

Appendix U

MJPA Economic Analysis

MARCH JOINT POWERS COMMISSION
OF THE
MARCH JOINT POWERS AUTHORITY

MJPA - Reports, Discussions and Action Items
Agenda Item No. 9 (1)

Meeting Date: September 27, 2023

Report: **RECEIVE AND FILE AN UPDATE FOR MARCH JOINT POWERS AUTHORITY’S ECONOMIC IMPACT ANALYSIS BY QISHENG PAN, Ph.D.**

Motion: Receive and file an Update for March Joint Powers Authority’s Economic Impact Analysis (EIA) Qisheng Pan, Ph.D.

Background

In December of 2016, Dr. Qisheng Pan completed an Economic Impact Analysis (EIA) for the March Joint Powers Authority. The study utilized the well-known California Planning Model (SCPM) to trace all regional economic impacts using high level as well as localized scenarios. Assumptions included the buildout of the March LifeCare Campus and Meridian Business Park in 2030, while keeping the Upper Plateau area as-is (no development).

The buildout of Meridian Business Park - South Campus is wrapping up ahead of the 2030 timeline within the 2016 EIA and the March Inland Port’s Parcel D-2, which was not factored into the 2016 study, is now fully developed. Given the current status of developments within the March JPA Planning area, it is necessary to update the 2016 EIA to more accurately reflect the agency’s economic impact to the region. Moreover, as March Air Reserve Base also experienced changes since 2016 with community partnerships that supported the attraction of new missions such as the KC-46 bed-down mission, the Commission authorized the inclusion of the base’s outputs in the JPA’s 2023 EIA. The updated economic impact assessment now captures all economic outputs associated with the area formerly known as the March Air Force Base.

Here to provide information on the 2023 EIA for March is Dr. Qisheng Pan.

Attachment: March 2023 Economic Impact Analysis

Economic Impact Analysis of the March Joint Powers Authority (MJPA) Development Projects

Draft Report by Dr. Qisheng Pan

Last Update on August 30, 2023

Executive Summary

The objective of this research project is to assess the economic effects of the development initiatives undertaken by the March Joint Powers Authority (JPA) in 2023, as well as future development projects that are anticipated. The impact analysis will be carried out in two phases, beginning with the assessment of the present development status in 2023, followed by an evaluation of the full build-out scenario projected for 2040. In the first phase, we will estimate the economic impacts of the development projects in their current state as of 2023, while in the second phase, we will evaluate the economic effects of the full build-out scenario with and without the West March Upper Plateau project for 2040. As an update of our previous study completed in May 2023, this project estimates the economic impacts of the development in March JPA by incorporating the activities in March Air Reserve Base (ARB) to both the current development state in 2023 and the full build-out scenario without the West March Upper Plateau project in 2040.

This study employs the latest version of the Southern California Planning Model (SCPM) to trace all the regional economic impacts in current and future development status with a high degree of sectoral and spatial disaggregation. The SCPM has been updated with the data obtained from the Southern California Association of Government (SCAG)'s most recent regional transportation model. It integrates two key modeling components, namely an input-output model and a spatial allocation model. The input-output model is based on the widely used IMPLAN mode¹, which offers a detailed breakdown of economic sectors. Meanwhile, the spatial allocation model as the second model component of SCPM is utilized to distribute sectoral impacts across the geographic zones in Southern California, such as municipal cities or traffic analysis zones. The economic impacts of the current development and the full built-out in March JPA and March ARB are shown in Table I and described as follows.

Phase 1 in 2023 generates significant economic impacts, with total output impacts of \$ 10,142.9 million and the creation of 41,311 jobs. Among the six counties in the SCAG region, Riverside County has the most substantial impacts, with \$ 5,998.3 million in output impacts and the creation of 21,346 jobs. Los Angeles County, being the largest county in the region, has \$ 2,615.9 million in output impacts and creates 12,591 jobs, while Orange County, the second-largest

¹ Made available by <http://www.implan.com/>

county, has \$ 852.0 million in output impacts and creates 4,120 jobs. San Bernardino County, located in the north of Riverside County, has \$ 417.8 million in output impacts and creates 2,039 jobs. Finally, Imperial County, located in the south of Riverside County, has \$ 49.2 million in output impacts and creates 223 jobs. Among the six counties, Riverside is the only county having direct impacts. All other counties have indirect and induced impacts, while direct impacts are absent.

The March Joint Powers Authority (JPA) West area encompasses several campuses including Meridian North, South, West Upper Plateau, and West March Lower Plateau. The total output impacts in this area are \$ 2,678.1 Million, which has created 10,441 jobs. The March JPA East includes the North East Corner/March LifeCare, March Inland Port, and Other (K4 / D3E), and has a total output impact of \$1,540.5 Million and 3,762 jobs. The March Air Reserve Base (ARB) has a total output impact of \$1,396.0 Million and 5,285 jobs. Because March ARB and March JPA East are located in the same SCAG traffic analysis zone (TAZ), they have a total output impact of \$2,936.5 Million and 9,047 jobs.

At the municipality level, the City of Moreno Valley has a total output impact of \$45.0 Million and 188 jobs, while the City of Perris has an impact of \$28.1 Million and 106 jobs. The City of Riverside has a total output impact of \$107.2 Million and 476 jobs. The Unincorporated Riverside area has a total output impact of \$5,591.7 Million and 19,478 jobs.

Since the West March Upper Plateau project has not yet been approved by the Commission, it has been excluded from the economic impact analysis for the future full-built-out development in Phase 2. The total output impacts in 2040 are \$12,747.6 Million, which creates 57,751 jobs in the Six-County SCAG region. Over half of the impacts are located in Riverside County, which has a total output impact of \$7,431.5 Million and 31,842 jobs. In the March JPA West, the total output impacts are \$3,325.7 Million and 13,211 jobs. In the March JPA East, the total output impacts are \$2,227.9 Million and 10,945 jobs. It is assumed that that the March ARB will possess an equivalent count of both military personnel and civilians due to the absence of information concerning the base in the future developmental phase. The March Air Reserve Base (ARB) has a total output impact of \$1,396.0 Million and 5,285 jobs in 2040. The combination of March JPA East and March ARB in the same SCAG TAZ has a total output impact of \$3,623.7 Million and 16,230 jobs. In City of Moreno Valle, the total output impacts are \$58.5 Million and 285 jobs. In City of Perris, the total output impacts are \$35.2 Million and 166 jobs. In City of Riverside, the total output impacts are \$134.0 Million and 611 jobs. In Unincorporated Riverside, the total output impacts are \$6,917.1 Million and 29,347 jobs.

Table IA. The economic impacts of the current development and the full built-out in March JPA and March ARB.

	Current Development in March JPA and March ARB in 2023								Full Built-out without West Upper Plateau in March JPA and March ARB in 2040							
	Output (\$Millions)				Jobs				Output (\$Millions)				Jobs			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
March JPA West	2,677.5	0.4	0.2	2,678.1	10,439	2	1	10,441	3,325.2	0.4	0.2	3,325.8	13,208	2	1	13,211
March JPA East	1,539.2	0.9	0.4	1,540.5	3,756	4	2	3,762	2,226.2	1.0	0.6	2,227.7	10,938	4	3	10,945
March ARB	1,395.4	0.5	0.1	1,396.0	5,283	2	1	5,285	1,395.4	0.5	0.1	1,396.0	5,283	2	1	5,285
March JPA East and March ARB	2,934.6	1.4	0.5	2,936.5	9,039	6	3	9,047	3,621.6	1.5	0.6	3,623.7	16,221	6	3	16,230
City of Moreno Valley	19.6	8.7	16.8	45.0	60	40	88	188	24.1	12.0	22.4	58.5	108	60	118	285
City of Perris	17.7	4.2	6.2	28.1	54	19	32	106	21.8	5.1	8.3	35.2	98	25	43	166
City of Riverside	41.9	37.8	27.4	107.2	163	169	143	476	52.1	45.5	36.5	134.0	207	212	192	611
Unincorporated Riverside	5,533.0	35.7	22.9	5,591.7	19,200	158	120	19,478	6,848.8	37.7	30.6	6,917.1	29,017	169	161	29,347
County of Los Angeles	0.0	1,368.7	1,247.3	2,615.9	0	6,115	6,476	12,591	0.0	1,708.9	1,664.0	3,372.9	0	7,756	8,635	16,391
County of Orange	0.0	480.1	371.9	852.0	0	2,188	1,932	4,120	0.0	604.3	497.3	1,101.7	0	2,807	2,574	5,381
County of Ventura	0.0	117.7	92.0	209.7	0	517	476	993	0.0	128.3	121.4	249.8	0	555	628	1,183
County of Riverside	5,612.1	210.7	175.5	5,998.3	19,478	950	918	21,346	6,946.8	250.9	233.8	7,431.5	29,429	1,182	1,230	31,842
County of San Bernardino	0.0	214.9	202.9	417.8	0	978	1,061	2,039	0.0	268.3	270.5	538.8	0	1,295	1,422	2,716
County of Imperial	0.0	30.3	18.9	49.2	0	125	98	223	0.0	28.9	24.1	53.0	0	111	126	237
Total	5,612.1	2,422.3	2,108.4	10,142.9	19,478	10,872	10,961	41,311	6,946.8	2,989.6	2,811.2	12,747.6	29,429	13,706	14,615	57,751

1. Introduction

Airport development has been considered the engine of future economic growth in large urban areas, similar to the hubs created by ports and railyards in the past (Garreau 1992). Airport hubs are often evaluated to assess the growth of metropolitan areas as airports have great potential impacts on economy development, job creation, and population growth (Green 2007). As stated in *The Economic Impact of Commercial Airports in 2013*, it was estimated that in year 2013, the total economic impact of all commercial airports in the US, 485 airports, was over \$1.1 trillion, provided 9.6 million jobs with total payroll approximately \$358 billion (Smith, 2014).

Many statistic facts have shown the economic agglomeration effect of airport hubs. The Department of Transportation (DoT) in each state evaluates their airport economic impact periodically. The *Economic Impact of Airports in Maine 2006* summarized that there were 36 public airports generating more than 20,900 jobs, accounted for nearly \$487.6 million in payroll and generated \$1.5 billion in economic activity (MDoT, 2006). The *Colorado Airports Economic Impact Study 2008* reported that the annual economic activity or output generated by the airports and activities totals \$32.2 billion. All airport related/supported jobs identified in this study represent 28% of Colorado's total employment and annual tax benefits from the airports total an estimated \$1.7 billion (CDoT, 2008). The study of economic impact of airports in Pennsylvania stated that public-use airports supported approximately 304,462 jobs, generated \$9.2 billion in annual payroll and produced \$23.6 billion in annual economic activity (PDoT, 2011). *The Ohio Airports Economic Impact Study 2014* indicated that the 104 airports in the Ohio supported nearly 123,500 total jobs with a total annual payroll of nearly \$4.2 billion in 2012. The airports also produced more than \$13.3 billion in total annual economic output (ODOt, 2014). Reported in the *Texas Aviation Economic Impact Study 2018*, it was indicated that the 264 aviation airports in Texas created over 48,000 jobs with annual payroll amount nearly \$2.6 billion. The total economic output is more than 9.3 billion. (TXDOT, 2018).

The March Joint Powers Authority (Authority) Planning Area encompasses approximately 4,400 acres of former March Air Force Base (AFB) properties located in Riverside County, California, between the cities of Riverside, Perris and Moreno Valley. March AFB previously operated on 6,600 acres of federal lands until a 1993 Base Closure and Realignment Commission (BRAC) action resulted in the realignment of Base boundaries, the designation of March AFB as an Air Force Reserve Base, the loss of 10,000 jobs and approximately \$500 million annually to the local economy. The Authority was formed through a partnership between the County of Riverside and the Cities of Riverside, Perris and Moreno Valley for the purpose of restoring the local economy and jobs that were lost due to BRAC. As a result of the partnership, the Authority serves as the land use authority for the March area, developing more than 3,300-acres of properties in partnership with private developers, including 300-acres on airport properties, overseen by the March Inland Port Airport Authority (a division of the Authority). The March Inland Port Airport, a public airport, has shared use of flying facilities with the March Air Reserve Base through a Joint Use Agreement. The Authority developed about twenty-five percent of its development area by the end of 2016.

A research project was sponsored by the authority in 2016 to assess the economic effects of airport development projects in their current state and their projected status by 2030 when fully built out. The 2016 study revealed that the development phase in that year had produced output impacts worth \$962.4 Million and generated 5,649 job opportunities. The full-built-out development was estimated to create a total output impact of \$9,226.5 Million and 55,526 jobs by 2030, as per the projections.

The Authority plans to conduct an updated study to evaluate the regional economic effects of its development projects in March 2023 and project their impacts in a fully-built-out scenario by 2040, building on the 2016 study. The research project aims to estimate the economic impacts of the Authority's development activities in two phases. Firstly, it will evaluate the impacts of the ongoing development projects as of March 2023, while the second phase will assess the full-build-out scenario in 2040, as expected under the Authority's Plan.

2. Literature Review

The economic impact of an airport encompasses not only the economic activities it initiates but also those related to its operation, including services such as transportation, job creation, business activities, tourism, and commodity transportation in the surrounding areas. According to Green's (2017) study, passenger activity is a more potent indicator than cargo activity for assessing an airport's impact on the local economy in terms of population growth and employment creation. In 2018, San Francisco International Airport (SFO) reported generating over \$3.3 billion in federal and local tax revenues, with more than half coming from direct airport activities. However, approximately \$2.3 billion was generated from visitor spending, while only \$1 billion was from freight services.

2.1. Job Creation, Housing Prices and Environmental Impact

Airport locations are strategically planned, but they are not profiting from their locations. Van den Berg (1996) discussed that one option for airport to profit is to create subsidiaries to cooperate with local businesses. According to numerous economic impact analyses in the literature, the direct impacts of an airport typically account for approximately half of the total impacts. Hakfoort et al (2010) studied the regional economic impact of the Amsterdam Schiphol airport, and found that each job created directly by the airport lead to another induced employment. Echeverri-Carroll (1999) stated that the construction of a new airport created enormous amount of employment in the local economy both directly and indirectly. The Austin Mueller airport construction in 1998 created over 11,000 new jobs in the area and nearly half of them are direct employment in the professional fields of engineering, architecture, land survey, and other goods and services (Echeverri-Carroll, 1990). Take the O'Hare as an example, in 1990 there were about 600,000 jobs clustered around the airport, about 100,000 more than Chicago central area (Chalabi, 2002).

In the State of California, public agencies have constantly monitoring the economic contributions from the airport system. The *San Diego International Airport Economic Impact Study 2018* estimated that airport tenants and visitors alone at the San Diego International Airport supported nearly 116,600 total jobs with annual total payroll up to \$3.9 billion (San Diego County Regional Airport Authority, 2018). According to the *San Francisco International Airport 2019*, the San Francisco International Airport (SFO) directly accounted for almost \$11 billion in business revenues in 2018, creating more than 46,000 jobs at the Airport. Additionally, the airport directly contributes \$42.5 billion in business sales and more than 188,000 jobs to the Bay Area, generated by visitor spending in tourism and freight transportation services. With the addition of these indirect and induced effects, the total economic impact of SFO in the Bay Area is over \$72.7 billion, including \$25.8 billion in labor income and about 330,000 jobs in the region.

While airports are generally associated with positive economic impacts, some studies question this notion. Pitfield (1979) argued that airports do not always have a significant impact on local economic development after a review of empirical studies on airport economic impact. Concerns over noise pollution also affect the desirability of residential properties close to airports. Several studies (Tomkins et al., 1998; Lipscomb, 2004; Pope, 2008; Cohen and Coughlin, 2005; Batog et al., 2019) have applied the hedonic model to assess the economic impact of airports on residential properties. Pope (2008) found that buyers' awareness of airport noise depreciates housing unit value by 2.9 percent. Besides noise considerations, proximity to airports is another key factor that affects housing prices (Cohen and Coughlin, 2005). Even though house prices can be negatively impacted by noise factors, access to the airport has a positive impact on housing prices. The estimation of the impact of airport noise is complicated as other external variables, such as accessibility and employment, have varying levels of impact on the housing market. While Bell (2011) also argued that noise factors have a certain impact on the local housing market, properties located close to noise sources do not necessarily depreciate automatically. Moreover, airport land use restrictions are another important factor that affects housing prices. Batog et al. (2019) concluded that more rigid restrictions on airport land use had a negative effect on property prices. Tomkins (1998) used Manchester airport as an example to illustrate that the impact of an airport is not evenly distributed spatially. They suggested that the benefits of improved accessibility and job opportunities associated with the airport could outweigh the negative effects of proximity, including noise pollution.

2.2. Airport impact assessment

In order to measure the economic effects of airport establishment, the impacts are typically categorized into three groups: direct impact, indirect impact, and induced impact. Ludders et al. (2008) conducted a study of six airports in California to assess the direct, indirect, and induced impacts on the local economy. They defined direct impact as the revenue generated from expenses incurred by travelers, such as transportation costs and goods and services purchased within the airport. Indirect impact was identified as the gains or losses experienced by surrounding businesses that are influenced by airport operations. Interestingly, tourism was

classified as a direct impact rather than an indirect impact. Induced impact was determined to be the outcome of the direct impact with multiplier effects.

Chalabi (2002) conducted a study on estimating the economic impact of airports, using Chicago O'Hare Airport as an example. The study defined direct jobs as those held by airline and air service employees, including government-related jobs. Indirect jobs were defined as those generated by travelers' expenditures, such as hotel, retail, ground transportation, food and service, and entertainment jobs. Induced jobs were identified as a multiplier effect of direct and indirect jobs, which typically included jobs generated by wage spending and suppliers of goods and services.

Pan (2022) utilized the Southern California Planning Model (SCPM) to analyze the regional economic consequences of the March Joint Powers Authority's (March JPA) development endeavors with sectoral and spatial disaggregation. The study focused on the impact of airport development projects in Riverside County, Southern California. The research was conducted in two phases, first estimating the impact of development projects in 2016, and then analyzing a full-build out scenario by 2030. The results of the study indicated that the economic impact of the March JPA's development activities extended beyond the local area and encompassed the entire Southern California region.

3. Methodology for Economic Impact Analysis

The widely recognized Southern California Planning Model (SCPM) is being employed to evaluate the regional economic effects with a detailed sectoral and spatial breakdown. The SCPM model is distinctive in its capability to distribute all impacts in terms of job or output value to sub-regional zones, primarily individual municipalities. This is accomplished through an integrated modeling approach comprising two fundamental components: an input-output model and a spatial allocation model. The approach permits the depiction of estimated spatial and sectoral impacts based on any anticipated alterations in final demand.

The initial SCPM model, which was created for the Los Angeles five-county region, has been revised to determine the effects of strategies, plans, and initiatives in the Six-County Southern California Association of Governments (SCAG) area, which includes Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial County, as per the SCAG's regional travel demand model for 2016.

The input-output model used in this study has a high level of sectoral disaggregation, currently consisting of 546 sectors in the IMPLAN version. This model generates sectoral impacts by processing external shocks, which are treated as changes in final demand. These sectoral impacts are then input into the spatial allocation model, which distributes them across small geographic

zones in Southern California, defined by the 2016 city and county unincorporated area boundary data from SCAG².

4. Data Analysis and Results in Phase 1, the Current Built-out Scenario

The data preparation for the Environmental Impact Assessment (EIA) of March Joint Powers Authority (JPA) in Phase 1, which considers the current built-out scenario in March 2023, underwent a series of step-by-step preprocessing steps.

4.1. The first step is to obtain the economic activities by industry in current March JPA. They have been identified with spatial location.

Table 1. Economic Activities by industry by TAZ of current March JPA in March 2023

March Joint Powers Authority Development Status (Completed)				Land Use				
Business	Location	Sq/Ft	Total Employees	NAICS Code	IMPLAN 2019	TAZ		
Meridian North Campus								
MS Development - "D"	MS Development D	157,513	150	2383	50-59	3261		
WMWD/March JPA	Unit 2, Lot 7	55,000	130	9211	526-534			
Kaiser	Unit 2, Lot 7	55,000	100	6211	483-485			
RCTC Metrolink	Unit 2, Lot 4	0	5	4851	418			
University of California	Unit 2, Lot 6	159,000	175	9231	470-474			
DSM Masonry	Clifford	107,000	25	2383	50-59			
Smith Floors	Clifford		55					
California Comfort & Carter Mills	Clifford		8					
AMES	Clifford		21					
Stevco	Clifford		5					
Rite-A-Way	Clifford		150					
MTGI	Clifford		5					
SSD Alarm	Clifford		5					
MDP Magnum Diesel Parts	Clifford		10				4413	402
Crossfit	Clifford		21				7139	504
E29 Baseball	Clifford		3	7139	504			
TRP Crown Sports	Clifford		5	7139	504			
Modfab Group	Clifford		3	5414	458			
Iverson Lab (IDL)	Clifford		10	3391	376-380			
Wood, Smith, Henning & Berman	Horizon	106,000	300	5411	455			

² <https://gisdata-scag.opendata.arcgis.com/datasets/SCAG::city-boundaries-scag-region/about>

Riverside Sheriff Association	Horizon			5611	470
Lamay Foundation	Horizon			7121	501
Southwest Arthritis	Horizon			6211	483-485
Riverside Elite Imaging	Horizon			6211	483-485
Concerta Urgent Care	Horizon			6211	483-485
Construction Industry Specialist CA	Horizon			2383	50-59
Foam Depot	Horizon			2383	50-59
P/P Uniforms	Falcon	247,000	6	4581	409
Natures Own (Flower Foods)	Falcon		20	3118	93-96
Pacific Flexible Solution	Falcon		5	4889	420
Entermedia	Falcon		4	5418	465
H & H Grading, Inc.	Falcon		6	2381	50-59
Rocksolid Granite	Falcon		7	2383	50-59
Ray & Associates, Inc.	Falcon		10	5416	462
Newspaper Distribution	Falcon		20	5131	423-427
Fastenal	Falcon		6	4441	405
CTE Geotechnical	Falcon		20	5413	457
Harvest Dental Lab	Falcon		10	3391	376-380
Stanley Security	Falcon		36	4599	330
Emerson Ecologics	Falcon		48	4249	400
US Global Direct	DRMO	81,000	25	4249	400
Spectrum Premium, Majestic III	Unit 1, Lot 3	85,000	50	4231	392
Berry Direct, Majestic III	Unit 1, Lot 4	125,000	20	3114	79-81
Russell Sigler, Majestic II	Unit 1, Lot 16	105,000	40	4237	394
Safco Products, Majestic I	Unit 1 Lot II	190,000	13	4232	396
McLane, Majestic I	Unit 1, Lot 18	225,000	40	4244	398
Newcastle 600	Unit 1, Lot 5&6	600,000	50	4249	400
McLane Foodservice	Unit 1, Lot 16	310,000	425	4244	398
Kia Distribution Warehouse	Unit 5, Lot 6	404,000	50	4231	392
Avanquest USA	Kia "B"	85,000	60	5415	460-461
JBS	Unit 3, Lot 3	110,000	830	3116	88-91
Global One Logistics	Unit 3, Lot 2	275,000	40	4931	422
Warehouse	Unit 3, Lot 1	90,000	12	4931	422
Rider Commerce	Unit 4, Lot 15	486,000	100	4249	400
Joe McKay Warehouse	Unit 4, Lot 13&14	110,000	40	4931	422
UNFI @ F&E	UNFI	1,100,000	800	4244	398
Albertson's @ F&E	Albertson's	65,000	100	3119	97-103
Meridian Distribution Center	Vacant	510,000	0	Vacant	
Joe McKay Business Park	Unit 4, Lot 3	240,000	200	4249	400
Sysco	Unit 4, Lot 16	480,000	450	4244	398
Veterans Plaza Hotel	Unit 4, Lot 4	81,723	40	7211	507-508

Veterans Plaza Restaurants		18,900	130	7225	509-511	
Veterans Plaza Retail		18,900	105	4599	330	
MS Development - "A"	MS Development A	176,396	150	2382	322-328	
MS Development - "B"	MS Development B	162,041	250	4931	422	
MS Development - "C"	MS Development C	74,922	300	2383	50-59	
Total		7,095,395	5,704			

March Joint Powers Authority Development Status (Completed)				Land Use		
West March Lower Plateau						
West Plateau - Burlington		2,273,000	350	4243	400	3261
West Plateau - Nissan			225	4231	392	
Business Park 1			0	Vacant		
Iron Mountain			35	4931	422	
Business Park 3			0	Vacant		
Total		2,273,000	610			

March Joint Powers Authority Development Status (Completed)				Land Use		
South Campus						
Building A Amazon		1,000,000	850	4249	400	3261
Building B UPS		1,000,000	1,000	4921	421	
Building C Safavieh		500,000	225	4232	396	
Building D Republic National Dist. Co		782,000	200	4248	396	
Eagle Business Park		390,500	400	4931	422	
Amazon DJT6		219,000	1,100	4921	421	
Van Buren Retail (2.9) Acre		30,000	60	4451	406	
Westmont Village			290	6223	490	
Total		3,921,500	4,125			

March Joint Powers Authority Development Status (Completed)				Land Use		
North East Corner/March LifeCare						
Foothill Baptist Church	NE Corner	21,800	6	8131	521	3268
United States Veterans Initiative Ph I	NE Corner	105,000	25	6239	491-492	
Former JPA Office	NE Corner	10,000	0	Vacant		
Total		136,800	31			

March Joint Powers Authority Development Status (Completed)				Land Use		
Other (K4 / D3E)						

K4		685,000	80	4251	401	3268
D3E		700,000	90	4249	400	
WMWD Sewer Treatment Plant			25	5622	479	
Total		1,385,000	195			

March Joint Powers Authority Development Status (Completed)				Land Use		
March Inland Port						
Millionaire FBO	Airport	5,000	21	4881	414	3268
Military Aviation Support	Airport	0	35	4881	414	
Amro Manufacturing (vacant)	Airport	110,000	0	Vacant		
Amazon Prime	Airport	186,000	578	4581	414	
Fellowship (former Philips Bldg)	Airport	225,000	88	4249	400	
Airport Trailer Storage Facility	Airport	500	8	4931	422	
VIP 215 / Target	Airport	1,800,000	2,800	4249	400	
Total		2,326,500	3,530			

TOTAL, ALL DEVELOPMENT		17,199,795	14,195
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Source: Author preparation using the 2023 data obtained from the March Joint Powers Authority.

Table 1 provides a breakdown of existing business establishments located in close proximity to Meridian Parkway in West Riverside County, along with the number of full-time equivalent (FTE) jobs associated with each establishment. In March 2023, the total number of jobs in the area of March Joint Powers Authority was 14,195 FTEs, which is more than four times the total of 2,896 FTEs in 2016. Some of the business establishments have their total space measured in square footage. The table reports a total space of 17.2 million square feet, which is over three times the 5.5 million square feet developed in 2016. The largest business establishments in the area include wholesale and retail stores, warehousing and storage, healthcare services, construction offices, and others.

Each business's traffic analysis zone (TAZ) was determined by matching its name and address to the physical location on the 2023 Development Map sent by the authority and then matching the location to the TAZs. These businesses are situated within two TAZs, namely TAZ 3261 and TAZ 3268, which were established in the Southern California Association of Government's (SCAG) 2016 regional travel demand model.

The original data classified the jobs by the North American Industry Classification System (NAICS) code, which are converted to IMPLAN 2019 sectors using an IMPLAN and NAICS “bridge” (sector matching) table.

Table 2. Military Personnel and Civilians with their Activities by industry in March Air Reserve Base (ARB) in 2023

Military Personnel	Quantity (Jobs)
Active Duty Personnel	774
Air Force Reserve / Air National Guard	313
Non-Extended Active Duty Reserve / ANG	2,620
Trainees / Cadets	
Military Dependents	
Active Duty Military Dependents*	
Appropriated Fund Civilians	
General Schedule	694
Federal Wage Board	218
Other Civilians	376
Non-Appropriated Fund Civilians <u>Paid with Appropriated Funds</u>	
Appropriated Fund NAF-Activity Civilians	89
Appropriated Fund AAFES Civilians	41
Appropriated Fund DeCA Civilians	50
Appropriated Fund DoDEA Civilians	
Contract Civilians (not elsewhere included)	108
Construction	Annual Expenditures
Military Construction Program	
Non-Appropriated Fund Construction	
Military Family Housing Construction	
O&M Construction	\$8,252,000
Other Construction	
Locally produced goods and services (non-construction)	
<i>Pick from list:</i>	
Utilities	\$4,354,072
Printing and related support activities	
Warehousing and storage	\$42,247
Broadcasting and telecommunications	\$104,914
Data processing, internet publishing, and other information services	

Professional, scientific, and technical services	\$20,000
Waste management and remediation services	\$1,577,926
Educational services	\$31,648
Other services	\$1,160,152

Source: Author preparation using the 2023 data from March ARB obtained by March JPA

Table 2 lists the military personnel and civilians in March ARB. The total number of FTEs is 5,283, including 3,707 military personnel and 1,576 civilians who received appropriated fund or non-appropriated fund but paid with the appropriated fund. It also breakdowns the annual expenditures of March ARB in construction and other activities. The total amount of annual expenditures in O&M Construction of the Military Construction Program is \$8.25 million. It also reports a total expenditure of \$7.29 million in local produced goods and services. The largest expenditures include \$4.35 million of utilities, \$1.58 million of waste management and remediation services, and \$1.16 million of other services, etc.

Though the data obtained from March ARB has not classified the jobs by the North American Industry Classification System (NAICS) code or other similar industrial code, the total 5,283 FTEs can be split by the composition of annual expenditures in construction, utilities, waste management and remediation services, and other service types. They are converted to IMPLAN sectors using appropriate bridge tables.

March ARB is located in SCAG’s TAZ 3268, which is the same as the business establishments in March JPA East. Thus, the economic activities of March ARB and March JPA East are combined at the TAZ level for the following analysis and reports.

4.2. IMPLAN input-output analysis with multiple sub-steps as follows,

1) Construct a new model

A new model is constructed for the Six-County Southern California Association of Government (SCAG) region using the most recent IMPLAN data in 2021 (see Figure 1).

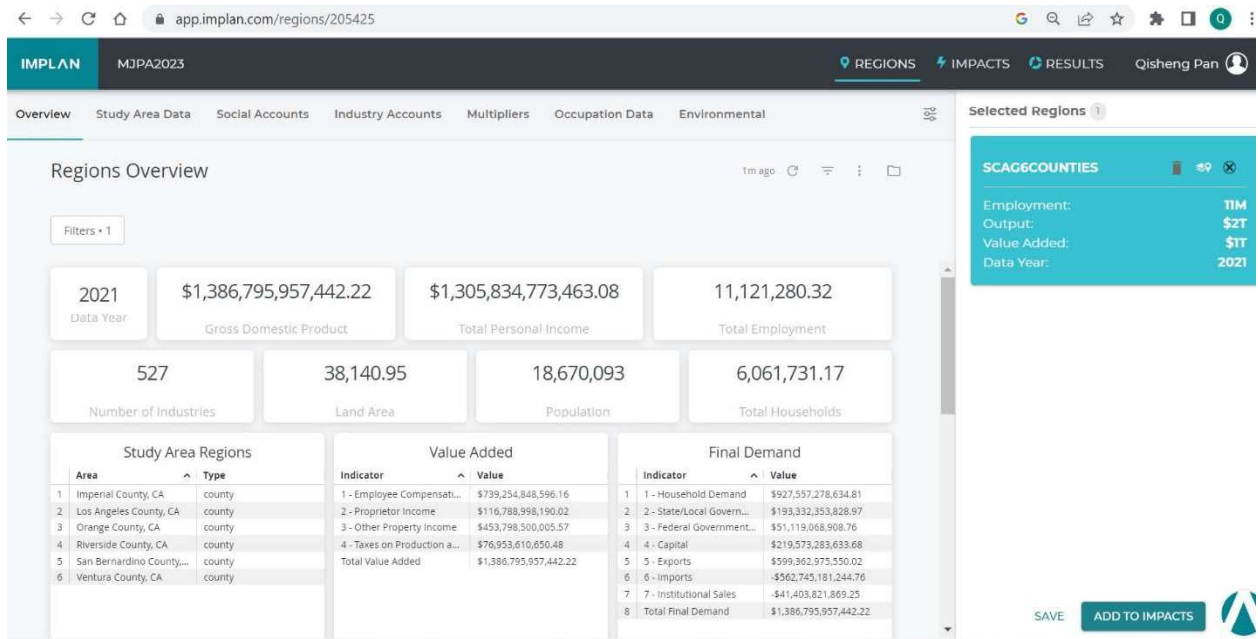


Figure 1. Constructing new model for the Six-County Los Angeles Region

IMPLAN 2021 data reveals that the Six-County Los Angeles Region boasts a population of 18.6 million, 6.1 million households, and 11.1 million jobs. Additionally, the regional economy generates \$2,302.1 billion outputs, which are distributed among 527 out of 546 industry sectors defined by IMPLAN.

2) Set up activities and create events

A new task for conducting an Economic Impact Analysis (EIA) is to be created, and new events for this task are to be generated using the employment data measured in FTEs from Table 1 for March JPA and Table 2 for March ARB. The year for the data is set to be 2021, which is the latest year available in IMPLAN, and the dollar year is set to be 2023, corresponding to the year of data obtained for economic activities by industry in the current phase of March JPA (Figure 2). Each business name is used as the title of the event, the IMPLAN industry sector is entered as the specification, and the employment value is extracted from the corresponding business in Table 1 and Table 2.

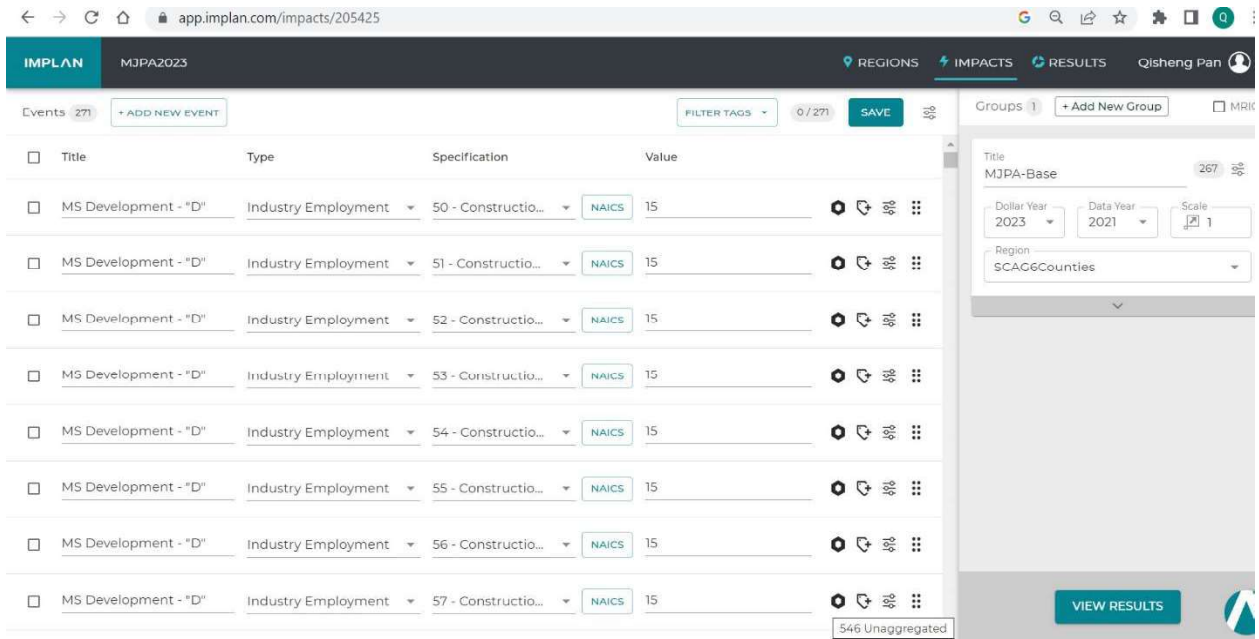


Figure 2. Set up activities and create events

3) Analyze scenarios

Generate an economic impact scenario based on the EIA activities and assess the scenario. The results of the impact analysis, which include direct, indirect, and induced effects, are reported by IMPLAN (refer to Figure 3). The "Direct" effects reflect the direct expenditures linked to an industry, such as labor, materials, supplies, and capital costs. The "Indirect" and "Induced" figures represent secondary effects resulting from suppliers' and contractors' expenditures, as well as household spending throughout the SCAG region.

Based on the definition for input-output models in IMPLAN Manual, direct effects represent the change of employment or output for an industry in response to the presumed change of final demand for that same industry. Indirect effects represent the response by all local industries caused by the iteration of industries purchasing from industries per million dollars of final demand for a given industry. Induced effects represent the response by all local industries caused by the expenditures of new household income generated by the direct and indirect effects per million dollars of final demand for a given industry (MIG 2004).

Input-output models calculate all indirect and induced impacts. In this context, direct impacts include the construction of new facilities and reductions in household expenditures resulting from increased taxes to pay for these facilities. Direct impacts result from the project expenditures. Indirect impacts consist of impacts on vendors from whom builders purchase materials and services. Each indirect impact creates additional but attenuating indirect

impacts. A vendor who supplies more of his own product purchases additional inputs from his own vendors, and so forth. Labor is an especially important production input and induced impacts consist of the impacts specific to the labor sector. These sector specific impacts can be expressed in terms of dollars or jobs (Pan and Richardson, 2015).

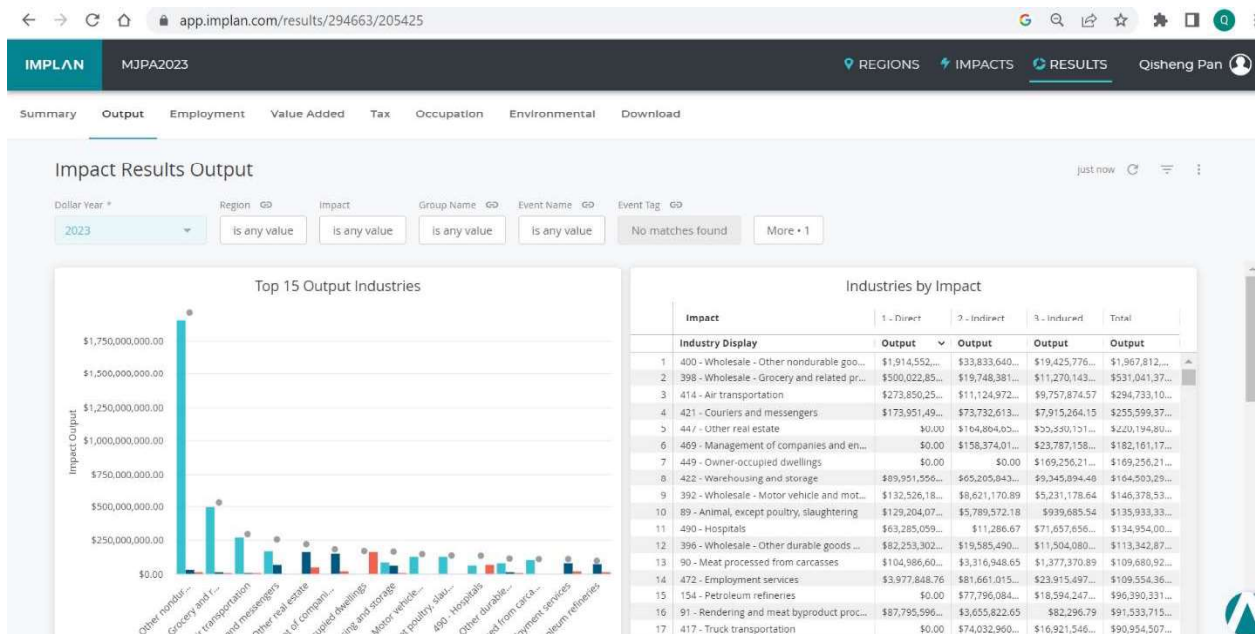


Figure 3. The results of IMPLAN impact analysis

The impact analysis results from IMPLAN are detailed and available as a comma-delimited file called "Detailed Economic Indicators - Current.csv". This file contains information on output and employment by IMPLAN sector. According to the IMPLAN model, the total impacts of the March Joint Powers (MJP) Authority's current development in March 2023 are \$10,142.9 million, which includes \$5,612.1 million in direct impacts, \$2,422.3 million in indirect impacts, and \$2,108.4 million in induced impacts. The total impacts measured in terms of jobs are 41,311 FTEs, which includes 19,478 jobs in direct impacts, 10,872 jobs in indirect impacts, and 10,961 jobs in induced impacts.

4.3. The following step involves allocating the impacts across various geographic zones in Southern California, which include counties, cities, and traffic analysis zones (TAZs). The crucial component of this model is the Garin-Lowry style module that is utilized in SCPM for spatial allocation of the induced impacts generated by the input-output model. The SCPM has been recently updated with the latest data from SCAG's 2016 regional transportation model, which includes 4,109 Tier 1 TAZs.

The modeling results are summarized by City and County in Table 3. Detailed modeling results are recorded in tables or spreadsheets.

Table 3. Economic Impacts of the current MJPA development status in 2023 in the Six-County SCAG Region

	Current Development in March JPA and March ARB in 2023							
	Output (\$Millions)				Jobs			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
March JPA West	2,677.5	0.4	0.2	2,678.1	10,439	2	1	10,441
March JPA East	1,539.2	0.9	0.4	1,540.5	3,756	4	2	3,762
March ARB	1,395.4	0.5	0.1	1,396.0	5,283	2	1	5,285
March JPA East and March ARB	2,934.6	1.4	0.5	2,936.5	9,039	6	3	9,047
City of Moreno Valley	19.6	8.7	16.8	45.0	60	40	88	188
City of Perris	17.7	4.2	6.2	28.1	54	19	32	106
City of Riverside	41.9	37.8	27.4	107.2	163	169	143	476
Unincorporated Riverside	5,533.0	35.7	22.9	5,591.7	19,200	158	120	19,478
County of Los Angeles	0.0	1,368.7	1,247.3	2,615.9	0	6,115	6,476	12,591
County of Orange	0.0	480.1	371.9	852.0	0	2,188	1,932	4,120
County of Ventura	0.0	117.7	92.0	209.7	0	517	476	993
County of Riverside	5,612.1	210.7	175.5	5,998.3	19,478	950	918	21,346
County of San Bernardino	0.0	214.9	202.9	417.8	0	978	1,061	2,039
County of Imperial	0.0	30.3	18.9	49.2	0	125	98	223
Total	5,612.1	2,422.3	2,108.4	10,142.9	19,478	10,872	10,961	41,311

The ongoing development activities in the March Joint Powers Authority (MJPA) result in total output impacts of \$10,142.9 Million and the creation of 41,311 jobs in the Six-County Los Angeles region. The majority of these impacts are concentrated in the County of Riverside, specifically in MJPA, the City of Moreno Valley, the City of Perris, the City of Riverside, and Unincorporated Riverside. The MJPA area is divided by the I-215 freeway into two parts, the west and the east (as depicted in Figures 4a and 4b). In the March JPA West, comprising Meridian North, South, West Upper Plateau, and West March Lower Plateau, the total output impacts amount to \$2,678.0 Million and 10,441 jobs. In the March JPA East, consisting of the North East Corner/March LifeCare, March Inland Port, and Other (K4 / D3E), the total output impacts are \$1,540.5 Million and 3,762 jobs. In March ARB, the total output impacts are \$1,396.0 Million and 5,285 jobs. Because March JPA East and March ARB are located in the same SCAG TAZ (TAZ 3268), the total output impacts in the TAZ are \$2,936.5 Million and 9,047 jobs. The City of Moreno Valley contributes \$45.0 Million and 188 jobs to the total output impacts, while the City of Perris generates \$28.1 Million and 106 jobs. The City of Riverside has \$107.2 Million in total output impacts and creates 476 jobs, and Unincorporated Riverside accounts for \$5,591.7 Million and 19,478 jobs in total output impacts. The detailed results of the impact analysis are presented in Table MJPAwithBase Impact - Current.xlsx, and Figures 5 and 6 illustrate the distribution of impacts in dollar value and job creation.

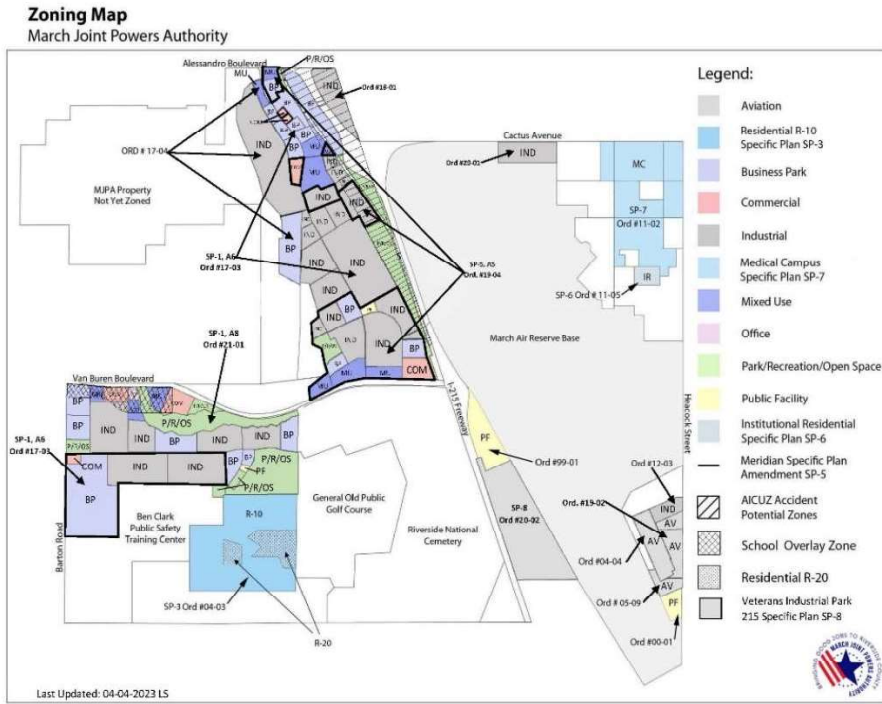


Figure 4a. Zoning Map of March JPA.



Figure 4b. 2023 Development Map of March JPA.

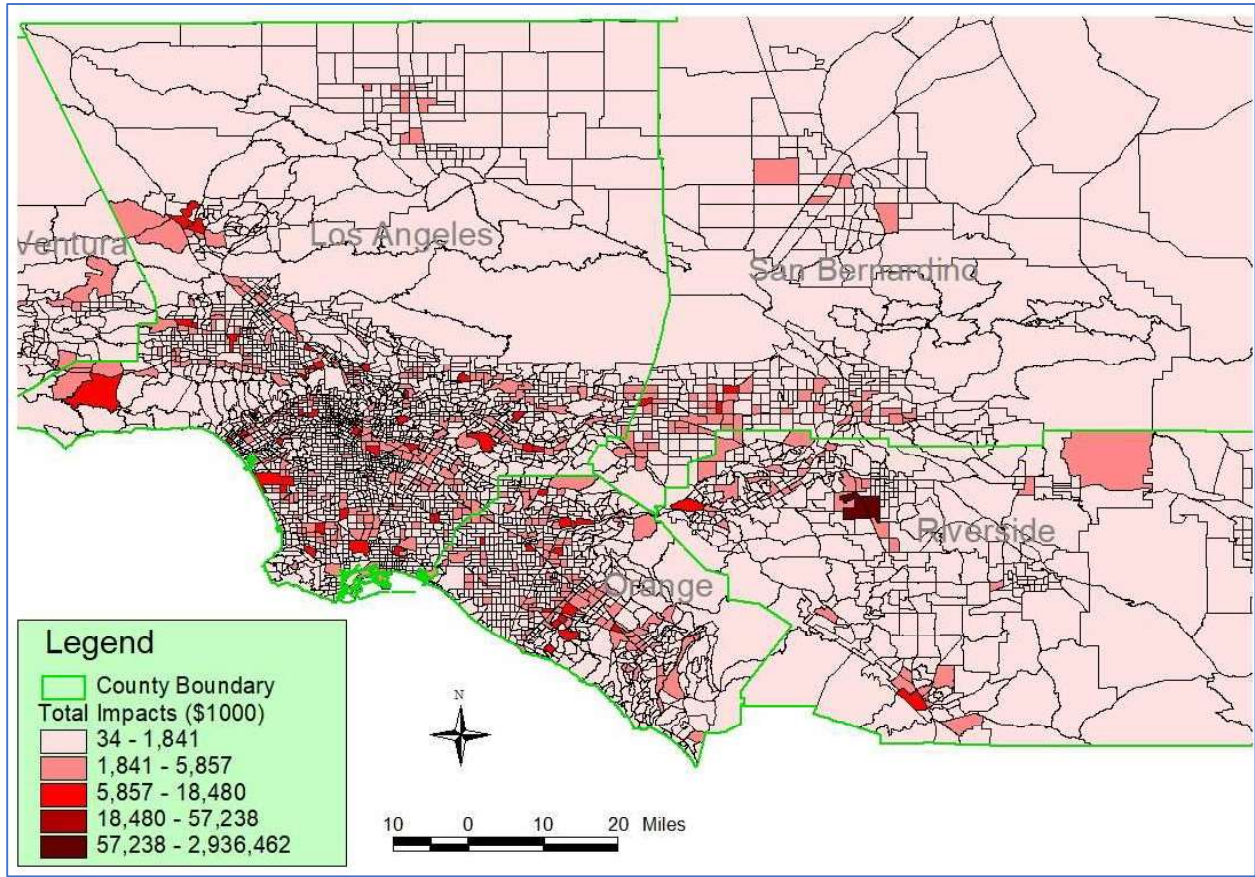


Figure 5. Dollar value of total impact in the current phase by Traffic Analysis Zone (TAZ)

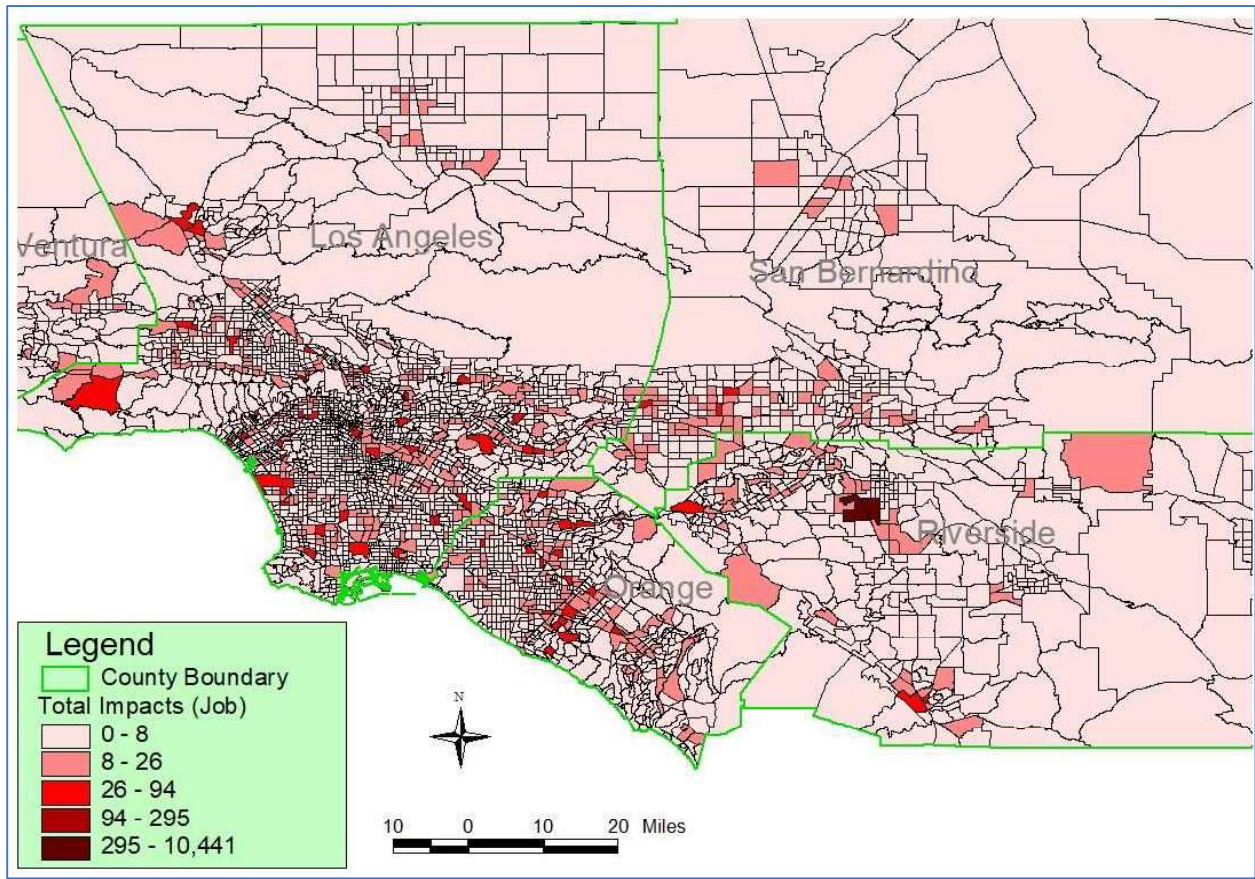


Figure 6. Job impacts in the first phase by TAZ

5. Data Analysis and Results of Phase 2, Future Built-out Scenario without West Upper Plateau Project in March JPA and March ARB

Though West Upper Plateau is in the March JPA West area, the West March Upper Plateau project is not yet approved by the Commission. The proposed warehouse, office, and retail activities in the West March Upper Plateau project for future development are excluded from economic impact analysis in Phase 2, the future built-out scenario. Similar to the procedures outlined in Section 4 for Phase 1 study, the data processing for the Economic Impact Analysis (EIA) of the March Joint Powers Authority (JPA) in the future built-out scenario without West Upper Plateau project has been preprocessed step by step.

5.1. The first step is to obtain the economic activities of the full built-out scenario by industry in March JPA. They have been identified with spatial location.

Tables 3a and 3b provided the projected development and employment data for the March Joint Powers Authority (JPA) in the future built-out scenario. Table 4a summarizes the proposed businesses in the March JPA, including their business names, locations, floor spaces, and employment projections. According to the table, the Meridian North Campus will have 288,000 square feet of business space constructed and generate 501 full-time equivalent (FTE) jobs, while the West March Lower Plateau will have 80,000 square feet of business space constructed and create 100 FTEs. The South Campus is expected to construct 1.7 million square feet of business space and generate 2,168 FTEs, The North East Corner/March LifeCare is projected to construct 2.7 million square feet of business space and create 6,985 FTEs, and the March Inland Port will construct 250,000 square feet of business space and generate 197 FTEs. Overall, the future built-out phase is expected to include a total of 10.0 million square feet of business space and create 12,569 FTEs.

Though the West Campus Upper Plateau has a plan to construct 5.0 million square feet of business space and generate 2,618 FTEs, including 1,455 fulfillment jobs and 1,163 jobs in business parks, these development activities are NOT incorporated in the following economic impact analysis because the West Campus Upper Plateau is not yet approved.

Table 4b provides a summary of the projected future development and employment in four locations of the March Joint Powers Authority (MJPA) at the certificate of occupancy date. These locations are Meridian (North and South), March Life Care, and March Inland Port Airport Authority (MIPAA), as shown on the development map of MJPA (Figure 4b). Meridian (North and South) is expected to create 1,560 jobs in business parks and 1,210 jobs in office/commercial zones. March LifeCare is projected to have 900 Continuing Care Retirement (CCR) jobs and 6,085 jobs in other categories. MIPAA is expected to have 197 airport employment. Meridian and West

Campus Upper Plateau are located in TAZ 3261 on the west side of MJPA, while March LifeCare and MIPAA are located in TAZ 3268 on the east side of MJPA, as shown in Figures 4a and 4b.

Lacking information regarding the future development of the March Air Reserve Base (ARB), it is posited that the base will maintain an equal balance of military personnel and civilians in the upcoming scenario. The projected figures for 2040 reflect a total output impact of \$1,396.0 Million and 5,285 jobs, represented by the data from Table 2 for the year 2023.

To estimate economic impacts using input-output models, detailed industrial sector information is required for each development. However, obtaining the NAICS code or IMPLAN sector for each future development in the March Joint Powers Authority (JPA) is not possible. Therefore, we assume that the industrial composition of future development will be broadly similar to current development in March JPA. Based on this assumption, we estimate the industrial composition in IMPLAN sector for the full-built-out development and employment in the west and east sides of March JPA. This estimate will be utilized in the IMPLAN input-output model to determine economic impacts in the subsequent step.

Table 4a March JPA Projected Development and Employment

March Joint Powers Authority Businesses		Proposed Not Yet Constructed	
Business	Location	Sq/Ft	FTE
Meridian North Campus			
Enterprise Unit 2/Lot 8	Enterprise Devt.	50,000	50
7-Eleven Convenience/Gas	7-Eleven	5,000	14
7/Eleven Retail	7-Eleven	25,000	75
Yocum Business Park	Unit 1, Lot 17	100,000	100
Riverside County Fire Dept	Unit 6, Lot 1	8,000	12
Veterans Plaza Expansion	Unit 4, Lot 4	100,000	250
Total		288,000	501
West March Lower Plateau			
Seefried Bld 4		80,000	100
Total		80,000	100
South Campus			
Building E		200,000	200
Building F		120,000	120
Building G		169,000	169
Building H		120,000	120
Building I		140,000	140
Van Buren Retail (10 Ac) Expansion		150,000	375

Van Buren 7.5 Ac Mixed Use		110,000	110
Van Buren 7.7 Ac Commercial		110,000	275
Van Buren 4.6 Ac Office		70,000	175
Van Buren 10.8 Ac Mixed Use		160,000	160
Seefried 1		144,000	144
Seefried 2		127,000	127
Seefried 3		53,000	53
Total		1,673,000	2,168

**West Campus Upper Plateau
(Excluded)**

North East Corner/March LifeCare			
United States Veterans Initiative PH II	NE Corner	105,000	5
Senior Congregate Care	NE Corner	800,000	600
CAARNG	NE Corner	40,000	60
Continuum of Care (2)		400,000	300
March LifeCare		1,400,000	6,020
Total		2,745,000	6,985

March Inland Port			
Hangers/Facilities	Airport	70,000	47
D1 Cargo Terminal	Airport	180,000	150
Total		250,000	197

TOTAL, ALL DEVELOPMENT		5,036,000	9,951
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Table 4b March JPA projected future development and employment at certificate of occupancy date

FY	Meridian (North and South)				March Life Care				MIPAA	
	BP / MU		Office/Com		OTHER		CCR Living		Industrial	
	SQ/FT	EMP ¹	SQ/FT	EMP ²	SQ/FT	EMP ⁵	SQ/FT	EMP ⁵	SQ/FT	EMP ⁵
23-24	400,000	400								
24-25	400,000	400	70,000	175						
25-26	400,000	400	70,000	175	145,000	65	800,000	600	180,000	150
26-27	140,000	140	70,000	175	100,000	430			20,000	13
27-28	140,000	140	70,000	175	100,000	430			25,000	17
28-29	80,000	80	70,000	175	100,000	430	400,000	300	25,000	17
29-30			70,000	175	100,000	430				
30-31			66,000	160	100,000	430				
31-32					100,000	430				
32-33					100,000	430				
33-34					100,000	430				
34-35					100,000	430				
35-36					100,000	430				
36-37					100,000	430				
37-38					100,000	430				
38-39					100,000	430				
39-40					100,000	430				

40- 41											
	<u>1,560,000</u>	<u>1560</u>	<u>486,000</u>	<u>1210</u>	<u>1,545,000</u>	<u>6,085</u>	<u>1,200,000</u>	<u>900</u>	<u>250,000</u>		<u>197</u>

¹ BP/Warehouse (.5 ALUC max. cal.)

² Average Retail/Office (1/400 sf)

³ E-Commerce (.5 ALUC max. cal.)

⁴ Warehouse/E-Commerce (.5 ALUC max. cal.)

⁵ Projected Employment March LifeCare/CCRC/School

⁶ Airport Employment Projection

Additional Total Projected Build Out:

5,036,000

Additional Total Projected Employment:

9,951

Additional Development Prior to JPA Sunsetting

870,000

Additional Employment Prior to JPA Sunsetting

975

5.2. IMPLAN input-output analysis with multiple sub-steps

1) Set up activities and create events

This study generates two new Economic Impact Analysis (EIA) activities for the full-built-out scenario on the west and east sides of the March JPA using the model developed for the Six-County Southern California Association of Government (SCAG) region. For each EIA activity, new events are created using the Full-Time Equivalent (FTE) employment data obtained in the previous step. The event year is set to 2040, which corresponds to the maximum certificate of occupancy date projected for the future development in the full-built-out scenario (Figure 7).

The screenshot displays the IMPLAN web application interface. The main window shows a table of events for the 'MJPA2023Future' scenario. The table has columns for Title, Type, Specification, and Value. The events listed are all 'Retail' activities under the 'Industry Employment' type, with values of 22.5. The specifications range from '406 - Retail - Fo...' to '413 - Retail - No...'. A 'FILTER TAGS' dropdown is set to '0/348'. A 'SAVE' button is visible. On the right, a 'Groups' panel shows '1' group named 'MJPA-Future' with a value of 344. Below this, there are input fields for 'Dollar Year' (2040), 'Data Year' (2021), and 'Scale' (1). The 'Region' is set to 'SCAG6Counties'. At the bottom right, there are 'PREVIEW' and 'RUN' buttons, and a status indicator '546 Unaggregated'.

Title	Type	Specification	Value
3261 Retail	Industry Employment	406 - Retail - Fo...	22.5
3261 Retail	Industry Employment	407 - Retail - He...	22.5
3261 Retail	Industry Employment	408 - Retail - Ga...	22.5
3261 Retail	Industry Employment	409 - Retail - Clo...	22.5
3261 Retail	Industry Employment	410 - Retail - Spo...	22.5
3261 Retail	Industry Employment	411 - Retail - Gen...	22.5
3261 Retail	Industry Employment	412 - Retail - Mis...	22.5
3261 Retail	Industry Employment	413 - Retail - No...	22.5

Figure 7. Set up the activity and create events in the future full built-out scenario

4) Analyze scenarios

The process in this step is analogous to the scenario analysis performed for the current scenario discussed in section 4.2. Various scenarios are generated using the EIA activities and evaluate their impact. The impact analysis is performed using IMPLAN, which generates reports containing direct, indirect, and induced effects as shown in Figure 8.

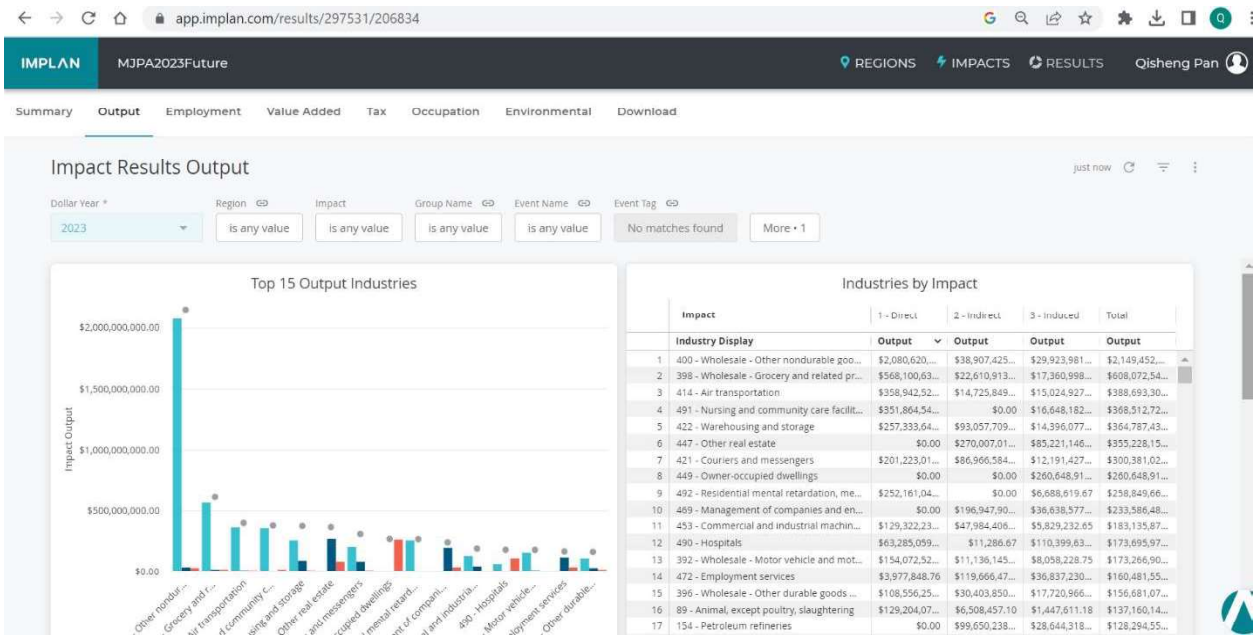


Figure 8. Results of IMPLAN impact analysis in the full built-out scenario

The results of the IMPLAN impact analysis for the full-built-out scenario are thorough and consist of both summarized and detailed tables. These tables are combined into a single comma-delimited file named "Detailed Economic Indicators - Future.csv," which contains information on output and employment categorized by IMPLAN sector.

According to the IMPLAN model, the full-built-out development in the March JPA is projected to generate a total economic impact of \$12,747.6 million, consisting of \$6,946.8 million in direct impacts, \$2,989.6 million in indirect impacts, and \$2,811.2 million in induced impacts. In terms of employment, the total impact is estimated to be 57,751 full-time equivalent (FTE) jobs, with 29,429 direct FTE jobs, 13,706 indirect FTE jobs, and 14,615 induced FTE jobs.

5.3. The following step involves distributing sectoral impacts of the full-built-out scenario to the geographic zones in Southern California. This basic model component involves modifying a Garin-Lowry style model to allocate the induced impacts created by the input-output model spatially. Table 5 provides a summary of the modeling results by county, and the detailed modeling results are recorded in tables or spreadsheets.

Table 5. Economic Impact of Phase 2 - Full Built-out of March JPA without West Upper Plateau Project in the Six-County SCAG Region

	Full Built-out with March ARB without West Upper Plateau							
	Output (\$Millions)				Jobs			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
March JPA West	3,325.2	0.4	0.2	3,325.8	13,208	2	1	13,211
March JPA East	2,226.2	1.0	0.6	2,227.7	10,938	4	3	10,945
March ARB	1,395.4	0.5	0.1	1,396.0	5,283	2	1	5,285
March JPA East and March ARB	3,621.6	1.5	0.6	3,623.7	16,221	6	3	16,230
City of Moreno Valley	24.1	12.0	22.4	58.5	108	60	118	285
City of Perris	21.8	5.1	8.3	35.2	98	25	43	166
City of Riverside	52.1	45.5	36.5	134.0	207	212	192	611
Unincorporated Riverside	6,848.8	37.7	30.6	6,917.1	29,017	169	161	29,347
County of Los Angeles	0.0	1,708.9	1,664.0	3,372.9	0	7,756	8,635	16,391
County of Orange	0.0	604.3	497.3	1,101.7	0	2,807	2,574	5,381
County of Ventura	0.0	128.3	121.4	249.8	0	555	628	1,183
County of Riverside	6,946.8	250.9	233.8	7,431.5	29,429	1,182	1,230	31,842
County of San Bernardino	0.0	268.3	270.5	538.8	0	1,295	1,422	2,716
County of Imperial	0.0	28.9	24.1	53.0	0	111	126	237
Total	6,946.8	2,989.6	2,811.2	12,747.6	29,429	13,706	14,615	57,751

Note: The future full-built out by 2040 is measured in 2040 dollar value

The total output impacts of the full-built-out development in 2040 are \$12,747.6 Million, which creates 57,751 jobs. Similar to the current scenario in March 2023, over half of the impacts are located in Riverside County, especially in March JPA, March ARB, City of Moreno Valley, City of Perris, City of Riverside, and Unincorporated Riverside.

March JPA is divided into two parts by the I-215 freeway, namely the March JPA West and the March JPA East (as shown in Figures 4a and 4b). The March JPA West, situated on the west side of

the I-215 freeway, including Meridian, has a total output impact of \$3,325.8 Million and 13,211 jobs. The March JPA East, located on the east side of the I-215 freeway, including March LifeCare and MIPAA, has a total output impact of \$2,227.7 Million and 10,945 jobs. Also located on the eastern side of the I-215 freeway, the March ARB generates a comprehensive output influence amounting to \$1,396.0 Million, along with the creation of 5,285 job opportunities. Given their shared location within the SCAG TAZ (TAZ 3268), the cumulative effect of merging the March JPA East and March ARB results in a combined total output impact of \$3,623.7 Million and the generation of 16,230 jobs. In the City of Moreno Valley, the total output impact is \$58.5 Million and 285 jobs. In the City of Perris, the total output impact is \$35.2 Million and 166 jobs. In the City of Riverside, the total output impact is \$134.0 Million and 611 jobs. In Unincorporated Riverside, the total output impact is \$6,917.1 Million and 29,347 jobs. The detailed modeling results can be found in the table named "MJPAwithBase Impact - Future.xlsx". The spatial distribution of the impacts in dollar value and job is illustrated in Figures 9 and 10.

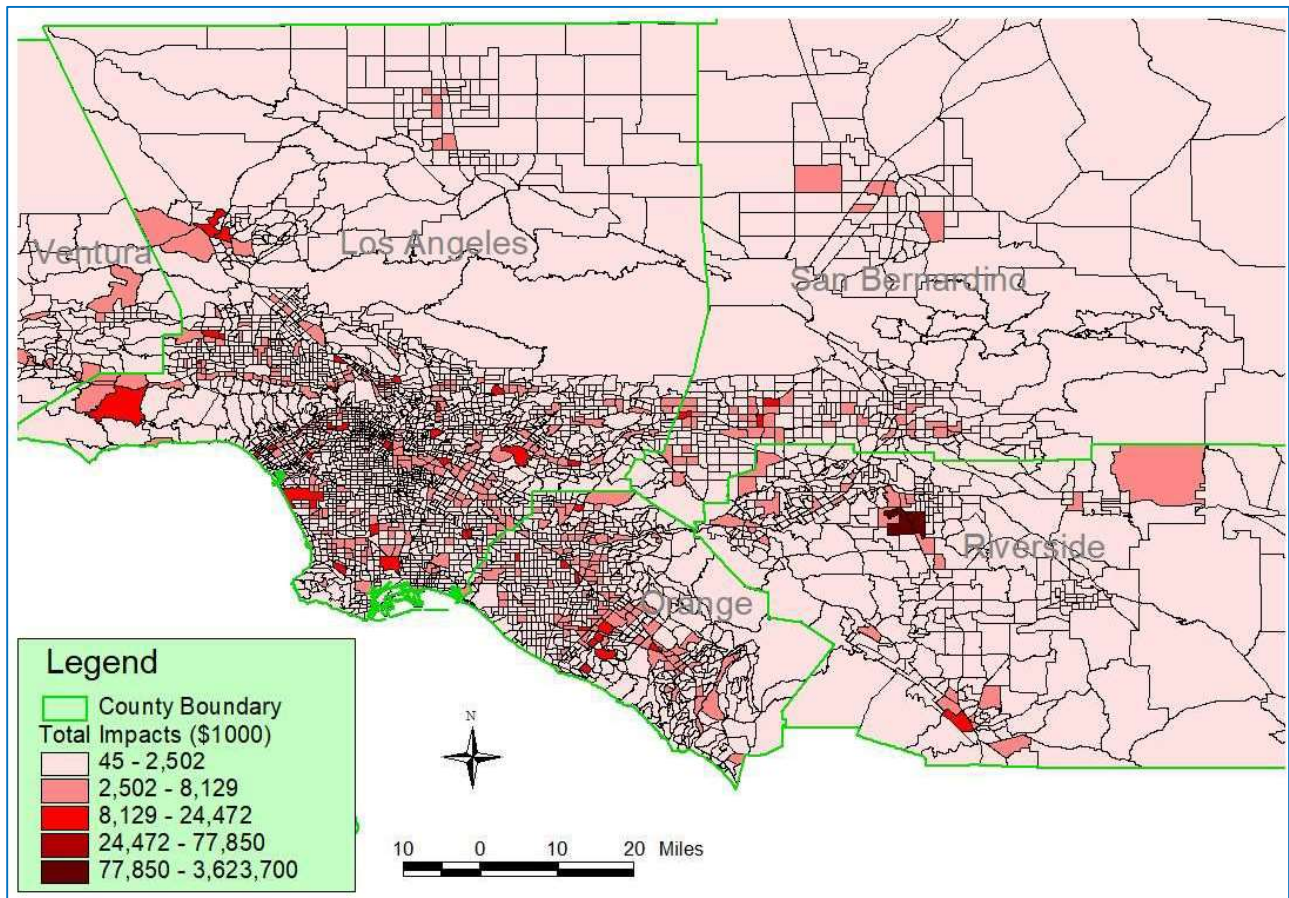


Figure 9. Dollar value of total impact in the second phase without West Upper Plateau project by TAZ

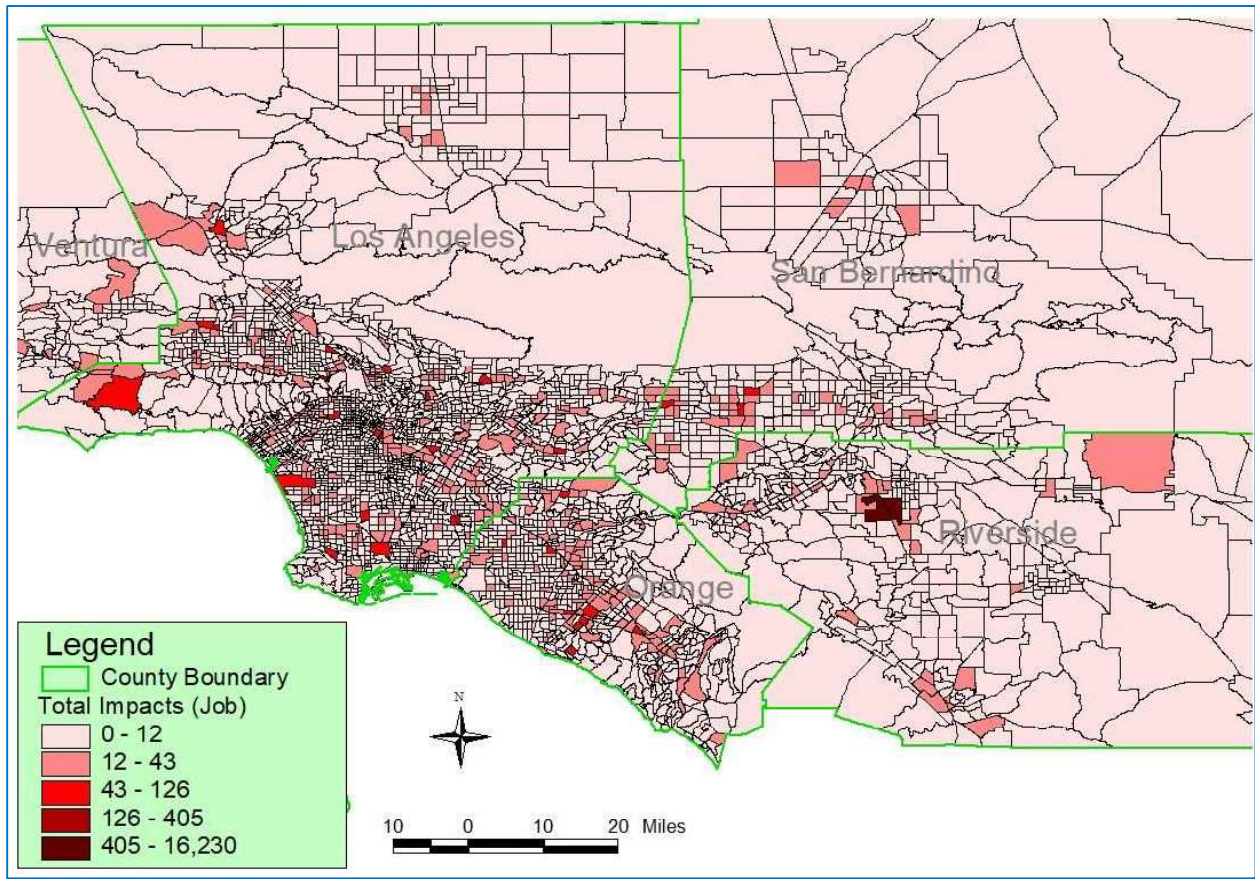


Figure 10. Job impacts in the second phase without West Upper Plateau project by TAZ

Short Bio of Key Personnel

Qisheng Pan is a full professor in the Department of Public Affairs and Planning, College of Architecture, Planning, and Public Affairs (CAPPA), University of Texas – Arlington (UTA). He is also the Director of the Center for Transportation, Equity, Decisions and Dollars (CTEDD), a USDOT (Tier-1) University Transportation Center (UTC), supported by the United States Department of Transportation (USDOT). The CTEDD Center is a UTA-led partnership with Georgia Institute of Technology, University of Wisconsin-Madison, University of South Florida, and California Polytechnic State University. Before he joined the faculty of UTA, Prof. Pan was a full professor in the Department of Urban Planning and Environmental Policy (UPEP) at Texas Southern University (TSU). He served as the UPEP department chair in 2008-2016. He was also the leader of the DOT Tier 1 UTC program at TSU, which is a collaborative effort with UT-Austin (Led), UPenn, and LSU to examine cooperative mobility for competitive megaregions. Dr. Pan received a Ph.D. in Urban Planning from the University of Southern California (USC) in 2003 and a Master's degree in Computer Science from USC in 2001. He received research grants from USDOT, Texas Department of Transportation (TXDOT), the Natural Resources Imagery Grant from ESRI, and Ewing Marion Kauffman Foundation, etc. Prof. Pan has also consulted in research projects funded by National Science Foundation, Department of Homeland Security, Department of Transportation, California Cut Flower Commission, Renovate America, and RAND Corporation, etc.

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