



CHAPTER 3

Environmental Setting, Impacts, and Mitigation Measures

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3.0 INTRODUCTION TO THE ANALYSIS

3.0.1 ENVIRONMENTAL IMPACT ANALYSIS

OVERVIEW

This chapter of the Connect SoCal 2024 Program Environmental Impact Report (2024 PEIR) evaluates the potential of the Project (Connect SoCal 2024) to result in significant impacts to the environment. This chapter also provides a full scope of environmental analysis in conformance with the California Environmental Quality Act Guidelines (CEQA Guidelines).

As a result of the detailed evaluation contained in this 2024 PEIR, it has been determined that the Plan would result in significant or potentially significant impacts to Aesthetics; Agriculture and Forestry Resources; Air Quality (except for consistency with federal transportation conformity requirements); Biological Resources; Cultural Resources; Energy, Geology and Soils; Greenhouse Gas Emissions (except for consistency with SB 375); Hazards and Hazardous Materials; Hydrology and Water Quality; Land Use and Planning; Mineral Resources; Noise; Population and Housing; Public Services; Recreation; Transportation; Tribal Cultural Resources; Utilities and Service Systems; and Wildfire. As discussed in more detail below, while Plan features and compliance with applicable laws and regulations may reduce impacts, uncertainty with respect to regulatory effectiveness and enforcement, individual circumstances, and project characteristics allows for the possibility that impacts could still be significant. Moreover, although mitigation measures have been proposed for all of the environmental resource areas identified above that would reduce the potentially significant impacts to the maximum extent practicable, and because individual circumstances and specific project characteristics are not reasonably foreseeable and SCAG has no authority over the implementation of project-level mitigation measures, impacts are considered to remain significant and unavoidable, even with the implementation of mitigation measures.

Each section provides the environmental setting consisting of definitions and existing conditions, regulatory framework, environmental impacts consisting of thresholds of significance, methodology, impact analysis, mitigation measures for significant impacts, level of significance after mitigation, cumulative impacts, and sources. The existing conditions portion of the environmental setting has been prepared in accordance with the CEQA Guidelines and includes a description of the physical environment in the Plan area (see additional discussion of baseline conditions as evaluated in this 2024 PEIR below). The existing conditions are described based on literature review, archived resources, and agency coordination. The federal, state, regional, county, and local laws, regulations, ordinances, rules, plans, and policies applicable to each resource area are included in the regulatory framework. Significance thresholds were established in accordance with Appendix G of the CEQA Guidelines. While the significance thresholds utilized throughout this 2024 PEIR largely follow those included in Appendix G of the CEQA Guidelines in terms of content and organization by topic, in some instances where similar or related issues are addressed by multiple thresholds either in the same section or in different sections (e.g., greenhouse gas emissions, hazards and hazardous materials, public services, and wildfire), impacts associated with those thresholds may be combined or addressed together in one section in order to reduce redundancy and provide a more succinct discussion. The level of significance after mitigation is evaluated in accordance with the thresholds of significance and the effectiveness of the proposed mitigation measures to reduce potentially significant impacts to below the significance threshold. The impact analysis contained in this PEIR is based on the implementation of Connect SoCal 2024, as described in Chapter 2, *Project Description*. The proposed mitigation measures are designed to address impacts at a programmatic level and contain SCAG mitigation measures and project-level mitigation measures.

The SCAG region includes six counties, 38,000 square miles, 191 cities, 5.5 million acres of critical habitat, six major climate types, 150 miles of coastline, 298 federally and/or state listed species, six major climate types and elevations ranging from 230 feet below sea level in the Imperial Valley to the 11,503-foot summit of Mt. San Geronio. The proposed Project is a long-range regional transportation and land use plan that conceptually identifies approximately 2,000 transportation projects as well as policies and strategies to achieve the Plan's Goals and Objectives, as described in Chapter 2, *Project Description*. The Plan includes a forecasted regional development pattern that provides one potential growth pattern that implements the Plan by increasing growth in Priority Development Areas (PDAs) and minimizing growth in Green Region Resource Areas (GRRAs). However, SCAG wields no local land use authority; all land use decisions remain the purview of cities and counties. Population growth remains a factor generally outside of local control, cities and counties do control the provision of housing and employment opportunities for that population, and this ultimately determines densities and growth patterns.

Given the size of the region, the lack of detail with respect to individual projects, and the minimum 20-year period, the PEIR provides a programmatic regional-level analysis of potential construction and operational impacts of new transportation projects planned by the region's County Transportation Commissions and transit providers and potential development from the integrated land use development patterns anticipated and encouraged to occur during the lifetime of the Plan.

CEQA BASELINE CONDITIONS FOR ANALYSIS OF IMPACTS

As noted above, the minimum 20-year planning horizon of Connect SoCal 2024 spans 26 years, from 2024 to 2050. The CEQA Guidelines provide that the existing physical conditions at the time the Notice of Preparation (NOP) is published will "normally" constitute the baseline (CEQA Guidelines Section 15125(a)). However, CEQA Guidelines Section 15125(a)(1) indicates that, "where existing conditions change or fluctuate over time, and where necessary to provide the most accurate picture practically possible of the project's impacts, a lead agency may define existing conditions by referencing historic conditions ... that are supported by substantial evidence."

By 2050, implementation of the Plan will result in a land use pattern and transportation network that is different from existing conditions. Unless otherwise stated, "existing conditions" in the Plan refers to conditions in the baseline year of 2019. The Plan uses 2019 as a baseline year for analysis, rather than the NOP issuance date (October 2022), because it is consistent with SCAG's modeling baseline for the Plan and the most recent year for which comprehensive land use, demographic, traffic count, and vehicle miles traveled (VMT) data are available for the Plan area, as described further below.

The primary basis for reliance upon 2019 data for baseline conditions is related to the drastic changes in travel patterns, transportation activity, employment conditions, and overall movement of goods and people in the region as a result of the COVID-19 global pandemic. With the onset of stay-at-home orders, social distancing mandates, travel restrictions, and other pandemic-related effects in early 2020, historic trends related to commute patterns, vehicular activity, air traffic, public transit, goods movement, and other relevant metrics were drastically skewed by the sudden comprehensive changes in daily life resulting from the government's response to the virus. Although many pandemic-affected activities have since stabilized and, in some cases, returned to pre-pandemic levels, many key factors such as widespread work-from-home policies, food and retail product delivery services, and leisure travel demands have not returned to prior conditions and may never do so.

In order to provide a consistent basis for comparison, this 2024 PEIR uses 2019 as the baseline year for the analysis of Plan-related impacts that are modeling-dependent (see further discussion of SCAG's models below). 2019 provides the most complete, integrated data portrait of the existing conditions in the region because it is the most

recent year for which comprehensive land use, demographic, traffic count, and VMT data are available for the SCAG region without the influence of pandemic-related effects. Thus, 2019 will give “the most accurate picture practically possible” of impacts under Connect SoCal 2024 as required under CEQA Guidelines Section 15125.

It should be noted that for some topic areas (such as agriculture and forestry resources, hydrology and water quality, and utilities and service systems) resources, facilities, or conditions were not notably affected by pandemic-related societal changes or relevant trends have emerged or continued since 2019 conditions. Where appropriate and identified throughout this 2024 PEIR, the environmental and regulatory settings of various resource areas have used more recent data to better characterize baseline conditions. Or, conversely, where data were unavailable for 2019 or a more recent year, the most recent data were used (typically 2022). See the *Methodology* section for each resource area for an additional discussion of data used to characterize environmental and regulatory settings for each resource topic.

INTERIM YEARS

The year 2050 is the horizon year of Connect SoCal 2024. While the Plan would be implemented gradually over the 26-year planning period, this 2024 PEIR does not generally analyze interim timeframes because the four-year update cycle of the RTP/SCS already requires short-term adjustments to Connect SoCal 2024.

An exception to this approach is in Section 3.3, *Air Quality*, which evaluates criteria air pollutant emissions for interim analysis years. Additionally, Section 3.8, *Greenhouse Gas Emissions*, examines impacts for the years 2020 and 2035 in comparison to a baseline of 2005 (to address consistency with SB 375 targets), and for the years 2030 and 2045 in comparison to a baseline of 2019 (to address consistency with all other applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases [GHGs]). Refer to Section 3.8 for additional information regarding laws, regulations, plans, and GHG reduction targets. In addition, Section 3.14, *Population and Housing*, provides a discussion of anticipated population growth in the region, which is the basis for the evaluation of air quality and GHG emissions impacts (including for the target years noted above), as these projections are utilized in stationary source emissions modeling and in transportation modeling for on-road mobile-source emissions. Section 3.17, *Transportation*, provides the region’s projected VMT for each of the target years, with VMT being a key factor in meeting the region’s GHG reduction targets.

REGIONAL GROWTH FORECAST

As described in Chapter 2, *Project Description*, and Section 3.14, *Population and Housing*, the process for developing the Plan began with an assessment of regional demographic and economic trends using a variety of spatially-explicit data sources—including local land use plans—to assess where growth is most likely to occur within the region. SCAG developed its Regional Growth Forecast using a range of demographic and economic data sources including the newly available 2020 Decennial Census, emphasizing a balance between future employment, population, and households. regional growth forecast process incorporates extensive input and data including the most up-to-date local land use information, policy responses, demographic, and economic data in order to determine the most likely future pattern of regional growth.¹ The growth forecast of projected regional

¹ SCAG’s regional growth forecasting process emphasized the participation of local jurisdictions and other stakeholders. The Local Data Exchange (LDX) process was used to give local jurisdiction’s opportunity to provide input related to land use and the future growth of employment and households to ensure that the most updated information from local jurisdictions was gathered to link and align local planning with a regional plan that can meet federal and state requirements and reflect a regional vision. Therefore, LDX was a key component of allocation of growth across jurisdictions in the SCAG region with 67% of jurisdictions providing information as part of the LDX process.

population, employment numbers, and households was then used to calculate the new building square footage required for different segments of the economy (e.g., retail, office, industrial, etc.) and the new housing units required to house the projected population of the region.² In other words, growth was forecasted prior to preparation of the Plan and was used as a basis for subsequent plan development and analysis.

IMPACT ANALYSIS METHODS

The 2024 PEIR includes the following types of analyses:

1. **Qualitative.** The PEIR qualitatively analyzes environmental resource areas based on the Plan characteristics including Goals and Objectives, Regional Planning Policies, Implementation Strategies, and Performance Measures described in Chapter 2, *Project Description*.
2. **Quantitative/modeled data.** The PEIR quantitatively analyzes the results of air quality, land use, and transportation modeling. The following models are used to identify potential environmental impacts:
 - a. **The Regional Activity-Based Travel Demand Model (RTDM)** and emissions models. RTDM is a peer-reviewed, activity-based regional travel demand forecasting model developed and maintained by SCAG. SCAG has been developing and improving these travel demand forecasting models for the SCAG region since 1967. The model meets or exceeds the state of the practice and is based on recommendations from SCAG's Model Peer Review Committee. The model was validated for the 2019 base year and meets all the requirements of the Transportation Conformity Regulations of 40 CFR Section 93.122(b)(1)(i-vi). RTDM is used to quantify the performance metrics of the transportation system including VMT, criteria pollutant emissions, and GHG emissions for Connect SoCal 2024 and the PEIR.
 - b. **The American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD)** is the state-of-the-science, steady-state Gaussian air dispersion model based on planetary boundary layer theory. AERMOD is the recommended air quality dispersion model and is used for calculating air pollutant concentrations from most source types. AERMOD simulates how pollutant emissions move and disperse in the air. The model is approved by the United States Environmental Protection Agency (USEPA), California Air Resources Board (CARB) and the air districts within the SCAG region as the industry standard for use in the air dispersion modeling for health risk assessment, nitrogen dioxide National Ambient Air Quality Standards (NAAQS) analysis and nitrogen deposition analysis. USEPA Guidelines on Air Quality Models – Appendix W lists AERMOD as the preferred model for mobile source applications.
 - c. **The California Emissions Estimator Model (CalEEMod)** is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and GHG emissions associated with both construction and operations from a variety of land use projects. The model was developed for the California Air Pollution Officers Association (CAPCOA) in collaboration with the California Air Districts. Default data (e.g., emission factors, trip lengths, meteorology, source inventory, etc.) have been provided by the various California Air Districts to account for local requirements and conditions. CalEEMod utilizes widely accepted methodologies for estimating emissions combined with default data that can be used when site-specific information is not available. Sources of these methodologies and default data include the USEPA's AP-42 emission factors,

² It is expected that household growth over the Connect SoCal horizon will exceed the 6th cycle RHNA housing unit need. SCAG's preliminary growth forecast at the jurisdiction and neighborhood levels, released on May 23rd, 2022, sought to reflect capacity changes from the 6th cycle of RHNA as this is an adopted policy with a large potential impact on household growth by 2050. However, since many jurisdictions' housing elements are incomplete and the rezonings associated with them may not be due until October 2024, data on newly available sites is inherently incomplete.

CARB's vehicle emission models, and studies commissioned by California agencies such as the California Energy Commission (CEC) and California Department of Resources Recycling and Recovery (CalRecycle). The CalEEMod 2022.1 model is the latest version of the model and is recommended by the air districts within the SCAG region for use in estimating air quality and greenhouse gas emissions in preparing CEQA or National Environmental Policy Act (NEPA) documents, conducting pre-project planning, and verifying compliance with local air quality rules and regulations.

- d. **The Emission FACTors (EMFAC) model** is developed and used by CARB to assess emissions from on-road vehicles including cars, trucks, and buses in California, and to support CARB's regulatory and planning efforts. The EMFAC model is used to calculate current and future criteria pollutant and greenhouse emissions inventories for motor vehicles at the state, air district, air basin, county, and project level. The EMFAC model also provides emissions rates of criteria pollutant and greenhouse gas emissions for on-road mobile sources for a range of past and future calendar years. EMFAC2021 is the latest CARB-developed and USEPA approved model (approval in November 2022). EMFAC2021 reflects CARB's current understanding of statewide and regional vehicle activities, emissions, and adopted regulations.
- e. **The Hotspots Analysis and Reporting Program Version 2 (HARP2)** is a package of software developed by CARB and used to support the requirements of the Air Toxics "Hot Spots" Program and to perform health risk assessments. Specifically, the **Health Risk Assessment Standalone Tool (RAST)** is used to calculate potential cancer and noncancer health impacts from inputs of emissions from CalEEMod and EMFAC as well as unitized ground level concentration values obtained from AERMOD. The model can be used to implement the HRA guidance promulgated by OEHHA.
- f. **The Scenario Planning Model (SPM)** is a web-based data management, land use development and modeling platform, developed by customizing the open-source version of UrbanFootprint (UF v1.5). SPM enables the creation and organization of local and regional data, plans and policies, and estimates a wide range of potential benefits resulting from alternative transportation and land use strategies. Starting with the 2016 RTP/SCS, SPM has been instrumental in assessing the existing and alternative future conditions for the Southern California region. SPM is used in providing directional and order-of-magnitude regional impacts of local land use and policy decisions. SPM analysis is grounded in its "canvas" of data that constitutes a base year (2019) as well as plan horizon year assessments of land use, demographic characteristics, and other conditions. This detailed data facilitates comparing land consumption, land conservation, passenger vehicle travel, bike and pedestrian accessibility, energy and water use, household costs, public health impacts, risk and resilience, and local infrastructure costs. The SPM analysis "modules" include the following: Land Consumption module, Fiscal Impact module, Energy use module, Water use module, Transportation module, Accessibility module, Public Health engine, and Land Conservation engine. A full description of the SPM and associated modules is available in the Connect SoCal 2024 Land Use and Communities Technical Report in the Plan.

Many analyses use a combination of qualitative and quantitative methods to provide a reasonably conservative analysis of anticipated Plan's environmental impacts at the regional level.

3.0.2 PLAN FEATURES THAT MAY REDUCE IMPACTS

As described in Chapter 2, *Project Description*, the Plan includes Regional Planning Policies and Implementation Strategies. The Regional Planning Policies provide guidance for integrating land use and transportation planning to realize the vision of Connect SoCal 2024, which is a healthy, prosperous, accessible, and connected region for a more resilient and equitable future. The Implementation Strategies help the region to achieve this vision for the

future and are priorities for SCAG efforts in fulfilling or going beyond the Regional Planning Policies. The Regional Planning Policies and Implementation Strategies were developed to achieve California's greenhouse gas emission reduction goals as set forth in SB 375 and federal Clean Air Act Section 176(c) requirements for transportation conformity while meeting the broader regional objectives, such as improved equity and resilience in addition to preservation of natural lands, improvement of public health, increased roadway safety, support for the region's vital goods movement industries and more efficient use of resources. See Connect SoCal 2024, Chapter 3: The Plan, for more details on the Regional Planning Policies and Implementation Strategies.

As part of the environmental analysis, this 2024 PEIR considers and discusses the potential of the Plan's Regional Planning Policies and Implementation Strategies to reduce impacts to the environment prior to the application of feasible mitigation measures. While not specifically designed to avoid or reduce environmental impacts, Regional Planning Policies and Implementation Strategies may in effect address some potential environmental impacts of the Plan (see CEQA Guidelines Section 15126.4(a)(2)). Rather than using the Regional Planning Policies and Implementation Strategies as mitigation measures, since these policies and strategies are already incorporated into and part of the Plan, the 2024 PEIR considers these policies and strategies as features of the Plan and discusses them in Chapter 2, *Project Description*, before the Plan is undergoing environmental analysis in this Chapter 3. Tables 2-2 and 2-3 in Chapter 2 of this 2024 PEIR assigns each Regional Planning Policies and each Implementation Strategies, respectively, with applicable environmental resource areas to show how these Plan features may reduce environmental impacts evaluated in Sections 3.1 through 3.20 of this 2024 PEIR.³

3.0.3 COMPLIANCE WITH LAWS AND REGULATIONS

Likewise, compliance with all applicable federal, state, and local laws, regulations, ordinances, rules, plans, and polices (as set forth in the Regulatory Framework for each resource area) would be reasonably expected to reduce impacts of the Plan (see CEQA Guidelines Section 15126.4(a)(1)(B)). The requirements are incorporated into the impact analysis by reference and are generally not included as mitigation measures.⁴ As discussed in more detail below, after consideration of Regional Planning Policies and Implementation Strategies and compliance with all laws and regulations, where there are remaining potentially significant impacts, feasible mitigation measures that go above-and-beyond existing laws, regulations, Regional Planning Policies and Implementation Strategies, are identified.

3.0.4 MITIGATION MEASURES

As noted above, the 2024 PEIR addresses a large-scale region with a variety of potential projects spread over more than 20 years. As such, this 2024 PEIR identifies regional-level mitigation measures to be implemented by SCAG over the lifetime of the Plan as well as project-level mitigation measures that lead agencies can and should consider, as applicable and feasible, in subsequent project-specific design, CEQA review, and decision-making processes. Given that SCAG is not an implementing agency and has no authority over projects in the Plan or any

³ Note that some Regional Planning Policies and Implementation Strategies may have in the past been identified as SCAG mitigation measures, but, consistent with CEQA Guidelines Sections 15064(f)(2) and 15126.4(a)(1)(A), such mitigation measures have been elevated and incorporated as Plan features in Connect SoCal 2024. As such, the number of SCAG mitigation measures identified in this 2024 PEIR has been reduced.

⁴ As with some of the Implementation Strategies, in the past, SCAG has incorporated many regulatory requirements in mitigation measures, which is allowable; however, in an effort to streamline the 2024 PEIR, SCAG will generally discuss the reduction in impacts as a result of regulatory compliance in the impact analyses. This will result in fewer project-level mitigation measures in the 2024 PEIR.

land use authority, it is ultimately up to the lead agency's own discretion to determine the appropriateness of the mitigation measures based on project-specific circumstances.

Consistent with CEQA Guidelines and case law, the mitigation measures to be implemented by SCAG in this 2024 PEIR correspond to SCAG's roles and are less detailed than those that would be part of a project EIR, and the more detailed project-level, performance standards-based mitigation measures are properly deferred to future project-specific CEQA reviews by lead agencies with decision-making authority over individual projects (see CEQA Guidelines Sections 15091(a)(2) and 15126.4(a)(1)(B)).

SCAG has no authority to impose project-level mitigation measures; rather, lead agencies have the discretion to determine which mitigation measures are applicable and feasible based on the individual site conditions, project-specific details, and community values. SCAG, however, has identified project-level mitigation measures that lead agencies can and should consider (among others) for implementation as applicable and feasible.

The mitigation measures presented in this 2024 PEIR recognize the limits of SCAG's authority; distinguish between SCAG commitments and project-level responsibilities and authorities; optimize flexibility for project implementation; and facilitate CEQA streamlining (e.g., SB 375) and tiering where appropriate on a project-by-project basis determined by each lead agency.

3.0.5 CUMULATIVE IMPACTS

CEQA Guidelines Section 15130 requires that an EIR evaluate potential environmental impacts that are individually limited but cumulatively significant. CEQA defines cumulative impacts as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (CEQA Guidelines Section 15355). The purpose of a cumulative analysis is to determine if several projects when evaluated together could result in a significant "cumulative" impact that would otherwise not be considered significant when projects are evaluated one at a time. If several projects considered together have the potential to result in a significant cumulative impact (that is not already identified as a significant project impact), the question becomes whether the project being analyzed would result in a "considerable" contribution to such a significant cumulative impact. Therefore, if a project results in a significant impact by itself, then its contribution to a cumulative impact is considerable.

Connect SoCal 2024 is a regional-scale Plan comprised of regional policies and strategies, a regional growth forecast, and individual transportation projects. At this regional-scale, a cumulative or related project to the Plan is another regional-scale plan (such as Air Quality Management Plans within the region) and similar regional plans for adjacent regions. In most resource areas, the Plan, in and of itself, would result in adverse environmental impacts and would only add to impacts of other cumulative or related projects.

As discussed in the following sections of the 2024 PEIR, the Plan would result in significant impacts in all issue areas (except for two issue areas: Plan's consistency with federal transportation conformity requirements under Air Quality and Plan's consistency with SB 375 under Greenhouse Gas Emissions). While the land use policies and strategies included in the Plan would result in a more compact development pattern which in turn would reduce impacts, the Plan could also facilitate access to other areas of the state by increasing infrastructure which could ultimately influence growth in areas outside the region's boundaries. Mitigation measures would reduce impacts, but impacts would remain significant and could contribute to cumulative impacts outside the SCAG region.

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