Metrolink's Economic Potential:
Southern California Optimized Rail Expansion (SCORE)

INSTITUTE FOR APPLIED ECONOMICS
Los Angeles County Economic Development Corporation

LAEDC **LOS ANGELES COUNTY**
ECONOMIC DEVELOPMENT CORPORATION

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1. Executive Summary

The accumulated efforts of the Southern California Regional Rail Authority (SCRRA) and its member agencies have manifested into the Southern California Optimized Rail Expansion (SCORE) Plan. SCORE's goals align with the ambitions of California's various transportation agencies as well as the needs of Southern California's residents. In building upon the region's current rail network, the program's $10.1 billion expansion will transform the way that visitors, residents and goods move through the region.

The Los Angeles County Economic Development Corporation (LAEDC) concludes that the total impact of SCORE's construction and implementation present a multitude of prospects for the Southern California region. The plan offers economic benefits in both labor and capital productivity all while bringing five major counties of Southern California closer together. Plans such as SCORE help give California its reputation for proactive environmental policies, reducing of harmful greenhouse gas emissions and addressing climate change. SCORE additionally aids disadvantaged communities by connecting them to a vast rail network, capable of quickly connecting them to anywhere in the five-county region. The following are the major projected impacts of SCORE:

❖ Over 1.36 million jobs will be created over the life of the SCORE project

❖ The construction of the SCORE plan alone will create over 113,100 jobs, each paying nearly $64,000 on average

❖ The SCORE project would increase regional output by $1.7 trillion

❖ New stations help attract 2.3 million pedestrians and 1.4 million bicyclists each year

❖ Over $100 billion will be saved on the cost of emissions to the public over the course of the project

The LAEDC was commissioned to produce a study assessing the impact of the construction investment for SCORE and the associated impacts from forecasted changes in travel demand, regional labor accessibility and reduced transportation costs from saved time. This study serves to demonstrate that the investment from SCORE will not only make the region increasingly attractive for the millions projected to arrive in Southern California for the Summer 2028 Olympic Games, but this expansion will also be a lynchpin for regional prosperity in the decades to come.

Estimated Economic Impacts

Results of the LAEDC's economic modeling show that the construction of the SCORE Plan has a large potential for growth in employment and resulting labor income, which, in turn, strengthens regional economic output.

These estimates show that over a nine-year construction period, implementing the SCORE Plan construction would create over 113,100 jobs. To put this in perspective, this equates over 90 percent of the total the LAEDC forecasts the entire region economy will add in 2019.[1] This nine-year horizon accounts for Early Completion and Midterm projects slated for completion by 2023 and 2028, respectively, per Metrolink's supporting analysis for the 2018 Transit and Intercity Rail Capital Program (TIRCP) application, which included the entire SCORE Plan. Tabulated and graphed results are given at the end of this document. Annual

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[1] 2019 LAEDC Economic Forecast and Industry Outlook.

figures are averages derived from estimated impacts over the 30-year forecast period.

The results concerning economic activity related to SCORE construction spending were all generated using a static impact model and averaged over the expected time horizon for both the Early Completion and Midterm SCORE projects. This means that the actual distribution of employment created, and the associated impacts on income and household spending, will vary year to year. Exhibit S-1 displays these results at key years.

Exhibit S-1: Construction Spending Economic Impacts for the 5-County Region

	2023	2028
Output ($ billions)	$8.96	$9.92
GDP ($ billions)	$5.17	$5.73
Labor Income ($ billions)	$3.43	$3.80
Total Employment	53,785	59,560
Direct	*30,440*	*33,710*
Indirect & Induced	*23,345*	*25,850*

Estimates by LAEDC

Beyond the construction spending impacts, additional analysis was performed based upon increases in ridership and productivity gains for each phase of the Plan. This additional analysis found further positive impacts in the five-county region in the Early Completion phase, Mid-Term phase, and post-implementation benefits through 2050. These estimates show that implementing the SCORE Plan will create an additional $1.17 trillion in output (equivalent to creating the 16th richest nation in the world) for the five-county Southern California region; $683.8 billion in gross domestic product (85 percent of Los Angeles County's annual gross product); and $185 billion in wages through 2050 (nearly the combined net worth of Bill Gates and Warren Buffet) over the course of the project. Regionally, the SCORE expansion is forecasted to create a net average of over 42,600 jobs annually (1.36 million new jobs divided evenly over the 32-year forecast period). This would accelerate regional job growth by over 25 percent. The results of the increased ridership and productivity at key years in Exhibit S-2. The gross domestic product figures here represent the forecasted growth in all goods and services produced.

Exhibit S-2: Ridership and Productivity Economic Impacts for the 5-County Region

	2023	2028	2050
Output ($ millions)	$16,891	$31,607	$57,778
GDP ($ millions)	$10,148	$19,091	$32,563
Personal Income ($ millions)	$4,864	$9,232	$5,282
Total Employment (annual growth)	49,400	93,200	15,000
Population (annual growth)	70,500	68,200	58,000

Estimates by LAEDC

Exhibit S-3 below shows the total estimated economic impact of the ridership and productivity impacts attributable to SCORE and estimated using REMI.

Exhibit S-3: Total Economic Operations Impacts for the 5-County Region

	2050
Output ($ Billions)	$1,170.0
GDP ($ Billions)	$683.8
Personal Income ($ Billions)	$185.0
Total Employment (Millions of Jobs)	1.36

Estimates by LAEDC

Approach, Methodology and Terms

Economic impact analysis typically begins with an increase in the final demand for an industry's output, such as a purchase of construction services, or an in-flow of out-of-town visitors who spend money at local accommodations and retail outlets.

Our approach utilized budget and rail ridership data provided by Metrolink. Ridership trends were utilized from the *Metrolink 2018 Origin-Destination Survey*. Additional data regarding trip, vehicle miles travelled, and vehicle hours travelled was acquired from the California Department of Transportation (Caltrans). This analysis begins by estimating the impact of SCORE's operations within the five-county region of Southern California (including one connecting station in San Diego County) based on data provided by the client. Once the initial direct activity was determined, we estimated the indirect and induced impacts using models developed with data and software from MIG, Inc. which offers a robust, widely-used set of modeling tools that provide economic resolution from the national level down to the ZIP code level.

The metrics used to determine the value of the economic impact include employment, labor income and the value of output. *Employment* numbers include full-time, part-time, permanent and seasonal employees, and the self-employed, and are measured on a job-count basis regardless of the number of hours worked. *Labor income* is a measure of all income received by both payroll employees and the self-employed, including wages and benefits such as health insurance and pension plan contributions. *Output* is the value of the goods and services produced. For most industries, this is simply the revenue generated through sales; for others, such as retail industries, output is the value of the services supplied. *Value added* is the equivalent of gross domestic product (since this report concerns the Southern California region, sometimes called gross domestic product), but this figure is always less than output since output contains the value of all inputs in addition to finished goods and services.

Direct employment is the personnel hired during the construction phase as well as the personnel required for ongoing maintenance as well as administrative, management, financial duties. *Direct* output is the value of the services provided by each business firm or entity. *Indirect* effects are those that stem from the employment and output motivated by the purchases made by each direct company. For example, indirect jobs are sustained by the suppliers of the office supplies and insurance coverage purchased by participating institutions. *Induced* effects are those generated by the household spending of employees whose wages are sustained by both direct and indirect spending.

Additionally, this report provides results from models intended to measure the economic impacts of implementing investments in the regional transportation system. For this work, we used the state-of-the-art REMI (Regional Economics Models, Inc): TranSight and TaxPi+ models. The TranSight model is a leading tool in evaluating the economic impacts of changes to transportation systems and indirect types of costs and benefits. Some indirect costs from SCORE include changes in safety, emissions, operating costs and transportation costs. TranSight is used to determine whether allocating funds to a transportation initiative is likely to produce measurable improvements compared to the

baseline and funding other policy initiatives. The Tax-PI model is a combined economic, demographic, and fiscal model within a Windows-based software package that performs economic impacts, demographic analysis, and the dynamic scoring of state budgets at the regional level. The results concerning the dynamic regional impacts related to the completion of SCORE and its predicted positive externalities were generated using an integrated REMI TranSight-Tax PI model.

To utilize the REMI TranSight and Tax-PI tools, a no-build baseline and implementation of SCORE transportation scenarios and a baseline budget using Metrolink SCORE budget information were created. For clarification, the baseline is the transportation demand derived from SCRRA's own ridership data estimates and vehicle miles traveled (VMT), vehicle hours traveled (VHT) and trips estimates from the U.S. and California Department of Transportation. The variant transportation scenarios considered reduced vehicle trips, miles and hours predicted as a result of increased regional rail ridership. The REMI TranSight forecasts also considered increased regional labor access as a result of the SCORE improvements and regional factor productivity gains for the rail transportation and transit and ground passenger transportation industries. The model forecast was run from 2018 until 2050.

Unless otherwise noted, labor income, value added, expenditures and output are expressed in current 2019 dollars. Employment estimates are reported on an annual basis, i.e., the number of full and part-time jobs supported in one year. When conveying the long-term impacts through 2050, we aggregated the annual output and job gains, as noted in the text.

2. Introduction

In Los Angeles Metropolitan Statistical Area, hours lost to congestion total 128, according to the 2018 Inrix Global Traffic Scorecard (source: Inrix, 2/11/2019 press release). Acknowledging that Southern California's freeway network has nearly reached its limit for widening, expansion and improvement of the current long-distance railway system is the among best methods to address the region's transportation needs across what Inrix describes as its "sprawling geography". By eliminating vehicles and offering an affordable means of transportation to millions of potential riders, SCORE will be responsible for creating immensely positive effects on the economy of the greater Southern California region. In pursuit of these advances, the SCRRA has proposed a $10 billion expansion of the current rail system in Southern California. The project is set to be completed in time for the 2028 Olympic Games as a showcase for the region's efforts to address its "car-is-king" past. The purpose of this study is to estimate the economic benefits that SCORE investments will have on the five-county regional economy.

Expansion will be divided into three main phases; "Early Completion" constituting the first five years (complete in 2023); an additional five years of Mid-Term construction (complete in 2028); and Long-Term plans for the Plan's post 10-year needs. The initial five-year phase of construction spans across the entire five county region. This phase will focus on increased throughput near the Burbank jurisdiction; implementing a double track system to the San Bernardino line; constructing an additional track serving the Los Angeles-Fullerton line; expanding current maintenance facilities as well as constructing new ones; and increasing capacity across an array of rail lines. Link Union Station (Link US) is a concurrent project designed to deliver two run-through tracks for more efficient connections between the northern and southern portions of the five-county region. Pulse scheduling will also be set in motion for riders to avoid dependency on a memorized schedule and instead become accustomed to an integrated bus and rail system with repeat and regular schedules.

Special consideration and planning will address environmental issues. Currently, SCORE's partners are already taking measures to reduce emissions. The SCRRA, operator of Metrolink commuter rail service, is in the process of converting 75 percent of its fleet to the highest level of emission control. Further integration is expected in the longer-term phase to pursue zero emissions. An increased emphasis will also be put on general public health benefits. Healthier communities and improvements in asthma and obesity levels are expected as SCORE's public transit routes connect with pedestrian and bike paths and millions of pounds of harmful emissions are reduced between 2023 and 2078.

Other major benefits from the project stem from the increased interconnectivity among Southern California residents, tourists and businesses. The cross-county and inter-city connections will promote active transportation, improved public health and safety, and further integration opportunities for the region's low-income communities. For example, SCORE will begin to address the discrepancies that exist in the region's current housing market and transportation system. As housing along the coast becomes more expensive, it pushes disadvantaged residents further east, where Metrolink service area is centered. Metrolink is poised to reconnect these displaced residents by providing more frequent service for them through LAUS and other stations across the region. Construction of grade separations and grade crossings, implementation of inward and outward facing cameras and many additional investments are planned or in place to provide a reliable system of transportation for all public transit riders.

Finally, the SCORE Plan benefits goods movement, particularly on the heavily congested segment between Commerce and Fullerton where there are approximately 50 freight trains sharing the tracks with the same number of passenger rail trains. SCORE, at build out, will provide two dedicated passenger rail tracks that separate and provide redundancy to permit more frequent and reliable service.

3. Environmental Challenges

Despite Southern California's historical progress on environmental issues, it nevertheless reigns as the nation's smoggiest state,[2] hosting eight out of ten of the country's most ozone-polluted cities.[3] A major factor in the prevalence of these pollutants is the absolute dependence of many Californians on personal vehicles.
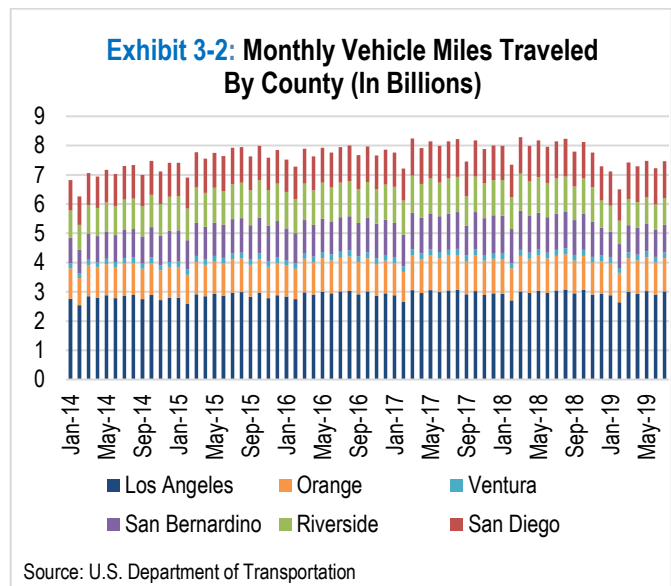
Exhibit 3-1 depicts the six states with the greatest vehicle miles travelled (VMT) in the country. For years, California has outpaced any other state in VMT and continues to do so, with a 4.3 percent increase in VMT from 2013 to 2017. Despite increased warnings about pollutants from vehicles, the only state of the six to experience a decrease in VMT is New York.

Exhibit 3-1: Annual Vehicle Miles (Billion)

Source: U.S. Federal Highway Administration
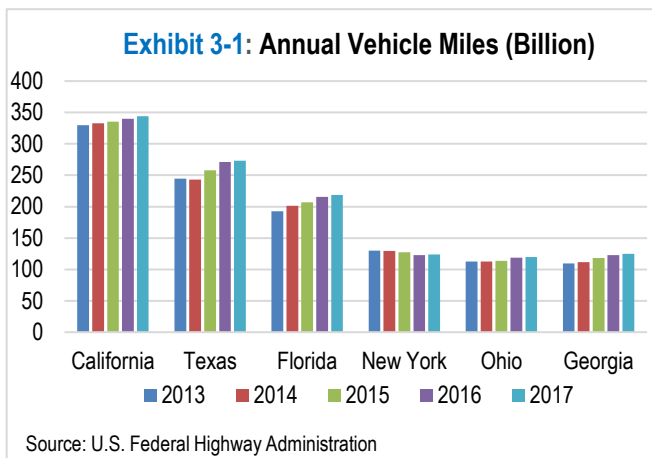
On a regional level, this problem is further exacerbated by the sheer amount of driving required given the current state of the region's infrastructure. Exhibits 3-2 and 3-3 capture Southern California's dependency on cars by looking at vehicle miles traveled, and vehicle hours traveled by month from January of 2014 to July of 2019. During this five-and-a-half-year span, Southern Californians drove 510.8 billion miles, with an average of over 25,000 miles per capita. This in turn causes Southern Californians to spend nearly nine

billion hours in vehicles. Many of these miles and hours in traffic are spent in Southern California's most populous county, Los Angeles. Indeed, the Los Angeles County accounts for 38 percent of all miles traveled in the Southern California region, and 40 percent of the region's vehicle hours traveled. Orange County is the most traffic burdened county per capita, making up 14.6 percent of miles and 14.4 percent of hours traveled despite constituting just under seven percent of Southern California's population.

The severity of the figures lies in the consistency of the vehicle travel. In the past five years, the vehicle miles and hours have increased.

Exhibit 3-2: Monthly Vehicle Miles Traveled By County (In Billions)

Source: U.S. Department of Transportation

[2] Rice, Doyle. "Bad air days on the rise: The nation's most polluted city is ..." *USA Today*, Usatoday.com/story/news/nation/ 2019/04/24/air-pollution-smog-soot-worst-california/3551734002/

[3] "More than 4 in 10 Americans Live with Unhealthy Air." *American Lung Association,* https://www.lung.org/about-us/media/press-releases/2018-state-of-the-air.html

Exhibit 3-3: Monthly Vehicle Hours Traveled By County (In Millions)

Legend: Los Angeles, Orange, Ventura, San Bernardino, Riverside, San Diego

Source: U.S. Department of Transportation

Source: https://www.latimes.com/local/california/la-me-metrolink-service-20160403-story.html
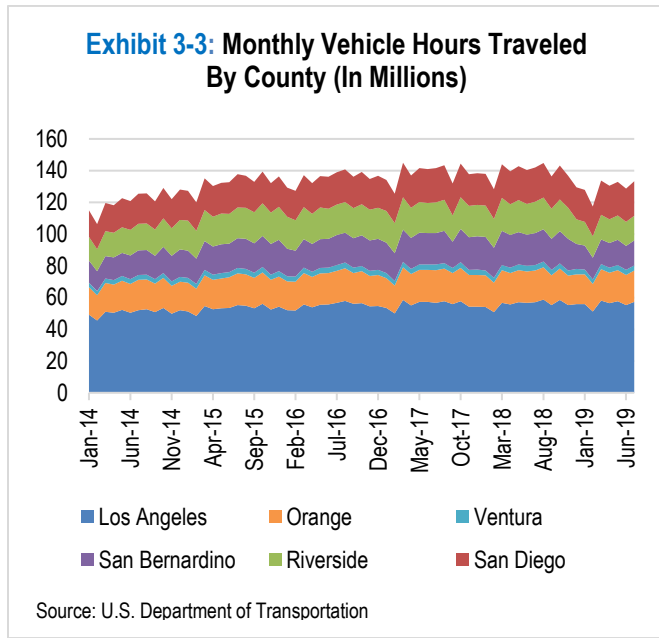
Due to the reliance that Californians have on cars, the expansion of the region's rail system, whose average trip length per passenger is now 36 miles, is a principal method of facilitating the shift towards an efficient source of alternative travel. First and foremost, SCORE seeks to vastly reduce the number of SoCal residents reliant on their automobiles for everyday travel. Over the course of its lifetime, from 2023 to 2078, SCORE is projected to eliminate 3.4 billion VMT on congested highways. Additionally, 51.7 million metric tons of carbon dioxide equivalent (MTCO2e) will be reduced. SCORE will continue to eliminate over 939,000 MTCO2e per year after 2078. From 2023 to 2027, 240,737 MTCO2e will be eliminated.

Various efforts within the SCORE program will lead to these improvements in emission reductions. As mentioned, Metrolink is converting 75 percent of its fleet to Tier 4 locomotives, the highest level of emission control for diesel technology. Further improvements in environmental conditions will stem from increased use of zero emissions vehicles on the rail system.

4. Addressing Affordability & Safety

With one third of Californians considering moving out of state because of affordability constraints[4] and growing concerns over income inequality, SCORE will help relieve pressure on disadvantaged communities.

Improving service to stations in disadvantaged communities facilitates increased disposable incomes for riders in those communities. Such low-income communities (referred to as AB 1550 communities) are defined by standards set by the Department of Housing and Community Development and census tract data. With nearly 70 percent of Metrolink stations located in disadvantaged communities, SCORE investments will advance access to transportation for those who need it most. Having access to reliable and affordable public transit increases ridership and reduces the need for more than one car per family, further reducing transportation costs and saving three to four thousand dollars per year as a result. [5] The decrease in vehicles on the road also serves as a major factor in improved safety. In 2017, nearly 485,900 car crashes were reported in the state, resulting in nearly 3,900 deaths. Southern California ranks as the most dangerous region in the state for auto accidents. Los Angeles, with over 91,000 fatalities and injuries, ranks as the most dangerous county, followed in order by; Orange, San Diego, San Bernardino and Riverside counties.[6] Speeding and driving under the influence of drugs or alcohol are leading causes of death related accidents.

In addition to AB 1550 communities, major strides are underway to improve quality of life for those living in areas disproportionately affected by emissions. In a recent study by the Union of Concerned Scientists, EPA data on emissions was used to assess the exposure to air pollution experienced by Californians. The results concluded that "the lowest-income households in the state live where PM2.5 (*fine inhalable particles[7]*) pollution is 10 percent higher than the state average, while those with the highest incomes live where PM2.5 pollution is 13 percent below the state average."[8] As such, the California Communities Environmental Health Screening Tool (CalEnviroScreen) ranks communities based on their vulnerability to many sources of pollution. Figure 4.1 shows the prevalence of these impacted communities in station ridership catchment areas.

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[4] Baldassare, Mark and Bonner, Dean "Californians and Housing Affordability." *Public Policy Institute of California,* https://www.ppic.org/publication/californians-and-housing-affordability/

[5] "Transit-Oriented Development and Joint Development in the United States: A Literature Review." *Transit Cooperative Research Program, the Federal Transit Administration,* http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rrd_52.pdf

[6] "California Car Statistics." *Megered Chian Law,* https://megeredchianlaw.com/california-car-accident-statistics/

[7] "Particulate Matter (PM2.5) Trends." *United States Environmental Protection Agency,* https://www.epa.gov/air-trends/particulate-matter-pm25-trends

[8] "Inequitable Exposure to Air Pollution from Vehicles in California." *Union of Concerned Scientists,* https://www.ucsusa.org/sites/default/files/attach/2019/02/cv-air-pollution-CA-web.pdf

Figure 4-1 shows the distribution of AB 1550 and SB 3535 communities.
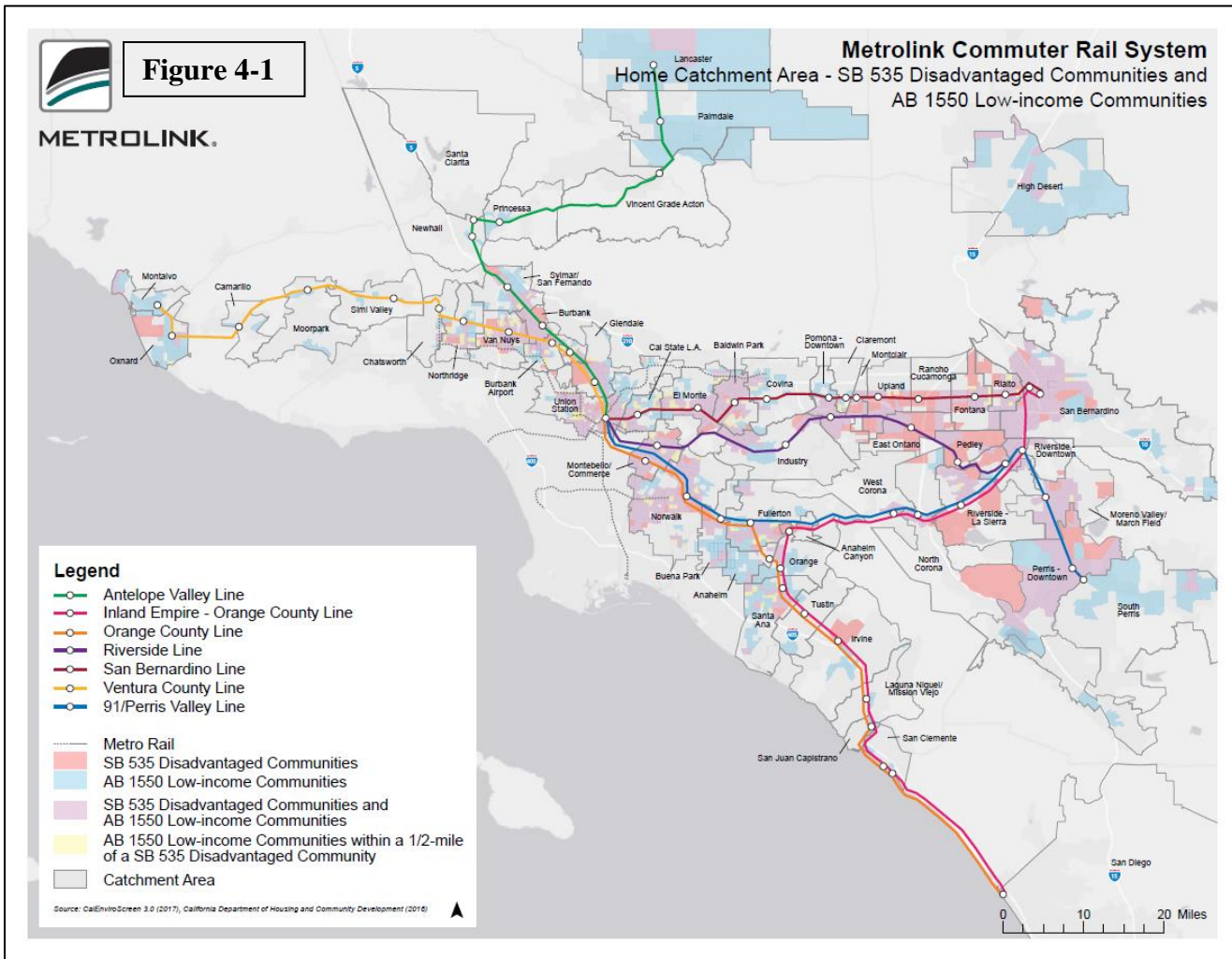
SCORE expands opportunities for an estimated 2.3 million new pedestrians and 1.4 million new bicyclists per year who choose to walk or cycle from home to their regional rail station[9]. Not only will the presence of additional cyclists and pedestrians contribute to taking vehicles off the road, but the added movement in everyday lives will improve health and wellness for residents as well, thereby contributing to a healthier community.

Source: https://www.tripadvisor.com/LocationPhotoDirectLink-g32655-d12230994-i302561960-Metrolink-Los_Angeles_California.html
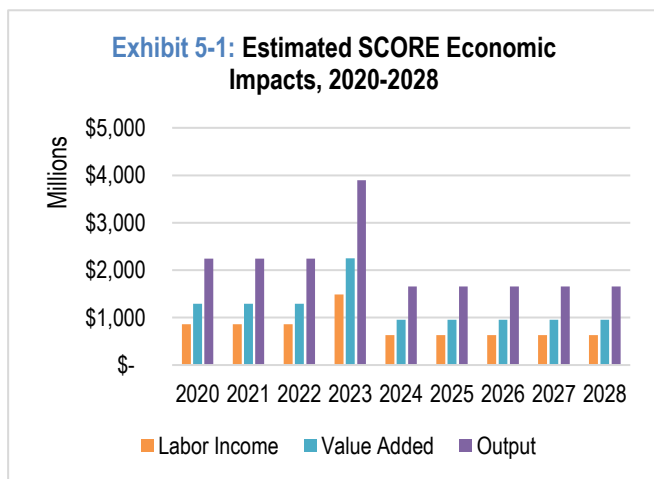

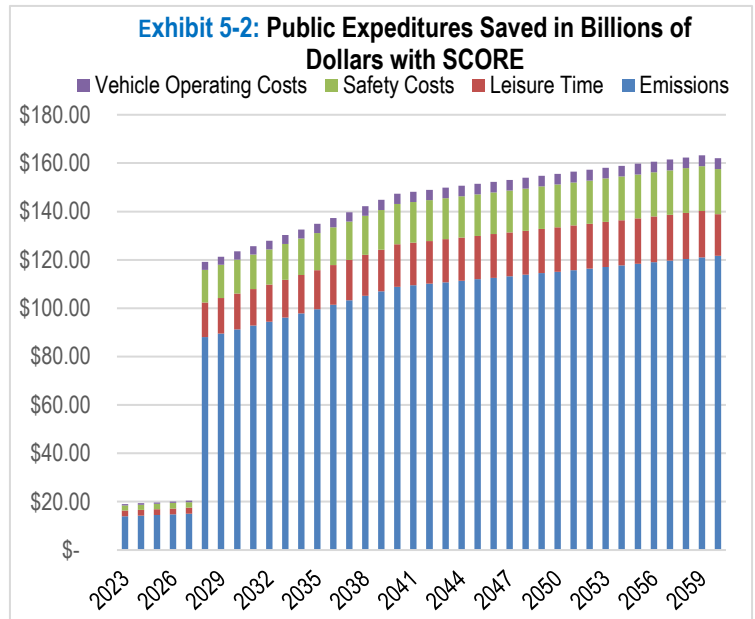[9] Southern California Optimized Rail Expansion Program (SCORE) TIRCP 2018 Funding Application – Appendix E:4

5. SCORE Construction Spending – An Economic Impact Analysis

Employment & Labor Income

This section provides an economic impact analysis of the direct development spending for SCORE. The largest benefiting employment sector is predicted to be construction, but other sectors including administrative and waste services, accommodation and food services, as well as retail trade would have jobs supported as well. About 50 percent of the jobs would be created in the Early Completion project, while the remaining 50 percent would be created in the Mid-Term projects. Employment would spike in or around the fourth year of construction, as the Early Completion projects will overlap with the Mid-Term projects. Labor income would follow a similar trend. Peaking in year four of construction, labor income is estimated to be just below $1.5 billion (equal to $80 dollars for every resident in the region). Total labor income due to construction should exceed over $7.2 billion, the bulk of which would go to the construction workers themselves (equal to $382 for every resident in the region).

Exhibit 5-1: Estimated SCORE Economic Impacts, 2020-2028

Estimates: LAEDC

Exhibit 5-2: Public Expeditures Saved in Billions of Dollars with SCORE

Estimates: LAEDC

Over all nine years of estimated construction activity, the average income for all jobs created by the projected construction spending is $63,742. This is significantly higher than the Los Angeles living wage of $29,900. Construction jobs for both phases of construction are estimated to pay on average $67,007. This estimated income for construction jobs exceeds the median household income in Los Angeles County of $61,015.[10]

Value Added

The estimated value added from SCORE construction over nine years is $10.9 billion. This figure represents the increase in Southern California's gross domestic product. Gross domestic product is the value of all finished goods and services produced. This is nearly the same as the projected impact of the 2028 Olympic Games.[11]

Economic Output

The estimated overall economic output for the construction of Metrolink's SCORE project is nearly $18.9 billion.

Economic Savings

Though the economic impact is not limited to employment and output, Exhibit 5-2 above shows how SCORE is projected to save over $150 billion worth of

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[10] American Communities Survey 5-Year Estimates.
[11] https://www.ocregister.com/2017/01/09/study-economic-impact-of-la-olympics-could-top-11-billion/

public costs, the majority of which being pollution costs. Other significant contributors include leisure time, safety costs, and vehicle operating costs. The last being "motor vehicle fuels, lubricants, fluids, maintenance, and repair". Assuming funding is immediately achieved, and the project is completed 2028 prior to the Olympics, the savings would be nearly instantaneous upon completion[12]. Aside from being the socially responsible choice, investing in infrastructure now economically reduces the future burden the state and taxpayers face in pollution, safety, and vehicle operating costs as well as the time invested in those activities.

Exhibit 5-3: Estmated SCORE Employment Impacts (2020-2028)

Estimates: LAEDC
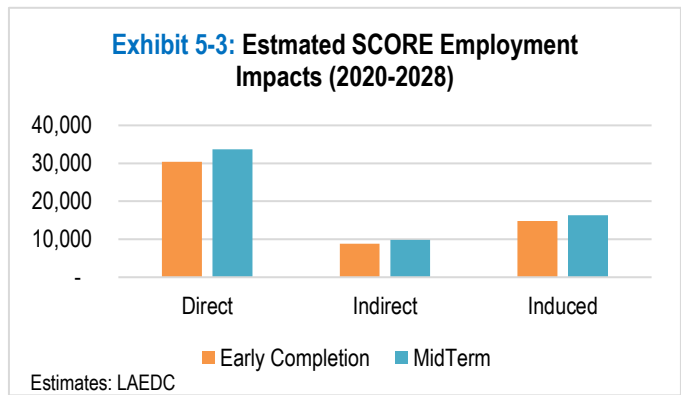
Exhibit 5-4: Estimated Economic Impacts for SCORE Early Completion and Midterm Projects for the Five-County Region

Year	Construction Employment (Direct, Indirect, & Induced)	Labor Income	Value Added	Output
2020	13,400	$ 857,100,000	$ 1,293,500,000	$ 2,239,600,000
2021	13,400	$ 857,100,000	$ 1,293,500,000	$ 2,239,600,000
2022	13,400	$ 857,100,000	$ 1,293,500,000	$ 2,239,600,000
2023	23,400	$ 1,489,900,000	$ 2,248,500,000	$ 3,893,100,000
2024	9,900	$ 632,800,000	$ 955,000,000	$ 1,653,500,000
2025	9,900	$ 632,800,000	$ 955,000,000	$ 1,653,500,000
2026	9,900	$ 632,800,000	$ 955,000,000	$ 1,653,500,000
2027	9,900	$ 632,800,000	$ 955,000,000	$ 1,653,500,000
2028	9,900	$ 632,800,000	$ 955,000,000	$ 1,653,500,000
Total	113,100	$ 7,225,200,000	$ 10,904,000,000	$ 18,879,400,000

Estimates: LAEDC

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[12] "https://www.metrolinktrains.com/about/agency/SCORE/

Exhibit 5-5: Estimated Employment Impacts (Direct Construction, Indirect and Induced) by Industry

Industry	Early Completion	Midterm	Average Wage
Construction (Direct)	30,600	33,900	$ 67,000
Retail	3,600	4,000	$ 42,200
Health care	2,700	3,000	$ 60,600
Hospitality	2,200	2,400	$ 29,500
Professional svcs	2,000	2,200	$ 85,900
Personal svcs	1,800	2,000	$ 47,900
Admin & waste services	1,800	2,000	$ 41,100
Manufacturing	1,500	1,700	$ 78,400
Wholesale	1,500	1,600	$ 83,300
Logistics	1,400	1,600	$ 60,800
Finance & insurance	1,300	1,500	$ 77,700
Real estate	1,300	1,400	$ 51,400
Other	1,900	2,100	$ 74,200
Living Wage in Los Angeles County (1 Adult):			$ 29,900

Estimates by LAEDC

Exhibit 5-6: SCORE Construction Employment Impacts

County Industry	Los Angeles	Orange	Riverside	San Bernardino	Ventura	5-County Total
11 Ag, Forestry, Fish & Hunting	10	-	30	10	60	110
21 Mining	70	20	20	30	30	170
22 Utilities	60	20	10	20	10	120
23 Construction	25,200	18,330	11,690	6,470	2,890	64,580
31-33 Manufacturing	1,760	820	230	290	130	3,230
42 Wholesale Trade	1,840	660	210	330	110	3,150
44-45 Retail trade	4,070	1,460	890	840	380	7,640
48-49 Transportation & Warehousing	1,630	230	380	710	50	3,000
51 Information	560	70	20	10	10	670
52 Finance & insurance	1,530	890	130	140	140	2,830
53 Real estate & rental	1,570	720	190	160	70	2,710
54 Professional- scientific & tech svcs	2,570	1,130	180	190	150	4,220
55 Management of companies	310	190	10	30	40	580
56 Administrative & waste services	1,860	1,040	330	370	130	3,730
61 Educational svcs	810	220	50	80	40	1,200
62 Health & social services	3,550	960	510	550	200	5,770
71 Arts- entertainment & recreation	540	290	70	40	30	970
72 Accommodation & food services	2,550	1,000	470	400	190	4,610
81 Other services	2,350	720	310	300	120	3,800
92 Government & non NAICs	150	40	30	30	10	260
Total	52,990	28,810	15,760	11,000	4,790	113,350

Estimates: LAEDC

IMPLAN

As mentioned previously, IMPLAN is an input-output static model that examines the impact of certain economic activities on local economies. This analysis can take place at the state, county, zip code or customized regional level. IMPLAN relies upon its own industry classifications, which are based on yet distinct from North American Industry Classification System (NAICS), to distinguish between various types of economic activity. Each industry is attached to a matrix of economic multipliers by which the impact of an activity, called an "event" in IMPLAN, is assessed. These activities are classified by various types, including but not limited to, industry output or spending; industry employment; industry employee compensation (typically aggregate wages); and proprietor income. Each activity is attached to an industry specification, which then allows IMPLAN to generate employment, output, gross domestic product and fiscal impact results based upon the economic multiples attached to that industry. For its analysis of the construction spending related to SCORE, the LAEDC assessed the construction spending totals provided by SCRRA. These totals were separated between the Early Action and Midterm projects, with total spending adding up to roughly $10.1 billion. This spending figure was attached to the industry classification of "construction of other new nonresidential structures" and analyzed accordingly.

IMPLAN vs. APTA: A Comparison in Economic Impact Modeling:

SCRRA and other transit agencies often rely on an American Public Transportation Association (APTA) tool to forecast the economic impacts of transit construction improvements. Since such forecast results will appear to differ from this study, we offer here the principle reasons why, as follows:

- ❖ APTA is measuring State level impacts, while IMPLAN is measuring regional impacts;
- ❖ APTA focusses on specific transit construction and operation assumptions, while IMPLAN is using more general construction only assumptions;
- ❖ LAEDC went with the REMI TranSight approach to capture the full picture of SCORE implementation, including its operation, while relying on IMPLAN for the construction only portion of the analysis.
- ❖ APTA captures a portion of both but is not as complete when compared to REMI TranSight.

6. REMI Dynamic Analysis

REMI TranSight augmented with REMI Tax PI was employed to dynamically assess the economic impacts, including GDP, employment and fixed investment, as a result of productivity gains, increased labor access and shifting transportation trends. This analysis relies on several assumptions. First, it is assumed that the work transportation patterns assessed in the *Metrolink 2018 Origin-Destination Survey* hold constant throughout the forecast period. Second, this assessment relies upon Metrolink projections as to the full benefits of SCORE.   These improvements will result in speed increases and delay reductions for freight traffic, which builds to more than 50 trains daily on some of the most heavily used segments of the network, including between Fullerton and Commerce. Finally, this analysis assumes that between Early Completion projects in 2023 and Mid-term project completion in 2028, productivity and labor access increase at least 35 percent. This estimate is based on increased ridership forecasts provided by Metrolink. Moreover, increased labor access is limited to Los Angeles, Orange, San Bernardino, Riverside and Ventura counties, since these counties are those identified as the only counties among the six counties served by Metrolink as the work destinations for the sampled cross-section of riders in 2018. Finally, these estimates are extended to the full limit of the forecast period presuming no adverse economic shocks.

Output, GDP and Income

Given the labor access benefits, productivity gains, operations and transportation costs savings and other estimated benefits, net increases in output, gross product and labor income should be expected. These results, and all subsequently presented results, will be given for 2023, the completion of the Early Completion

Exhibit 6-1: SCORE Ridership and Productivity Economic Impacts, SoCal 5 ($ millions)

SCORE 2050 Impacts:
Output: $1,170.0 billion
GDP: $683.8 billion
Income: $185.00 billion

Estimates: LAEDC

■ Output ■ GDP ■ Income
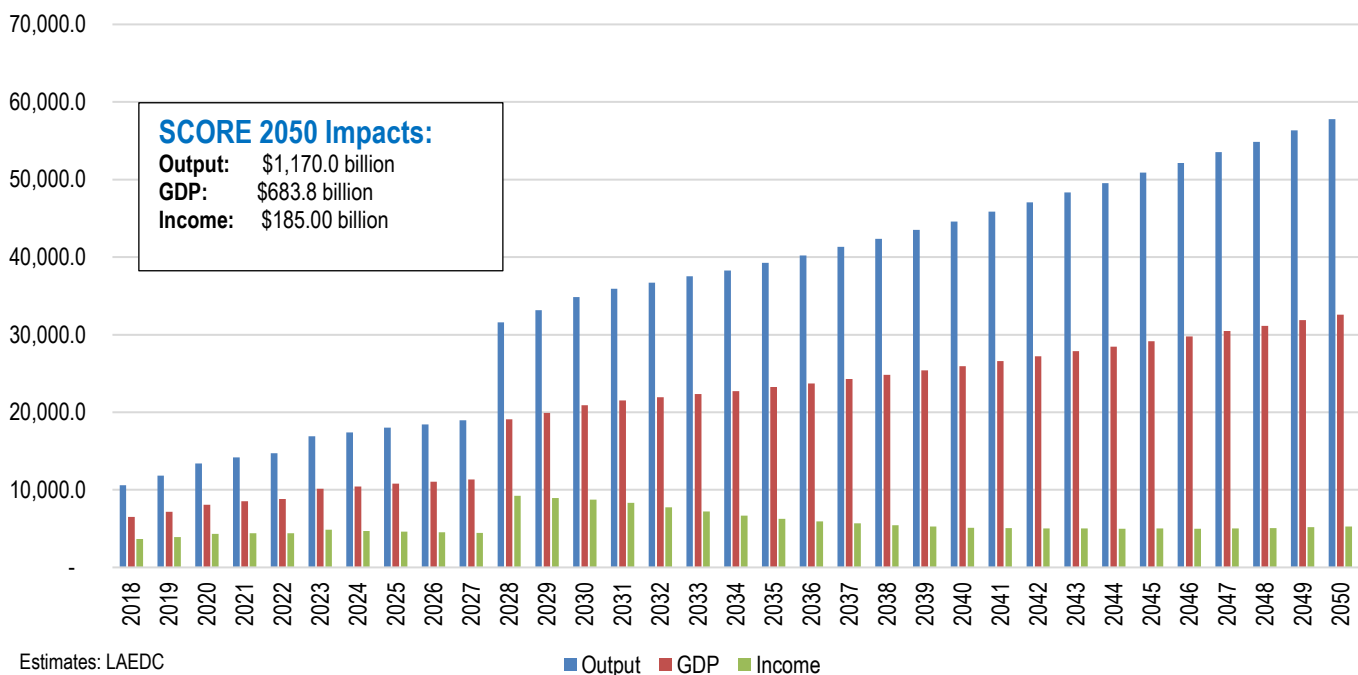
projects; 2028, the completion date of the Midterm projects; and 2050, the REMI forecast limit. Starting in 2023, the model predicts $16.9 billion added output above baseline for the region. This translates into over $10.1 billion additional value added and $4.9 billion in new labor income. In 2028, additional output is estimated to be $31.6 billion, additional GDP $19.1 billion and new labor income $9.2 billion. By 2050, annual additional output is forecasted to rise to $57.8 billion, new value added to over $32.6 billion and increased labor income to $5.3 billion. These results are presented in figure 6-2.

Exhibit 6-2: Ridership and Productivity Economic Impacts for the 5-County Region

	2023	2028	2050
Output ($ millions)	16,891	31,607	57,778
GDP ($ millions)	10,148	19,091	32,563
Personal Income ($ millions)	4,864	9,232	5,282
Total Employment (annual growth)	49,400	93,200	15,000
Population (annual growth)	70,500	68,200	58,000

Estimates: LAEDC

On a county level, Los Angeles and Orange Counties are naturally predicted to have the largest gain, with GDP increases of $5.5 billion and $2.5 billion, respectively, above baseline in 2023. In 2028, these GDP increases above baseline are $9.8 billion and $4.9 billion, respectively. For all five counties, the model predicts net positive output, GDP, income, employment and population impacts through the completion of Midterm projects in 2028.

Employment Impacts

Over the course of the forecast period (2018 to 2050), the model predicts nearly 1.36 million jobs to be created as a result of SCORE through the five-county Southern California region. This estimate aggregates job gains and losses over this period. The largest average annual job gains are expected to be in Los Angeles County, which is forecasted to gain a mean of over 21,300 jobs per year over the forecast period. These are, however, annual averages and presume no adverse shocks.

The following table breaks out the economic, labor and population impacts by county for the two major SCORE benchmark years, 2023 and 2028, and the chosen forecast limit of 2050.

As presented in Exhibits 6-4 through 6-6, employment impacts vary by industry. The following are some economic postulations on the industries forecasted to grow and those projected to suffer a decline.

The following three industries are forecasted by the REMI to grow over the period between 2018 to 2050 due to the impacts of SCORE:

Manufacturing: By increasing the efficiency not only of passenger rail but also freight, SCORE enables regional manufacturers to more quickly avail themselves of manufacturing inputs not only by rail but also by truck, since reduced vehicular traffic will decrease highway congestion. SCORE will therefore reduce time-related transportation costs incurred by regional manufacturers and allow them to produce more for less; reach vendors and consumers more quickly; and expand their revenues, therefore allowing regional manufacturing firms to hire more employees.

Retail Trade: The efficiencies generated by SCORE will allow both domestic and international finished goods to retail establishments in Southern California, thereby reducing firm-level costs and consumer prices. These savings will induce increased consumer demand and business revenues, thereby stimulating employment growth in regional retail trade.

State/Local Government: State and local government covers a variety of activities, including education, public hospitals, regulatory agencies and justice departments. SCORE will enable all these various government bodies to access a larger regional labor pool; reduce transportation subsidies by encouraging rail use, thereby generating savings that will translate to new hires; and increase employment to provide services to the population induced to move to Southern California by better transportation and job opportunities.

The following three industries are forecasted by the REMI to shrink over the period between 2018 to 2050 due to the impacts of SCORE:

Health care and social services: A so-called "population serving" serving industry, a decline in health care and social services in certain counties indicates, jointly, a decline in population over the forecast period and easier access to these services in adjacent areas. A decline in these jobs occurs in counties where population is predicted to decline, Los Angeles, San Bernardino and Riverside, while this industry is

forecasted to grow modestly in counties with population increases, Orange and Ventura. To be clear, this modest decline in health care and social services employment is over a 30-year period and is restricted to certain counties in the region. Moreover, this is indicative of regional population shifts precipitated by the transportation demand changes due to SCORE.

Accommodation and food service: Accommodation and food service cover lodging and establishments that prepared meals for immediate consumption. Typically, a sector with lower-paying jobs, this industry has grown often due to the absence of other similarly-skilled, higher paying career opportunities. The efficiencies generated by SCORE will likely encourage some transition away from these jobs as the regional population has increased access to different employment options.

Education services (private): Another so-called "population serving" industry, education services as an industry excludes public education at the primary, secondary and post-secondary levels. A decline in this industry likely indicates greater labor and consumer demand in public education and a smaller market for these services, that is, fewer education-age residents. Since the SCORE impact model predicts an increase in state and local government employment - much pertains to public education – this decline in private education employment is likely due to a substitution effect in favor of public education.

Exhibit 6-3: Economic Impacts Overview by County

County	2023	2028	2050
Los Angeles			
Output ($ millions)	9,126	16,336	30,841
GDP ($ millions)	5,451	9,801	17,260
Personal Income ($ millions)	2,217	3,653	1,066
Total Employment	25,200	45,700	11,000
Population	33,800	25,800	-32,600
Orange			
Output ($ millions)	4,121	8,008	14,440
GDP ($ millions)	2,523	4,936	8,324
Personal Income ($ millions)	1,300	2,609	2,939
Total Employment	12,900	24,400	7,900
Population	15,100	17,200	4,100
San Bernardino			
Output ($ millions)	1,403	2,912	5,704
GDP ($ millions)	831	1,732	3,164
Personal Income ($ millions)	287	682	-304
Total Employment	2,500	6,700	-1,000
Population	5,800	6,100	-15,100
Riverside			
Output ($ millions)	1,475	2,828	3,959
GDP ($ millions)	887	1,710	2,220
Personal Income ($ millions)	719	1,547	376
Total Employment	6,300	11,600	-4,200
Population	11,800	13,200	-19,600
Ventura			
Output ($ millions)	766	1,523	2,834
GDP ($ millions)	456	912	1,595
Personal Income ($ millions)	341	741	1,205
Total Employment	2,500	4,800	1,300
Population	4,000	5,900	5,200

Estimates: LAEDC

Population Impacts

Over the three-decade forecast period, the model predicts net outmigration from the five-county Southern California region to the rest of California. The positive assumptions of the model, that is, increased productivity of the rail transportation sector and increased access to jobs, have the long-run effect of inducing population growth away from the five counties of Southern California toward the rest of the state. Indeed, as rail improvements create efficiency gains for both passenger and freight traffic, it may have the effect of incentivizing movement farther away from jobs-rich regions in Los Angeles and the denser areas of western San Bernardino and Riverside counties. This trend in labor migration, at least within this model, appears supported by a long-
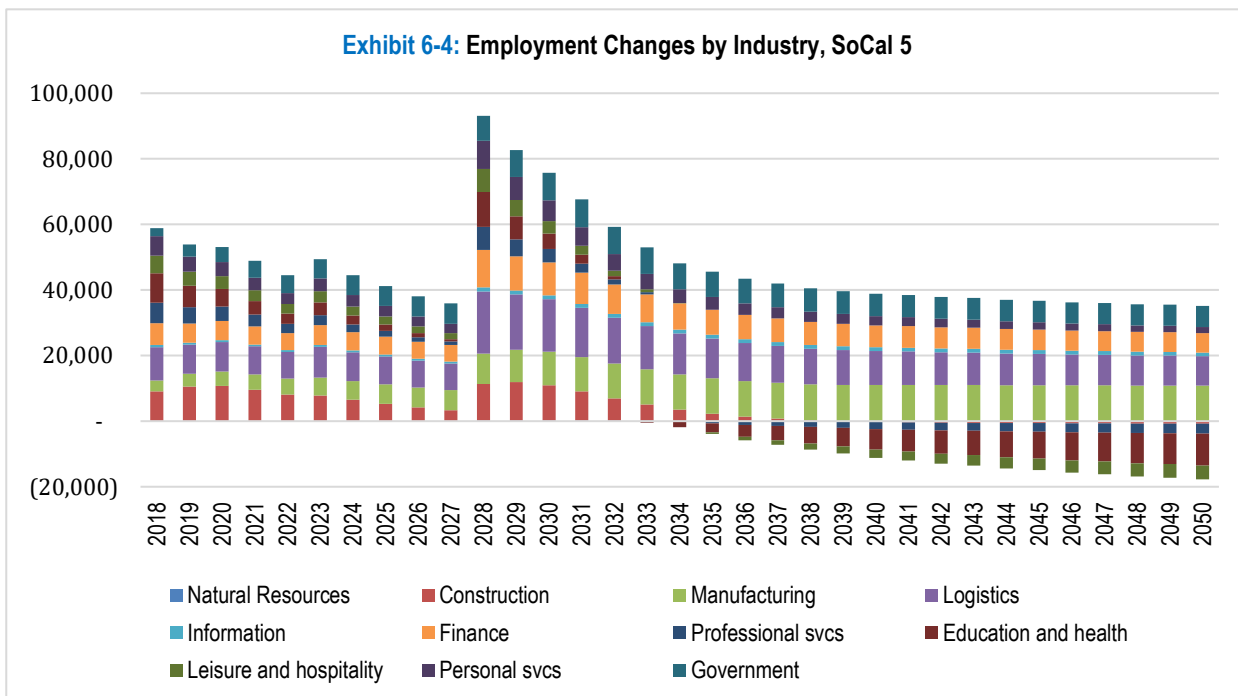
term regional decline in population-serving industries such as management, health care and education. This may also prove to be true for trade and logistics-related employment, as improved rail efficiencies may induce longer and more elaborate regional supply chains and reduced need for local warehousing. Positive population growth predictions for Ventura and Orange counties demonstrate long-term movement toward the coastal areas of Southern California. Moreover, employment growth is predicted in Los Angeles through 2050 despite population declines.

These trends might be interpreted in several ways. First, increased labor access to the jobs-rich regions of Southern California might have the long-term effect of encouraging movement back toward coastal Southern California. This may occur through current generations having greater access to jobs due to SCORE and, through savings and wealth transfers to their children, allowing them to access to more expensive coastal real estate later in the century. Second, the model predicts employment gains by 2050 despite population losses in Los Angeles County. This suggests SCORE accomplishing the aim of alleviating some housing pressures while still increasing access to the jobs-rich centers of the region.

The limitations of the model should also be noted. It presumes no increases in the housing stock, and

therefore no changes to housing costs. Additionally, the model is bound by built-in geographic rigidities, meaning it does not give a picture of how SCORE might impact usage by riders from outside the five-county region.

Overall, however, REMI predicts net positive impacts in the near, medium and long term in terms of output, value added and labor access as a result of SCORE.

Exhibit 6-4: Employment Changes by Industry, SoCal 5

Legend: Natural Resources, Construction, Manufacturing, Logistics, Information, Finance, Professional svcs, Education and health, Leisure and hospitality, Personal svcs, Government

Exhibit 6-5: SCORE Employment Impacts by Industry by County

|	2023 Early Action					2028 Midterm				
	Orange	San Bernardino	Ventura	Los Angeles	Riverside	Orange	San Bernardino	Ventura	Los Angeles	Riverside
Natural Resources	47	11	(13)	97	9	82	20	(31)	166	4
Construction	2,674	(271)	579	3,344	1,339	3,799	259	833	4,220	1,952
Manufacturing	1,303	412	162	3,331	303	2,263	762	286	5,497	527
Logistics	2,292	250	484	5,041	1,227	4,538	1,169	997	9,654	2,499
Information	95	20	19	484	29	191	37	36	969	53
Finance	1,661	411	294	3,029	599	3,352	784	564	5,659	1,105
Professional services	1,017	150	142	1,403	388	2,241	465	302	3,270	776
Education and health	1,014	262	191	1,913	469	2,615	845	515	5,359	1,257
Leisure and hospitality	914	207	209	1,609	467	1,944	484	446	3,210	955
Personal Services	910	336	196	2,039	490	2,005	751	453	4,296	1,112
Government	1,006	696	258	2,884	981	1,354	1,115	390	3,383	1,344

Estimates by LAEDC

Exhibit 6-6: SCORE Operations Employment Impacts (2018-2050)

County *Industry*	Los Angeles	Orange	Riverside	San Bernardino	Ventura	SoCal Total
NAICS 11 Forestry, fishing, and hunting	700	(200)	(2,000)	(200)	(3,000)	(4,700)
NAICS 21 Mining	4,200	2,300	800	600	700	8,600
NAICS 22 Utilities	2,300	800	500	800	300	4,700
NAICS 23 Construction	61,500	49,800	16,900	(10,800)	11,500	128,900
NAICS 31-33 Manufacturing	183,300	71,300	12,300	21,300	8,500	296,700
NAICS 42 Wholesale trade	45,200	21,300	5,600	8,500	2,900	83,500
NAICS 44-45 Retail trade	80,200	53,100	31,700	24,400	15,100	204,500
NAICS 48-49 Transportation and warehousing	54,500	16,700	4,900	(15,700)	2,600	63,000
NAICS 51 Information	26,400	4,400	800	500	600	32,700
NAICS 52 Finance and insurance	59,800	35,200	700	5,200	3,900	104,800
NAICS 53 Real estate and rental and leasing	56,600	34,600	14,600	9,700	8,500	124,000
NAICS 54 Professional, scientific, and technical services	5,200	13,400	2,300	(4,400)	600	17,100
NAICS 55 Management of companies and enterprises	(7,100)	(6,200)	(1,000)	(1,700)	(800)	(16,800)
NAICS 56 Administrative, support, waste management, and remediation services	7,300	6,300	(1,800)	4,300	900	17,000
NAICS 61 Educational services; private	(12,000)	(2,900)	(2,600)	(3,300)	(1,700)	(22,500)
NAICS 62 Health care and social assistance	(23,500)	11,000	(4,700)	(11,300)	2,800	(25,700)
NAICS 71 Arts, entertainment, and recreation	18,700	9,600	1,600	100	1,500	31,500
NAICS 72 Accommodation and food services	(17,100)	5,100	(6,000)	(7,600)	2,300	(23,300)
NAICS 81 Other services (except public administration)	63,200	29,400	14,200	8,100	7,400	122,300
NAICS 99 State and Local Government	95,700	41,200	33,700	33,700	13,000	217,300
Total	**704,900**	**396,300**	**122,600**	**62,200**	**77,600**	**1,363,600**

Estimates by LAEDC

7. Occupational Profiles

The LAEDC, per its expertise as an industry and workforce development organization, has identified several targeted middle skill and high skill occupations predicted to be created as a result of SCORE construction spending. The following is an example of such an occupation, complete with average wages for this job compared to the Southern California regional living wage; projected occupational growth according to the LAEDC's latest

Regional Wage 2018

Ave. Regional Wage	$120,515
Living Wage	$29,370

$- $40,000 $80,000 $120,000
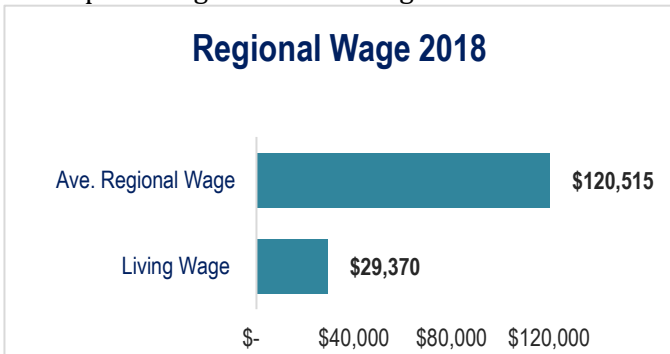
forecasts; and other industries in which this occupational role is found beyond the construction industry.

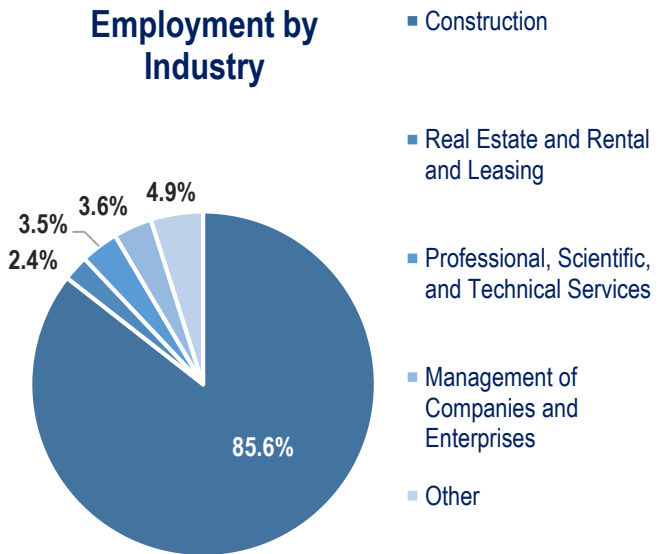## Construction Managers
(SOC Code: 11-9021)

Plan, direct, coordinate, or budget, usually through subordinate supervisory personnel, activities concerned with the construction and maintenance of structures, facilities, and systems. Participate in the conceptual development of a construction project and oversee its organization, scheduling, and implementation. Include specialized construction fields, general superintendents, project managers, and constructors who manage, coordinate, and supervise the construction process.

Forecast

+1610 Total Projected Openings (2018-2023)

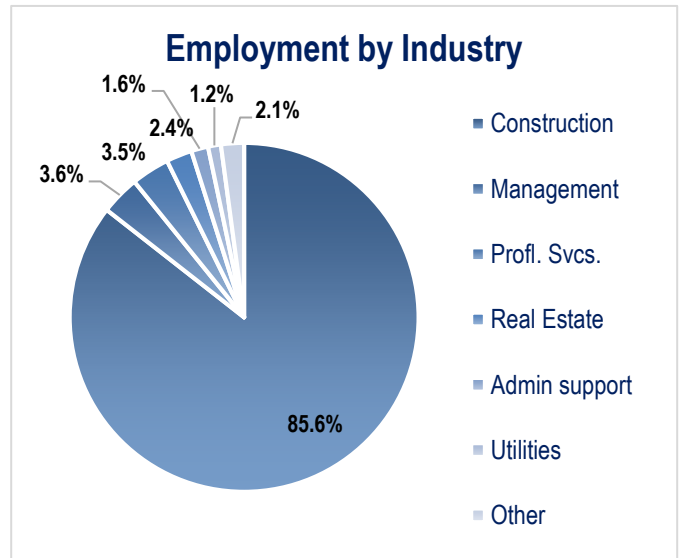**13,755 jobs** 2018 Regional Employment

11.7% 5-yr Projected Growth

Employment by Industry

- Construction
- Real Estate and Rental and Leasing
- Professional, Scientific, and Technical Services
- Management of Companies and Enterprises
- Other

2.4% 3.5% 3.6% 4.9%

85.6%

Construction Laborers
(SOC Code: 47-2061)

Perform tasks involving physical labor at construction sites. May operate hand and power tools of all types: air hammers, earth tampers, cement mixers, small mechanical hoists, surveying and measuring equipment, and a variety of other equipment and instruments. May clean and prepare sites, dig trenches, set braces to support the sides of excavations, erect scaffolding, and clean up rubble, debris and other waste materials. May assist other craft workers.

Region Wage 2018

Ave. Regional Wage	$46,458
Living Wage	$29,370

$- $20,000 $40,000 $60,000

Employment by Industry

- Construction — 85.6%
- Management — 3.6%
- Profl. Svcs. — 3.5%
- Real Estate — 2.4%
- Admin support — 1.6%
- Utilities — 1.2%
- Other — 2.1%

Forecast

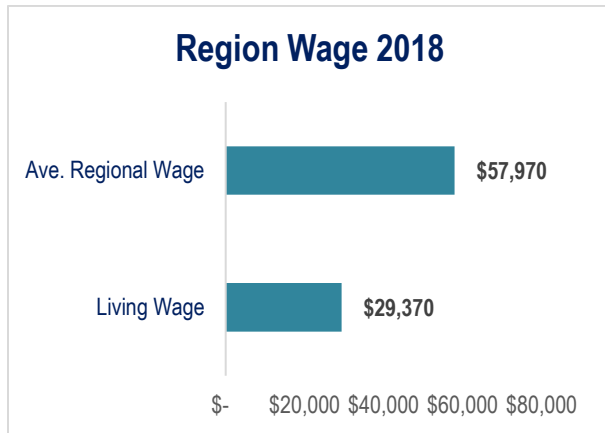**+5,278** Total Projected Openings (2018-2023)

44,937 jobs 2018 Regional Employment

11.7% 5-yr Projected Growth

Carpenters
(SOC Code: 47-2031)

Construct, erect, install, or repair structures and fixtures made of wood, such as concrete forms; building frameworks, including partitions, joists, studding, and rafters; and wood stairways, window and door frames, and hardwood floors. May also install cabinets, siding, drywall and batt or roll insulation. Includes brattice builders who build doors or brattices (ventilation walls or partitions) in underground passageways

Region Wage 2018

Ave. Regional Wage	$57,970
Living Wage	$29,370

$- $20,000 $40,000 $60,000 $80,000

Forecast

+5,376 Total Projected Openings (2018-2023)

41,569 jobs 2018 Regional Employment

12.9% 5-yr Projected Growth

Employment by Industry

- 2.4%
- 1.0%
- 9.1%
- 87.5%

- Construction
- Admin support
- Profl. Svcs.
- Other

Electricians
(SOC Code: 47-2111)

Install, maintain, and repair electrical wiring, equipment, and fixtures. Ensure that work is in accordance with relevant codes. May install or service street lights, intercom systems, or electrical control systems.
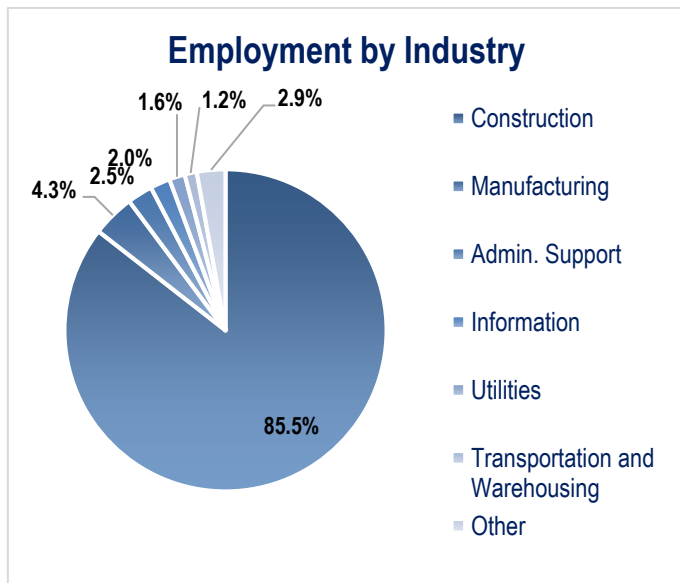
Region Wage 2018

Ave. Regional Wage	$61,228
Living Wage	$29,370

$- $20,000 $40,000 $60,000 $80,000
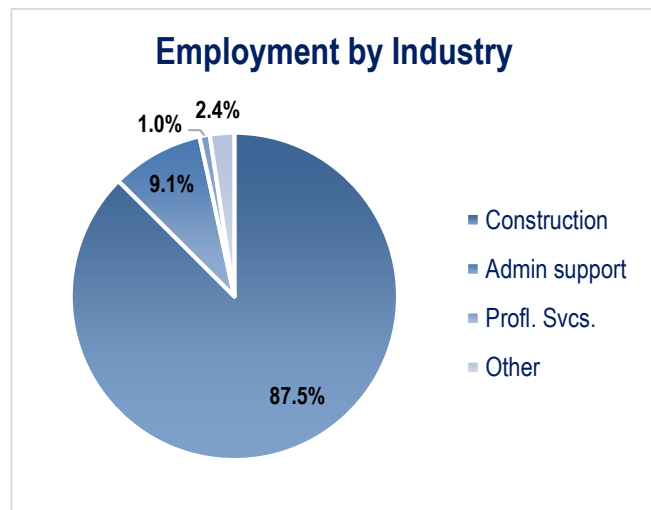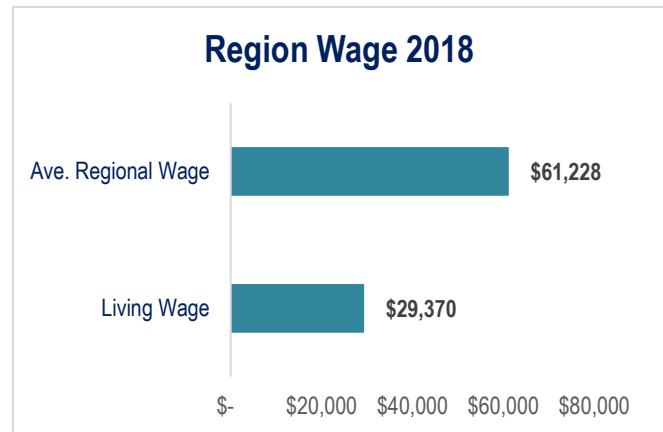
Forecast

+3,149 Total Projected Openings (2018-2023)

27,357 jobs 2018 Regional Employment

11.5% 5-yr Projected Growth

Employment by Industry

- 1.6%
- 1.2%
- 2.9%
- 2.0%
- 2.5%
- 4.3%
- 85.5%

- Construction
- Manufacturing
- Admin. Support
- Information
- Utilities
- Transportation and Warehousing
- Other

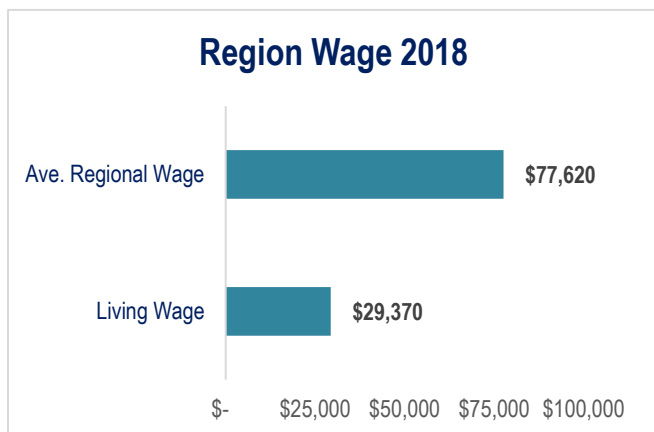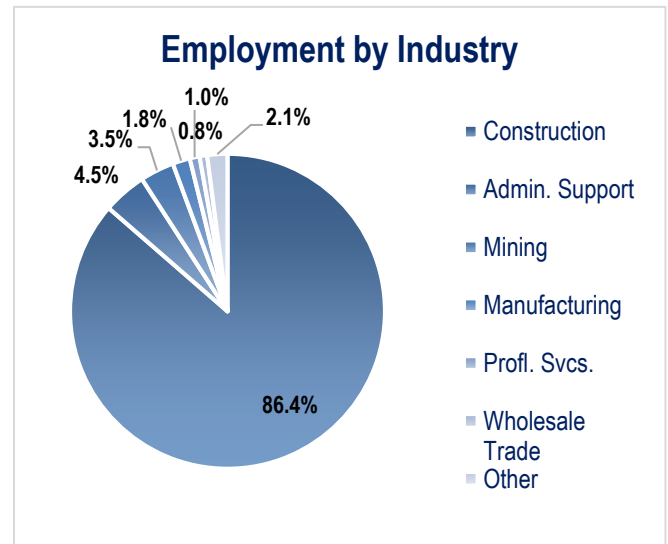## Forecast

+1,059 Total Projected Openings (2018-2023)

9,905 jobs 2018 Regional Employment

10.7% 5-yr Projected Growth

Operating Engineers and Other Construction Equipment Operators

(SOC Code: 47-2073)

Operate one or several types of power construction equipment, such as motor graders, bulldozers, scrapers, compressors, pumps, derricks, shovels, tractors, or front-end loaders to excavate, move, and grade earth, erect structures, or pour concrete or other hard surface pavement. May repair and maintain equipment in addition to other duties.

Employment by Industry

- 1.0%
- 1.8%
- 0.8%
- 2.1%
- 3.5%
- 4.5%
- 86.4%

- Construction
- Admin. Support
- Mining
- Manufacturing
- Profl. Svcs.
- Wholesale Trade
- Other

Region Wage 2018

Ave. Regional Wage	$77,620
Living Wage	$29,370

$- $25,000 $50,000 $75,000 $100,000

8. Final Thoughts

Overall, the total impact of SCORE's construction and implementation present a host of opportunities for the Southern California region. Beyond the immense economic benefits that the plan will offer, there is also hope that furthering the connection between Southern California's five counties and the rest of the state will further the dynamism and opportunities within the region. Finally, this expansion of the regional rail network demonstrates Southern California's commitment to reinforcing its economic prowess while also furthering its commitment to reducing greenhouse gas emissions and addressing climate change.

The economic impacts of the initial nine years of direct development spending by SCORE is estimated to contribute $10.9 billion in value added in the five-county region. Construction will be the main industry of benefit from SCORE's operations, as $18.9 billion in economic output will be generated and over half of all generated employment will be in the industry. Average wages for these jobs are expected to exceed the median household income in Los Angeles by around $6,000 annually. The health care and retail industries will also see substantial employment and economic output.

Furthermore, the shifts in transportation trends and productivity indicate that by 2028, GDP will increase by $19.1 billion. Additional output and labor income are also estimated to increase by $31.6 billion and $9.2 billion, respectively. By 2050, additional output will further rise by an estimated $57.8 billion, with $31.9 billion and $5.3 billion in value added and labor income. Throughout the entire forecasted period (2018 to 2050), a forecasted 1.36 million jobs will be created in the five-county region. The majority of the gains will be felt within Los Angeles and Orange Counties, with GDP increasing $5.6 billion and $2.6 billion, respectively, above baseline through the completion of Midterm projects in 2028.

Due to the increases in ridership, productivity and labor access are due to increase by at least 35 percent by the end of the Mid-Term completion. Despite the overall benefits for employment in Los

Angeles County, total population in the region would be expected to decline, all other factors besides SCORE being equal. Efficiencies of the rail, combined with an emphasis on addressing housing concerns, will result in greater movement away from denser areas of the SoCal region. Due to this dispersal, population-serving industries such as management, health care and education are expected to decline modestly over the long term, whereas employment in logistics, construction and finance are expected to have the largest growth.

The positive impacts of SCORE on environmental, safety and affordability issues also should be highlighted. The combined impacts will further expand benefits in fuel efficiency, emission reductions and decreased highway congestion. Reductions in rail and vehicle related fatalities are anticipated due to the improved maintenance at facilities and increase in safety features. Additionally, the prominence of sustainability in SCORE's expansion plans ensures that the project will have overall benefits to the environmental condition of the five county SoCal region. SCORE will eliminate up to 51.7 MTCO2e over the life of the project and the design of the High-Speed Rail is expected to be an entirely electric line. Each of these measures undertaken by SCORE is meant to reach a goal of zero emissions by 2030. Each of these efforts plays a fundamental role in the estimated $150 billion that will be saved in public expenditures by 2028. The improvements in air quality and the strong relationship of low income and disadvantaged communities to the regional rail systems ridership catchment areas will contribute to the project's goal of relieving pressure on these communities and creating the access to transportation necessary to access further opportunities. Finally, SCORE may also provide alleviation for chronic housing unaffordability as it makes cheaper inland housing more accessible to coastal workers.

Overall, the end of each phase of SCORE's construction will create advancements related to the reliability and affordability of transportation within Southern California. Regardless of occupation or zip code, SCORE represents a transportation system equitable to residents in each of the five counties. Tourists and other Californians alike will see improvements as the rail line continues to expand and facilitate easier movement within the state. As highways benefit from less congestion and traffic accidents, the region will become a healthier place for employees, residents and visitors

alike. Through the SCORE Plan, Southern California is moving towards a healthier, more efficient future that makes many hopeful for the clear skies ahead.
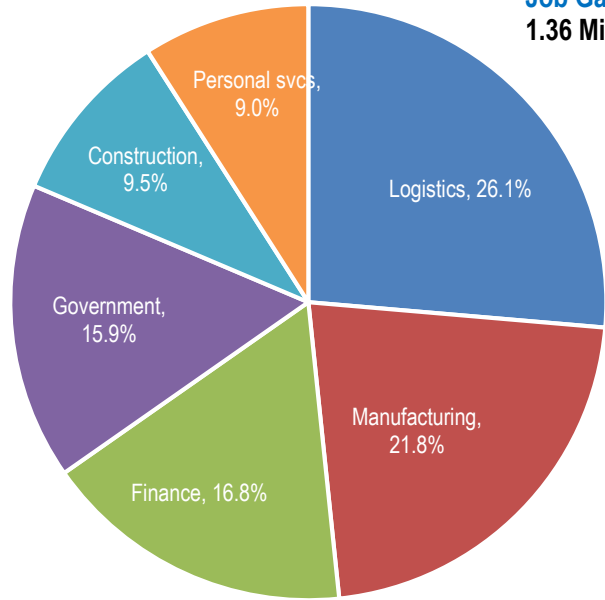
9. Appendix

5 County Region

Exhibit A-1: Total Economic Impacts for the 5-County Region

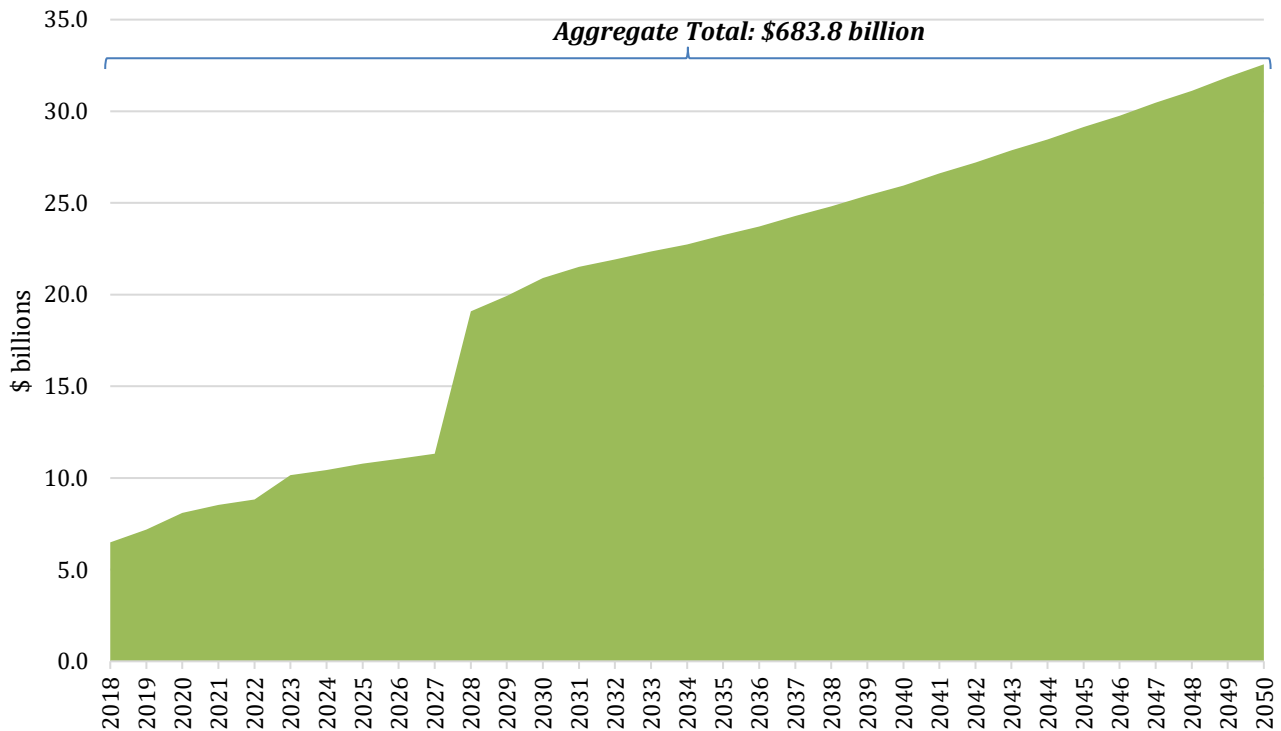|	2050
Output ($ Billions)	1,170.0
GDP ($ Billions)	683.8
Personal Income ($ Billions)	185.0
Total Employment Gains (Millions of Jobs)	1.36

Estimate by LAEDC with REMI

Exhibit A-2: 5 County Region Relative Job Gains by Industry, SCORE 2050

Score 2050 Total Job Gains: 1.36 Million

- Logistics, 26.1%
- Manufacturing, 21.8%
- Finance, 16.8%
- Government, 15.9%
- Construction, 9.5%
- Personal svcs, 9.0%

Estimate by LAEDC with REMI

Exhibit A-3: 5-County Region, Change in GDP due to SCORE
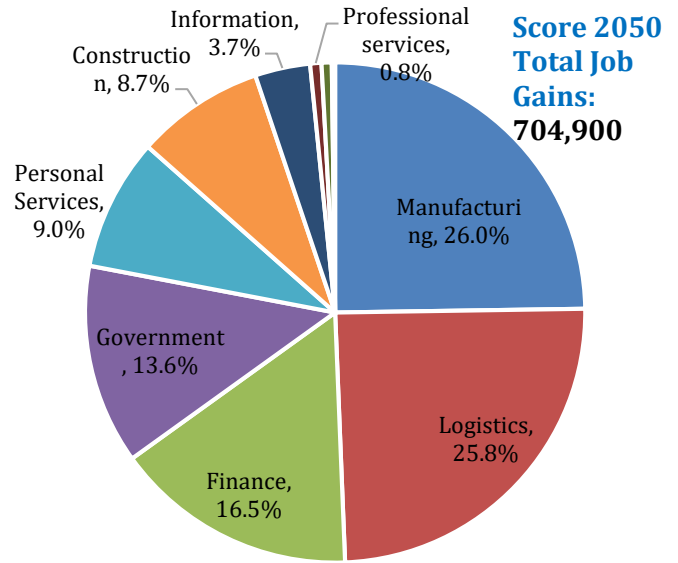
Aggregate Total: $683.8 billion

Los Angeles County

Exhibit A-4: SCORE Impacts

Los Angeles County Snapshot

Output ($ billions)	$	613.6
Gross County Product ($ billion)	$	355.9
Personal Income ($ billion)	$	57.5
Net Total Employment Gains		704,900

Estimate by LAEDC with REMI

Exhibit A-5: Los Angeles County Relative Job Gains by Industry, SCORE 2050

Score 2050 Total Job Gains: 704,900

- Information, 3.7%
- Professional services, 0.8%
- Construction, 8.7%
- Personal Services, 9.0%
- Government, 13.6%
- Finance, 16.5%
- Manufacturing, 26.0%
- Logistics, 25.8%

Estimates by LAEDC with REMI

Exhibit A-6: Los Angeles County, Change in GDP due to SCORE

Aggregate Total: $355.9 billion
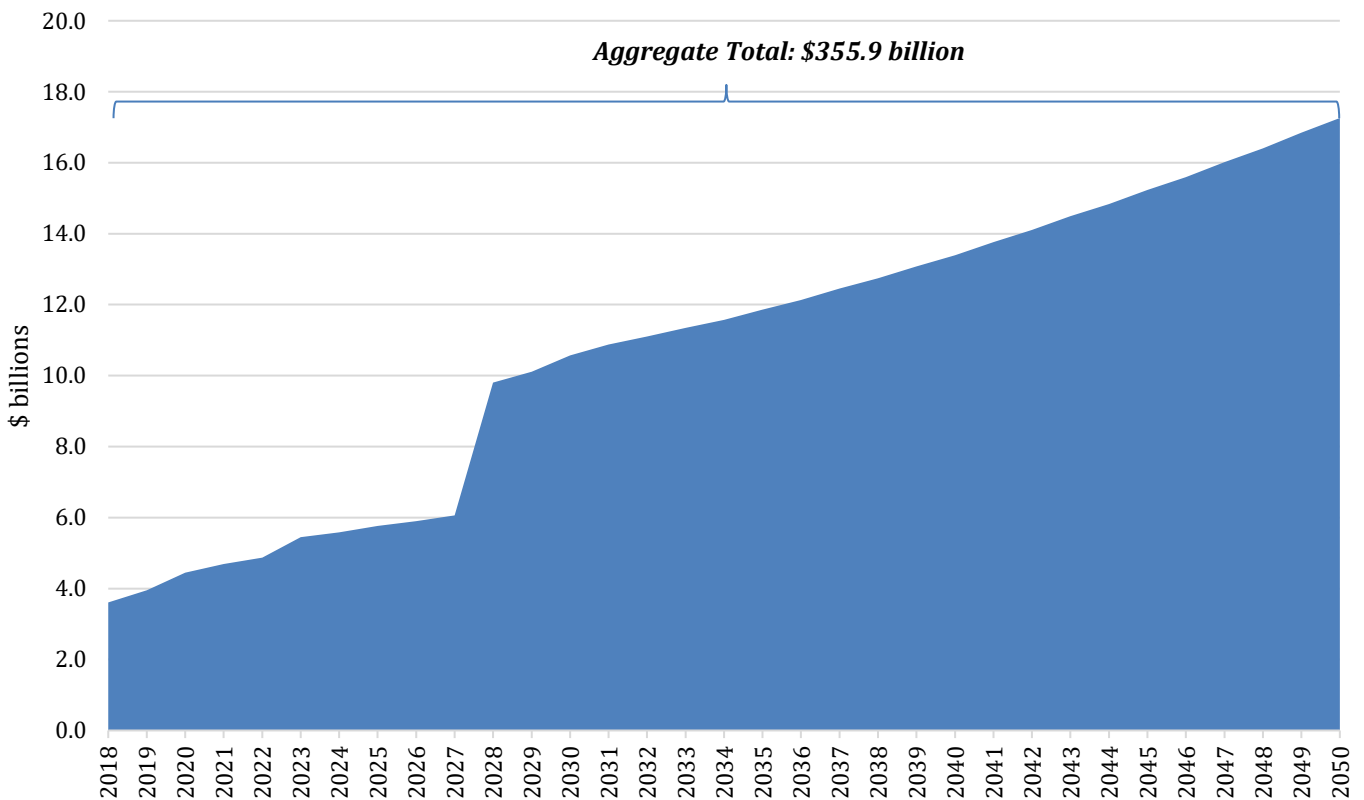
$ billions

Orange County

Exhibit A-7: SCORE Impacts

Orange County Snapshot

Output ($ billions)	$	290.1
Gross County Product ($ billion)	$	173.3
Personal Income ($ billion)	$	66.0
Net Total Employment Gains		396,300

Estimate by LAEDC with REMI

Exhibit A-8: Orange County Relative Job Gains by Industry, SCORE 2050

Score 2050 Total Job Gains: 396,300

- Profl. Svcs, 3.4%
- Leisure and hospitality, 3.7%
- Personal Svcs, 7.4%
- Education and health, 2.0%
- Logistics, 23.5%
- Manufacturing, 17.9%
- Finance, 17.5%
- Construction, 12.5%
- Government, 10.4%

Estimate by LAEDC with REMI
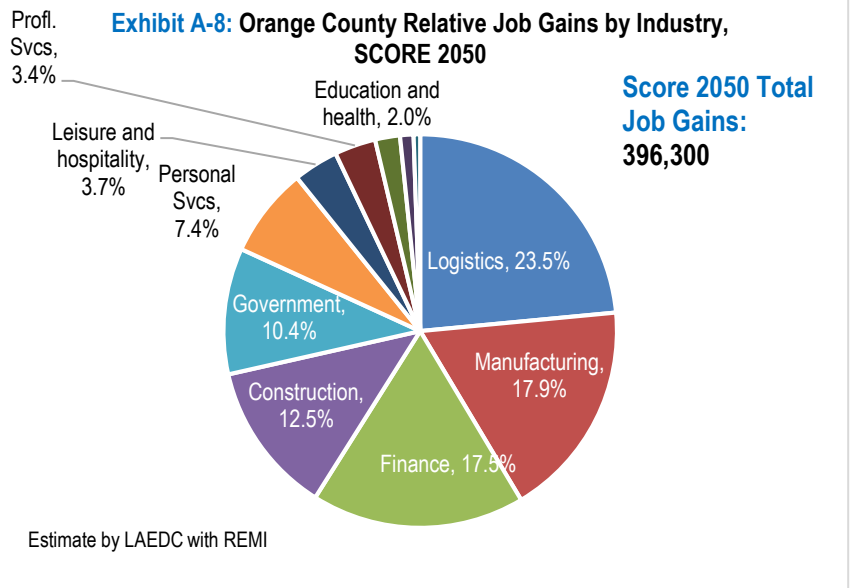
Exhibit A-9: Orange County, Change in GDP due to SCORE

Aggregate Total: $173.3 billion
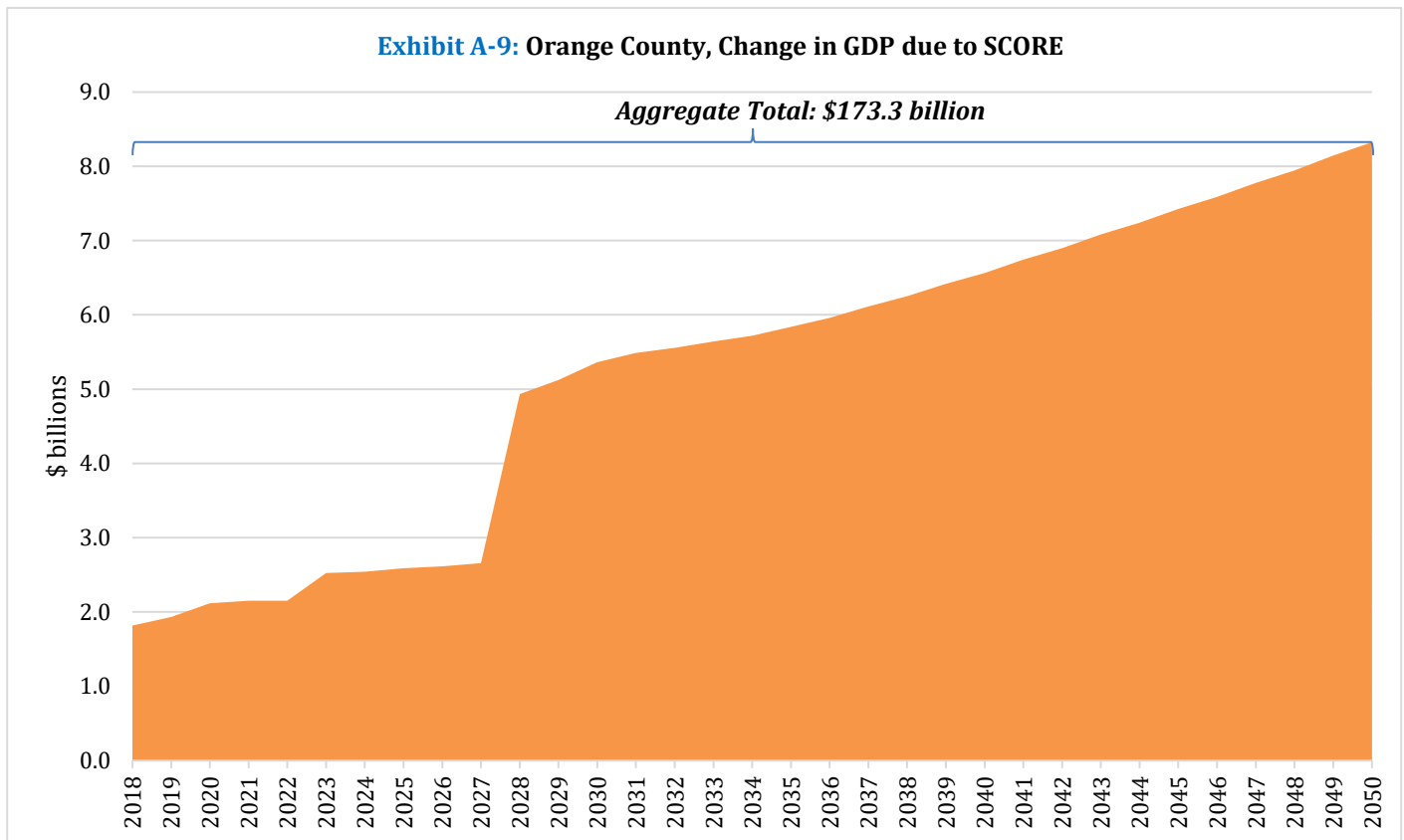
Ventura County

Exhibit A-10: SCORE Impacts

Ventura County Snapshot

Output ($ billions)	$	57.9
Gross County Product ($ billion)	$	33.7
Personal Income ($ billion)	$	24.0
Net Total Employment Gains		77,600

Estimate by LAEDC with REMI

Exhibit A-11: Ventura County Relative Job Gains by Industry, SCORE 2050

Score 2050 Total Job Gains: 77,600

- Leisure and hospitality, 4.9%
- Personal svcs., 9.6%
- Education and health, 1.3%
- Logistics, 27.0%
- Government, 16.8%
- Finance, 15.9%
- Construction, 14.9%
- Manufacturing, 11.0%

Estimates by LAEDC with REMI
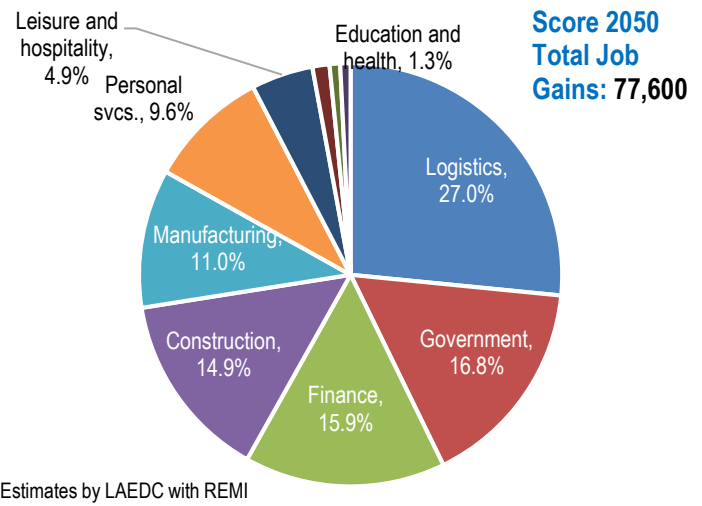
Exhibit A-12: Ventura County, Change in GDP due to SCORE

Aggregate Total: $33.7 billion
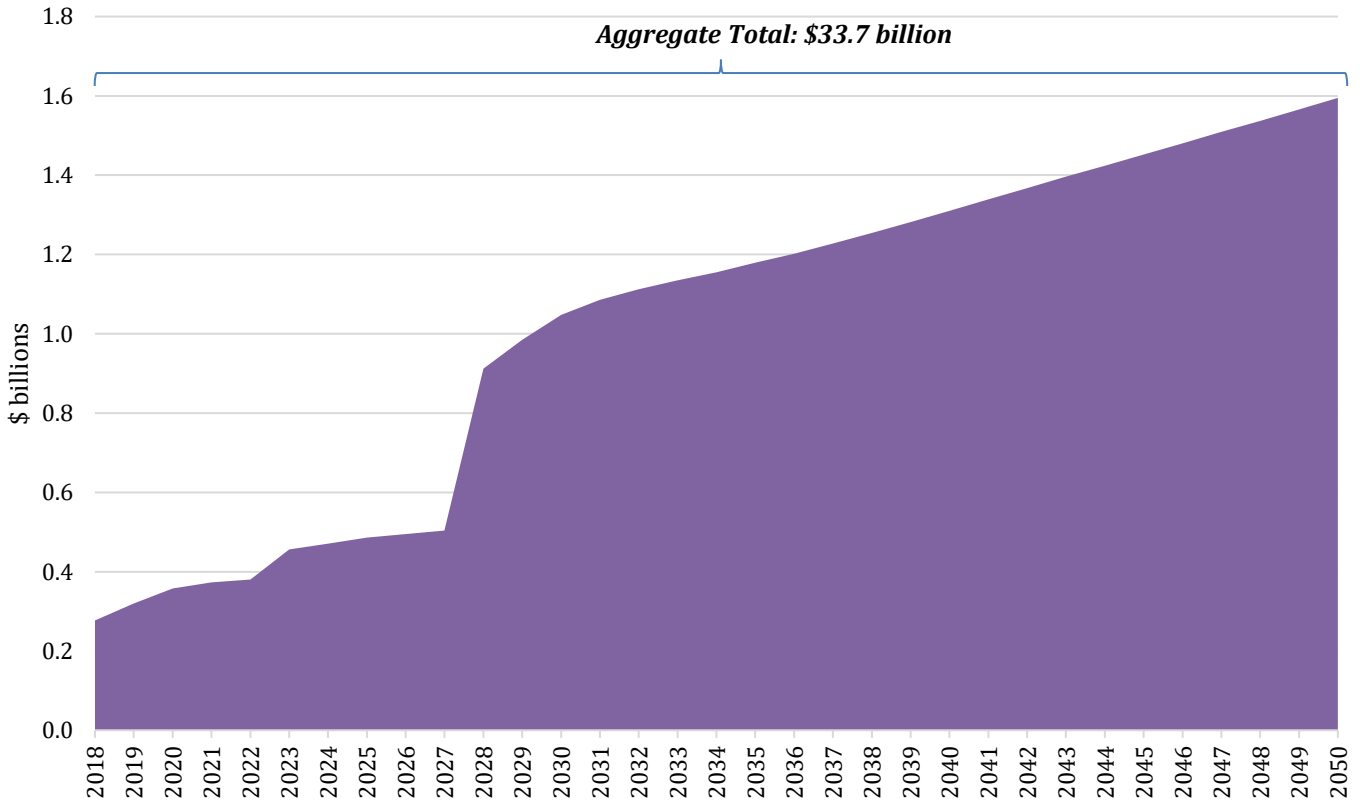
$ billions

San Bernardino County

Exhibit A-13: SCORE Impacts

San Bernardino County Snapshot

Output ($ billions)	$	116.7
Gross County Product ($ billion)	$	67.3
Personal Income ($ billion)	$	7.6
Net Total Employment Gains		62,200

Estimates by LAEDC with REMI

Exhibit A-14: San Bernardino County Relative Job Gains by Industry, SCORE 2050

Score 2050 Total Job Gains: **62,200**

- Personal Services, 8.4%
- Information, 0.6%
- Finance, 15.4%
- Government 34.8%
- Logistics, 18.5%
- Manufacturing, 21.9%

Estimates by LAEDC with REMI
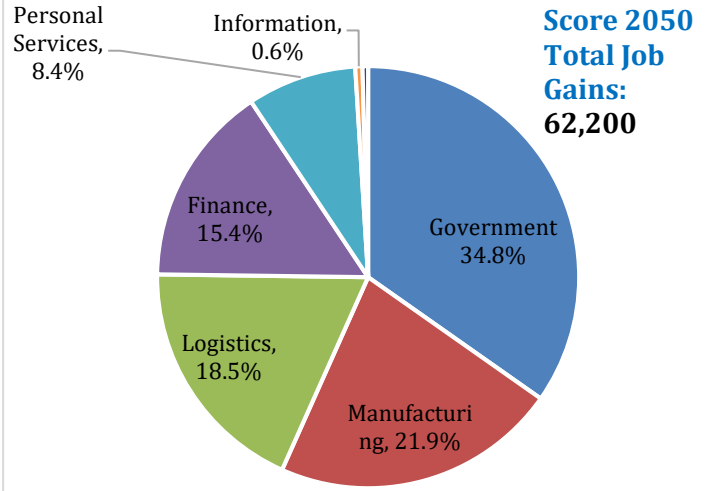
Exhibit A-15: San Bernardino County, Change in GDP due to SCORE

Aggregate Total: $67.3 billion
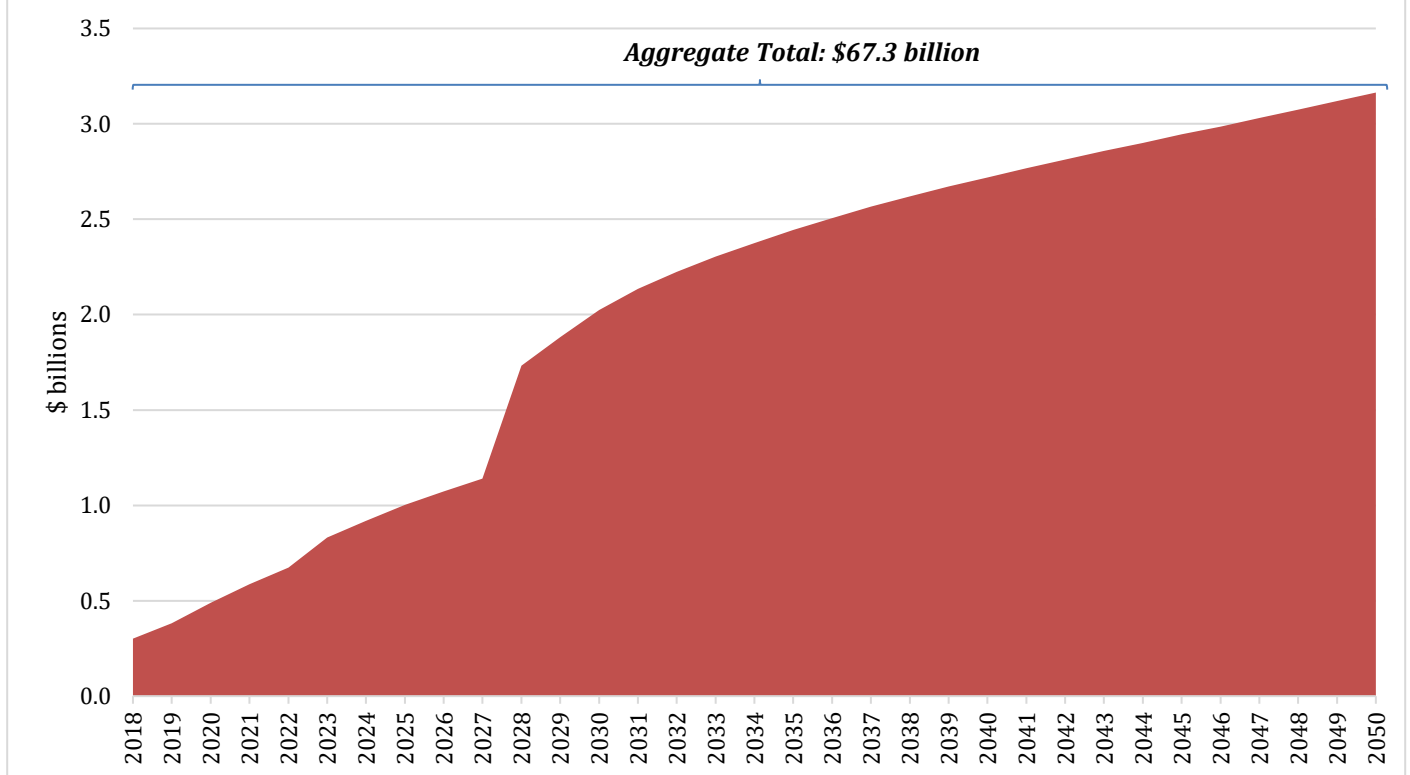
$ billions

Riverside County

Exhibit A-16: SCORE Impacts

Riverside County Snapshot

Output ($ billions)	$	91.7
Gross County Product ($ billion)	$	53.7
Personal Income ($ billion)	$	29.9
Net Total Employment Gains		122,600

Estimate by LAEDC with REMI

Exhibit A-17: Riverside County Relative Job Gains by Industry, SCORE 2050

Score 2050 Total Job Gains: 122,600

- Manufacturing, 9.1%
- Information, 0.6%
- Personal Services, 10.4%
- Finance, 11.2%
- Construction, 12.4%
- Logistics, 31.4%
- Government, 24.8%

Estimates by LAEDC with REMI
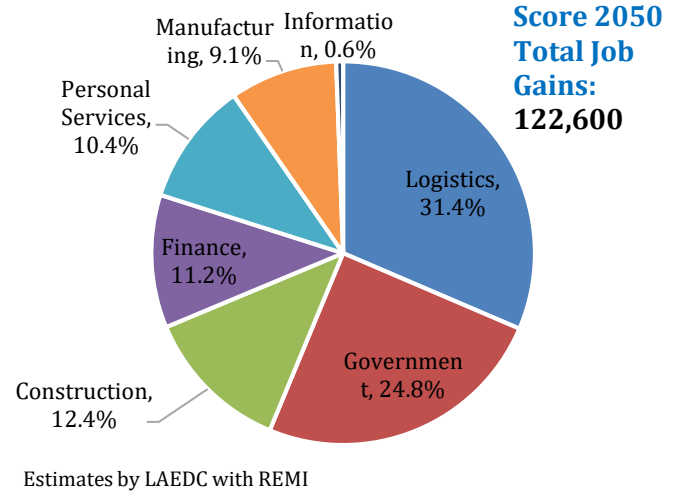
Exhibit A-18: Riverside County, Change in GDP due to SCORE

Aggregate Total: $53.7 billion