 2022 population distribution among entities, while Figure 2 displays the developed land use acreage by Entity.

Table 3 Summary of Residential Use and Population for Year 2022

Year	Entity	Dwelling Unit	Occupied Dwelling Unit	Population	Group Quarters Population	Total Population
2022	Boulder City	7,209	6,632	14,612	360	14,972
	Unincorporated CC	413,425	384,122	1,008,387	15,506	1,023,893
	Las Vegas	260,019	246,978	654,616	4,620	659,236
	N. Las Vegas	92,632	88,649	276,699	1,234	277,933
	Henderson	140,952	133,224	332,500	1,253	333,753
	Mesquite	11,994	10,159	21,925	221	22,146
	Total	926,231	869,765	2,308,740	23,194	2,331,934

Figure 1 - Year 2022 Population Distribution by Entities

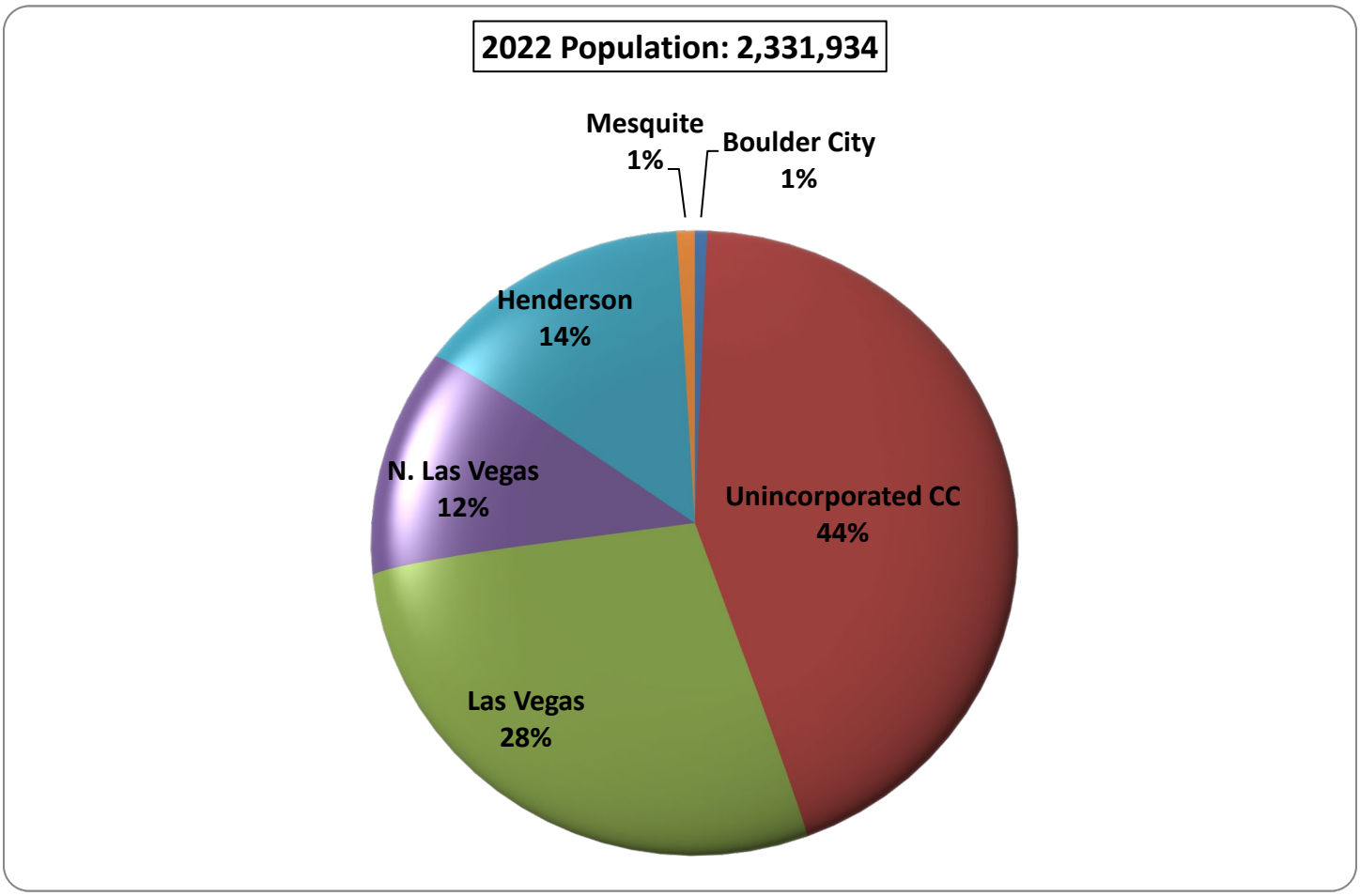
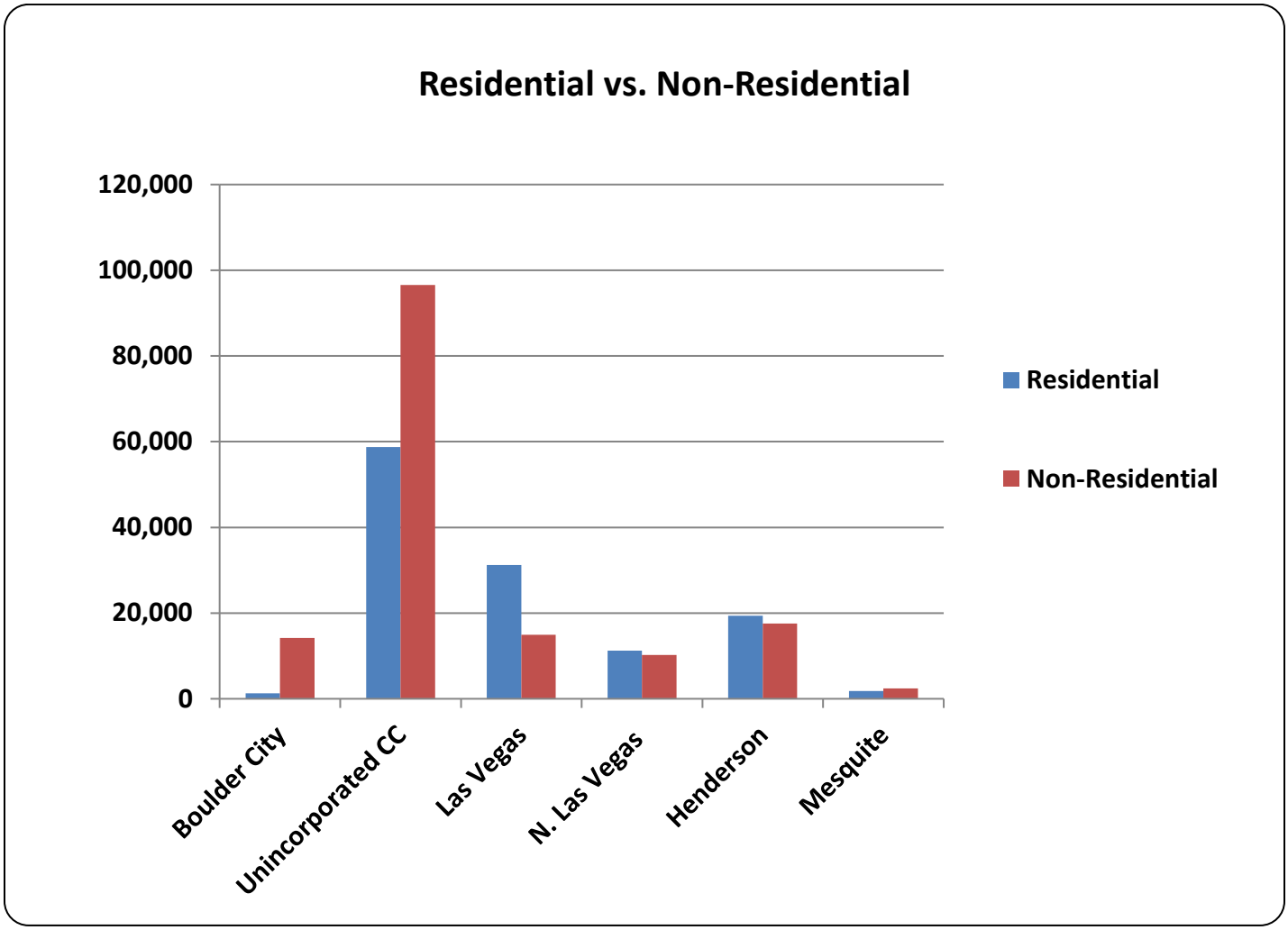


Figure 2 - Year 2022 Developed Land Use Acreage



3.2 Future Year Land Use Forecast

The future year land use forecast was created through the work of the RTC Land Use Workgroup (LUWG) with the members representing the City of Las Vegas, City of North Las Vegas, City of Henderson, City of Boulder City, City of Mesquite, Clark County and the RTC. The working group was formed to develop a consensus-based process to transfer future land use plans to future PV Variables for RTC's transportation planning process. Based on the available vacant land in GILIS 2022, the group created GIS data of future planned land development using the RTC planned land use categories. This future land use is in 5-year increments by jurisdiction for years 2025 through 2050. It contains acreage and residential density / dwelling units for each residential development, and acreage for non-residential uses. Table 4 provides the defined planned land use categories. Table 5 is the summary of planned land use acreage by Entity.
Figure 3 illustrates the data in Table 5.

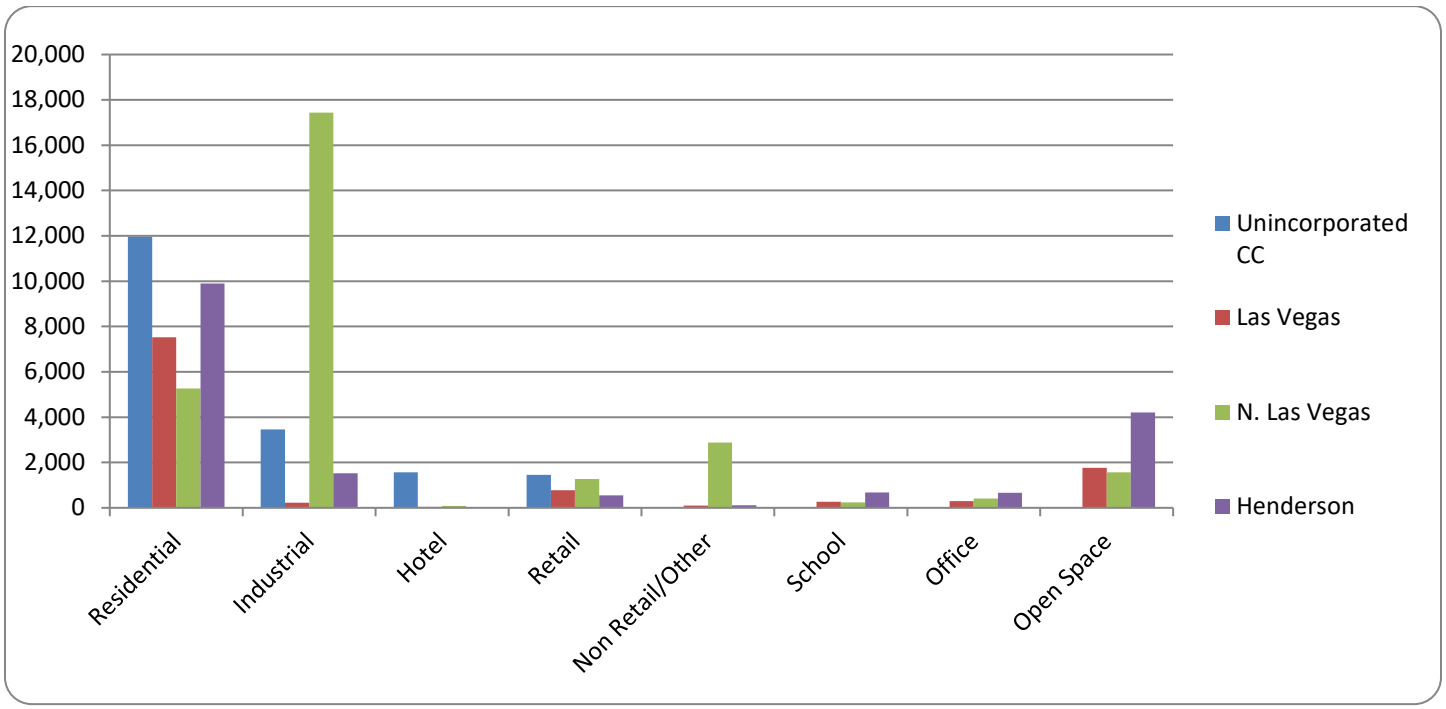
Table 4 Planned Land Use Categories

#	Planned Land Use	
	Category	Description
1	SF	Residential - Single Family
2	MF	Residential - Multi Family
3	Hotel	Hotel
4	Ret	Retail
5	Office	Office
6	School	School
7	OS	Open Space
8	Ind	Industrial
9	Other_Non	Everything Else

Table 5 2025-2050 Planned Land Use Acreage by Category

Entity	Residential	Industrial	Hotel	Retail	Non Retail/Other	School	Office	Open Space
Unincorporated CC	11,964	3,458	1,564	1,452	0	0	0	0
Las Vegas	7,520	220	37	770	94	272	303	1,762
N. Las Vegas	5,272	17,435	79	1,273	2,880	242	407	1,572
Henderson	9,896	1,518	0	544	114	680	668	4,205
Total	34,652	22,630	1,679	4,039	3,088	1,194	1,378	7,539

Figure 3 – 2025-2050 Planned Land Use Acreage by Entity



3.3 Future Year Population Development

Given the acreage and units, the planned land use development must be converted to population by multiplying occupancy rate and household size.

The occupancy rate is provided by Clark County Department of Comprehensive Planning, and it is estimated using postal ZIP code geography. 2022 occupancy rates were used in the calculation. Due to lack of information on how the occupancy rates change over time, the 2022 occupancy rates were applied to each horizon year. The household size is based on 2020 census data by census tract. By applying the following formula, information such as dwelling units, occupied dwelling units, population can be obtained on parcel level.

Occupied Dwelling Units = Dwelling Units * Occupancy Rate

Population = Occupied Dwelling Units * Household Size

The parcel level data is then processed with GIS to get the data for all the Traffic Analysis Zones (TAZs).

Table 6 and Table 7 show the projected growth and population projections by entity respectively.

Table 6 does not include projected growth figures for the City of Boulder City and City of Mesquite due to a lack of available planned land use data. Instead, both cities have provided their respective annual growth rates to RTC for projecting their future population. A 0.5 % of annual growth for City of Boulder City and 3.75 % of annual growth rate for City of Mesquite were applied to their base year dwelling units, occupied dwelling units and population, resulting in the projections listed on Table 7. Additionally, projections from redevelopment plans outlined in the City of Las Vegas Master Plan were also included in Table 7.

Figure 4 illustrates the 5-year population growth rates for entities, while Figure 5 depicts the distribution of population shares among entities in 2050.

Table 6 Projected Growth by Entity

Year	Entity	Dwelling Units	Occupied Dwelling Units	Population
2025	Unincorporated CC	10,222.8	9,660.1	27,148.7
	Las Vegas	10,067.3	9,647.9	28,531.2
	N. Las Vegas	4,785.0	4,510.1	13,420.8
	Henderson	8,113.0	7,573.9	18,857.5
	Subtotal	33,188.1	31,392.1	87,958.3
2030	Unincorporated CC	9,466.2	8,925.5	24,706.4
	Las Vegas	8,963.9	8,501.5	24,858.5
	N. Las Vegas	8,492.8	8,056.0	24,288.5
	Henderson	15,343.0	14,293.8	36,275.1
	Subtotal	42,265.9	39,776.9	110,128.5
2035	Unincorporated CC	4,541.5	4,148.3	11,954.6
	Las Vegas	8,751.1	7,973.2	22,888.3
	N. Las Vegas	6,058.7	5,794.1	15,956.3
	Henderson	14,866.0	13,778.3	35,479.3
	Subtotal	34,217.3	31,693.8	86,278.5
2040	Unincorporated CC	2,844.4	2,602.5	7,508.4
	Las Vegas	9,507.0	8,306.0	23,599.4
	N. Las Vegas	7,499.6	7,132.5	20,271.1
	Henderson	12,666.0	11,460.9	29,250.4
	Subtotal	32,516.9	29,501.9	80,629.2
2045	Unincorporated CC	217.3	210.0	551.6
	Las Vegas	8,152.9	6,675.9	19,187.1
	N. Las Vegas	8,646.5	8,144.8	24,567.6
	Henderson	13,634.0	12,731.1	32,982.0
	Subtotal	30,650.6	27,761.7	77,288.3
2050	Unincorporated CC	81.7	75.2	217.7
	Las Vegas	8,884.4	7,653.7	22,045.5
	N. Las Vegas	7,232.8	6,794.7	20,535.1
	Henderson	15,213.0	14,313.7	37,741.7
	Subtotal	31,412.0	28,837.3	80,540.0
Total	Unincorporated CC	27,373.9	25,621.6	72,087.4
	Las Vegas	54,326.6	48,758.2	141,109.9
	N. Las Vegas	42,715.3	40,432.2	119,039.5
	Henderson	79,835.0	74,151.7	190,586.1
	Subtotal	204,250.8	188,963.7	522,822.8

Table 7 Projected Populations by Entity

Year	Entity	Dwelling Unit	Occ. Dwelling Unit	Population	Group Quarters Population	Total Population
2022	Boulder City	7,209	6,632	14,612	360	14,972
	Unincorporated CC	413,425	384,122	1,008,387	15,506	1,023,893
	Las Vegas	260,019	246,978	654,616	4,620	659,236
	N. Las Vegas	92,632	88,649	276,699	1,234	277,933
	Henderson	140,952	133,224	332,500	1,253	333,753
	Mesquite	11,994	10,159	21,925	221	22,146
	Total	926,231	869,765	2,308,740	23,194	2,331,934
2025	Boulder City	7,317	6,732	14,831	360	15,191
	Unincorporated CC	429,016	398,899	1,049,916	15,506	1,065,422
	Las Vegas	272,204	258,638	688,528	4,620	693,148
	N. Las Vegas	97,417	93,159	290,119	1,234	291,353
	Henderson	149,065	140,798	351,358	1,253	352,611
	Mesquite	13,343	11,302	24,392	221	24,613
	Total	968,362	909,529	2,419,145	23,194	2,442,339
2030	Boulder City	7,500	6,900	15,202	360	15,562
	Unincorporated CC	438,482	407,825	1,074,622	15,506	1,090,128
	Las Vegas	285,919	271,647	724,179	4,620	728,799
	N. Las Vegas	105,910	101,215	314,408	1,234	315,642
	Henderson	164,408	155,092	387,633	1,253	388,886
	Mesquite	15,845	13,421	28,966	221	29,187
	Total	1,018,064	956,100	2,545,010	23,194	2,568,204
2035	Boulder City	7,688	7,073	15,582	360	15,942
	Unincorporated CC	443,024	411,973	1,086,577	15,506	1,102,083
	Las Vegas	309,173	293,315	778,305	4,617	782,922
	N. Las Vegas	111,968	107,010	330,364	1,234	331,598
	Henderson	179,274	168,870	423,112	1,253	424,365
	Mesquite	18,816	15,937	34,397	221	34,618
	Total	1,069,943	1,004,178	2,668,337	23,191	2,691,528
2040	Boulder City	7,880	7,249	15,972	360	16,332
	Unincorporated CC	445,868	414,575	1,094,085	15,506	1,109,591
	Las Vegas	335,032	317,165	838,497	4,455	842,952
	N. Las Vegas	119,468	114,142	350,635	1,234	351,869
	Henderson	191,940	180,331	452,363	1,253	453,616
	Mesquite	22,344	18,926	40,846	221	41,067
	Total	1,122,532	1,052,388	2,792,398	23,029	2,815,427
2045	Boulder City	8,077	7,431	16,371	360	16,731
	Unincorporated CC	446,085	414,785	1,094,637	15,506	1,110,143
	Las Vegas	358,714	338,622	888,562	4,096	892,658
	N. Las Vegas	128,115	122,287	375,203	1,234	376,437
	Henderson	205,574	193,062	485,345	1,253	486,598
	Mesquite	26,534	22,474	48,505	221	48,726
	Total	1,173,099	1,098,661	2,908,623	22,670	2,931,293
2050	Boulder City	8,279	7,616	16,780	360	17,140
	Unincorporated CC	446,167	414,861	1,094,855	15,506	1,110,361
	Las Vegas	380,779	358,714	935,677	3,909	939,586
	N. Las Vegas	135,347	129,081	395,738	1,234	396,972
	Henderson	220,787	207,376	523,086	1,253	524,339
	Mesquite	31,509	26,688	57,599	221	57,820
	Total	1,222,867	1,144,336	3,023,736	22,483	3,046,219

Figure 4 - 2025-2050 5-year Population Growth Rates by Entities

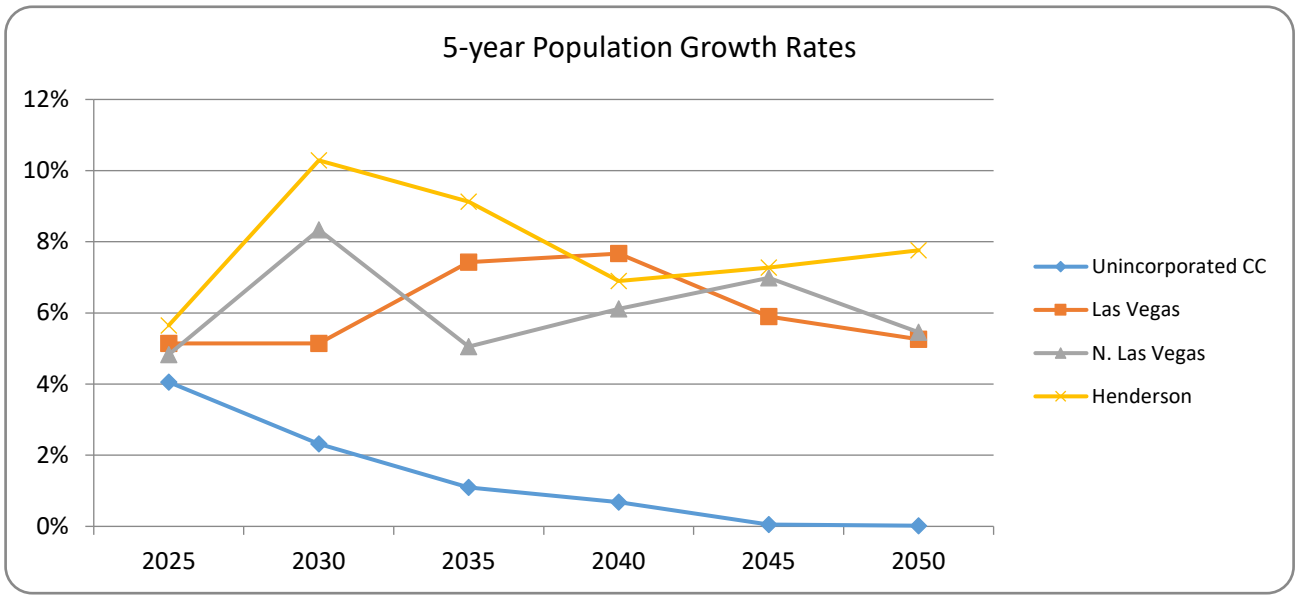
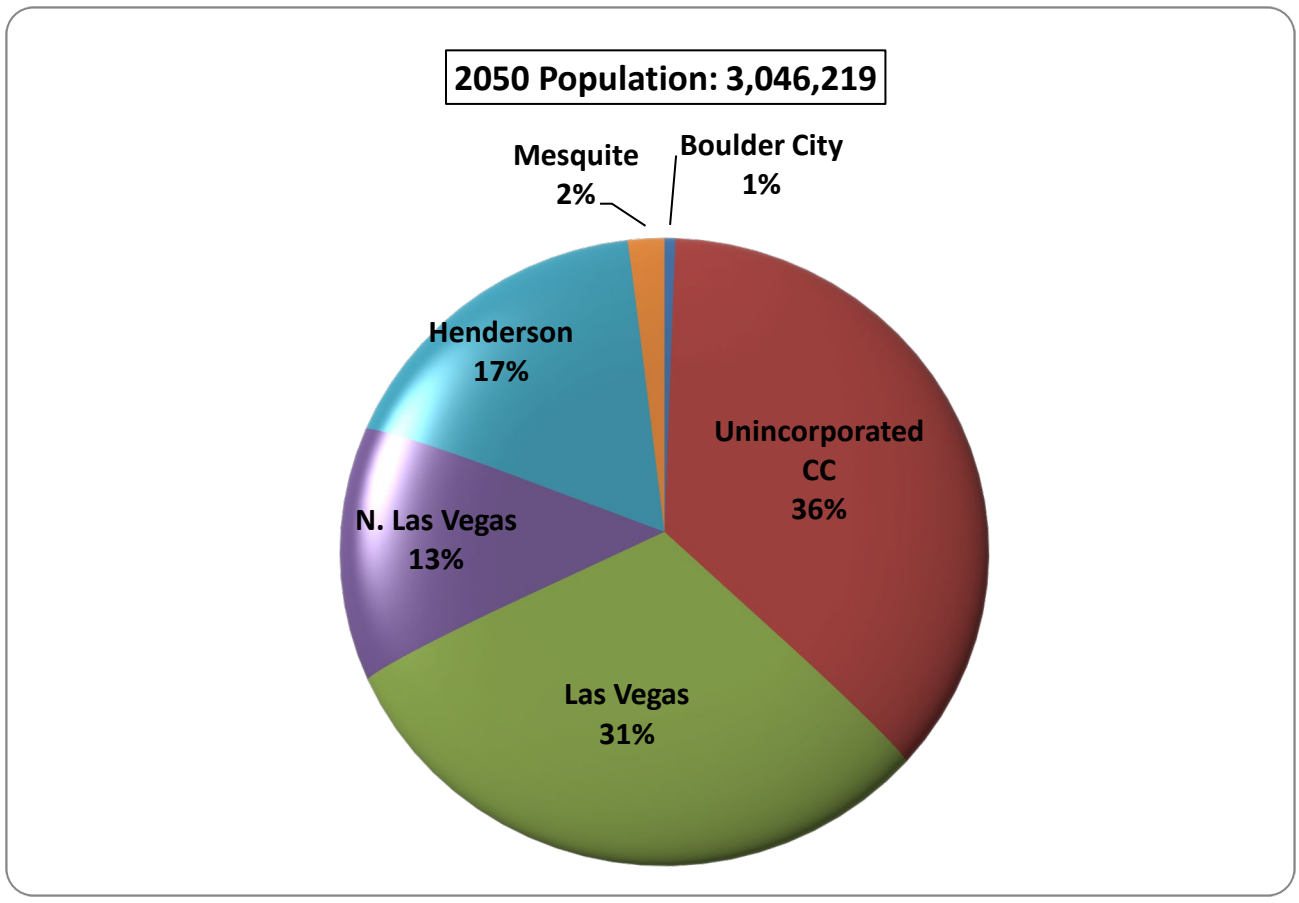


Figure 5 - Year 2050 Population Distribution by Entities



3.4 Benchmark

LUWG decided to use the 2023-2080 Clark County population forecast published by University of Nevada Las Vegas (UNLV) the Center for Business and Economic Research (CBER) in May 2023 as the control total and the benchmark. Therefore, the populations projected from the land-use planning process described in the previous section were compared to CBER's control totals. Table 8 and Figure 6 present the population projections by LUWG and CBER, while Figure 7 displays the population growth by LUWG and CBER.

Table 8 Comparison with CBER Control Total

Year	CBER Population	LUWG Projected Population	Difference
2022	2,331,934	2,331,934	0
2025	2,438,000	2,442,339	-4,339
2030	2,645,000	2,568,204	76,796
2035	2,750,000	2,691,528	58,472
2040	2,848,000	2,815,427	32,573
2045	2,935,000	2,931,293	3,707
2050	3,014,000	3,046,219	-32,219

Figure 6 - Population Projection by LUWG and CBER

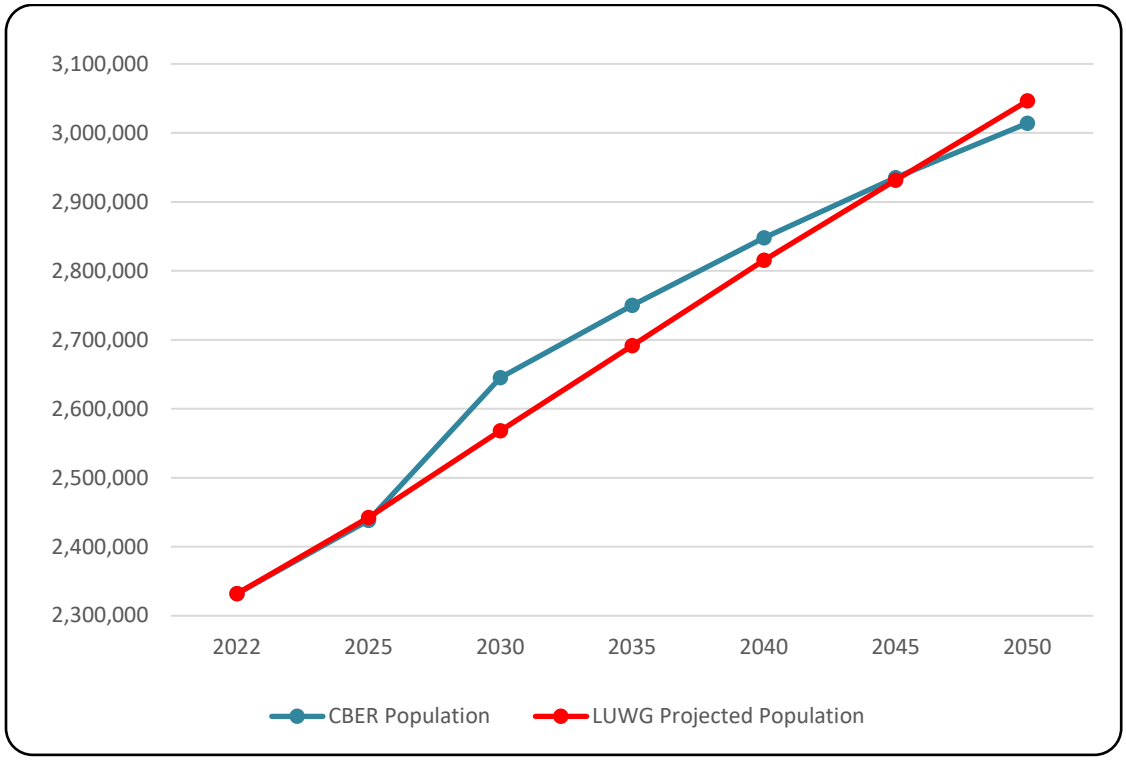
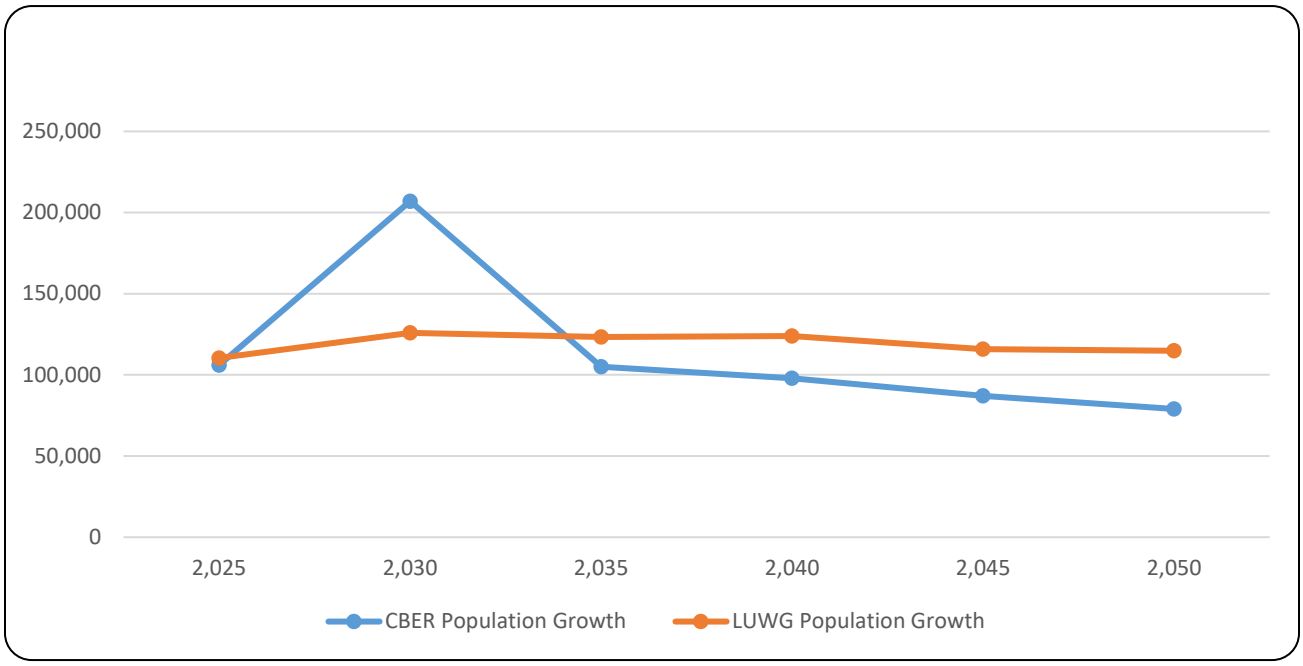


Figure 7 - Projected Population Growth by LUWG and CBER



CBER initially projected significant growth for 2030, followed by a tapering off, while our projections remained consistent after 2030, as indicated in Figure 7. The projected population in 2030 exhibited a difference of 77,000 between the two projections, but this disparity gradually narrowed in the subsequent years. By 2045, the difference had decreased to 3,700. In 2050, LUWG population projection exceeded CBER population projection by 32,000, as shown in Table 8. Despite the substantial gap observed in 2030, we concluded that LUWG population projections were generally in alignment with CBER control totals over the long term. Therefore, we determined that further adjustments are unnecessary, as our focus remains on the overall long-term trend rather than individual horizon years.

4. DEVELOPMENT OF EMPLOYMENT

4.1 Base Year Employment

The base year employment is not factored by acreage. It is developed from Nevada State Department of Employment, Training and Rehabilitation (DETR) employer data. The DETR 2022 2nd quarter employer data is used to generate year 2022 employment data for modeling purposes. The process consists of: 1) address matching with street center line; 2) translating DETR employer code to TDM categories; 3) aggregating the employment to TAZs by category; and 4) post processing. The details are described in the following sections.

4.1.1 DETR Address Information & Address Matching

There are total of 68,023 records in the DETR 2022 2nd quarter employer database that the RTC have received. Of those, 49,755 (73%) of them are reported with address or with latitude/longitude, while it accounts for 95% of total employment reported. Some establishments reported the total employment to a single address (Headquarter). The addresses in the database are examined and standardized to the addresses with matching issues before geocoding. The matching results that have 80% less matching score and employment is more than 50 are manually checked with Google Maps, GISMO and aerial photos.

4.1.2 Category Translation – DETR Industry Code to TDM Employment Category

A conversion table was created by assigning each of the employment categories in DETR's employer database to the appropriate TDM employment category. This lookup table was used in the employment data conversion process and is listed below.

Table 9 Employment Category Conversion Table

Model Work Industry		NAICS	
Code	Description	Code	Description
1	Agriculture, Mining	11	Agriculture, Forestry. Fishing and Hunting
		21	Mining, Quarrying. and Oil and Gas Extraction
2	Manufacturing	31	Manufacturing
		32	Manufacturing
		33	Manufacturing
3	Utilities. Construction. Transportation, Waste Management	22	Utilities
		23	Construction
		48	Transportation and Warehousing
		49	Transportation and Warehousing
		56	Administrative and Support and Waste Management and Remediation Services
4	Wholesale	42	Wholesale Trade
5	Retail trade	44	Retail Trade
		45	Retail Trade
6	Information. Finance, Insurance, Professional, Scientific, Technical, Management, Real Estate	51	Information
		52	Finance and Insurance
		53	Real Estate and Rental and Leasing
		54	Professional. Scientific, and Technical Services
		55	Management Of Companies and Enterprises
7	Education, Health, Social Services	61	Educational Services
		62	Health Care and Social Assistance
8	Food, Art, Entertainment, Recreation, Other Services	71	Arts. Entertainment, and Recreation (except Casinos)
		72	Accommodation and Food Services (except Casino Hotels)
		81	Other Services (except Public Administration)
9	Public Administration, Military	92	Public Administration
11	Casinos	71	Casinos
12	Casino Hotels	72	Casino Hotels

4.1.3 Post Processes (Headquarter Issue)

Clark County School District Employment (CCSD) – In the DETR 2022 employment data, CCSD reported that all employees were working at the district office (headquarters) address (5100 W. Sahara Ave). However, there were only 137 people who actually worked at the headquarters address. The number of employees working at each school site and non-school site in school year 2022-2023 were provided by CCSD. The process for allocating the employment was completed by geocoding the school and non-school site addresses, and then assigned CCSD employees to the education employment category.

Local Governments -- The local governments, including the City of Las Vegas, City of North Las Vegas, City of Henderson, Clark County, City of Bouder City, and City of Mesquite reported all employment to their respective main offices. The correction process mirrored the employment allocation method used for CCSD. The actual numbers of employment at each agency's main location and associated facilities were obtained from these agencies. After geocoding, the employment was assigned to the public administration category. Table 10 is the summary of DETR 2022 geocoded employment data results.

Table 10 Summary of Address Matched DETR 2022 2nd Quarter Employer Data By Employment Category

Code	Description	Employment	Percentage
1	Agriculture, Mining	2,361	0.2%
2	Manufacturing	26,760	2.8%
3	Utilities, Construction, Transportation, Waste Management	193,116	20.1%
4	Wholesale trade	19,877	2.1%
5	Retail trade	102,341	10.6%
6	Information, Finance, Insurance, Professional, Scientific, Technical, Management, Real Estate	108,811	11.3%
7	Education, Health, Social Services	141,931	14.8%
8	Food, Art, Entertainment, Recreation, Other Services	165,042	17.2%
9	Public Administration, Military	71,747	7.5%
11	Casinos	2,594	0.3%
12	Casino Hotels	124,782	13.0%
99	Undetermined	2,187	0.2%
Total		961,549	100.0%

4.2 Future Year Employment

Compared to the population projections, the development of the future employment projection and allocation is very challenging. While population data can be tracked in a relatively straightforward manner using dwelling unit count data from the Clark County Comprehensive Planning and entity' land use data, the allocation of future employment projection must consider several factors, including:

1) Number and type of employees per acre or square feet of building space,
2) Conversion factors relating property acreage and square feet of building space,
3) Location of employees compared with main office address,
4) Variability of employment types such as hotel, retail, office, and industrial.
5) Last but not least, there are much more uncertainty in terms of where and what type of employment will occur in future.

To project initial employment distributions, non-residential acreage is converted into employment using factors derived from the analysis of data from Clark County Comprehensive Planning, and the DETR. The base year parcel data contains the information about parcel acreage and land use type. The DETR data provides the information of employer's industry code, number of employees and address. Employment factors based on acreage were developed previously by combining the DETR data, with the industry codes interpreted into relevant land use types, and a base year parcel data. Table 11 summarizes these factors. For samples and methods in developing the factors, refer to Regional Transportation Plan FY 2006-2030 Appendix V.

The future year employment growth then was projected by applying the employment factors to the projected future non-residential acreages of different land use types.
The general formula is as follows:

$$\text{Number of Employee Growth} = \sum(\text{AcG} * \text{GtN} * \text{Emp per Ac})$$

Where:

AcG	Employment's corresponding land use acreage growth
GtN	Land use's corresponding gross to net ratio
Emp per Ac	Land use's corresponding employee per acre
∑	Employment of an employment category is the total of all the land use categories (Table 4) falls into the employment category (Table 11)

Table 11 Acreage to Employment Factors

IDX	LAND USE		EMPLOYMENT		
	LU	DESCRIPTION	CATEGORY	Per Acre	Gross to Net
1	Hotel	Hotel (Resort Corridor)	Hotel	100	0.80
2	Hotel_N	Hotel (Not on Resort Corridor)	Hotel	40	0.80
3	Ret	Retail	Retail	22	0.80
4	Other_Non	Land use not in any other categories	Other_Non	20	0.80
5	Office	Office	Office	50	0.80
6	School	School	Other_Non	15	0.80
7	Hospital	Hospital	Other_Non	70	0.80
8	Ind	Industrial	Indust	12	0.80
9	OS	Open Space	Other_Non	0.5	0.80

Note: The Land Use is for the purpose of corresponding to the LUWG planned land use category. The Employment category corresponds to TDM's employment category. The gross to net ratio is for the purpose of reducing the land needed for public facilities such as ROW.

As stated, the factors in Table 11 serve only as a starting point to project initial employment information that may be adjusted during validation steps.

5 QUALITY CONTROL AND VALIDATION OF DEVELOPED PLANNING VARIABLES (POPULATION & EMPLOYMENT)

The PV variables were validated using aerial photographs from the Clark County GISMO for each TAZ. The intention was to do a reasonable check for how many acres can be developed between 2022 and 2050. The numbers can be used to estimate the population and employment totals. In particular, developing employment control totals for industrial, transportation, utility facilities and areas with a lot of open space needs to be carefully reviewed.

The employment data was then validated by Parsons Transportation Group (PTG), see Attachment 1 from PTG at the end of this document.

The final PV variables were made available to members of LUWG for quality and reality review. The questions, comments, and suggestions from the review have been addressed and incorporated into the final adjustments.

6 SPECIAL GENERATORS

Nellis Air Force Base (NAFB), Creech Air Force Base, Harry Reid International Airport, Southern Nevada Supplemental Airport (SNSA), University of Nevada at Las Vegas (UNLV, including the main campus and North Las Vegas campus), College of Southern Nevada (CSN), Nevada State University

(NSU) and High-Speed Rail (HSR) station are treated as special generators in RTC's TDM. The SNSA is included as a special generator because it is outside of the SNPLMA boundary and not yet adopted by local agencies. The employment for special generators is not included in the employment categories in the PV variables development process. The current and the future special generator data is obtained/derived from relevant agencies, departments, and institutions. Sources include each agency's planning staff and information published on their web sites. Table 12 -Table 16 lists the employment and student enrollments / Passengers for Special Generators accordingly.

Please be aware that all projections presented here come with the following conditions:

a) As is typical with all forecasts, future activity levels may vary from the forecast due to fluctuations in demand and/or unexpected events. The forecasts provide approximate estimations of future activity levels.

b) The airport forecasts have not received approval from the Federal Aviation Administration. They are provided as broad ranges and estimates solely for planning purposes. The Environmental Impact Statement (EIS) for SNSA is still on-going. Therefore, the certainty regarding the advancement and scale of the project is yet to be determined.

c) The forecast distribution of activity between Harry Reid Airport and SNSA airport is based on assumptions regarding the allocation of passenger airlines and specific travel segments of travel between the two airports. However, this distribution is subject to change as it has not been finalized. The actual airline users and activity will be determined through future negotiations between Clark County Department of Aviation and airlines."

d) For Creech AFB employment, without knowledge of its future budget or mission, they are unable to adjust their projected personnel numbers.

Table 12 Employment and Passengers of Airports

Year	Harry Reid Airport			Southern Nevada Supplemental Airport		
	Total Passengers	Average Daily Passengers	Employment	Total Passengers	Average Daily Passengers	Employment
2022	52,667,741	144,000	21,000			
2025	56,226,575	154,000	22,500			
2030	63,235,149	174,000	25,000			
2035	70,823,658	194,000	25,000			
2040	57,570,336	158,000	25,000	21,481,225	58,000	6,700
2045	58,504,573	160,000	25,000	29,495,575	80,000	9,600
2050	65,048,406	178,000	25,000	32,794,704	90,000	12,500

Table 13 Employment of Air Force Base

Year	Nellis AFB	Creech AFB
2022	15,065	4,320
2025	15,517	4,320
2030	16,292	4,320
2035	17,106	4,320
2040	17,961	4,320
2045	18,860	4,320
2050	19,803	4,320

Table 14 UNLV Employment and Enrollment

Year	Main Campus		Shadow Lane Campus		North Las Vegas Campus	
	Enrollment	Employment	Enrollment	Employment	Enrollment	Employment
2022	25,045	3,792	318	286		
2025	25,350	3,838	322	290		
2030	27,205	4,119	345	311	5,000	371
2035	29,200	4,421	371	334	7,500	556
2040	31,346	4,746	398	358	10,000	741
2045	33,656	5,096	427	385	12,500	925
2050	36,141	5,472	459	413	15,000	1,111

Table 15 CSN Employment and Enrollment

Year	Charleston Campus		Henderson Campus		North Las Vegas Campus	
	Enrollment	Employment	Enrollment	Employment	Enrollment	Employment
2022	8303	583	3208	161	5791	392
2025	8,720	612	3,369	169	6,082	412
2030	9,450	664	3,651	183	6,591	446
2035	9,115	640	3,522	177	6,357	430
2040	8,791	617	3,397	170	6,132	415
2045	8,791	617	3,397	170	6,132	415
2050	8,791	617	3,397	170	6,132	415

Table 16 NSU Employment and Enrollment

Year	Total Enrollment	Students On Campus	Employment
2022	7162	2533	333
2025	7103	2598	339
2030	7804	3317	443
2035	8617	3,846	553
2040	9559	4,458	705
2045	10,652	5,169	900
2050	11,136	5,483	1,148

7 CCSD SCHOOL ENROLLMENT

The Clark County School District provided 2022-2023 school year enrollment numbers by grade to RTC. The attribute K-12 enrollment in PV table represents the total student enrollment from kindergarten to Grade 12.

The 2022-2023 school year enrollment data from CCSD are geocoded and aggregated to TAZs. The future schools that plan to open after the year 2022 are defined through the LUWG land use.

8 CONCLUSION

The land use forecasting is both a complex and continuous process. Great care and effort were taken during the process, but there are some areas in the process that could be improved. It is very challenging to estimate employment data for a large area such as Clark County under the current economic situation. Given the nature of the land use planning process, more fine-tuning will occur in each of the subsequent land use updates. Table 17 and Table 18 list total employment by entity in Clark County. Details on the development and results of the future year employment projections are documented in Attachment 1. The land use information used in the travel demand model is updated every four years, prior to the development of each RTP.

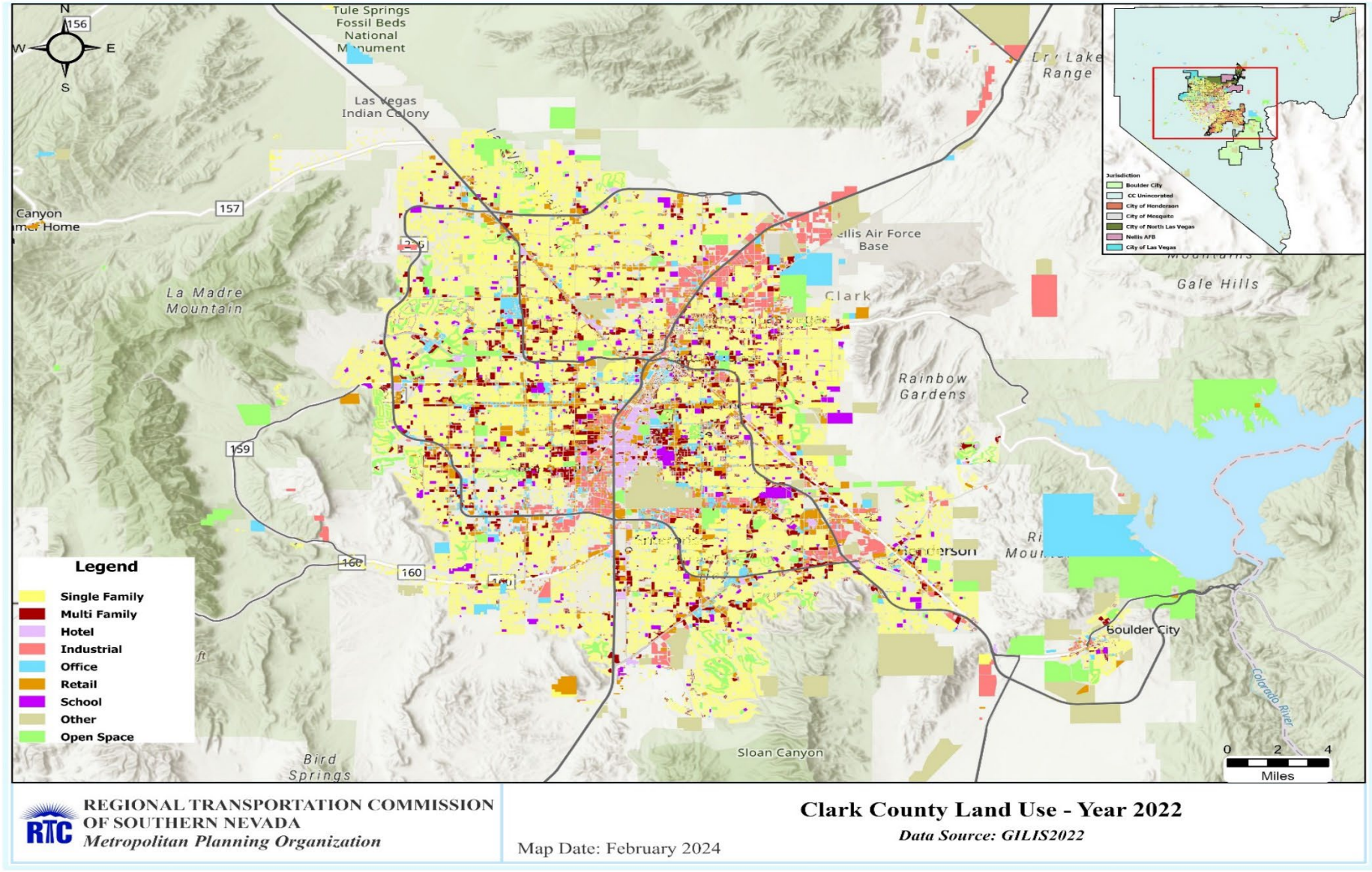
Table 17 Projected Total Employment by Entity (Constrained)

Jurisdiction	2022	2025	2030	2035	2040	2045	2050
Boulder City	3,367	3,427	3,577	3,620	3,636	3,641	4,008
CC Unincorporated	560,221	580,012	615,109	632,220	652,267	667,144	681,306
Las Vegas	205,836	218,728	248,578	261,133	265,662	270,351	277,070
North Las Vegas	86,138	93,865	115,742	132,266	149,313	168,447	183,168
Henderson	99,301	109,197	125,394	130,719	144,080	152,612	160,710
Mesquite	6,686	6,810	7,711	7,820	7,879	8,013	8,120
Total	961,549	1,012,039	1,116,111	1,167,779	1,222,837	1,270,208	1,314,382

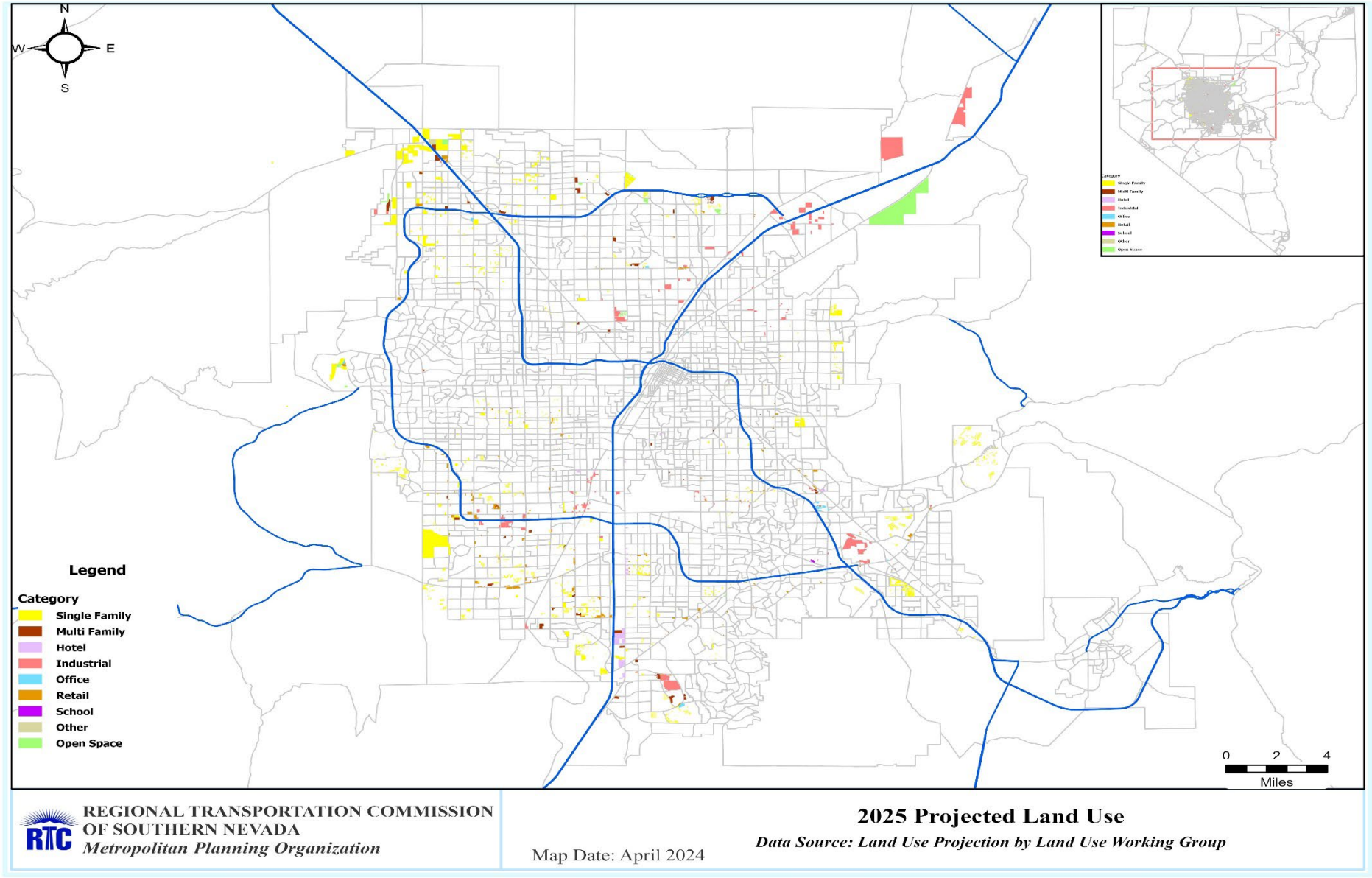
Table 18 Projected Total Employment by Entity (Unconstrained)

Jurisdiction	2022	2025	2030	2035	2040	2045	2050
Boulder City	3,367	3,427	3,577	3,620	3,636	3,641	4,008
CC Unincorporated	560,221	580,012	615,109	641,384	666,057	683,847	701,313
Las Vegas	205,836	218,728	248,578	261,133	265,662	269,804	276,522
North Las Vegas	86,138	93,865	115,742	132,269	149,093	168,091	182,688
Henderson	99,301	109,197	125,394	130,720	143,369	151,368	159,071
Mesquite	6,686	6,810	7,711	7,820	7,879	7,949	8,055
Total	961,549	1,012,039	1,116,111	1,176,947	1,235,696	1,284,700	1,331,657

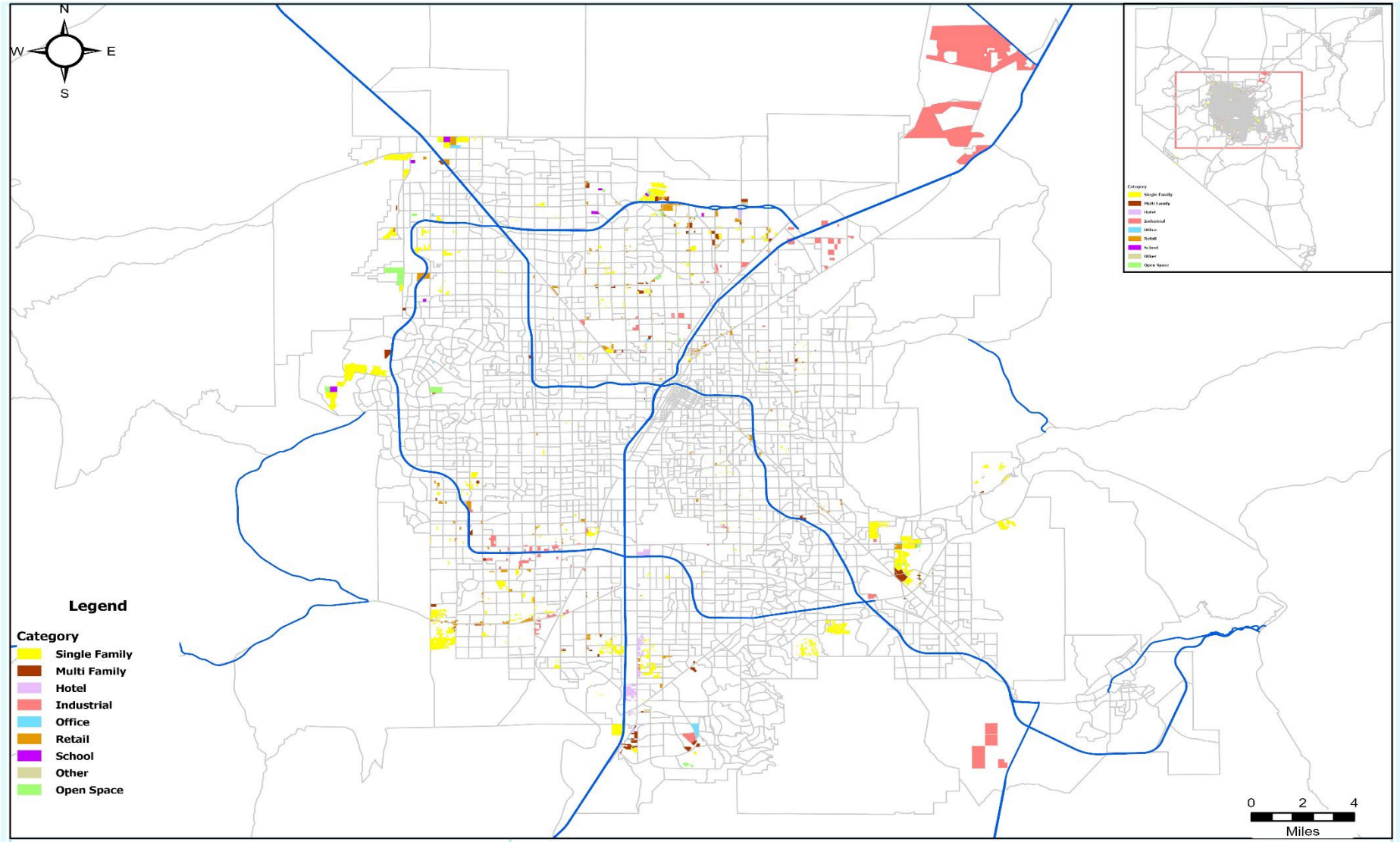
Map 1 -- Base Year 2022 Land Use



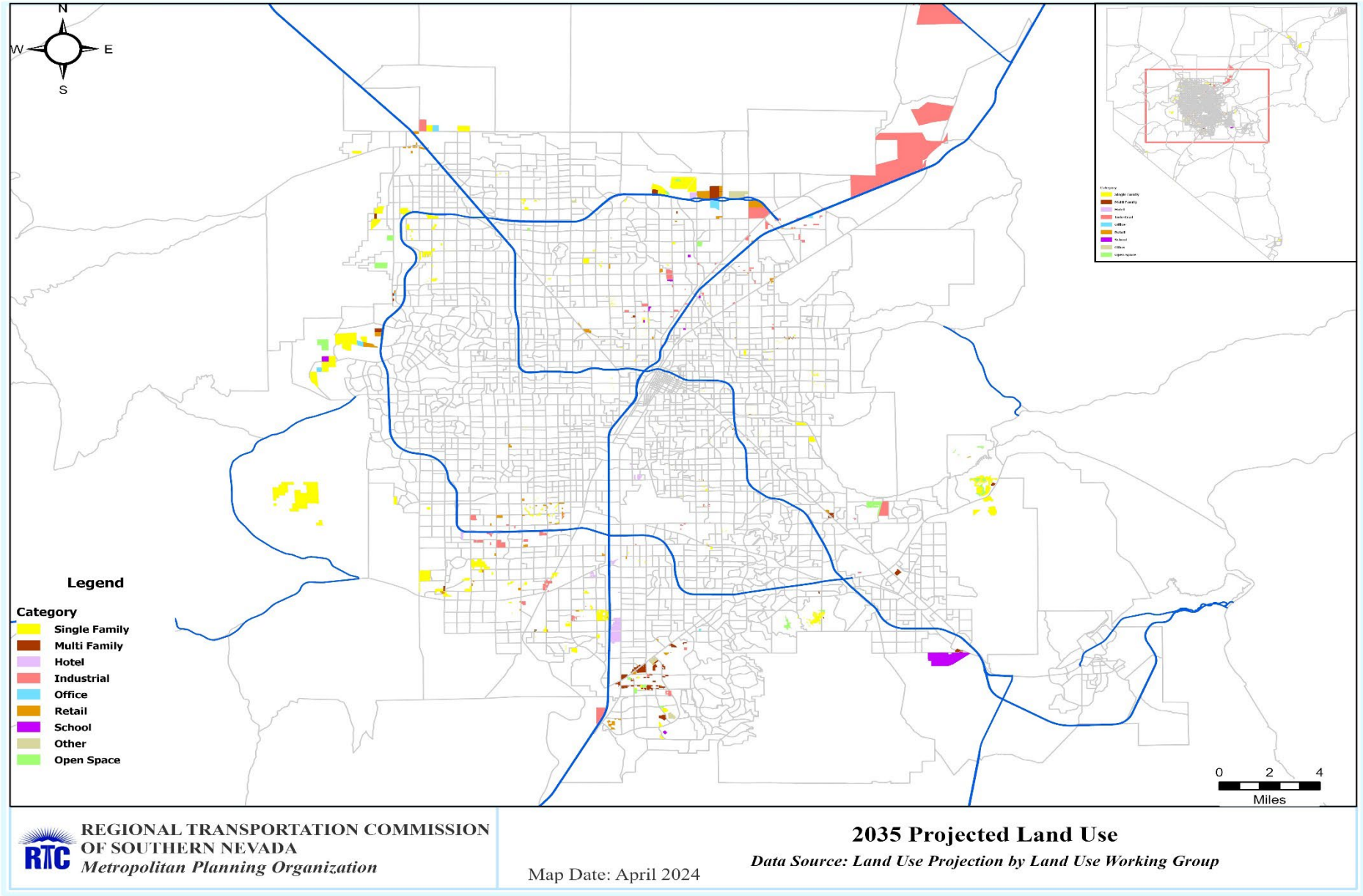
Map 2 -- Planned Land Use Growth 2022 – 2025



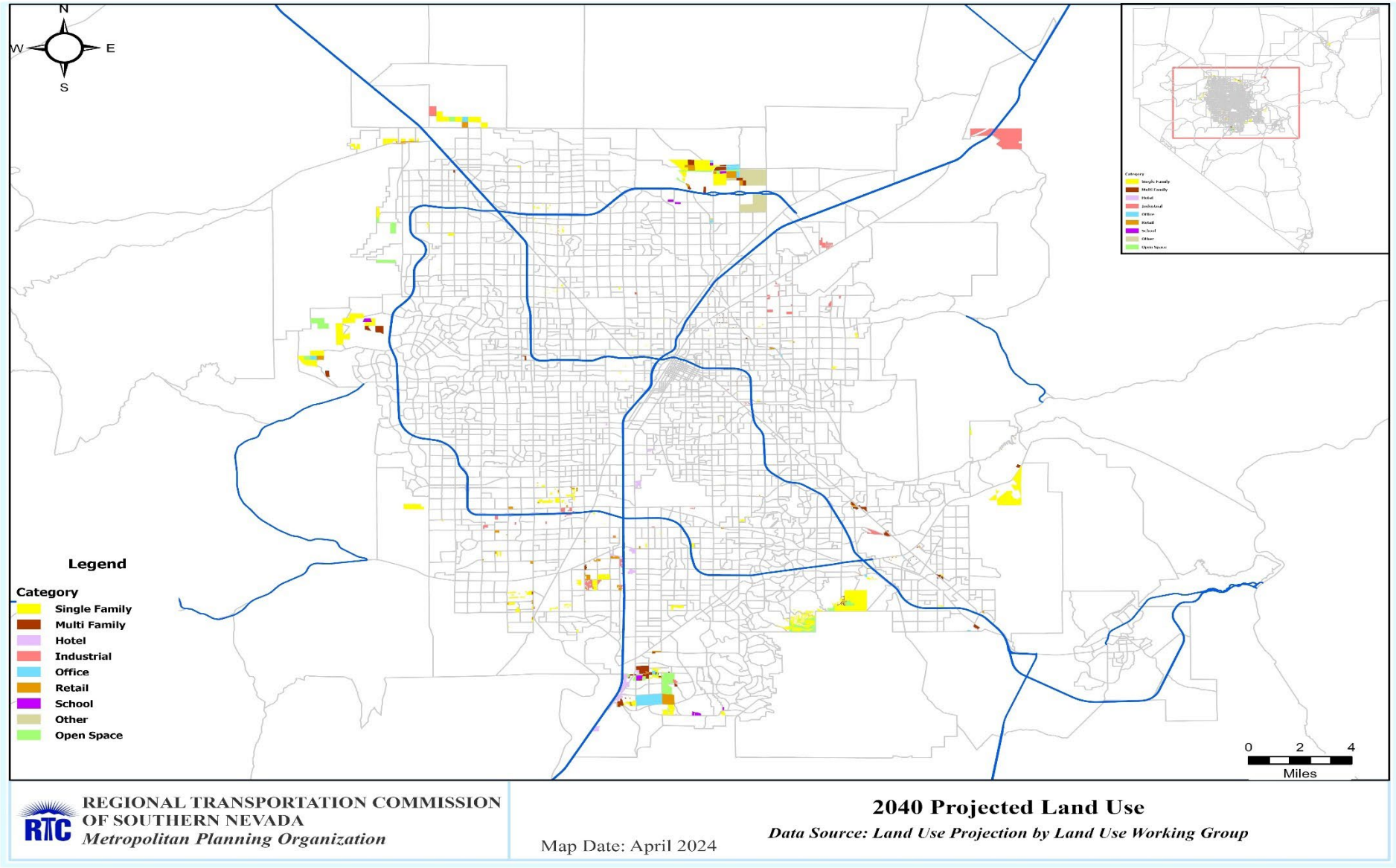
Map 3 -- Planned Land Use Growth 2025 – 2030



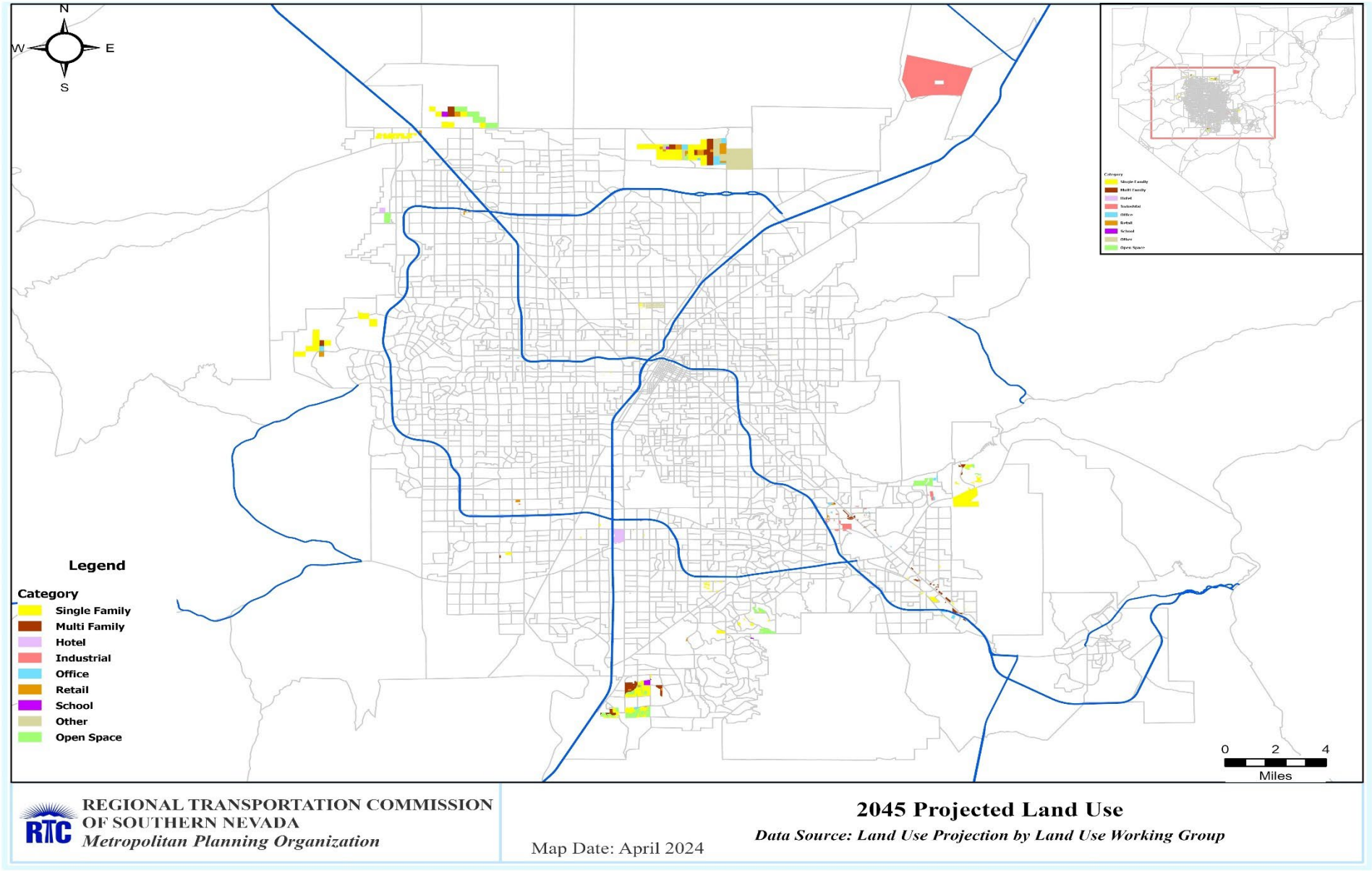
Map 4 -- Planned Land Use Growth 2030 – 2035



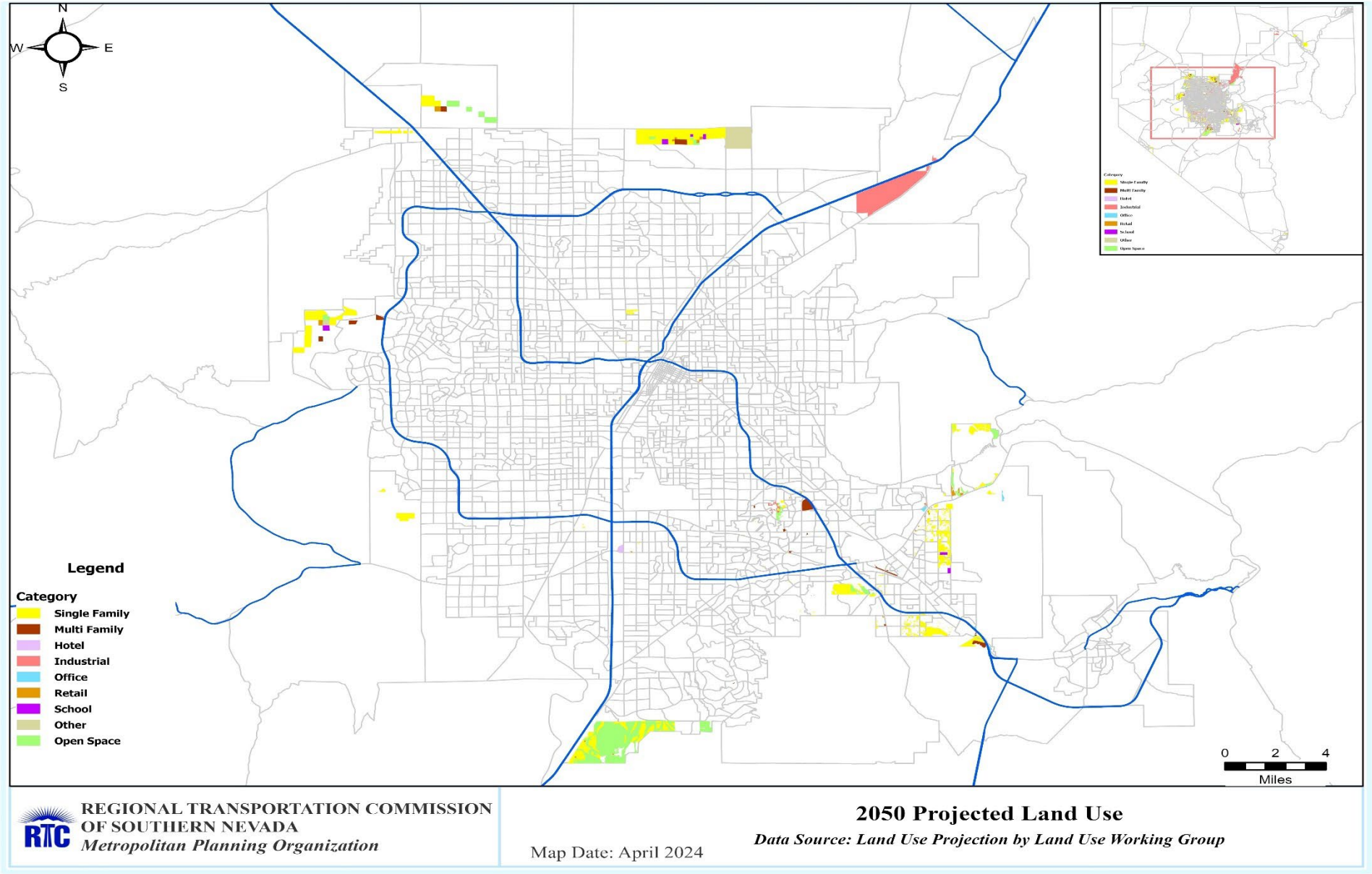
Map 5 -- Planned Land Use Growth 2035 – 2040



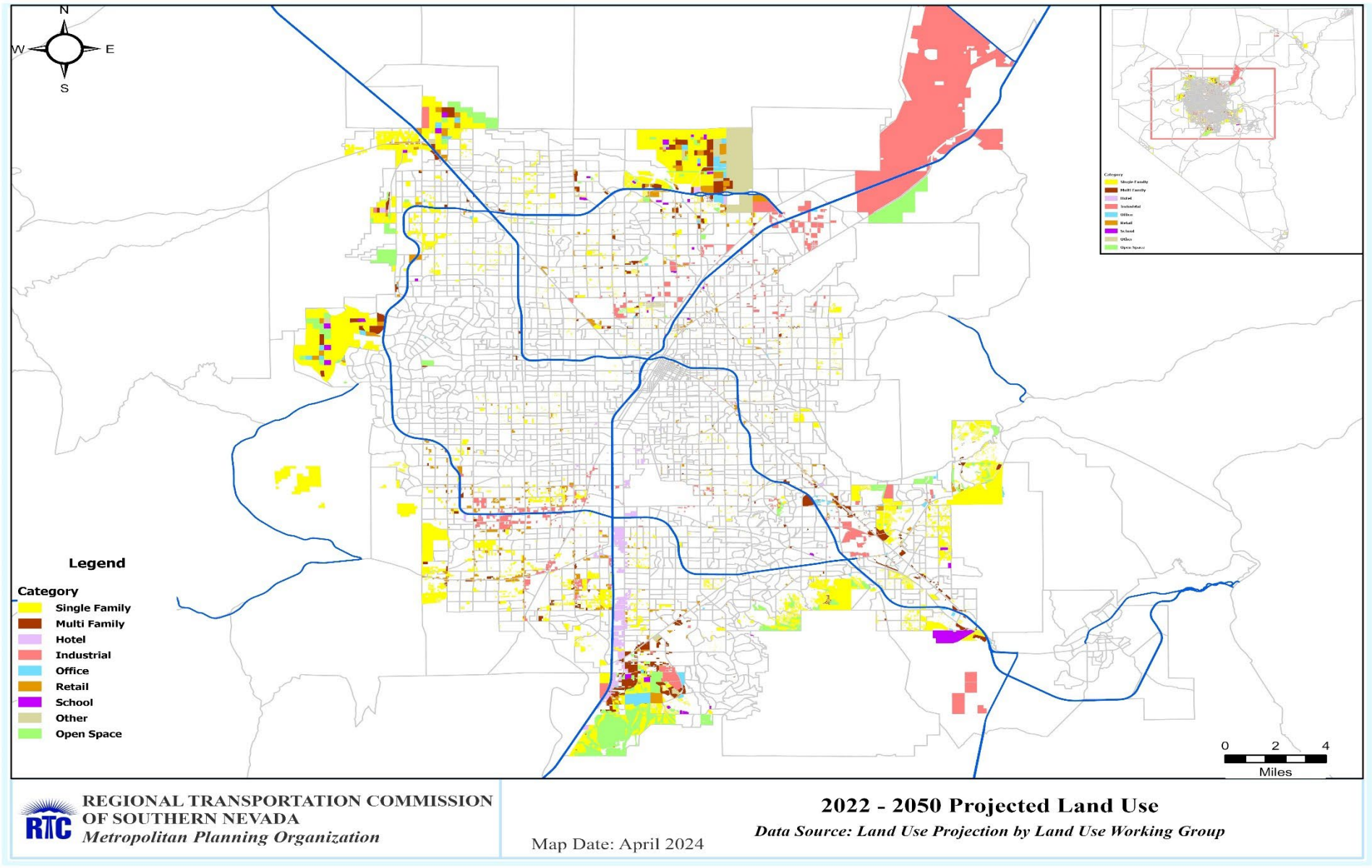
Map 6 -- Planned Land Use Growth 2040 – 2045



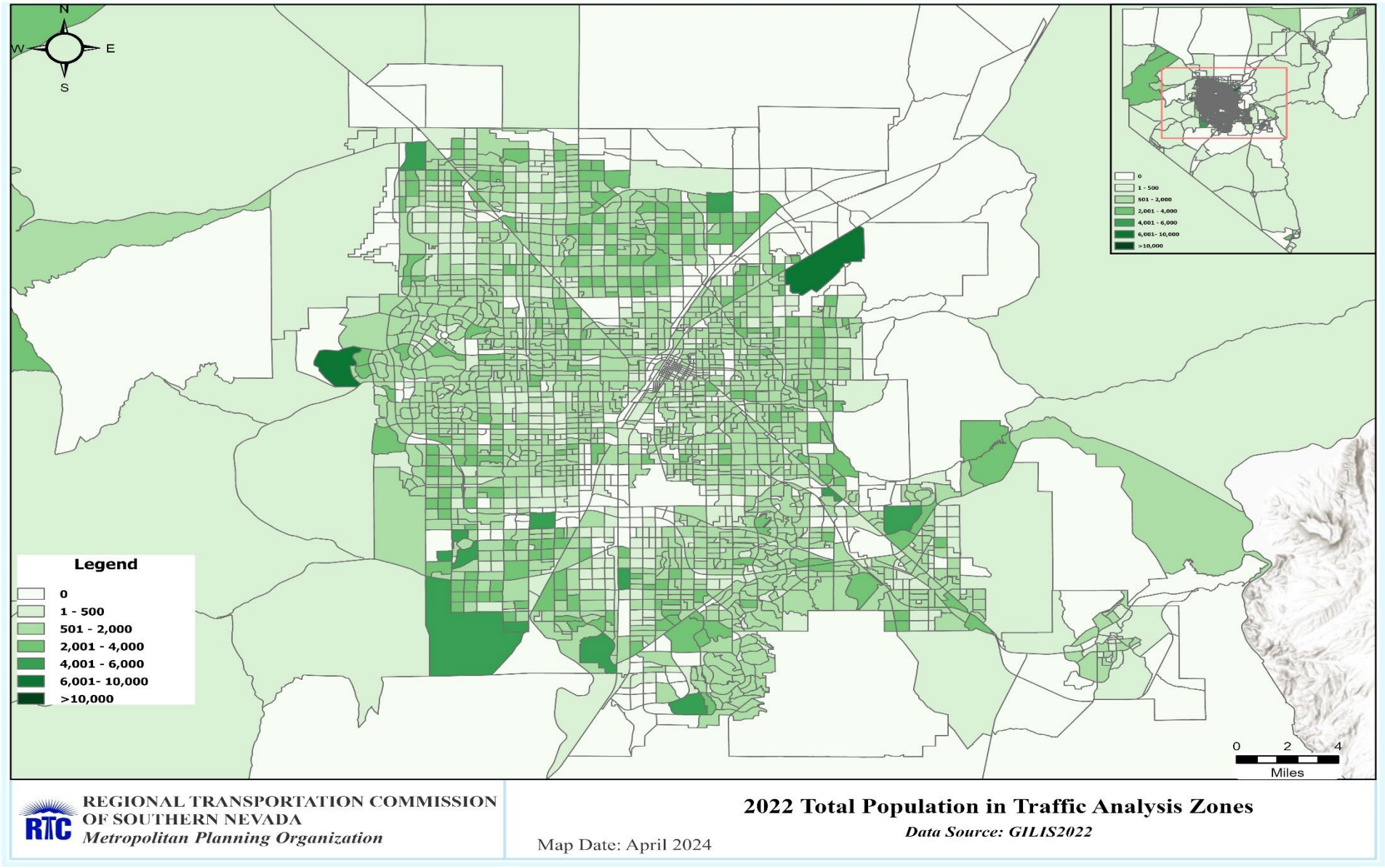
Map 7 -- Planned Land Use Growth 2045 – 2050



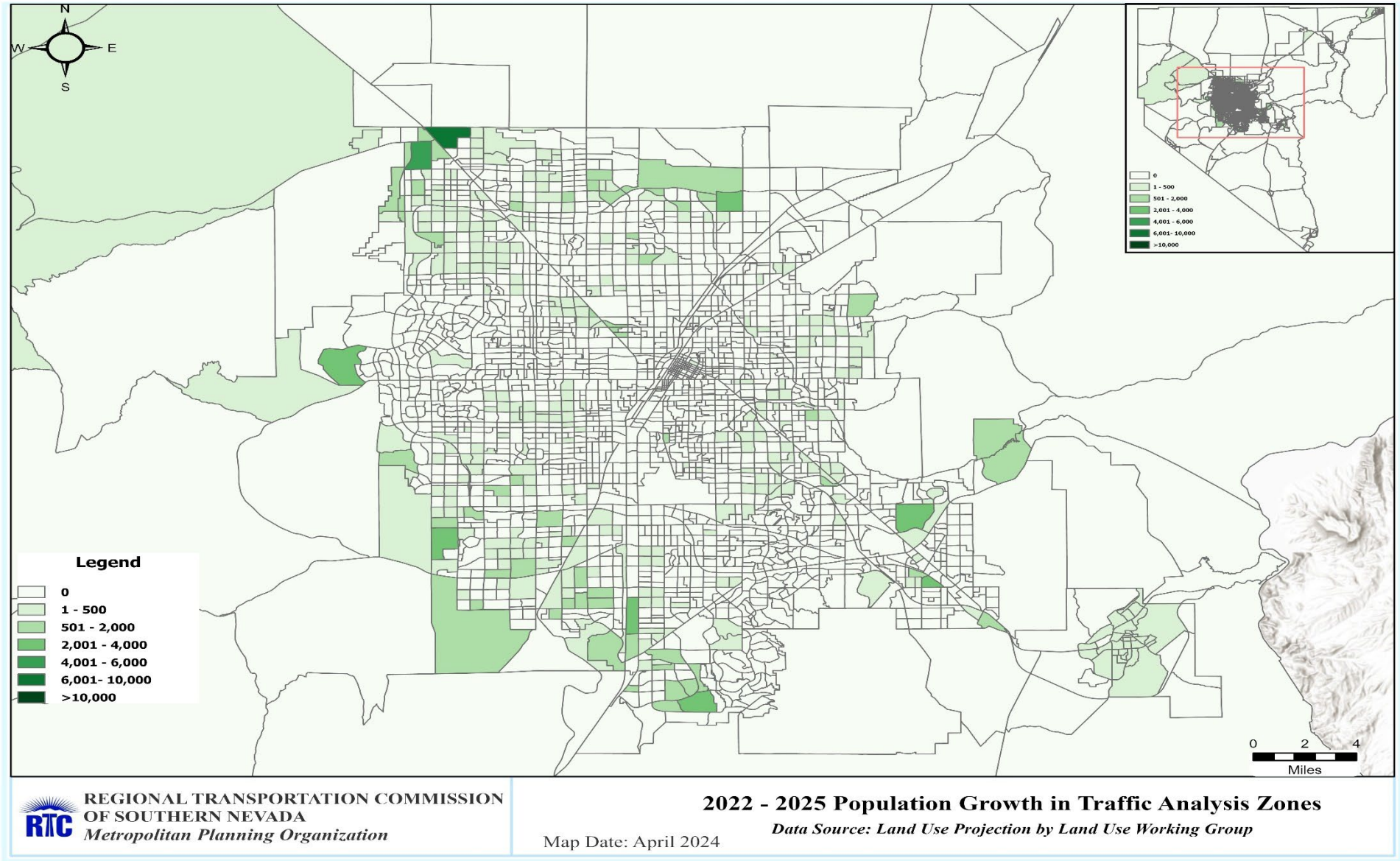
Map 8 -- Planned Land Use Growth 2022 – 2050



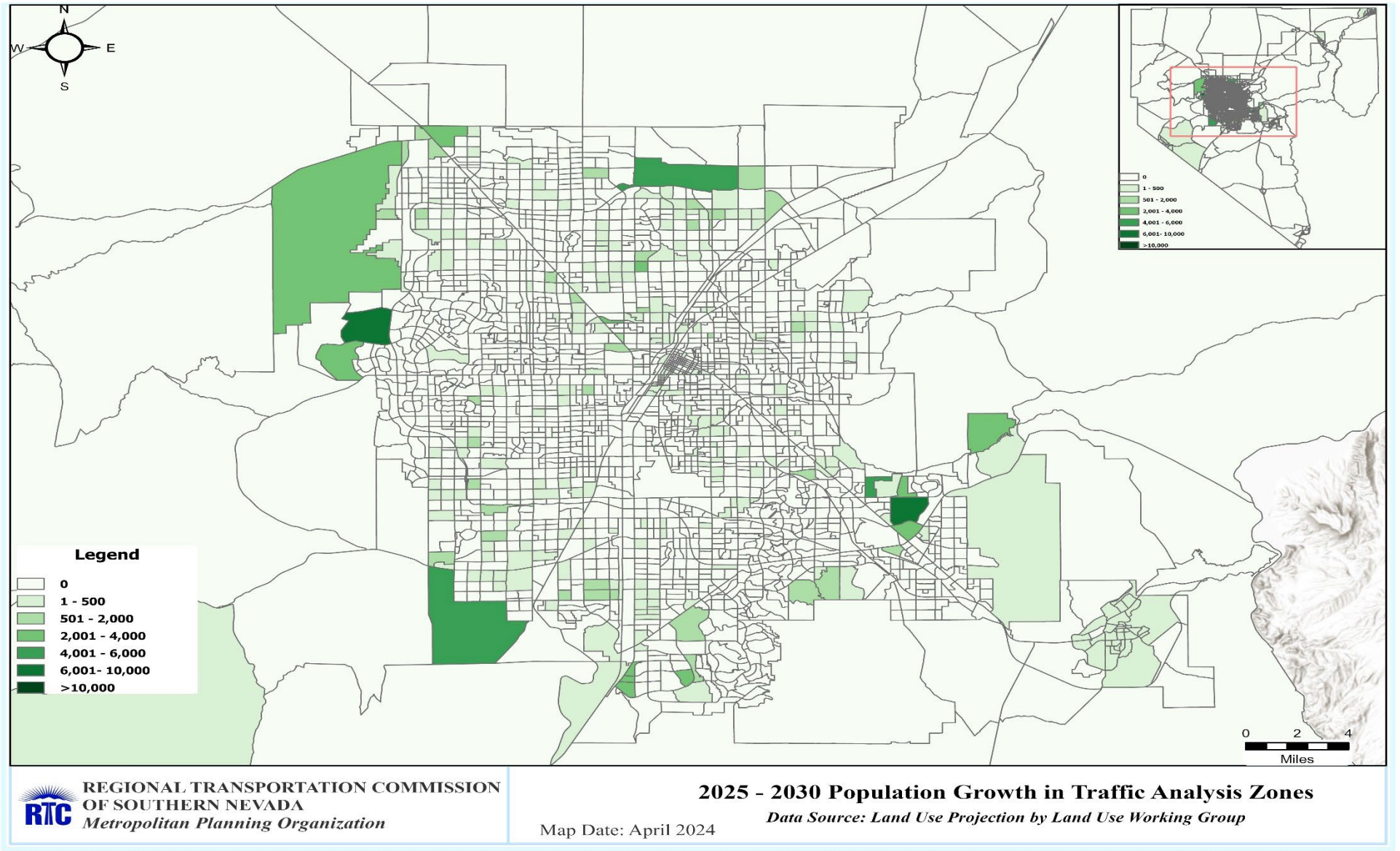
Map 9 -- 2022 Population in Traffic Analysis Zones



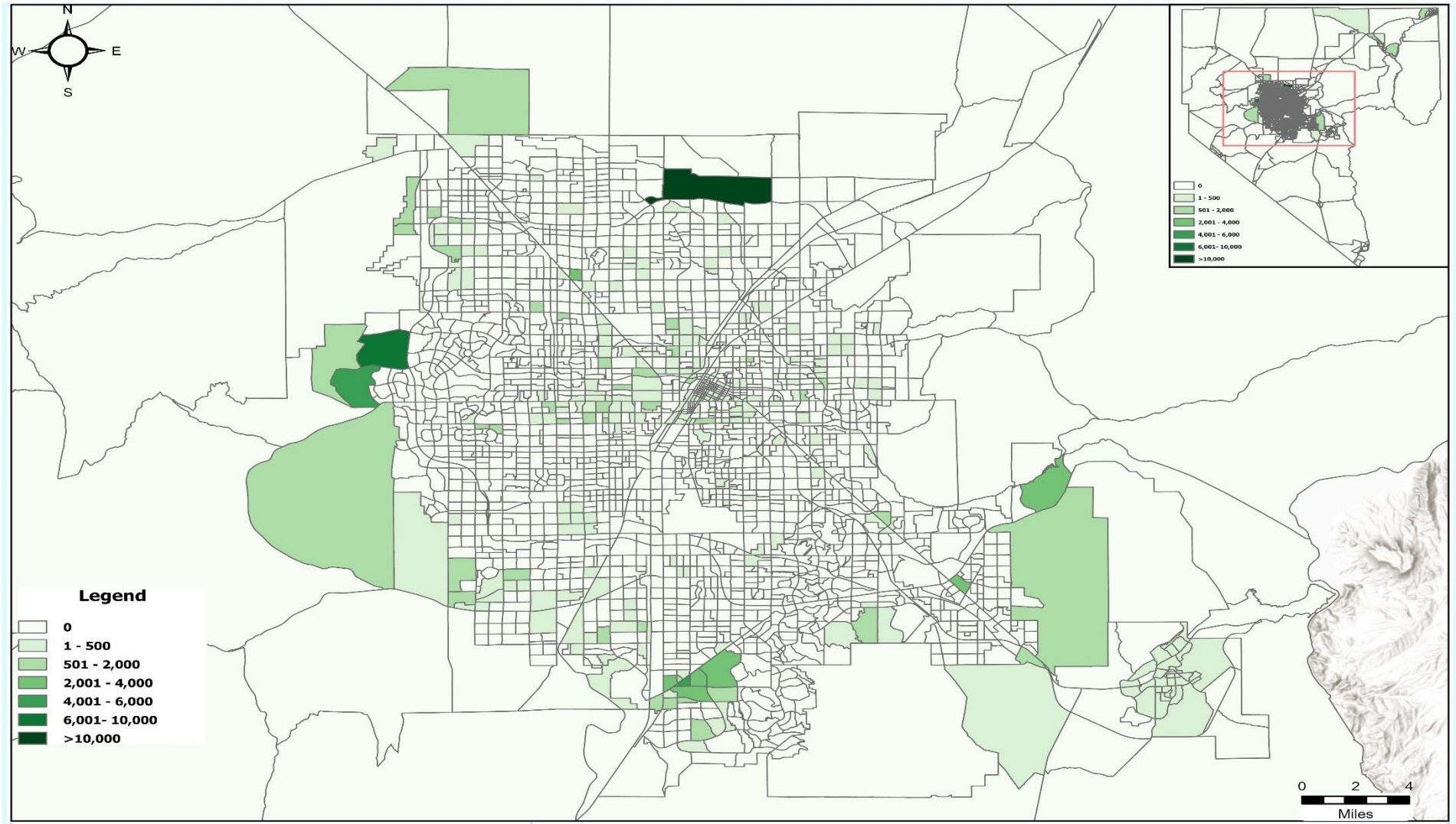
Map 10 -- 2022-2025 Population Growth in Traffic Analysis Zones



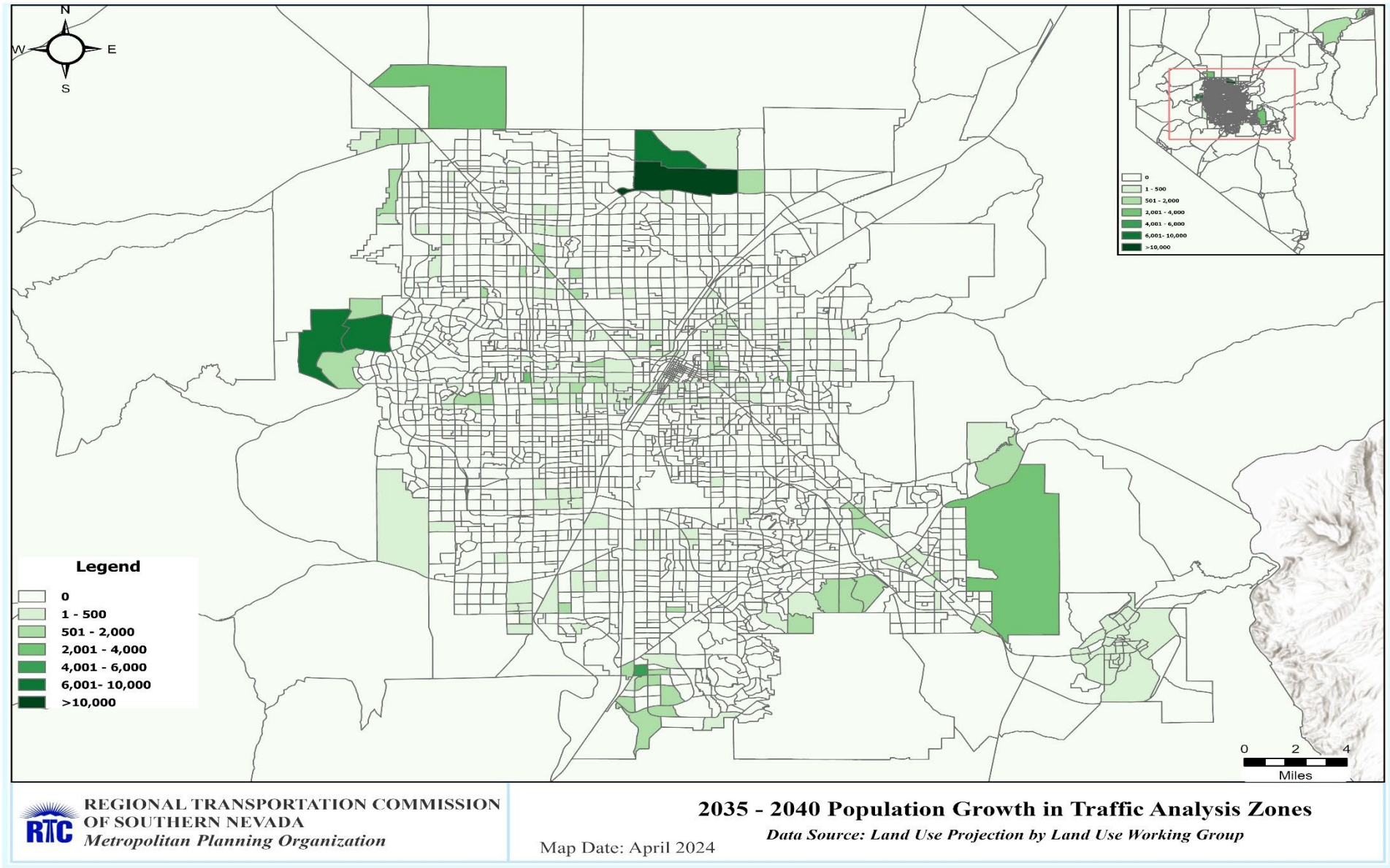
Map 11 -- 2025-2030 Population Growth in Traffic Analysis Zones



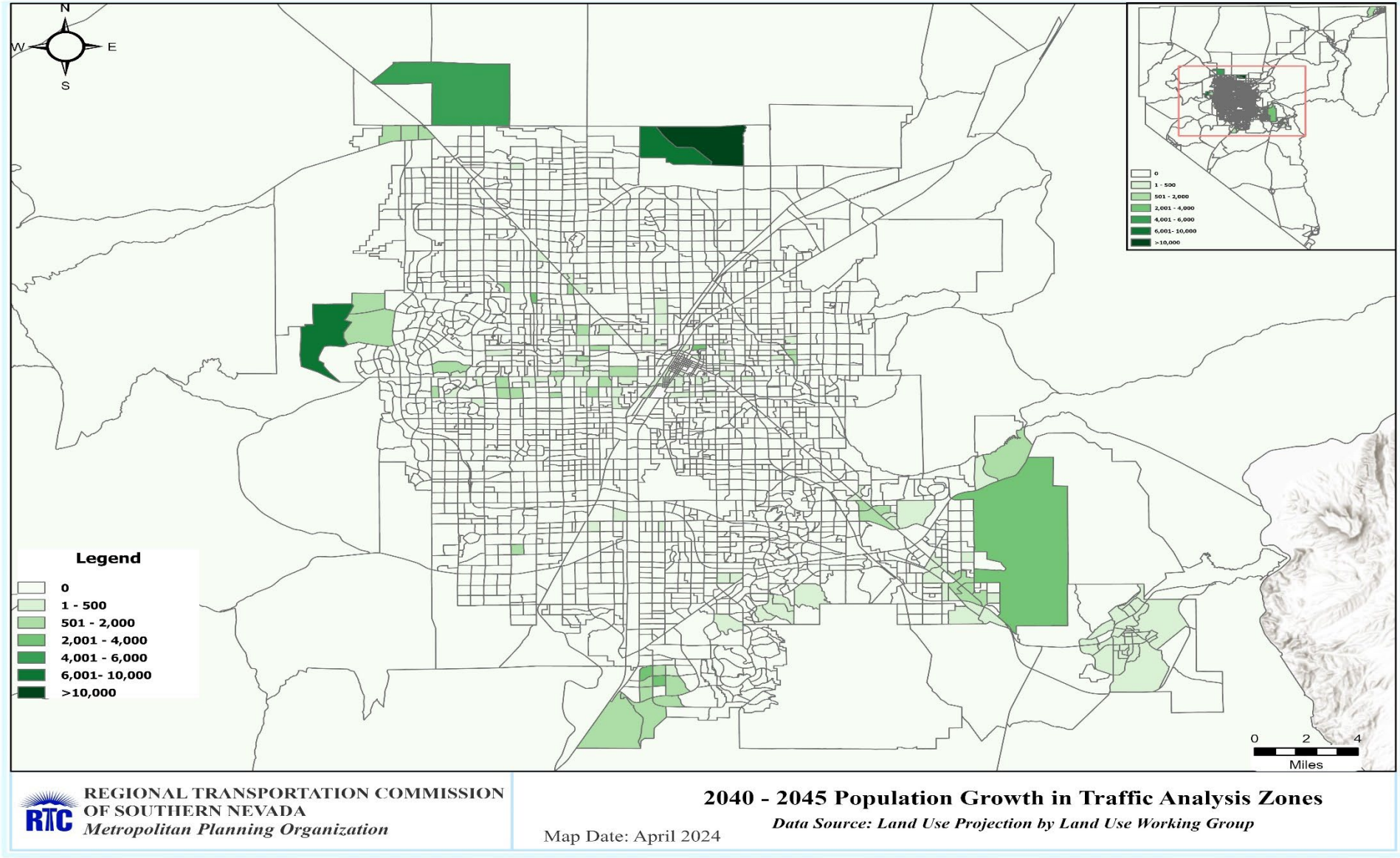
Map 12 -- 2030-2035 Population Growth in Traffic Analysis Zones



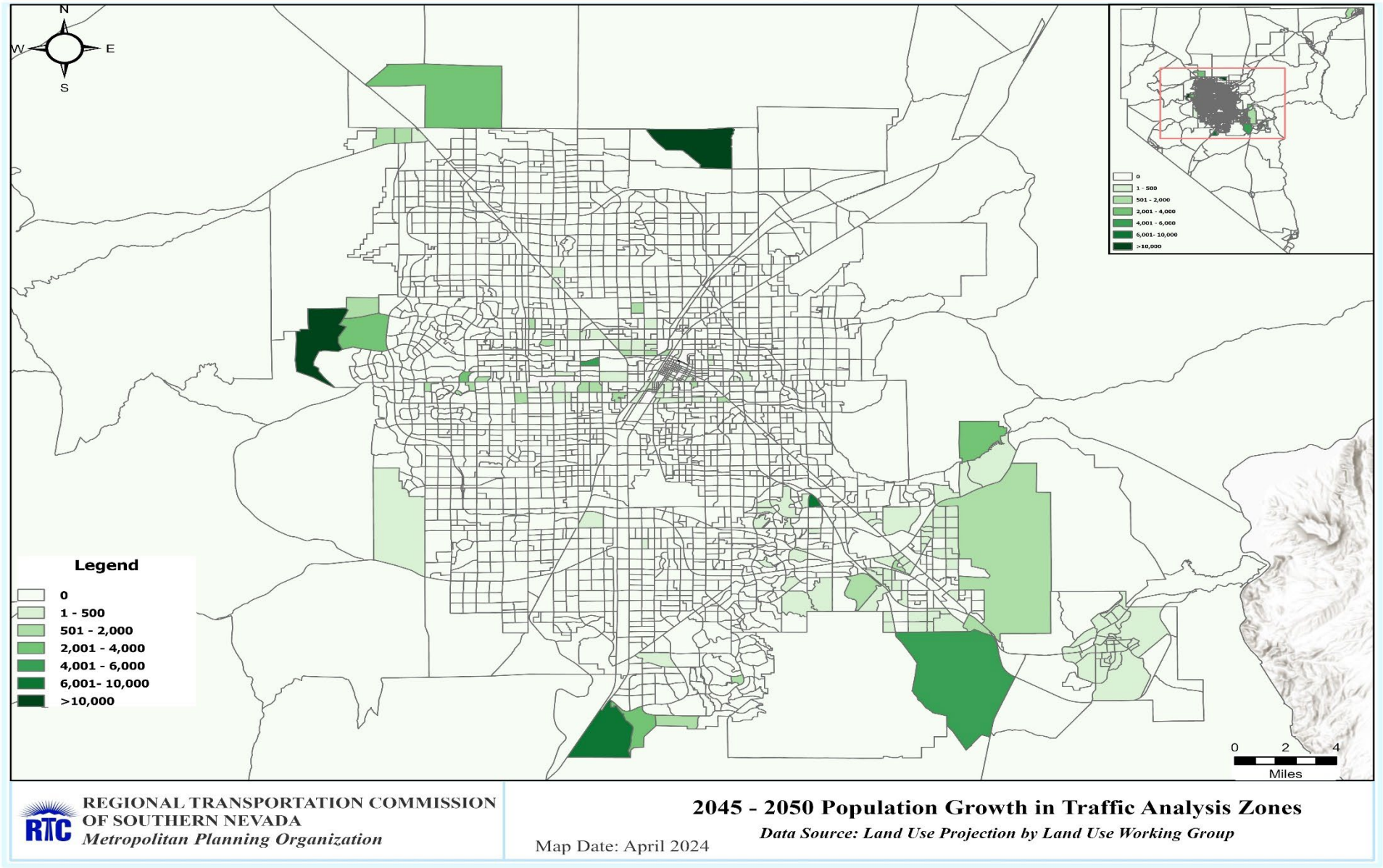
Map 13 -- 2035-2040 Population Growth in Traffic Analysis Zones



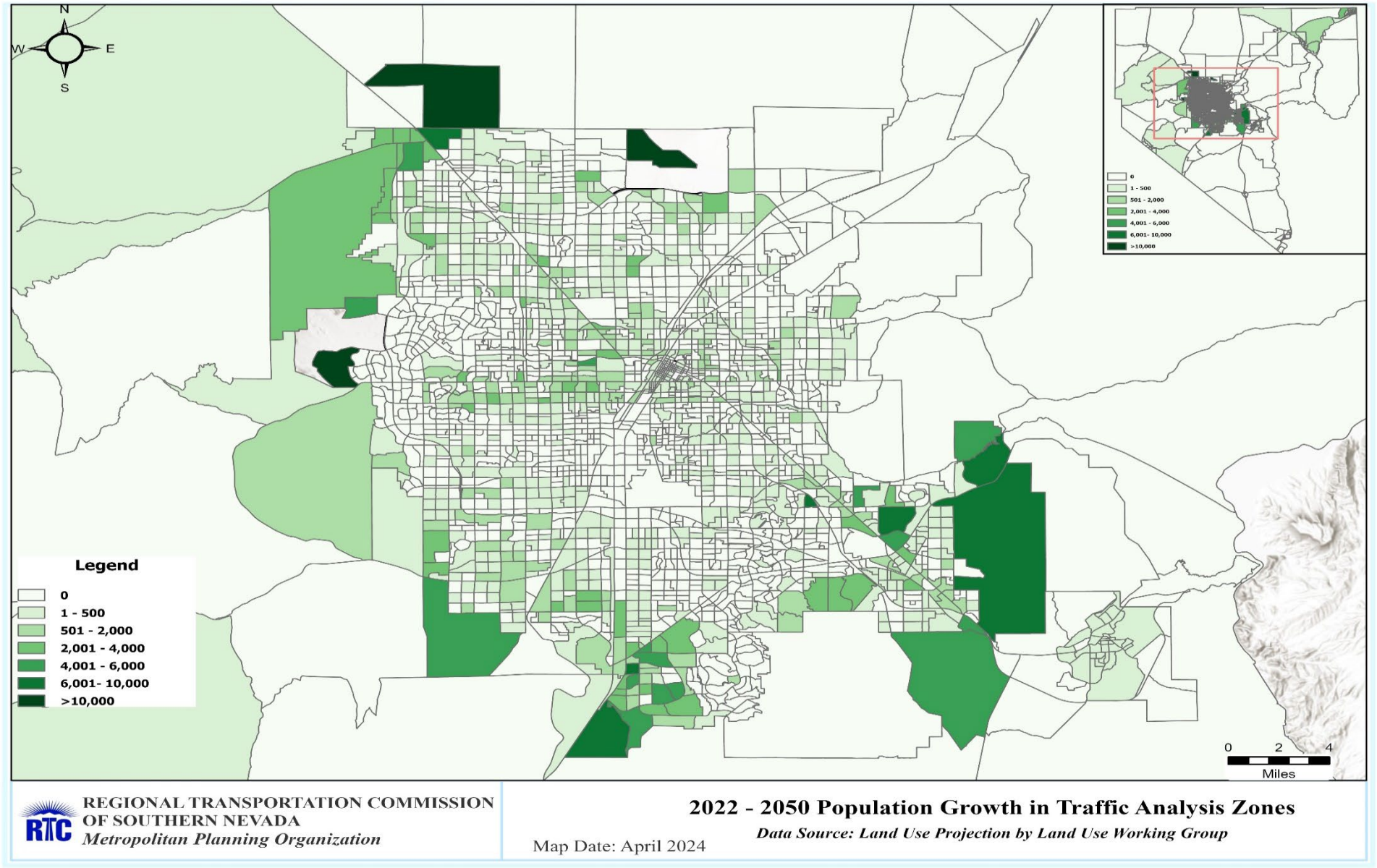
Map 14 -- 2040-2045 Population Growth in Traffic Analysis Zones



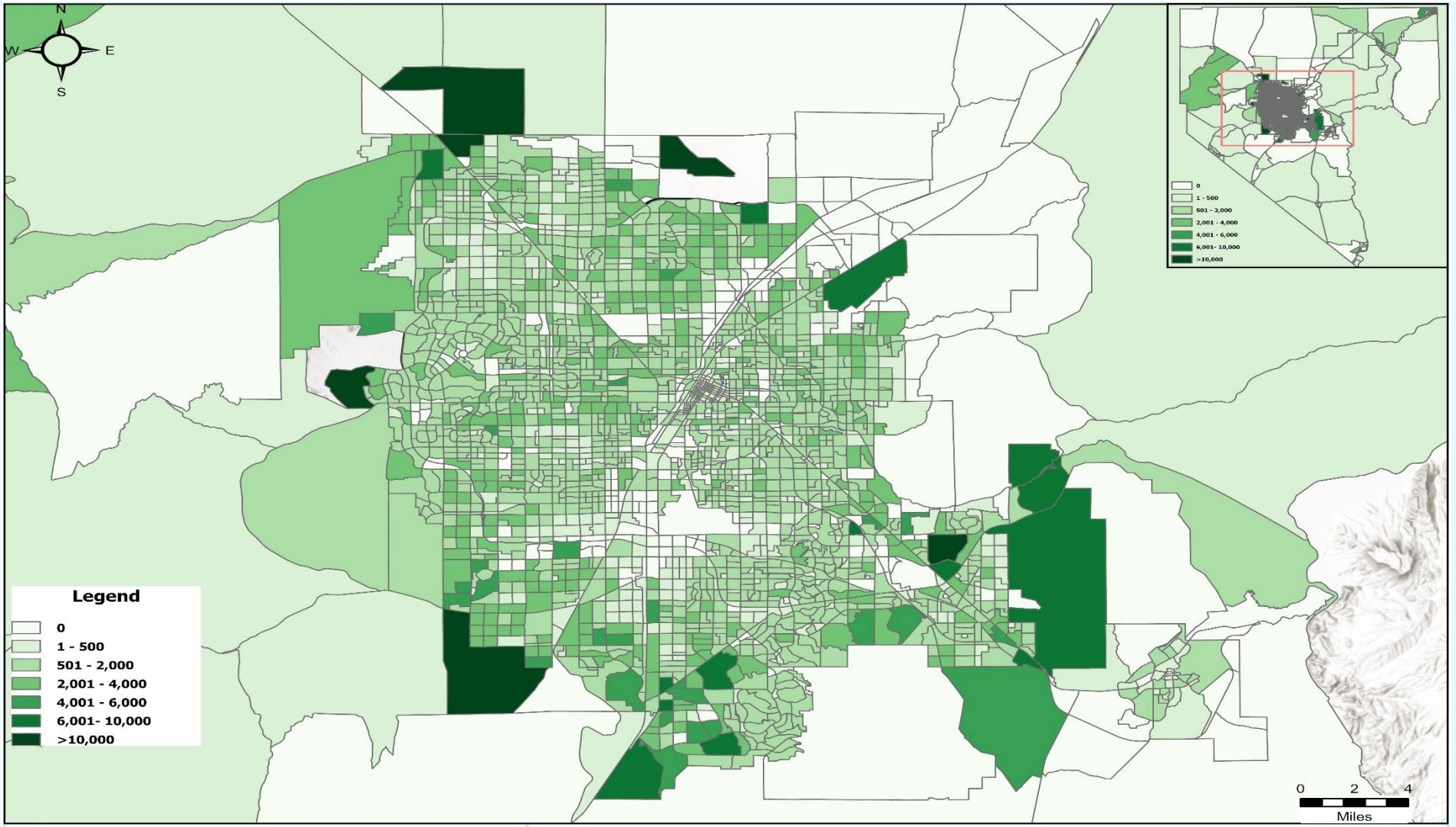
Map 15 -- 2045-2050 Population Growth in Traffic Analysis Zones



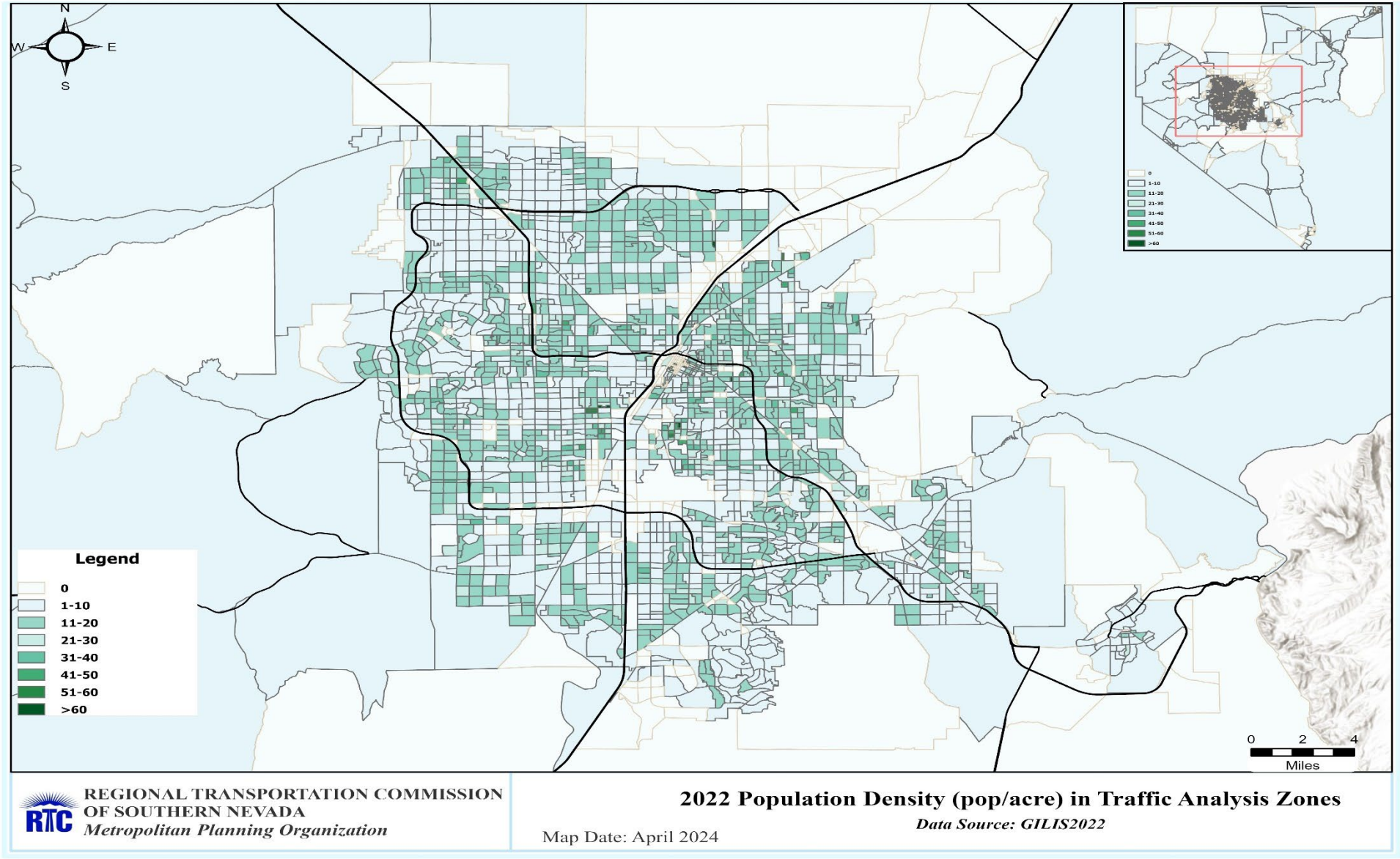
Map 16 -- 2022-2050 Total Population Growth in Traffic Analysis Zones



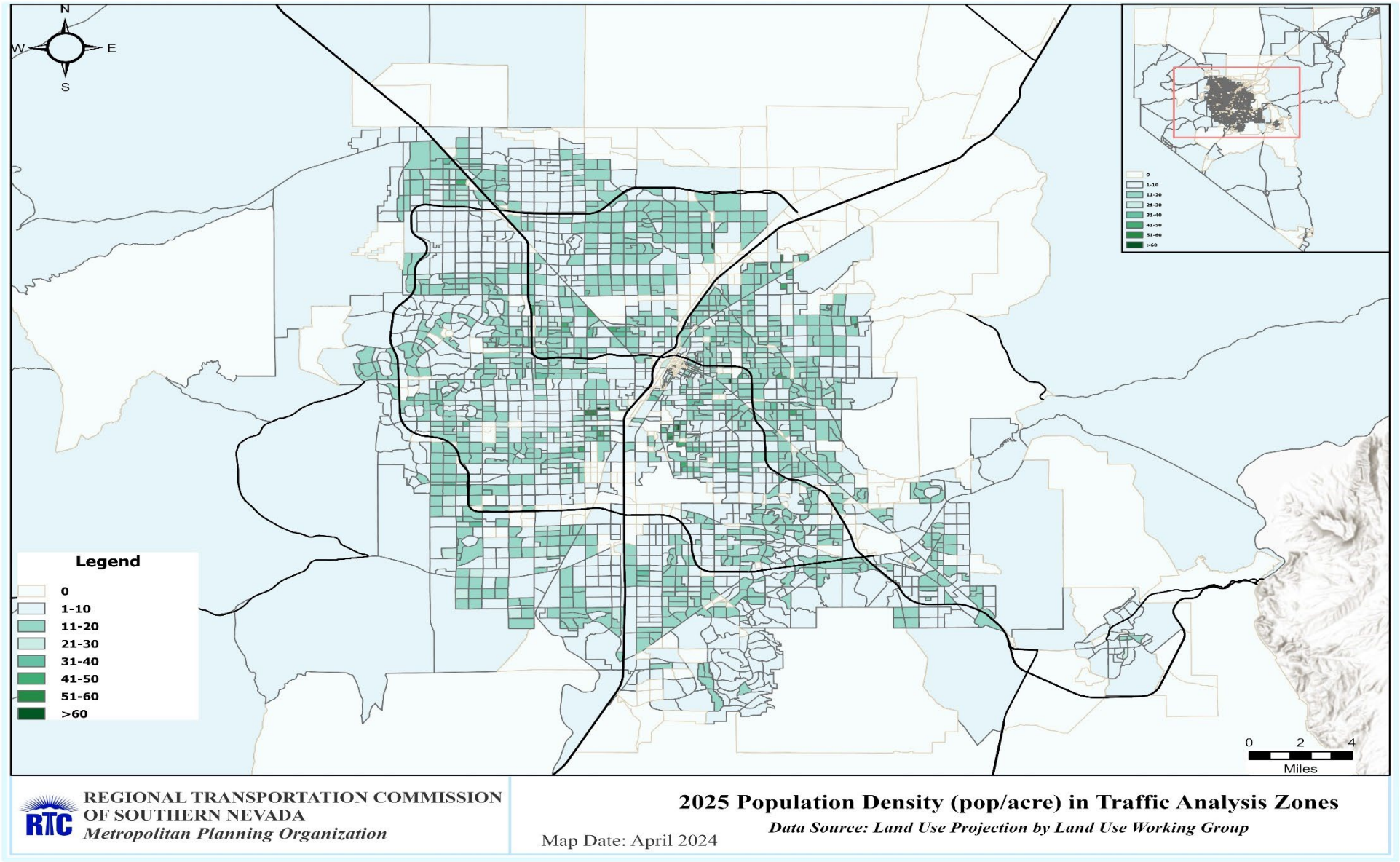
Map 17 -- 2050 Total Population in Traffic Analysis Zones



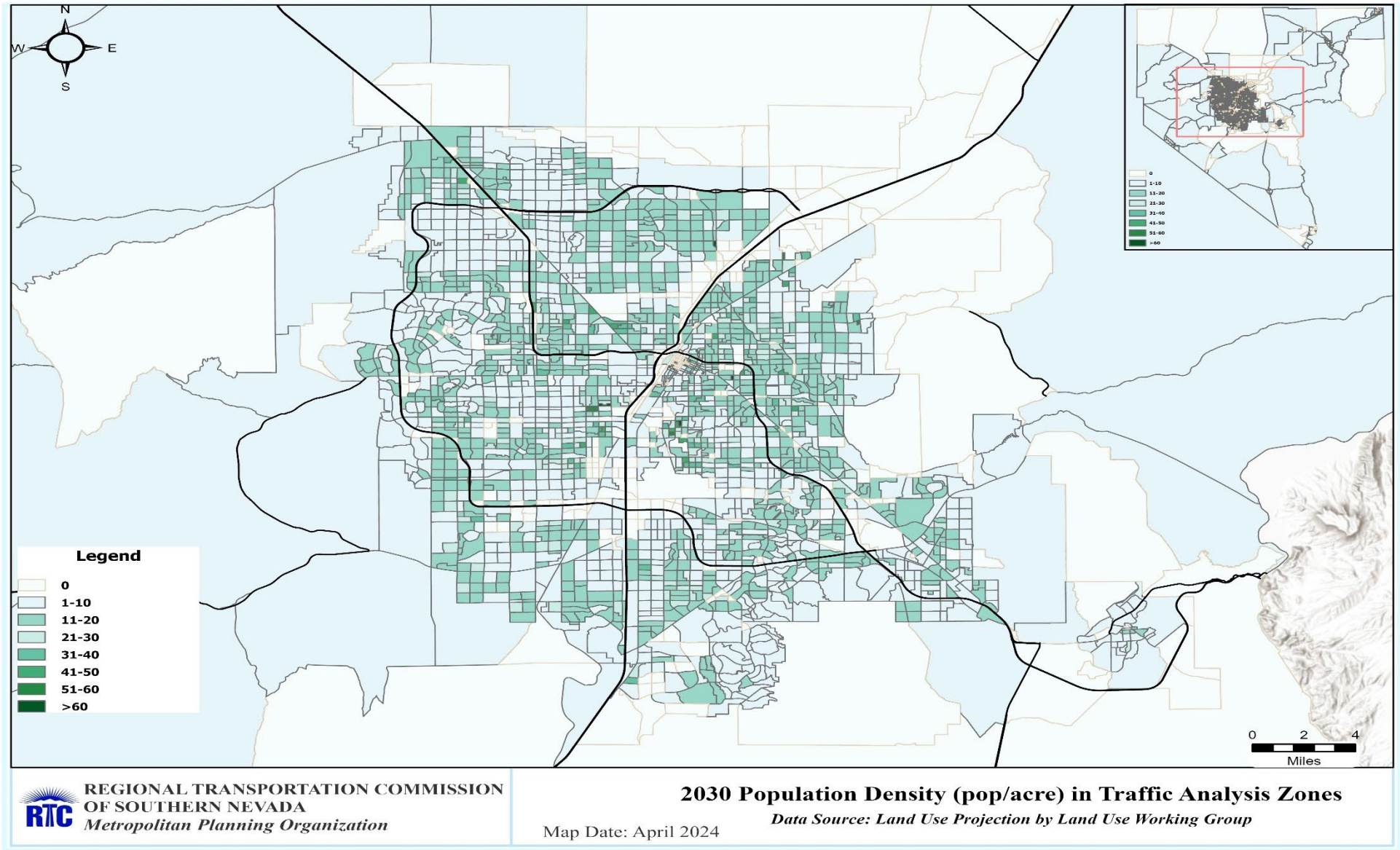
Map 18 -- 2022 Population Density (Pop/Acre) in Traffic Analysis Zones



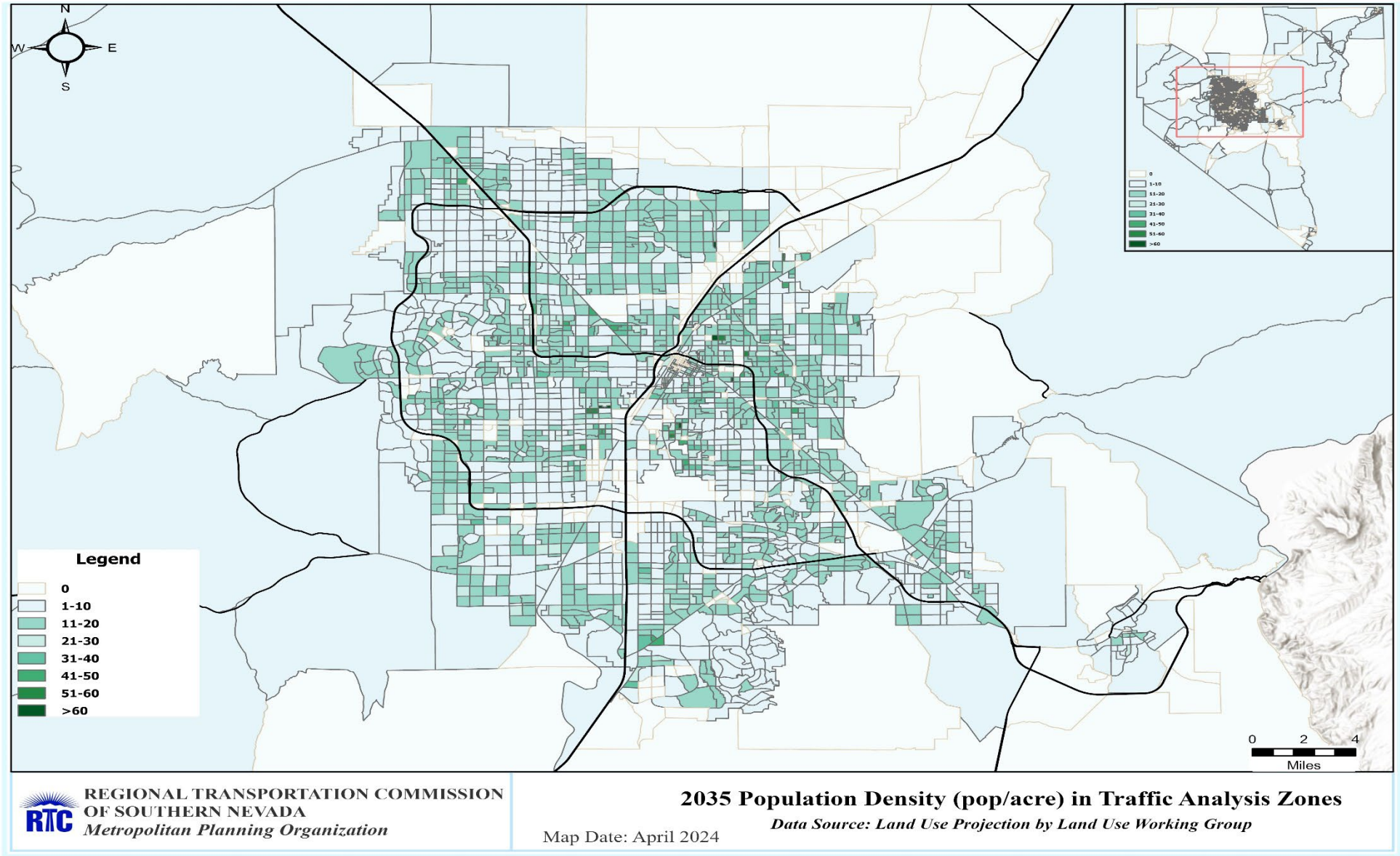
Map 19 -- 2025 Population Density (Pop/Acre) in Traffic Analysis Zones



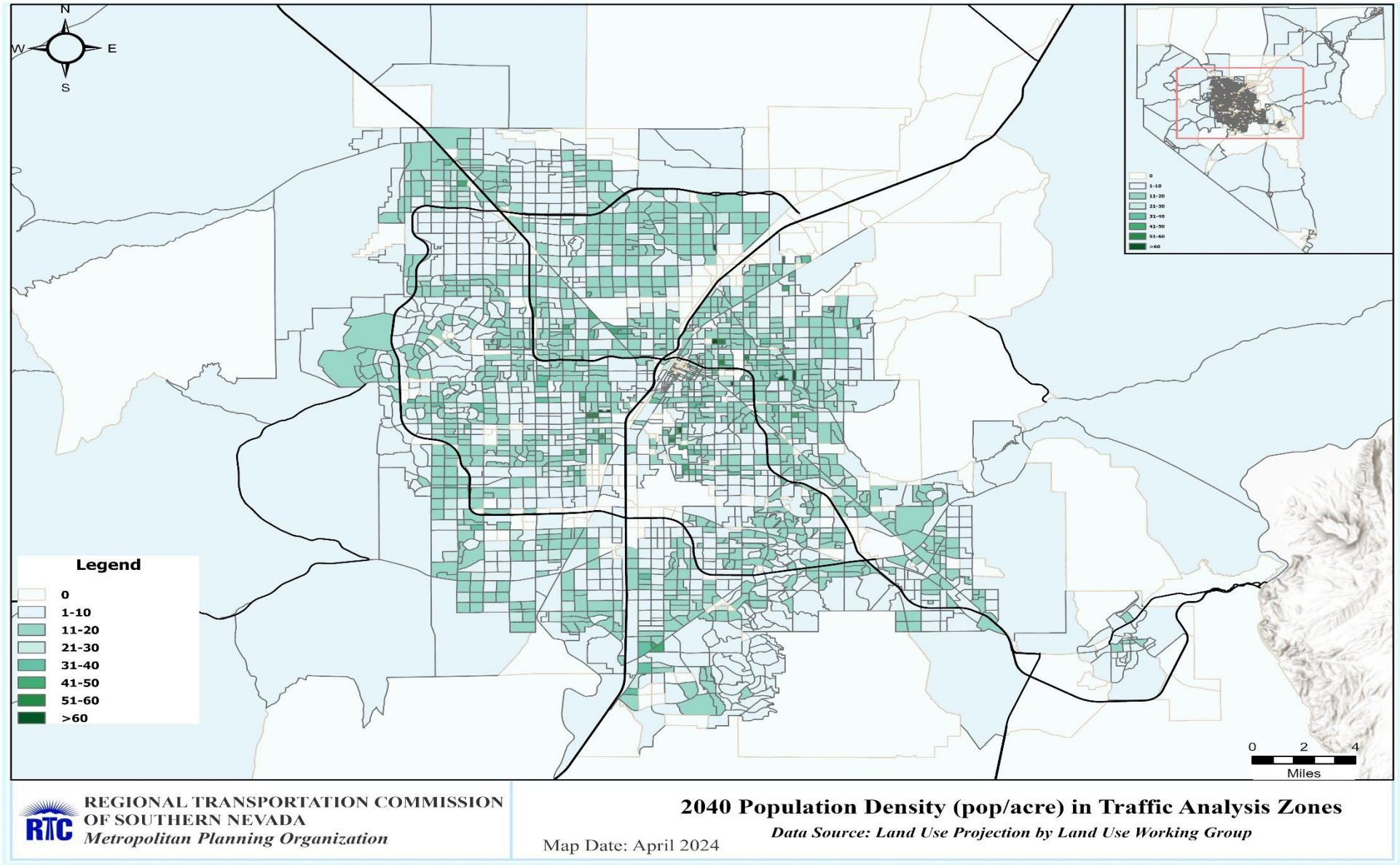
Map 20 -- 2030 Population Density (Pop/Acre) in Traffic Analysis Zones



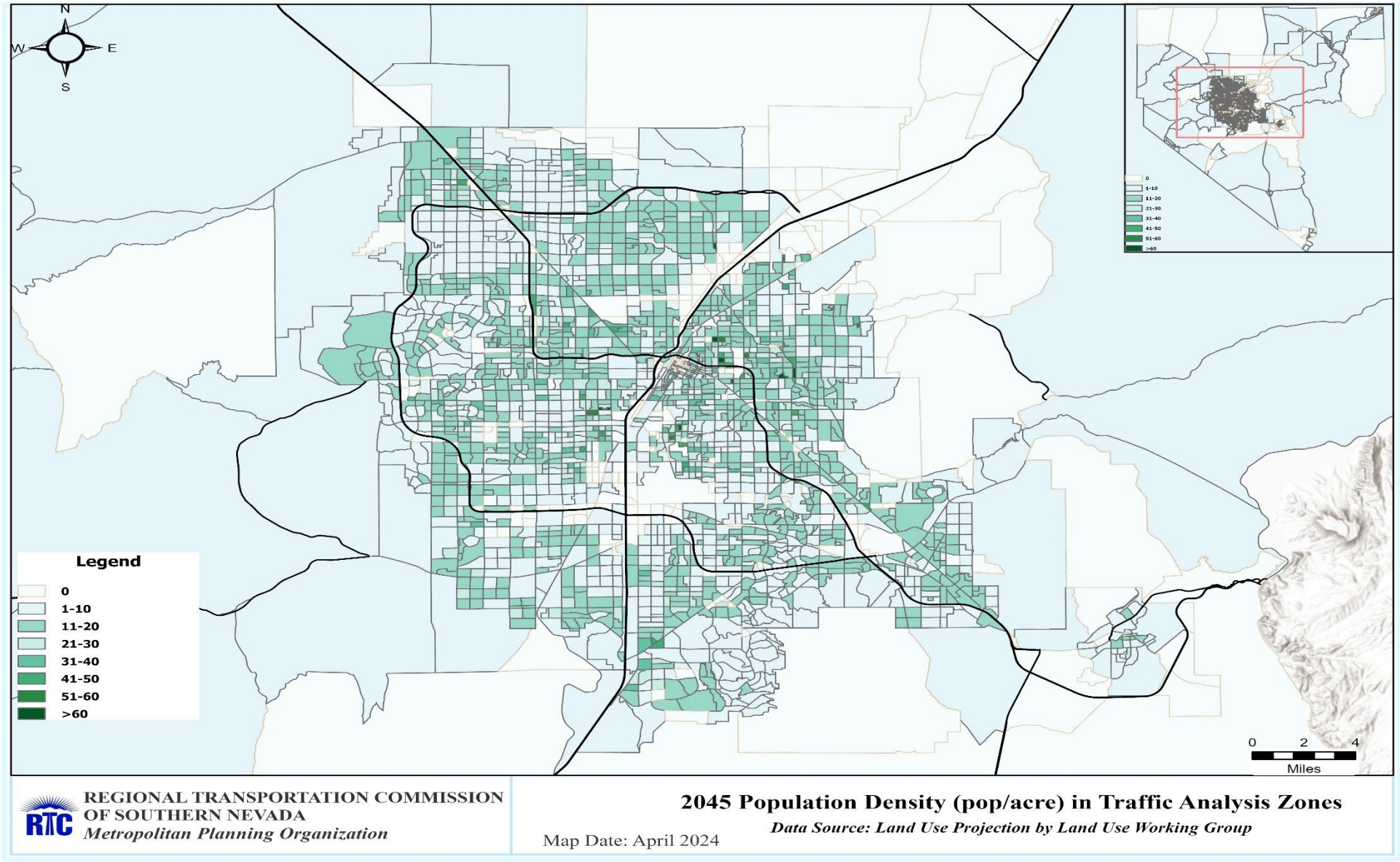
Map 21 -- 2035 Population Density (Pop/Acre) in Traffic Analysis Zones



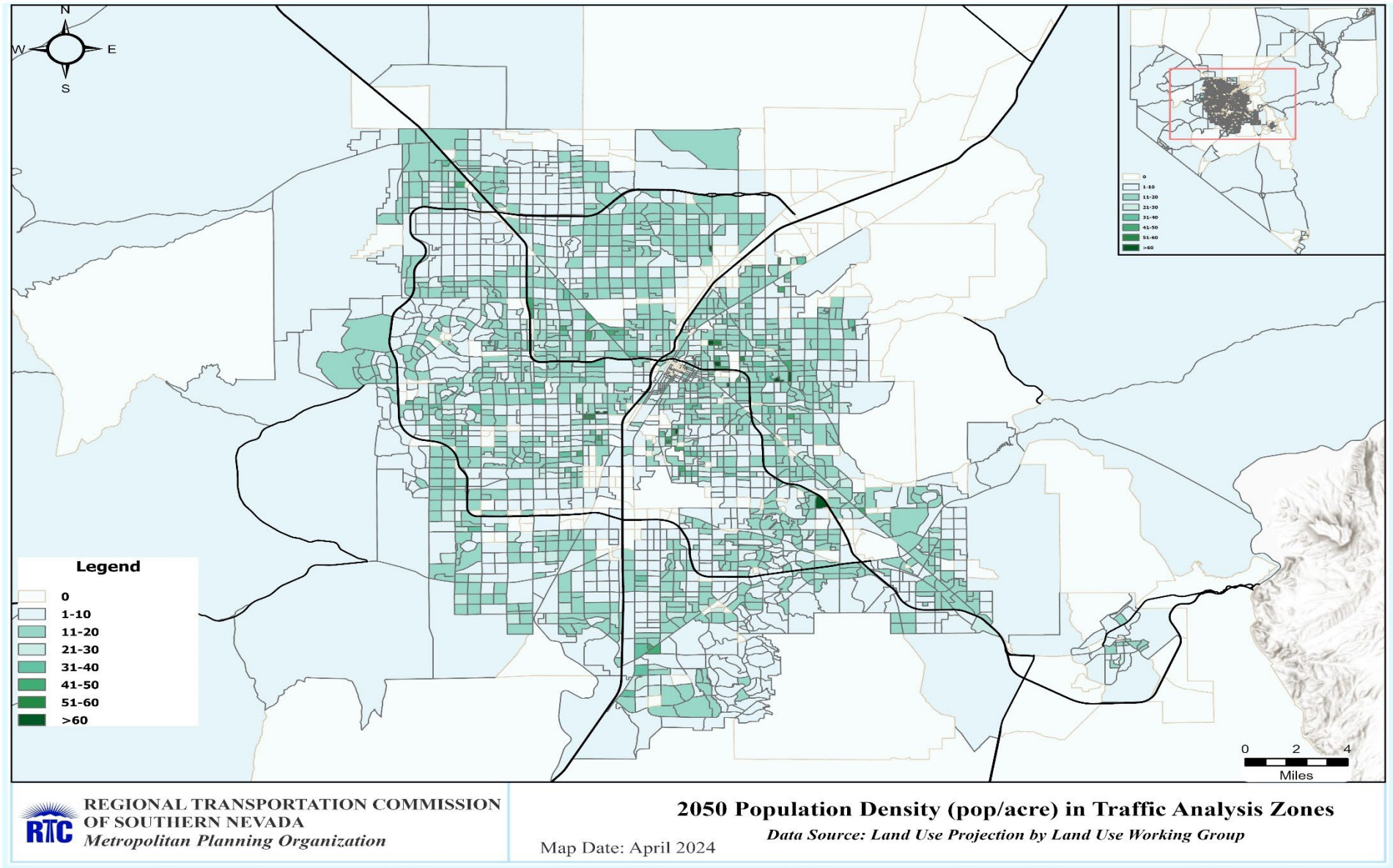
Map 22 -- 2040 Population Density (Pop/Acre) in Traffic Analysis Zones



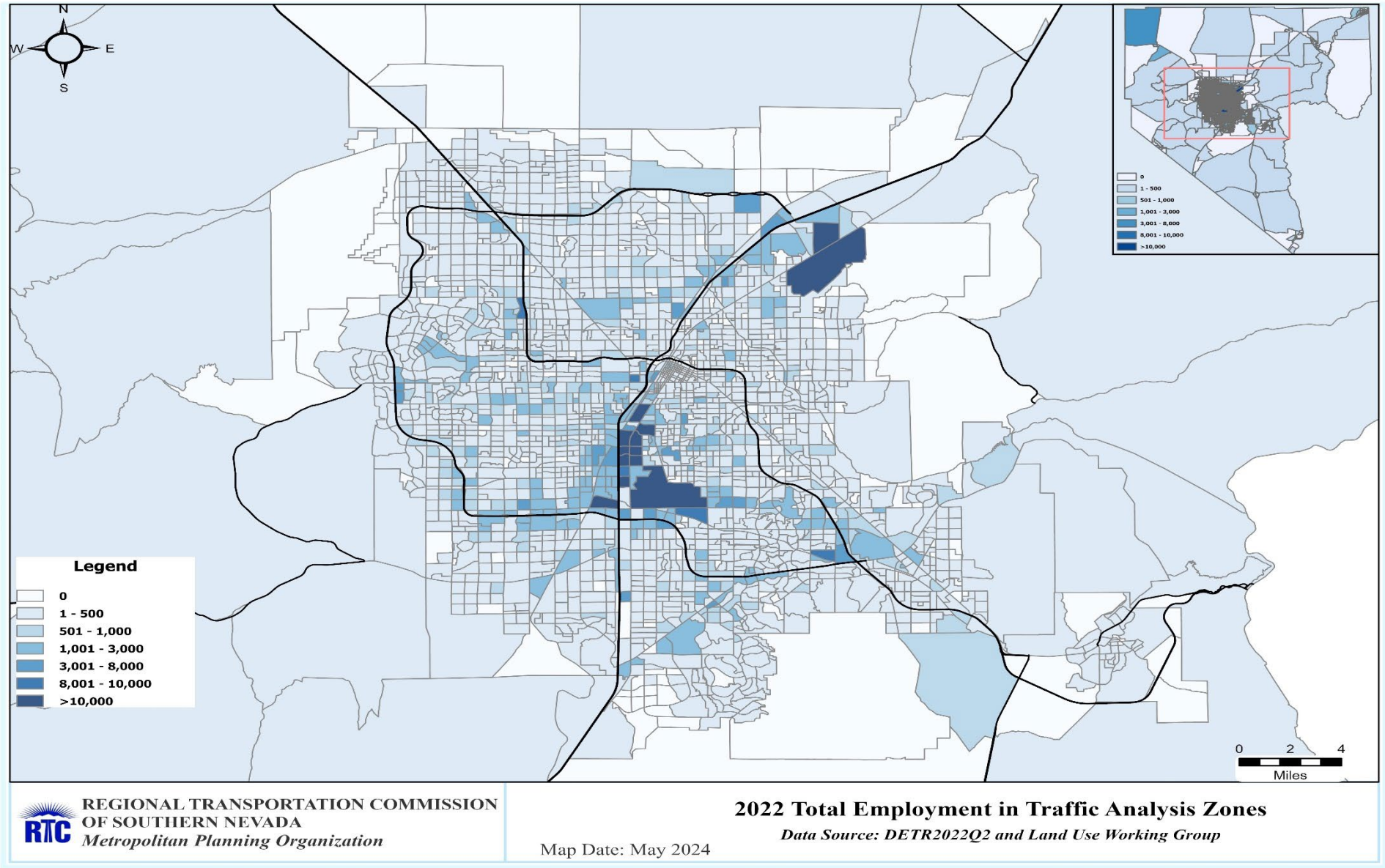
Map 23 -- 2045 Population Density (Pop/Acre) in Traffic Analysis Zones



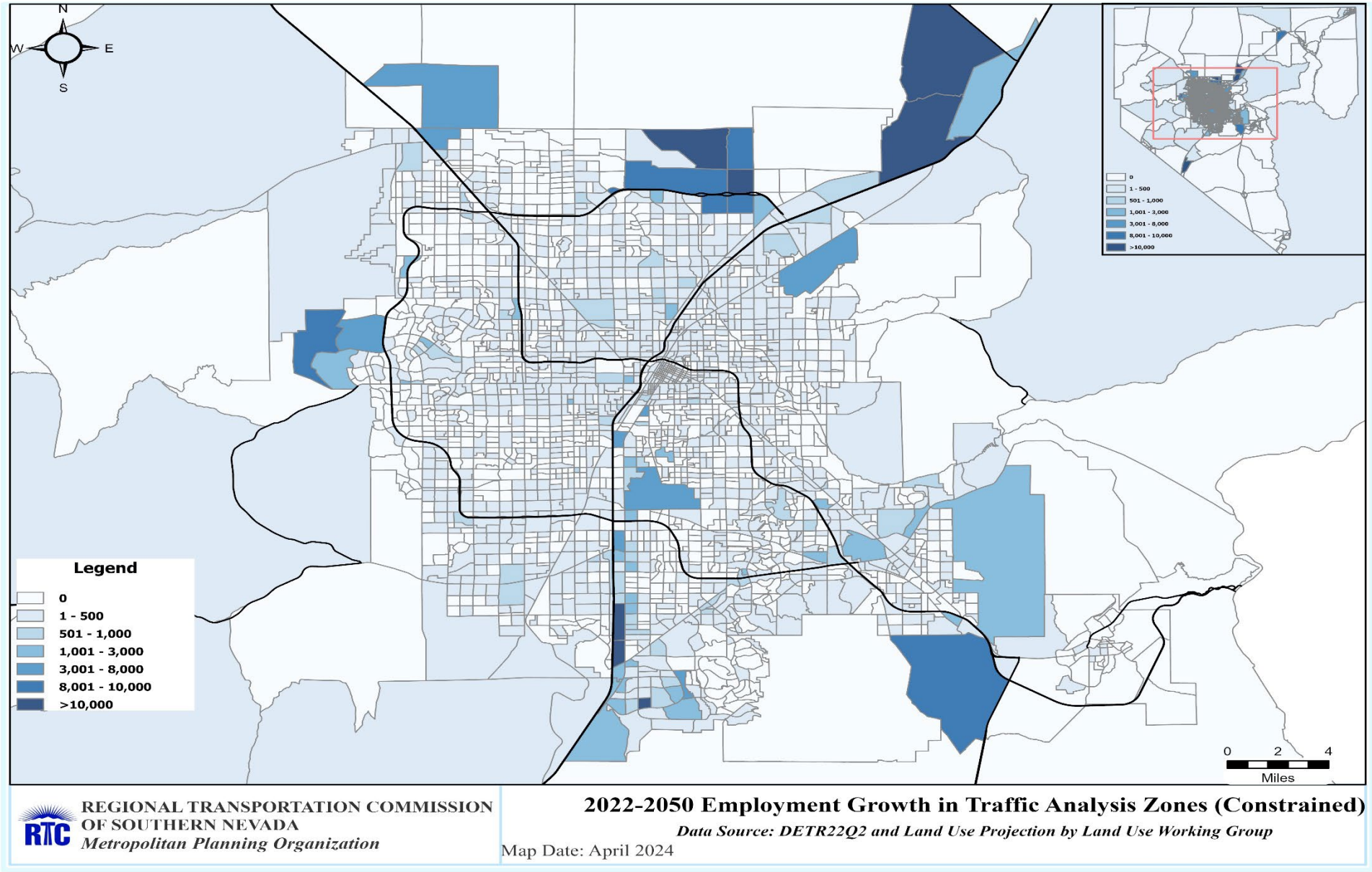
Map 24 -- 2050 Population Density (Pop/Acre) in Traffic Analysis Zones



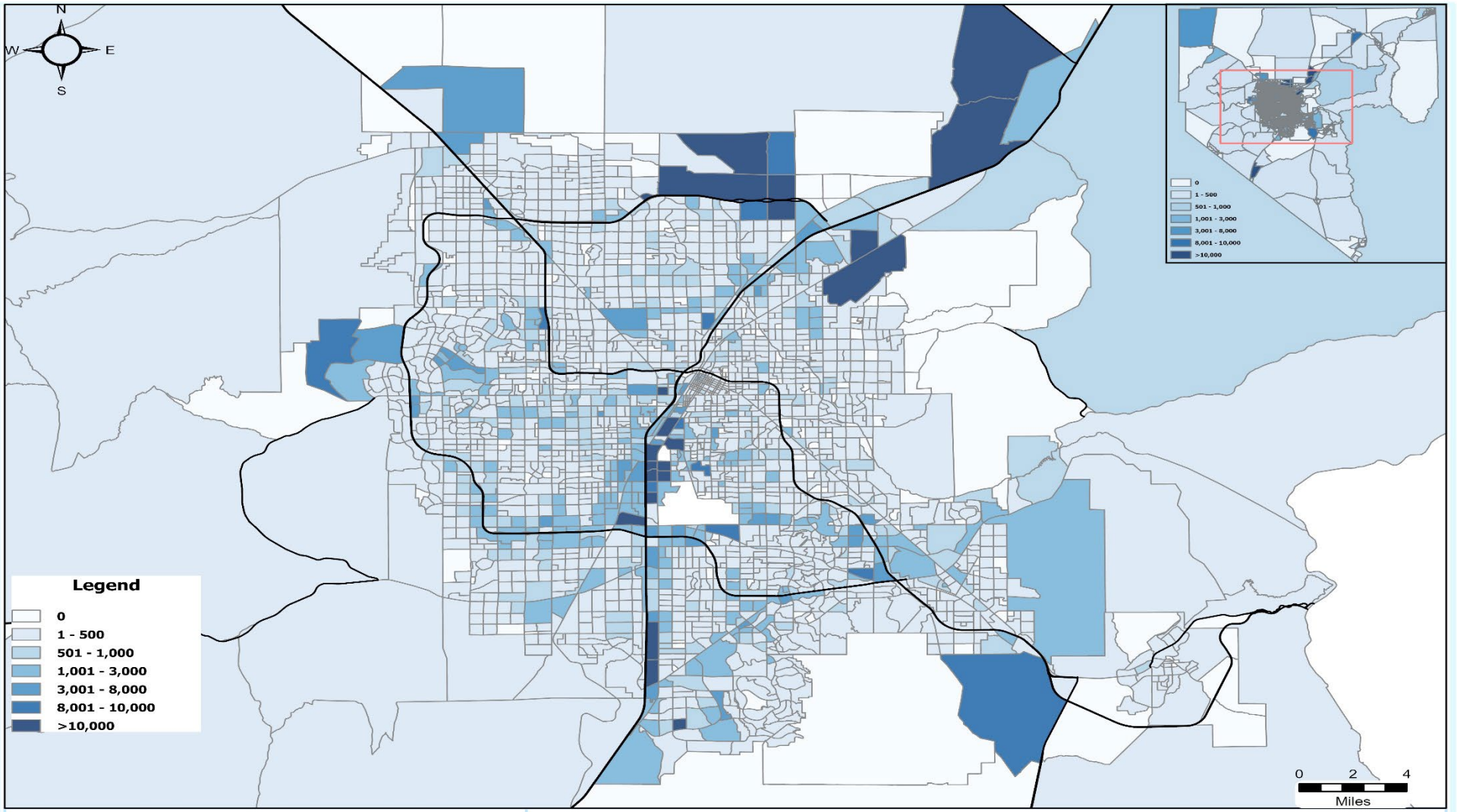
Map 25 -- 2022 Total Employment in Traffic Analysis Zones



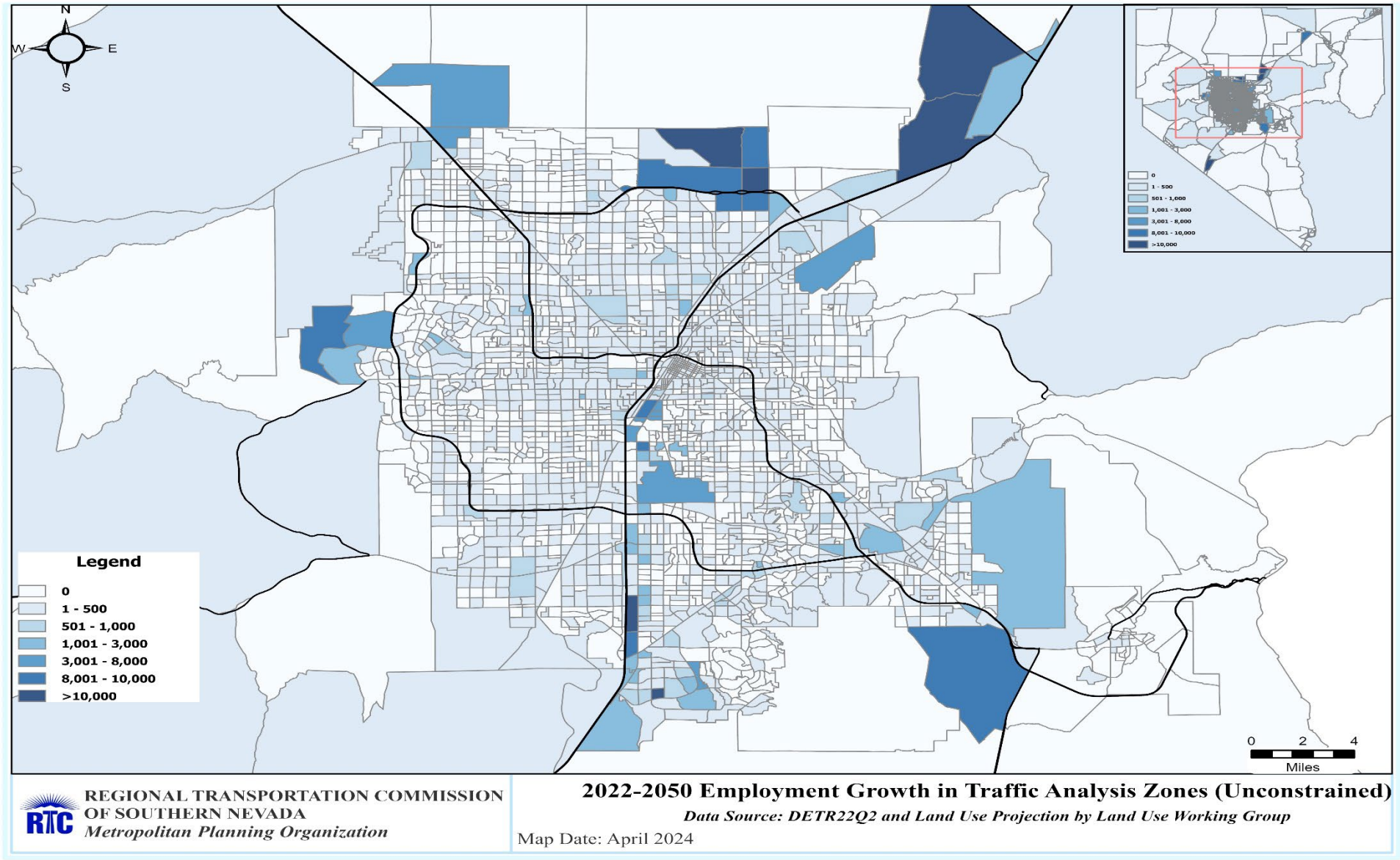
Map 26 -- 2022-2050 Total Employment Growth in Traffic Analysis Zone (Constrained)



Map 27 -- 2050 Total Employment in Traffic Analysis Zones (Constrained)



Map 28 -- 2022-2050 Total Employment Growth in Traffic Analysis Zone (Unconstrained)



Map 29 -- 2050 Total Employment in Traffic Analysis Zone (Unconstrained)