



October 25, 2021

By E-Mail

Kirsten Uchitel, Associate Planner
 SANDAG
 401 B Street, Suite 800
 San Diego, CA 92101
RegionalPlanEIR@sandag.org

Re: *Comments on Draft EIR for SANDAG's Draft 2021 Regional Plan*

Dear Ms. Uchitel:

52-1

This firm represents Lakeview 1, LLC, Lakeview 2, LLC and Moller Lakes Investment, LLC (collectively, Lakeview), owners of the approved Otay Ranch Resort Village Project (Resort Village).¹ On behalf of Lakeview, we have reviewed SANDAG's Draft Environmental Impact Report (Draft EIR) for the Draft 2021 Regional Plan (Draft Plan) and provide the comments that follow below.

Please note that these comments build upon our prior comment letter, dated August 3, 2021, which was submitted in response to SANDAG's circulation of the Draft Plan.² Based on the comments that follow and those we submitted in August, we request that SANDAG revise and recirculate for further public review both the Draft Plan and the Draft EIR – both documents are subject to errors, ambiguities and flaws that need to be corrected before SANDAG's decision-making body adopts and certifies the documents in question.

Project Description

52-2

1. Page 2-4 of the Draft EIR does not plainly disclose that SANDAG is required "to use the most recent planning assumptions *considering local general plans* and other factors" by Government Code section 65080(b)(2)(B) when preparing its Sustainable Communities Strategy (SCS). (Italics added.) The omission of this planning requirement also undermines the Draft Plan itself, precluding the Draft Plan from meeting its statutorily-set parameters and Draft EIR from assessing the environmental impacts of a properly formulated Regional Transportation Plan (RTP)/SCS. We therefore request that both the Draft Plan and Draft EIR

¹ The Resort Village also is referred to as Village 13.

² We recognize that this comment letter has been submitted shortly after the close of the public review and comment period on the Draft EIR. However, we did not receive notice of availability of the Draft EIR for review and comment from SANDAG, even though we submitted comments on the Draft Plan. It was only through other means that we learned the Draft EIR had been published.

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be revised to properly account for the general plan frameworks of land use jurisdictions in the San Diego region and recirculated for further public review.

For example, contrary to the land use parameters of the 2011 County of San Diego General Plan, the Draft Plan assumes there will be zero housing growth in the unincorporated County areas after 2035, with a mere 4 percent increase (7,419 units) in the number of housing units over the totality of the 2016-2050 planning period (see Draft EIR Table 2-3).³ The Draft Plan similarly assumes a meager 1 percent increase in population growth in the unincorporated County areas over more than 30 years (2016 to 2050), despite an anticipated 23 percent increase in the number of jobs in the unincorporated County areas (compare Draft EIR Table 2-2 with Table 2-4). These growth assumptions for the unincorporated County areas, particularly those pertaining to population and housing, seem highly improbable and raise concerns that the assumptions may be somewhat artificially contrived to help enable SANDAG to demonstrate attainment of CARB's adopted SB 375 reduction targets.

52-2
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The Draft Plan's estimated increase in the number of jobs in the unincorporated County areas cannot be intuitively reconciled with the limited population and housing increases reflected in the growth projections. Additionally, a key land use strategy related to the reduction of greenhouse gas (GHG) emissions is to locate housing close to jobs; so, why a 23% jump in jobs with no corresponding jump in housing? One answer may be that individuals who work in the unincorporated areas of the County have been forced to find housing in neighboring Riverside and Imperial Counties, where housing is less expensive. Such individuals tend to have longer than average home-to-work commutes. This potential should be examined in the EIR, as it may substantially affect assumptions regarding air quality and GHG emissions.

³ The absence of housing growth in unincorporated County areas after 2035 that is projected in the Draft Plan and evaluated in the Draft EIR will present a unique predicament in the future, unless SANDAG is prepared to now say that it will *not* allocate additional housing units to the unincorporated areas in concert with Regional Housing Needs Allocation (RHNA) cycles that encompass the post-2035 time period. More specifically, the County's allocation in SANDAG's 6th Cycle RHNA Plan is 6,700 units between 2021 and 2029. Thereafter, and assuming 8-year planning cycles (2029, 2037 and 2045) leading into the Draft Plan's 2050 planning horizon, the County's housing growth is very likely to exceed the remaining 719 units reflected in the Draft Plan.

Moreover, the housing growth projections for the unincorporated County areas fail to account for the deficit in housing production associated with prior RHNA cycles and the underbuilding of homes in the region for numerous years. The demand and need for that housing does not simply disappear by virtue of an unsupported assumption in the Draft Plan and Draft EIR.

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52-2
cont.

We also note that, as pointed out in our prior comment letter, the Draft Plan does not accurately reflect the land use parameters assigned to the Resort Village site in the County of San Diego General Plan (see Draft EIR Figures 2-17 through 2-19) and needs to be revised accordingly.

For all the reasons provided above, please identify the source materials that form the basis of the growth assumptions in the Draft Plan and Draft EIR.

52-3

2. On page 2-38, the Draft EIR states that one of the project objectives is to “[p]rovide transportation investments and land use patterns that promote social equity.” However, not all aspects of the Draft Plan appear to be aligned with this intention. More specifically, page 2-71 of the Draft EIR describes a pricing strategy that includes “a mileage-based road usage charge.” Such pricing strategies serve to penalize residents of the San Diego region that do not live close to their places of employment and have had to secure housing options at more distant locations for affordability reasons.

Air Quality

52-4

1. Pages 4.3-38 and 4.3-39 of the Draft EIR discuss the “Analysis Methodology” for the impact evaluation pertaining to the Draft Plan’s potential to result in a cumulatively considerable net increase in nonattainment or attainment criteria air pollutants. In doing so, the Draft EIR states that on-road emissions “were estimated based on emission factors from CARB’s EMFAC2017 model based on the average fleet mix operating in San Diego County for each analysis year.” However, the Draft EIR is unclear as to whether its modeling analysis accounts for the numerous initiatives of the State of California to deploy a faster transition to zero emission vehicles (ZEV) away from internal combustion engine vehicles. Please revise the Draft EIR to clarify whether any model adjustments for the rate of ZEV transition were made, recognizing that EMFAC2017 pre-dates many of California’s more recent initiatives, and recirculate the document for further public review.

52-5

2. The Draft EIR reports significant reductions in criteria air pollutant emission loads attributable to the Draft Plan (Draft EIR pages 4.3-40 through 4.3-44). However, whether those estimated reductions are supported by substantial evidence is contingent upon the reasonableness and accuracy of the growth parameters discussed above in our comments on the Draft EIR’s Project Description Section. This comment also pertains to the impact analysis for other environmental resource areas, such as GHG emissions, where such analysis is influenced by the locational attributes of the growth assumptions (where development will occur and how much development will occur at that location). To the extent that the Draft Plan’s growth parameters are refined and improved to more reasonably reflect anticipated projections in housing, population and employment, the Draft EIR must be revised and recirculated to account for the environmental impacts of those refined projections.

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Greenhouse Gas Emissions

- 52-6
1. Based on review of Draft EIR Appendix H, and related to our air quality comment above regarding ZEV modeling assumptions, it appears that the GHG emissions inventory only accounts for ZEV fleet parameters for model years 2017 through 2025 that are attributable to CARB’s Advanced Clean Cars Program (Draft EIR Appendix H, page X-7). The Draft EIR should be revised to more plainly describe whether it accounts to the full suite of California’s ZEV-related initiatives, including those ZEV penetration targets set by Executive Order, and recirculated for further public review.
- 52-7
2. The Draft EIR utilizes a significance criterion (GHG-3) that is tied to “at least [a] 30% reduction in per capita GHG emissions from the entire on-road transportation sector by 2035 compared to existing conditions (2016)” (Draft EIR page 4.8-19). The Draft EIR later indicates that this threshold is related to a resolution adopted by SANDAG in April 2021 (Draft EIR page 4.8-28). To better serve as an informational document, the Draft EIR needs to explain the basis for this significance criterion (e.g., whether it is sourced from the guidance and/or policy of some other agency) and explain whether it is relevant to project-level CEQA evaluations for development or other projects. Therefore, please revise and recirculate the Draft EIR with additional information regarding significance criterion GHG-3, its origin, its application and its intended future use.
- 52-8
3. Project-level mitigation measures GHG-5e and GHG-5f refer to CAPCOA’s 2010 *Quantifying Greenhouse Gas Mitigation Measures* document (Draft EIR pages 4.8-48 and 4.8-49). That document, which is now more than 10 years old, has recently been updated in draft. See <https://www.airquality.org/businesses/ceqa-land-use-planning/ghg-handbook-caleemod>. We recommend that the Draft EIR’s mitigation measures refer to the more up-to-date iteration of the CAPCOA document, as it reflects substantial refinement in the quantification of various GHG reduction strategies over the past decade, as illustrated by the current draft update. Please revise and recirculate the Draft EIR with this important change, as SANDAG needs to innovate and lead the region with this next planning cycle.
- 52-9
4. With respect to significance criterion GHG-5, the Draft EIR concludes that the Draft Plan would be inconsistent with California’s ability to achieve statewide reduction targets established for 2030, 2045 and 2050, resulting in a significant and unavoidable impact referred to as Impact GHG-5 (Draft EIR page 4.8-52). Unfortunately, the mitigation framework recommended in the Draft EIR to address the Draft Plan’s GHG emissions does not exhaust all feasible mitigation opportunities. More specifically, as a regional agency with substantial staffing and resources, SANDAG should prioritize its development and completion of a regional GHG mitigation bank that can be used by development projects to contribute

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regionally to the reduction of GHG emissions where development site-specific reduction opportunities have been exhausted.

As SANDAG knows, development project applicants often have limited means and authority to reduce tailpipe/mobile source emissions, outside of selecting the location of proposed projects, developing transportation demand management (TDM) programs for project-specific implementation, and incentivizing ZEV use. SANDAG's development of a regional GHG mitigation bank is a feasible mitigation strategy that would allow for more meaningful collaboration between SANDAG and the region's land use developers, creating pathways for funding, innovation and system improvements that beneficially reduce GHG emissions within the context of CEQA analysis for individual development projects.

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Mitigation banks have a history of successful use in the context of CEQA; for example, with respect to the mitigation of biological resource impacts. In this instance, SANDAG can identify a number of GHG (and vehicle miles traveled [VMT]) reduction projects – transportation and otherwise – that can be undertaken within the larger San Diego region. SANDAG is in a position to feasibly administer and oversee such projects, creating a funding pathway for itself via the payment of mitigation fees by individual development applicants. This is a far more reasonable approach to achieving region-wide GHG reductions when compared to placing the onus for piecemealed reduction strategies on individual project applicants whose expertise is in land use development, not regional GHG and VMT reduction planning. Therefore, please revise the Draft EIR's GHG mitigation framework and recirculate the same for further public review.

Transportation

1. The Draft EIR analysis of VMT-related impacts is inadequate in that the methodology used to conduct the analysis conflicts with state guidance and is not supported by substantial evidence (Draft EIR pages 4.16-43 to -54). Moreover, the Draft EIR fails to identify all feasible mitigation measures to reduce the identified significant impacts. As such, the Draft EIR must be revised to include the appropriate analysis and mitigation measures and, thereafter, recirculated for further public review and comment.

52-10

Analysis Methodology

In its analysis of potential transportation impacts related to VMT, the Draft EIR utilizes a significance criterion of 14.3 percent below existing VMT/capita (Draft EIR page 4.16-46). The number is based on the California Air Resources Board's (CARB) 2017 Scoping Plan (Draft EIR pages 4.16-44 to -45). This significance threshold conflicts with the Office of Planning and Research (OPR) recommended threshold of 15% below existing VMT/capita.

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As OPR stated in its *Technical Advisory on Evaluating Transportation Impacts in CEQA* (December 2018; OPR TA):

“Based on OPR’s extensive review of the applicable research, and in light of an assessment by the California Air Resources Board quantifying the need for VMT reduction in order to meet the State’s climate goals, **OPR recommends that a per capita or per employee VMT that is fifteen percent below that of existing development may be a reasonable threshold**” (OPR TA page 10, bold original).

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In utilizing 15% as its number, OPR was fully aware of the 14.3% reduction identified in the CARB 2017 Scoping Plan but, nevertheless, determined that 15% below was the necessary reduction in order to achieve the state’s mandated goals (OPR TA pages 10-11). While SANDAG is entitled to certain discretion in selecting the significance threshold, the Draft EIR does not include substantial evidence in support of the determination to utilize a 14.3% metric rather than the OPR-recommended 15%.

We note that the Draft EIR presents the results of the VMT analysis at pages 4.16-47 to -52 in a summary format with related tables. (See, for example, Draft EIR Table 4.16-17 [summarizes the VMT projections and analyses developed under Year 2025 conditions (page 4.16-47); see also 2035 at pages 4.16-48 to -49, and 2050 at pages 4.16-50 to -51].) However, neither the Draft EIR nor its supporting appendices explain the analysis beyond the conclusory summary appearing in the body of the Draft EIR. The only transportation-related appendix included as part of the Draft EIR is Appendix B, Transportation Projects and Phasing Tables, which is limited to listing the planned transportation projects that are part of the RTP assumptions.

52-12

Separate from the Draft EIR and its appendices, the Draft Plan does include an appendix, Appendix S, Travel Model Documentation, which provides a detailed description of the ABM2+ model that was used to conduct the VMT analysis. However, Appendix S does not present the analysis or results that presumably served as the basis for the summary presented in the Draft EIR. CEQA requires that SANDAG and the EIR preparers “show us their work,” that as part of the public review and comment process sufficient documentation be provided to allow the public sufficient opportunity to “peer review” the results of the analysis. (Pub. Resources Code, §21005(a); *City of Long Beach v. Los Angeles Unified School Dist.* (2009) 176 Cal.App.4th 889, 898 [EIR must contain facts and analysis, not just the bare conclusions of the agency]; see also *Concerned Citizens of Costa Mesa, Inc. v. 32nd Dist. Agricultural Assn.* (1986) 42 Cal.3d 929, 935.)

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Failure to Identify All Feasible Mitigation

The Draft EIR determined the Draft Plan would result in significant direct and cumulative VMT-related impacts (see, e.g., Draft EIR pages 4.16-52; 5-66 to -67). After a relatively weak analysis of potential mitigation measures, the Draft EIR concludes the Draft Plan's impacts would be significant and unavoidable as there are no mitigation measures available to reduce the identified impacts to less than significant (Draft EIR page 4.16-54). The Draft EIR further concludes that the responsibility for mitigating the identified impacts lies in part with the local jurisdictions, rather than SANDAG (*ibid.*).

The Draft EIR's analysis of potential mitigation measures is, in the first instance, legally inadequate under CEQA as there is no effort to consider *all feasible measures*. (See, e.g., Pub. Resources Code, §21002; *King & Gardiner Farms v. County of Kern* (2020) 45 Cal.App.5th 814.) Moreover, even assuming implementation of appropriate mitigation lies within the jurisdiction and control of local agencies (which is not the case here), the appropriate course of action is for SANDAG to take a leadership role and present an innovative suite of mitigation measures that, if implemented, would reduce the identified impacts to less than significant, recognizing that implementation of some of the measures may be beyond its control. As OPR notes, it "expects that agencies will continue to innovate and find new ways to reduce vehicular travel" (OPR TA page 28).

52-13

The mitigation measures proposed in the Draft EIR are the same tired measures we have seen for years, implemented on a piecemeal basis throughout the region, with no sense of innovation. The identified strategies include vanpools (formation encouraged via subsidies), car-share programs (short-term rentals), pooled rides (encourage carpools by incentives), regional TDM ordinance (require large employers to provide commuter benefit programs to employees), and electric vehicle charging and incentive programs (Draft EIR pages 4.16-53 to -54). The Draft EIR provides little to no data showing that these strategies meaningfully reduce traffic and VMT.

As OPR notes: "Because VMT is largely a regional impact, regional VMT-reduction programs may be an appropriate form of mitigation" (OPR TA page 27). To this point, OPR refers to in-lieu fees as valid mitigation, recognizing that any such mitigation program must undergo CEQA evaluation, and that "such evaluation could be part of a larger program, *such as a regional transportation plan, analyzed in a program EIR*" (*ibid.*, *italics added*).

Thus, the Draft EIR needs to be revised (and recirculated) to include analysis of a *regional* fee-based mitigation program that would incorporate a broad range of VMT-reducing strategies (including, but not limited to, TDM strategies, transit infrastructure improvements, and VMT mitigation banking, for example), that when implemented would reduce the Draft Plan's

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identified VMT impacts to less than significant. Such a program, if properly structured, is feasible and could result in the Draft Plan achieving the 2050 VMT reduction targets and a less-than-significant impact. The region, generally, and the San Diego development community in particular, is looking to SANDAG to provide a solution to a problem that has thus far been kicked down the road ever since the enactment of SB 743, and that has resulted in our elected leaders approving more housing only with corresponding significant and unavoidable impacts.

2. The Draft EIR's analysis of hazards is inadequate in that it fails to analyze the Draft Plan's potential impacts related to bicycle safety (Draft EIR pages 4.16-55 to -57). The Draft EIR must be revised to include the appropriate analysis and recirculated to provide the public with an opportunity to comment on the resulting analysis.

The Draft EIR fails to analyze the Draft Plan's potential impacts relative to bicycle facility hazards. Under the Draft Plan, there would be an increase of 242 miles of bicycle facilities and a related increase of 160,889 average daily bicycle trips by year 2050 (Draft EIR Table 4.16-15). However, the Draft EIR contains no analysis of the potential safety impacts that inevitably would arise relative to bicyclist/vehicle conflicts with this substantial increase in bicycle facilities and related bicycle trips. (See, e.g., *San Diego Union Tribune*, August 23, 2021 [Opinion: 12 Cyclists Have Died in San Diego County this Year Due to Lack of Safe Bike Lanes, Mandel].)

52-14

As stated in the OPR TA, "because safety concerns result from many different factors, they are best addressed at a programmatic level (i.e., in a general plan or regional transportation plan) in cooperation with local governments, metropolitan planning organizations, and, where the state highway system is involved, the California Department of Transportation. In most cases, such analysis would not be appropriate on a project-by-project basis" (OPR TA page 26).

Bicyclist-related injuries and fatalities are a potentially significant impact that need to be addressed in the Draft EIR. This responsibility arises from the Draft EIR's requirement to consider the Draft Plan's consistency with the *Riding to 2050 – San Diego Regional Bike Plan* goal to improve safety for bicyclists (Draft EIR pages 4.16-28 to -29), as well as CEQA's general requirement that an EIR consider all potentially significant impacts (*Protect the Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal.App.4th 1099 [in preparing an EIR, the agency must consider and resolve every fair argument that can be made about the possible significant environmental effects of a project, irrespective of whether an established threshold of significance has been met with respect to any given effect].) Accordingly, the Draft EIR needs to be revised to provide the necessary analysis, and

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subsequently recirculated to give the reviewing public an opportunity to comment on the adequacy of the resulting analysis.

3. The Draft EIR's analysis of the Draft Plan's consistency with programs, plans, ordinances, or policies addressing the circulation system (Draft EIR pages 4.16-30 to -43) must be revised to adequately consider all relevant goals and policies and, ultimately, revised to conclude impacts would be significant in light of the Draft Plan's failure to meet applicable VMT and GHG reduction goals.

The Draft EIR analyzes the Draft Plan's consistency with circulation system-related programs at pages 4.16-30 to 4.16-43 and concludes the Draft Plan would be consistent with such programs and, accordingly, impacts would be less than significant. Although the Draft EIR summarizes a substantial number of federal, state, and local programs, etc. relevant to the Draft Plan in the Regulatory Setting section (pages 4.16-20 to -29), the consistency analysis is limited to the 2019 Federal Regional Transportation Plan and Riding to 2050 bicycle plan (Draft EIR pages 4.16-30 to -31). Such "cherry picking" results in an incomplete and inadequate analysis and, therefore, must be revised to appropriately consider a more comprehensive range of relevant programs.

52-15

Furthermore, it is unclear how the Draft EIR analysis can conclude that the Draft Plan would be consistent with these programs when an underlying principle of each is the reduction of GHG and the corresponding achievement of specific GHG reduction goals. As previously noted, the Draft EIR analysis concludes the Draft Plan would *not* meet VMT reduction targets, a key metric in achieving GHG reduction goals, and would, in fact, result in significant and unavoidable VMT impacts (Draft EIR page 4.16-52).

For example, it is unclear how the analysis could conclude that the Draft Plan is consistent with relevant transit goals and policies when the Draft Plan's increase in available transit facilities is insufficient on its own, or in combination with other Plan transportation features, to reduce the forecasted increase in VMT to less-than-significant levels (Draft EIR page 4.16-54). Similarly, the "slight" increase in road miles (Draft EIR pages 4.16-32 to -33) and 98 miles of new bicycle facilities (Draft EIR pages 4.16-33 to -34) are insufficient to achieve the necessary VMT targets. Consider also that the Draft Plan does not contain any direct or specific pedestrian facility expansions or improvements (Draft EIR Page 4.16-34).

In sum, the Draft EIR's consistency analysis with relevant circulation system goals and policies is inadequate and must be revised and recirculated for further public review.

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Subsequent Determinations and Use

52-16

1. As SANDAG knows, if it proceeds to adopt the Draft Plan, subsequent discretionary projects – under the jurisdiction of local cities and the County of San Diego – will need to assess their potential to conflict with the Plan as part of their CEQA analysis. This type of analysis most directly emerges within the four-corners of GHG emissions analysis, but also can surface within the context of other environmental resource areas, as well. Unfortunately, neither the Draft Plan nor the Draft EIR provide instructive information regarding how such potential conflicts should be evaluated, and both documents need to be revised and recirculated to provide clarity on this important ramification of an adopted RTP/SCS.

Note that, in our view, a rigid conformance evaluation tied to the specific land use inputs of the forecasted development pattern is not dispositive. As promulgated in SB 375 and as recognized by SANDAG in the Draft EIR, an RTP/SCS does not usurp the land use authority of cities and counties. Therefore, any such consistency evaluation undertaken in the CEQA process needs to provide flexibility and multiple avenues to assessing potential conflicts.

52-17

2. As SANDAG knows, SB 375 provides several CEQA streamlining benefits, including to qualifying transit priority projects (TPPs) that are allowed to be approved with a sustainable communities environmental assessment (SCEA) provided certain criteria are met (Pub. Resources Code, §21155.2). Please confirm that this Draft EIR for the Draft Plan has been prepared as a “first-tier” EIR in a fashion that creates clear opportunities and pathways for TPPs to be processed with an SCEA in the future. Additionally, please confirm that the Draft EIR plainly identifies those mitigation measures and performance standards or criteria that must be incorporated into qualifying TPPs in order to establish their eligibility for an SCEA. Finally, please confirm that SANDAG considers its proposed mobility hubs to serve as major transit stops or high-quality transit corridors, as those terms are defined in CEQA for purposes of identifying eligible TPPs. The Draft EIR (and Draft Plan) should be revised and recirculated to address its use for future SCEAs in all of these respects.

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In closing, we appreciate this opportunity to provide input on SANDAG's Draft EIR for the Draft Plan. We also respectfully encourage and call upon SANDAG to assume a leadership role in the San Diego region, carving out pathways for the regional reduction and mitigation of GHG emissions and VMT through innovation and partnership with stakeholders. Thank you for your consideration of these comments.

Very truly yours,



David P. Hubbard
of
Gatzke Dillon & Ballance LLP

DPH/rlf

cc: Nick Lee, Baldwin & Sons
Eric Johnston, Baldwin & Sons
Chuck Miller, Dansk Investment Group, Inc.

Comment ID	Response to Comment
52-1	<p data-bbox="352 285 1451 315">Thank you for your participation in the environmental review process for the proposed Plan.</p> <p data-bbox="352 358 1890 565">SANDAG published a Notice of Availability (NOA) for the Draft EIR in local newspapers on August 27, 2021, and mailed the NOA to an extensive distribution list. SANDAG also filed a Notice of Completion (NOC) with the State Clearinghouse to indicate the availability of the Draft EIR for public review and comment on August 27, 2021. The Draft EIR was distributed to the agencies, organizations, and individuals that provided written comments on the NOP, the SANDAG Board of Directors, SANDAG member agencies, and other interested parties and stakeholders. Agencies, organizations, and individuals were invited to provide written comments on the Draft EIR during the public review period from August 27 to October 11, 2021.</p> <p data-bbox="352 609 1871 776">The Draft EIR and all appendices were available for review online at www.sdforward.com; at SANDAG offices located at 401 B Street, Suite 800, San Diego, California 92101; and at the San Diego Central Library located at 330 Park Boulevard, San Diego, California 92101. Since this letter was received on October 25, 2021 after the end of the public review period on October 11, 2021. CEQA does not require a Lead Agency to respond to comments received after the close of the comment period; however, SANDAG has chosen to respond to this comment nonetheless for consideration by the SANDAG Board.</p> <p data-bbox="352 820 1871 881">For responses to the letter submitted by Gatzke Dillon & Balance LLP on the proposed Plan, please refer to responses beginning from L192 in Final EIR Appendix P-2.</p> <p data-bbox="352 925 1881 1092">Regarding the request to recirculate the Draft EIR, this comment letter and the below responses do not constitute “significant new information” that would trigger EIR recirculation under CEQA Guidelines § 15088.5. For example, they do not involve a new significant impact, a substantial increase in the severity of a significant impact, or a new feasible mitigation measure or alternative substantially different than those analyzed in the EIR that would clearly lessen the Regional Plan’s significant impacts. The responses to comments clarify and amplify information presented in the Draft EIR.</p>
52-2	<p data-bbox="352 1109 1881 1312">The comment inaccurately suggests that the County’s General Plan has been ignored in the developing the proposed Plan. Consistent with SB 375 requirements, SANDAG relied upon local general plans <i>and other factors</i> to develop the forecasted development pattern for the region consistent with Government Code Section 65080(b)(2)(B). Consistency of the proposed Plan with relevant general plans is analyzed in Section 4.11, <i>Land Use</i>, of the Draft EIR. Due to the programmatic nature of the EIR analysis, the Draft EIR does not call out specific policies from local jurisdictions’ general plans or other local planning documents. Consistency of individual second-tier projects with these policies would be considered during project-specific CEQA reviews.</p> <p data-bbox="352 1356 1881 1417">Proposed Plan Appendix F, <i>Series 14 Regional Growth Forecast and SCS Land Use Pattern</i>, details the development of the population and job growth projections that are reflected in the Draft EIR. The Series 14 Regional Growth Forecast aligns with the</p>

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	<p>regional population projection from the California Department of Finance released in January 2020 and reflects population declines or lower population growth in certain areas in the region. These assumptions, described in Regional Plan Appendix F, include an increase in the region’s vacancy rate to 4 percent by 2040, an accounting of vacation rentals and second homes as “unoccupiable,” and a decrease in household size from 2.75 persons per household in 2016 to 2.62 persons per household by 2036. Data for all the counties in the United States show that as the population ages, household size declines, and the Series 14 Regional Growth Forecast assumes that due to the aging population in the region, a similar pattern will be observed. This is achieved by converging to household formation rates from the 2010 decennial census by 2035, which are held at that level through the end of the forecast. The Series 14 Regional Growth Forecast Documentation and Sustainable Communities Strategy Land Use Pattern Subregional Allocation methodology is available at: https://sdforwarddata-sandag.hub.arcgis.com/documents/SANDAG::series-14-regional-growth-forecast-andscs-land-use-pattern-subregional-allocation-oct-2021-draft/about.</p> <p>The region is expected to grow by 440,000 jobs by 2050. Future jobs are allocated to existing employment centers and scheduled commercial development. In rural areas, growth would be focused within existing rural communities, rather than in unincorporated areas that are not part of rural communities. Jobs and housing would be focused primarily in Mobility Hub areas described in the proposed Plan. By 2050, 53 percent of the population, 71 percent of the jobs, and 54 percent of the housing for the region are projected to be in Mobility Hub areas. See Tables F.4 through F.6 in Appendix F of the proposed Plan for more details on the regional population, jobs, and housing within Mobility Hub areas. Development under the SCS for the proposed Plan is substantially more compact than previous plans, conserving far more land and open space due to densification in the Mobility Hub areas.</p> <p>For response to the comment asserting that the proposed Plan does not accurately reflect the land use parameters of the Resort Village Site, please refer to response L192 in Appendix P-2. The Otay Ranch Resort Village Project had not been approved by the Board of Supervisors at the time the SCS Land Use Pattern was developed.</p>
52-3	<p>SANDAG will launch a study in the next year to further study the potential of usage-based fees and their capabilities in addressing various goals, including equity and GHG emissions reduction. The initial phase of this study will focus on calculating the true cost of driving, and better understanding what sources of existing revenue are funding different parts of the system and how different populations are impacted by existing revenue mechanisms. This foundational understanding will help SANDAG to design a road usage charge program that is more fair than current transportation funding sources.</p> <p>The study will also assess the potential impacts of user fees on San Diego residents, visitors, and businesses, particularly those relying heavily on transportation. SANDAG staff will work with Board Members, stakeholders, and community members to</p>

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	develop implementation strategies for a road usage charge, including high level constructs of the program, such as who will pay, the fee structure, and the distribution of revenues. SANDAG is committed to developing a carefully constructed program that will ensure that no particular group, such as those driving fuel-powered vehicles, are paying more than their fair share
52-4	Emissions modeling was done using emission factors from CARB’s EMFAC2017 as noted in the comment, which account for state programs related to ZEVs, and it was reasonable for the EIR not to make model adjustments for the rate of ZEV transition. See response to Gatzke Dillon & Balance 52-6 for additional detail related to ZEV initiatives.
52-5	For discussion regarding the reasonableness and accuracy of the growth parameters discussed in the EIR, refer to the response to Gatzke Dillon & Balance LLP 52-2. The growth parameters in the EIR do reasonably reflect projections in housing, population, and employment.
52-6	<p>This comment addresses the assumptions for zero emissions vehicles used in the Draft EIR GHG emissions projections and asserts that the Draft EIR should be revised to more plainly describe whether the GHG emissions inventory accounts for “ZEV penetration targets set by Executive Order” and other unnamed “ZEV-related initiatives” and recirculated for further public review.</p> <p>As explained in Section 4.8 of the Final EIR (p. 4.8-21), the future GHG emissions projections are based on “existing laws, regulations, programs, and policies in effect as of May 2021.” Implementation of Governor’s Executive Orders related to zero emission vehicles (ZEV) targets, such as Executive Order N-79-20, is not accounted for in the projections because it is not possible to know at this time, and it is therefore speculative, whether, when, or how the State will adopt new legislation, regulations, and/or programs to implement targets identified in a Governor’s Executive Order.</p> <p>The Final EIR goes on to explain that the GHG emissions projections for the on-road transportation sector, which includes passenger cars and light-duty vehicles, reflect implementation of the federal SAFE Vehicle Rule (Parts One and Two) (p. 4.8-21). The Final SAFE Vehicle Rule revokes California’s authority to set its own emissions standards and establish ZEV manages in the state, which affects some of the underlying assumptions used in CARB’s Emission Factor (EMFAC) model (p. 4.8-13). CARB staff has developed guidance and adjustment factors to be applied to EMFAC emissions outputs to adjust for revised and reduced ZEV sales in future years and the associated increase in GHG emissions. The on-road transportation sector GHG emissions reported in the Final EIR were modeled using CARB’s EMFAC2017 model and adjusted per CARB guidance to reflect implementation of the federal SAFE Vehicle Rule.</p> <p>Also, please note that if there were to be more rapid penetration of zero emission vehicles than the EIR assumes, the net effect would be to reduce air pollutant and GHG emissions levels from those predicted in the EIR. In that sense, the EIR air quality and GHG emissions projections are conservative.</p>

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52-7	<p>This comment references Draft EIR significance criterion GHG-3 and asserts that the Draft EIR needs to explain the basis for this significance criterion and whether it is relevant to project-level CEQA evaluations for development or other projects, and then be recirculated for public review.</p> <p>As explained in the Draft EIR (page 4.8-28), the source of the threshold for Impact GHG-3 is SANDAG Board Resolution No. 2021-17, which, among other things, directs SANDAG staff to consider the following when drafting the 2021 Regional Transportation Plan: “At least a 30% per capita GHG emissions reduction from the entire on-road transportation sector by 2035.” The Draft EIR further explains that it analyzes this target against baseline 2016 conditions and for the purposes of the GHG-3 impact analysis defines the entire on-road transportation sector as including passenger cars and light-duty trucks and also heavy-duty trucks and vehicles. Furthermore, the Draft EIR explains in Section 4.8.3 how SANDAG developed GHG significance criteria, including GHG-3, specifically intended for the proposed Plan and its EIR. In addition to SANDAG Board Resolution No. 2021-17, the Draft EIR also explains that the GHG significance criteria are based on the CEQA Guidelines Appendix G checklist questions and CEQA Guidelines Section 15064.4.</p>
52-8	<p>This comment asserts that Draft EIR mitigation measures GHG-5e and GHG-5f be revised to replace a reference to CAPCOA's 2010 <i>Quantifying Greenhouse Gas Mitigation Measures</i> document with a references to the Draft <i>Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity</i> (draft GHG handbook) that was published by the Sacramento Metropolitan Air Quality Management District for a public comment period on August 19, 2021 and was not final as of December 8, 2021. The commenter recommends that this change be made and the EIR recirculated because the newer draft document includes “substantial refinement in the quantification of various GHG reduction strategies.”</p> <p>As described in the Draft EIR, mitigation measure GHG-5e states that SANDAG shall, and other transportation project sponsors can and should, during the planning, design, project-level CEQA review, construction, operation, and maintenance of transportation network improvements, implement a detailed list of measures to reduce GHG emissions and achieve zero-net energy, including but not limited to, applicable measures identified in the 2010 CAPCOA document and in the Center for Resource Efficient Communities and the Center for the Built Environment’s <i>Zero-Carbon Buildings in California Feasibility Study</i> (completed in 2021) (Zero-Carbon Buildings Study).</p> <p>Mitigation measure GHG-5f is similar to GHG-5e, and states that the County of San Diego and incorporated cities can and should, during the planning, design, project-level CEQA review, construction, and operation of land use development projects implement a detailed list of measures to reduce GHG emissions and achieve zero-net energy, including but not limited to,</p>

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	<p>applicable measures identified in the 2010 CAPCOA document and in the Center for Resource Efficient Communities and the Center for the Built Environment’s <i>Zero-Carbon Buildings in California Feasibility Study</i> (completed in 2021).</p> <p>The Draft EIR references the 2010 CAPCOA document as a source of measures potentially applicable to transportation network improvement projects and land use development projects that SANDAG shall, and other specified lead agencies can and should consider at the project-level; the text of mitigation measures GHG-5e and GHG-5f is not related to information in the 2010 CAPCOA document on the quantification of GHG reduction strategies, and does not rely on such quantification. Moreover, regarding commenter’s concern with updates to “the quantification of various GHG reduction strategies over the past decade,” the Zero-Carbon Buildings report referenced in mitigation measures GHG-5e and GHG-5f was published in 2021 and does include more recent information on the quantification of GHG reduction strategies than the 2010 CAPCOA report. Based on the above information, the EIR’s GHG mitigation measures are adequate and meet CEQA require mtns, notwithstanding the availability of a draft updated CAPCOA document that has not been finalized.</p>
52-9	<p>This comment references the significant and unavoidable impact conclusion identified for Impact GHG-5 in the Draft EIR, and asserts that development of a “regional GHG mitigation bank that can be used by development projects to contribute regionally to the reduction of GHG emissions where development of site-specific reduction opportunities have been exhausted” is a feasible mitigation measure that would reduce the proposed Plan’s significant GHG emissions impacts (GHG-5). The commenter offers that such a regional GHG mitigation bank would be funded “via the payment of mitigation fees by individual development applicants” and that SANDAG would then identify and undertake “a number of GHG (and vehicle miles traveled [VMT]) reduction projects – transportation and otherwise” to reduce GHG emissions. The commenter does not reference what other types of non-transportation GHG reduction projects SANDAG would implement under such a program.</p> <p>It is not feasible for SANDAG to implement a regional GHG mitigation bank as described by the commenter because SANDAG does not have the land use authority to regulate land use development projects and collect mitigation fees from development project applicants. Moreover, regarding the suggestion for SANDAG to implement transportation projects to reduce GHG emissions using development mitigation fees, the commenter does not provide any evidence addressing what specific transportation projects or types of transportation projects would be undertaken by SANDAG through a mitigation bank to avoid or reduce the GHG emissions impacts of the proposed Plan; the GHG emissions projections reported in the EIR already take into account the many strategies included in the proposed Plan to reduce GHG emissions (refer to Final EIR page 4.8-42 and 4.8-43), and the EIR’s VMT and GHG mitigation measures propose additional transportation measures that reduce GHG emissions. It is also not feasible for SANDAG to implement various kinds of non-transportation projects that reduce GHG emissions. For example, SANDAG does not have the land use or other authorities needed to implement projects that reduce GHG emissions from other major GHG emitting sectors in the San Diego region, such as the type and amount of energy used by existing private buildings</p>

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	<p>and new development projects, generation and disposal of organic waste, and types and the amounts of energy embedded in the region's water supply and wastewater processes.</p> <p>It is also important to note that the California Air Resources Board's 2017 Climate Change Scoping Plan, the state's blueprint for achieving state GHG emission reductions, does not mention regional GHG mitigation banks as a feasible strategy to help reduce GHG emissions levels. For example, Scoping Plan Appendix B exhaustively lists many examples of plan-level GHG reduction actions that could be implemented by local governments, but does not mention regional or local GHG mitigation banks.</p> <p>Also refer to responses to comment 52-13 regarding the feasibility of a regional VMT-reduction program.</p>
52-10	Please refer to the responses to Gatzke Dillon comment 52-11 through 52-15.
52-11	<p>As stated in the last sentence of the opening paragraph (page 1) of the <i>Governor's Office of Planning and Research (OPR) Technical Advisory on Evaluating Transportation Impacts in CEQA, December 2018 (Technical Advisory)</i>:</p> <p style="padding-left: 40px;">The purpose of this document is to provide advice and recommendations, which agencies and other entities may use at their discretion. This document does not alter lead agency discretion in preparing environmental documents subject to CEQA. This document should not be construed as legal advice.</p> <p>As such, the advice and recommendations contained within the Technical Advisory are not binding for any lead agencies, which have the discretion to develop their own VMT thresholds of significance. Further, as the EIR notes on pp. 4.16-46 and 4.16-47, the Technical Advisory does not provide guidance or thresholds in regard to assessing the significance of VMT impacts for RTPs at the regional level. The 15% threshold is applicable to only certain types of land use development projects, and not to RTPs.</p> <p>As stated on Page 11 of the Technical Advisory (Footnote 15), OPR's recommendation for a significance threshold of achieving a VMT per capita 15 percent below the regional mean, relies on the substantial evidence contained within the findings of the California Air Resources Board (CARB) <i>California Air Resources Board 2017 Scoping Plan-Identified VMT Reductions and Relationship to State Climate Goals, January 2019 (2019 Scoping Plan)</i>. As noted in the Analysis Methodology Section under TRA-2 of the DEIR (Page 4.16-47), the findings of the 2019 scoping plan were also used as substantial evidence to establish a significance threshold to evaluate VMT per capita related impacts in the DEIR (14.3 percent below the regional mean).</p> <p>As the comment notes, the 2019 Scoping Plan found that per capita VMT reductions from land use and transportation projects are necessary to achieve the statewide GHG emissions reduction goals but will not alone achieve the goals. To achieve the 2050</p>

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	<p>statewide goal, CARB estimates that, for all vehicle types, reductions in total VMT per capita of 14.3 percent below existing levels would be needed. In terms of light-duty vehicle (i.e., passenger vehicle) per capita VMT reductions, to achieve the 2050 statewide goal, CARB (2019) estimates that reductions of 16.8 percent below existing levels would be needed by 2050.</p> <p>The 2019 Scoping Plan provides no reference to a goal or threshold of achieving reductions in VMT per capita of 15 percent below the regional mean, nor does OPR’s Technical Advisory provide any additional evidence to substantiate the use of a reduction of VMT per capita of 15 percent below the regional mean. Additionally, as noted in the Analysis Methodology Section under TRA-2 of the DEIR (Page 4.16-47):</p> <p style="padding-left: 40px;">The OPR Technical Advisory does somewhat address VMT-related impacts associated with the development and implementation of General Plans, noting:</p> <p style="padding-left: 80px;">A general plan, area plan, or community plan may have a significant impact on transportation if proposed new residential, office, or retail land uses would in aggregate exceed the respective thresholds recommended above.</p> <p style="padding-left: 40px;">However, the Technical Advisory does not provide guidance on the VMT-related impacts that may be associated with regional plans, such as an RTP and SCS, as included in the proposed Regional Plan.</p> <p>As such, the DEIR utilized the findings of the 2019 Scoping Plan as the basis in determining the significance thresholds for VMT per capita related impacts, as documented in the Significance Thresholds Section under TRA-2 of the DEIR (Page 4.16-46):</p> <p style="padding-left: 40px;">... there are no State-recommended significance per capita VMT thresholds for regional plans such as an RTP/SCS. Therefore, a qualitative threshold is used: <i>would the proposed Plan achieve the substantial VMT reductions needed to help achieve statewide GHG reduction goals?</i> Also, as noted, to achieve the 2050 statewide goal, CARB (2019) estimates that reductions in total VMT per capita of 14.3 percent below existing levels would be needed by 2050. The VMT per capita reduction target of 14.3 percent under existing levels is utilized in this analysis as a guide to determine whether the proposed Plan would reach the substantial VMT reductions needed to help achieve statewide GHG reduction goals.</p> <p>Based on the above information, the EIR’s 14.3 percent reduction threshold is supported by substantial evidence. Further,, it should be noted that the revised VMT per capita calculations included within the FEIR show a reduction of 15.4 %, over Base Year 2016 conditions, in VMT per capita under Year 2050 conditions. Thus, the proposed Plan would be consistent with OPR’s recommendations as well as the 2019 Scoping Plan. However, the implementation of the proposed Plan would still result in a net</p>

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	<p>increase in the total VMT generated by the region; therefore, implementation of the proposed Plan will still result in a significant impact under TRA-2.</p> <p>The comment also requests additional information in regard to how the VMT metrics and figures analyzed in the DEIR were developed. Footnote 2, on page 4.16-1 of the EIR has been updated to include the following link, which provides a detailed description of the background, data sources, methodologies, and outputs associated with ABM 2+.</p> <p>Link: https://www.sandag.org/index.asp?subclassid=120&fuseaction=home.subclasshome This link provides additional and detailed information sufficient for the public to understand how the EIR's VMT numbers were calculated.</p>
52-12	<p>The comment requests that documentation of the transportation related analysis and results be included within the DEIR.</p> <p>As noted in the VMT Analysis Approach Section under TRA-2 of the EIR (page 4.16-48), The ABM2+ was utilized to derive the transportation based metrics analyzed under each analysis scenario (VMT, trip generation, mode share, and trip length). ABM2+ forecasts the regional transportation metrics predominantly on the land uses and transportation network that is coded into the model. This process and results are documented within the EIR in the following locations.</p> <ul style="list-style-type: none"> • <i>Model Inputs:</i> The land use and transportation network improvements that were inputted into ABM2+ are documented in the Project Description contained within Chapter 2.0 of the EIR. • <i>Methods and Process:</i> The methodologies and process that ABM 2+ utilizes to calculate the transportation based metrics is documented in Attachment S of the proposed Plan as well as the link provided in footnote #2 of Section 4.16 is consistent with the VMT data presented in Section 4.16.4 of the EIR. • <i>Analysis Results:</i> The VMT, trip generation, trip length, and transportation mode share information presented in Section 4.16.4 of the EIR are direct outputs of ABM2+ and were all derived from the methodologies and information presented in Attachment S of the proposed Plan. <p>This is sufficient information to allow full public review of how the results were achieved. Also, please see response to Gatzke Dillon comment 52-12.</p>
52-13	<p>The comment infers that relying on local jurisdictions to implement identified mitigation measures is not adequate under CEQA and that SANDAG must take a leadership role in implementing the identified mitigation measures. Please see Master Response 2 for additional discussion of why the EIR's mitigation approach for second-tier measures to be implemented by other agencies meets CEQA requirements.</p>

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	<p>As noted in the Significance After Mitigation Section under TRA-2 of the Final EIR (p. 4.16-57):</p> <p>By Year 2050 the proposed Plan would reduce the region’s VMT per capita by 15.4 percent over Baseline Year 2016 conditions. As outlined in Tables S-17 through S-22 in Appendix S of the proposed Plan, there are some TDM strategies included in the proposed Plan that could not be incorporated into ABM2+ and were therefore not assumed in the transportation impact analysis. As noted within the appendix, these reductions could further reduce the total VMT generated within the region by an additional 2.2 percent by Year 2050. These reductions were calculated based on their influence of the total VMT generated within the region. As such, it is reasonable to assume that these strategies would have a similar effect on region’s VMT per capita, as the majority of trips within the region are home based. Therefore, the region could achieve reductions of up to of 17.6 percent (15.4 + 2.2 percent) in VMT per capita, over 2016 conditions, by 2050,¹ if these strategies are fully implemented. However, as noted in the mitigation section above, TDM strategies generally are required and implemented at the project level, by local agencies, to be most effective. The VMT reductions associated with these project-level TDM measures can vary greatly based on the project type, location, and size; therefore, an overall regionwide reduction cannot be estimated at the program level.</p> <p>SANDAG cannot require local agencies implementing development projects, or other transportation project sponsors, to adopt the above mitigation measures, and it is ultimately the responsibility of the CEQA lead agency to determine and adopt mitigation. In addition, the State has indicated that additional State policy actions and funding would be required to close the VMT gap between what the MPOs could achieve through implementation of their SCSs and reductions needed to meet State goals. Therefore, this impact would be significant and unavoidable.</p> <p>As noted, additional VMT reducing measures and programs are included within the proposed Plan that were not taken credit for within the VMT calculations conducted under TRA-2. As outlined in Tables A-14 through A-17 in Appendix A of the proposed Plan, the proposed Plan will provide funding and resources for local jurisdictions to plan, design, and implement these measures. Thus, SANDAG is taking a leadership role in their implementation, as the comment requests. However, since SANDAG does not have the land use authority, nor the authority to directly implement these programs nor the localized infrastructure improvements outlined in the mitigation measure, SANDAG cannot guarantee that they will be implemented.</p> <p>The comment also requests that a regional fee-based mitigation program be included as a mitigation strategy under TRA-2. It should be noted that a mitigation fee program, in and of itself, does not provide any additional mitigation measures for the</p>

¹ This exceeds the CARB target reduction of 14.3 percent by 2050.

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	<p>identified impacts. Instead, a mitigation fee program helps to fund and fairly allocate the cost and responsibility of the types of mitigation measures identified within an EIR. Therefore, the inclusion of a regional fee-based mitigation program would not reduce the identified impacts, it would only an additional funding source for VMT-reducing measures that are already included either within the proposed Plan or a VMT-reduction mitigation measures.. Therefore, the inclusion of a mitigation fee program will not substantial reduce the proposed Plan’s significant VMT impacts.</p>
52-14	<p>As stated in TRA-3, the significance threshold analyzed to assess impacts to bicycle safety is as follows: “Substantially Increase Hazards Due to a Design Feature (e.g., Sharp Curves or Dangerous Intersections) or Incompatible Uses.” This threshold is consistent with the requirements outlined in Appendix G of the CEQA Guidelines. The proposed bicycle improvements included within the proposed Plan are programmatic at this stage and have not been designed or conceptually laid out at this point. Therefore, any specific hazards relating to the proposed facilities design (e.g., Sharp Curves or Dangerous Intersections) cannot be evaluated or identified at this point, and will need to be evaluated at the project level once they have been designed. The EIR does provide discussion and direction on how the proposed transportation network improvements can and should be designed and implemented under Impact TRA-3 (Pages 4.16-58 through 4.16-59):</p> <p style="padding-left: 40px;">The transportation network improvements and programs in the proposed Plan would be required to conform to the design standards of the public agency responsible for implementation. Design standard conformance is a key part of developing networks that provides common expectations for users to minimize hazardous conflicts and conditions that could contribute to collisions. The standards outlined in the California MUTCD, HDM, and MTS’ <i>Design for Transit</i> (see Section 4.16.2 of the EIR), as well as the street design manuals established by the local jurisdictions, cover all aspects of the transportation right-of-way, including physical and operational features as well as appropriate actions during construction.</p> <p>As such, it is reasonable to assume that the implementation of the proposed transportation network improvements would not result in an increase to bicycle hazards.</p> <p>The comment also cites the proposed increases in bicycle facilities within the region including 242 miles of new bicycle facilities and 160,889 additional average daily bicycle trips that are estimated under Year 2050 conditions. The comment then questions if the implementation of these additional facilities and the resulting increasing in the bicycle mode share will result in an impact to safety. As support, the comment cites an opinion article that was published within the San Diego Union Tribute that identifies a</p>

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	<p>need for additional complete streets within the region, as well as an expansion of the bicycle network within the region. As outlined in Tables 4.16-7 (2025), 4.16-11(2035), and 4.16-15 (2050) the proposed Plan will implement the following:</p> <ul style="list-style-type: none"> • Year 2025: the proposed Plan will implement 41 miles of additional protected bicycle facilities (Class I & IV bicycle facilities). • Year 2035: the proposed Plan will implement 147 miles of additional protected bicycle facilities (Class I & IV bicycle facilities) with 59 miles of unprotected facilities (Class II & III bicycle facilities) being upgraded to protected. • Year 2050: the proposed Plan will implement 273 miles of additional protected bicycle facilities (Class I & IV bicycle facilities) with 119 miles of unprotected facilities (Class II & III bicycle facilities) being upgraded to protected. <p>As such, the implementation of the proposed protected bicycle facilities is consistent with the needs that are identified within the article. The implementation of the proposed network of protected bicycle facilities and resulting increase in ridership should also help to improve bicycle safety. This is further supported by a study published by the <i>Journal of Transportation and Health (Volume 13, June 2019)</i> entitled “Why cities with high bicycling rates are safe for all road users,” found the following:</p> <ul style="list-style-type: none"> • Cities with high bicycling mode shares have surprisingly good road safety records. • Higher bicycling rates and ‘safety in numbers’ was not significant. • Increased prevalence of protected bicycle facilities suggest safer cities for all. <p>Source: https://www.sciencedirect.com/science/article/abs/pii/S2214140518301488?via%3Dihub</p> <p>Based on the above information, the increase in bicycle mode share/bicycle trips projected with the implementation of the proposed Plan, as well as the implementation of new protected bicycle facilities (Class I and Class IV) and proposed conversion of unprotected to protected bicycle facilities, would enhance bicycle safety within the region, not degrade it. Therefore, there is no substantial evidence that the proposed Plan would have a significant adverse impact on bicycle safety, and the EIR’s analysis of bicycle safety impacts is adequate.</p> <p>Finally, the comment notes that OPR’s Technical Advisory recommends that safety concerns should be addressed at a programmatic level. Please note that this recommendation is consistent with the findings under Impact TRA-3 of the EIR. As noted in the EIR (page 4.16-58), the proposed Plan includes several regional planning efforts that would improve transportation safety within the region, including:</p>

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	<ul style="list-style-type: none"> • <i>Development of Regional Vision Zero Program:</i> The proposed Plan introduces the Vision Zero Program with the aim of keeping all roadway users—especially vulnerable users—safe through the use of data, project prioritization, education, and community engagement. • <i>Proposed Plan Network Development:</i> Safety data were applied to project bundles during the network-development process through evaluation criteria. See Appendix T of the 2021 Regional Plan for more information. • <i>Federal Transportation Performance Management:</i> Planning and programming are informed by five safety performance targets for all public roads and seven transit safety performance targets that the lead CEQA agency monitors and updates on a regular schedule. See Appendix O of the 2021 Regional Plan for more information. • <i>Strategic Highway Safety Plan:</i> The proposed Plan is consistent with the 2020 Strategic Highway Safety Plan (SHSP). SANDAG supported the development of this statewide plan and continues support of plan implementation through SHSP Challenge Area Teams. • <i>Comprehensive Multimodal Corridor Plans (CMCPs):</i> These subregional plans develop groupings of transportation projects that are evaluated using performance measures, including safety improvements. <p>The inclusion of these programs within the proposed Plan is consistent with OPR’s recommendation that safety concerns be addressed at the programmatic level.</p>
52-15	<p>The comment states that the DEIR is inconsistent with programs, plans, ordinances, and/or policies addressing the circulation system since it will not meet the applicable VMT and GHG reduction goals. As outlined in Section 4.16.2 of the EIR (Pages 4.16-21) there are no circulation system based policies contained within the relevant, currently adopted plans (2019 Federal Plan and Riding to 2050), that pertain to GHG or VMT reduction targets. Therefore, the State GHG reduction targets were not considered under Impact TRA-1.</p> <p>It should be noted that Impact TRA-2 specifically evaluates whether the proposed Plan will conflict or be inconsistent with CEQA Guidelines Section 15064.3 by not achieving the substantial VMT reductions needed to help achieve statewide GHG reduction goals; the Impact GHG-2 analysis therefore provides the type of information requested by the commenter. This approach is consistent with the Environmental Checklist contained in Appendix G of the CEQA Guidelines. Therefore, the EIR takes the correct approach in analyzing these two issues separately, as there is currently no circulation system program, plan, ordinance or policy in place that requires the plan be consistent with the State GHG reduction targets. .</p>
52-16	<p>The EIR prepared for the proposed Plan is a first-tier Program EIR. “Second-tier projects” that would implement the Plan include site-specific transportation network improvements and development projects would be subject to project-specific environmental</p>

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	<p>review. With a programmatic level of analysis, the EIR provides a general assessment of potential impacts associated with the proposed Plan. The evaluation of potential impacts resulting from second-tier projects, including potential conflicts with the Regional Plan, is the responsibility of second-tier EIR lead agencies, and would occur as part of the project-specific environmental review process for these projects. As noted in the Final EIR, p. 4.11-14, the land use portion of the SCS is implemented through <i>voluntary</i> local government actions.</p>
52-17	<p>The EIR prepared for the proposed Plan is a first-tier Program EIR. “Second-tier projects” that would implement the Plan include site-specific transportation network improvements and development projects, as well as any qualifying transit priority projects. The EIR would allow qualifying transit priority projects to be approved with a sustainable communities environmental assessment or a streamlined EIR, so long as they meet the applicable criteria set forth in Pub. Resources Code, §21155.2.</p> <p>As discussed in the Draft EIR (page 4-4), SANDAG is responsible for implementing those mitigation measures within its responsibility, jurisdiction, and statutory authority. Mitigation can also include measures that are within the responsibility and jurisdiction of another public agency (CEQA Guidelines Section 15091 (a)(2)). In many instances, mitigation measures included in the EIR that would avoid or substantially lessen significant impacts of the proposed Plan fall under the responsibility and jurisdiction of other implementation agencies, such as cities, the County, Caltrans, public transit agencies, or other special districts. In other words, SANDAG will not be the lead agency for the majority of the second-tier projects that implement the proposed Plan.</p> <p>Although second-tier lead agencies routinely implement the types of mitigation measures assigned to them during project design, CEQA review, and/or project construction, the Draft EIR recognizes that due to project- or site-specific circumstances, it may not be feasible for individual lead agencies to implement all of the “can and should” mitigation measures listed for a particular significant impact; in this case, the Regional Plan EIR programmatic mitigation measures still meet CEQA requirements, but in the later project-specific CEQA review, the Regional Plan EIR could not be used as a first-tier Program EIR for the significant impact proposed for mitigation. Please see Master Response 2 for additional discussion.</p> <p>Mobility Hubs are not the same as “major transit stops” or “high-quality transit corridors” defined in SB 375. Figures D.8 and D.9 in Appendix D of the Regional Plan depict potential areas for Transit Priority Projects based on the 2035 and 2050 transit systems, respectively. As defined in SB 375, these include areas within a half mile of a “major transit stop,” defined in Public Resources Code Section 21064.3, or “high quality transit corridor,” defined as a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours.</p>

From: David De Vries <DDeVries@poway.org>
Sent: Wednesday, December 1, 2021 8:35 AM
To: Kirsten Uchitel <Kirsten.Uchitel@sandag.org>
Cc: Bob Manis <BManis@poway.org>
Subject: RE: San Diego Forward: 2021 Regional Plan Draft EIR

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Thanks Kristen, I also provided clear evidence that Highway 67 is designated as an Eligible State Scenic Highway in 26-2 and this was not addressed in the response to comments or updated in the EIR. Can you please let me know why this is not an Eligible State Scenic Highway?

Thank you,

David De Vries, AICP

City Planner
Development Services
City of Poway | 13325 Civic Center Drive | Poway, CA 92064
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From: Kirsten Uchitel <Kirsten.Uchitel@sandag.org>
Sent: Tuesday, November 30, 2021 8:27 PM
To: David De Vries <DDeVries@poway.org>
Cc: Bob Manis <BManis@poway.org>
Subject: RE: San Diego Forward: 2021 Regional Plan Draft EIR

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EXTERNAL EMAIL

Dear David –

The Final EIR and Appendices are available for review and download on the San Diego Forward website:

<https://sdforward.com/mobility-planning/eir/>

I will follow up with you regarding the announcement for the “County Unincorporated” event before the end of the week.

Thank you very much,
Kirsten

From: David De Vries <DDeVries@poway.org>
Sent: Tuesday, November 30, 2021 9:30 AM
To: Kirsten Uchitel <Kirsten.Uchitel@sandag.org>
Cc: Bob Manis <BManis@poway.org>
Subject: RE: San Diego Forward: 2021 Regional Plan Draft EIR

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Thanks Kristen, this has been received. Do you know when we will be able to review the updated EIR and appendices? Could you send me the announcement for virtual open house held on June 16, 2021, entitled "County Unincorporated," which included connections to adjacent cities, including Poway, as described in Response 26-5?

Thank you,

David De Vries, AICP
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From: Kirsten Uchitel <Kirsten.Uchitel@sandag.org>
Sent: Monday, November 29, 2021 11:09 PM
To: David De Vries <DDeVries@poway.org>
Subject: San Diego Forward: 2021 Regional Plan Draft EIR

You don't often get email from kirsten.uchitel@sandag.org. [Learn why this is important](#)

EXTERNAL EMAIL

November 29, 2021

Thank you for submitting a comment on the 2021 Regional Plan Draft EIR. Attached please find SANDAG's written response to your comment, provided pursuant to Public Resources Code Section 21092.5(a) and CEQA Guidelines Section 15088(b).

Please confirm receipt of this email at your earliest convenience.

Thank you very much,

Kirsten Uchitel
Associate Regional Planner

619.699.7335. office

401 B Street, Suite 800, San Diego, CA 92101

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SANDAG [office hours](#) are Tuesday – Friday and every other Monday from 8 a.m. – 5 p.m.

Comment	Response to Comment
<p>Re: Virtual Open House</p>	<p>The notice for the virtual open house held on June 16, 2021 was publicized via sent emails, posting on the SANDAG website, and publishing of a newspaper notice.</p> <p>The following emails were sent on:</p> <ul style="list-style-type: none"> - Friday, May 28, 2021: <i>The draft 2021 Regional Plan is here!</i> (https://mailchi.mp/sandag/the-draft-2021-regional-plan-is-here); - Wednesday, June 9, 2021: <i>You're invited! Draft 2021 Regional Plan informational open houses this summer</i> (https://mailchi.mp/sandag/youre-invited-draft-2021-regional-plan-informational-open-houses-this-summer); and - Monday, June 14, 2021: <i>Reminder: Virtual Open Houses</i> (https://mailchi.mp/sandag/remindervirtualopenhouses). <p>The open house notice was posted on the SANDAG website at the following link (https://www.sandag.org/index.asp?newsid=1295&fuseaction=news.detail).</p> <p>Finally, the newspaper notice was published in English in the San Diego Union Tribune and in Spanish in the San Diego Union Tribune en Espanol on June 10, 2021 (see attached).</p>
<p>Re: Scenic Highway</p>	<p>To ensure consistency of analysis throughout the County, The Draft and Final EIRs rely upon data from the California Scenic Highway Program, administered by the California Department of Transportation (Caltrans), to identify scenic highways. The highways in the San Diego region officially designated or identified as eligible scenic highways by Caltrans are listed in Table 4.1-1 and shown in Figure 4.1-1. Caltrans scenic highway data can be found at https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aaca. SR 67 in Poway is not identified as an officially designated or eligible scenic highway by Caltrans in this data set. In addition to the state scenic highways, the County of San Diego General Plan Conservation and Open Space Element (County of San Diego 2011) identifies other scenic roadways and highways worthy of protection in the unincorporated County. A list of these highway segments is found in Table 4.1-2, which includes portions of SR 67, but not the segment in Poway. Because the EIR is a programmatic analysis, it does not identify all scenic highway general plan elements or programs. However, future planned projects along SR 67 within the City of Poway will be required under CEQA to conduct separate environmental analysis, at which time designations of SR 67 as a scenic roadway by the Poway General Plan will be considered under that separate environmental analyses.</p>

The San Diego Union-Tribune

PROOF OF PUBLICATION

STATE OF CALIFORNIA County of San Diego

The Undersigned, declares under penalty of perjury under the laws of the State of California: That he/she is the resident of the County of San Diego. That he/she is and at all times herein mentioned was a citizen of the United States, over the age of twenty-one years, and that he/she is not a party to, nor interested in the above entitled matter; that he/she is Chief Clerk for the publisher of

The San Diego Union-Tribune

a newspaper of general circulation, printed and published daily in the City of San Diego, County of San Diego, and which newspaper is published for the dissemination of local news and intelligence of a general character, and which newspaper at all the times herein mentioned had and still has a bona fide subscription list of paying subscribers, and which newspaper has been established, printed and published at regular intervals in the said City of San Diego, County of San Diego, for a period exceeding one year next preceding the date of publication of the notice hereinafter referred to, and which newspaper is not devoted to nor published for the interests, entertainment or instruction of a particular class, profession, trade, calling, race, or denomination, or any number of same; that the notice of which the annexed is a printed copy, has been published in said newspaper in accordance with the instruction of the person(s) requesting publication, and not in any supplement thereof on the following dates, to wit:

June 10, 2021

I certify under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Dated in the City of San Diego, California
on this 10th of June 2021


Cris Gaza

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PUBLIC NOTICE OF AVAILABILITY OF THE DRAFT SAN DIEGO FORWARD: THE 2021 REGIONAL PLAN, THE DRAFT AIR QUALITY CONFORMITY ANALYSIS, AND NOTICE OF PUBLIC MEETINGS

Notice is hereby given that the San Diego Association of Governments (SANDAG) is circulating the draft San Diego Forward: The 2021 Regional Plan (2021 Regional Plan) for public comment which began May 28, 2021 with a closing date for public comments on the draft 2021 Regional Plan of July 30, 2021.

The 2021 Regional Plan prioritizes quality of life, social equity, and environmental preservation. By using the most advanced data modeling ever used in a Regional Plan, SANDAG is proposing a transformative transportation system for the San Diego region that can improve the lives of all San Diegans. The draft 2021 Regional Plan incorporates the region's Regional Transportation Plan, Sustainable Communities Strategy, and Regional Comprehensive Plan, and also includes the draft Air Quality Conformity Determination demonstrating the 2021 Regional Plan's conformity with the State Implementation Plans for air quality, in accordance with the Transportation Conformity Requirements in 40 C.F.R. 51 and 93, as required by the 1990 Clean Air Act Amendments.

SANDAG is holding informational open houses (virtually) to provide information about policy choices and issues considered in the draft 2021 Regional Plan. **The subregional open houses are scheduled for**

- North County Coastal: Tuesday, June 15, 2021, 6-8 p.m.
- County Unincorporated: Wednesday, June 16, 2021, 6-8 p.m.
- South County: Tuesday, June 22, 2021, 6-8 p.m.
- East County: Thursday, June 24, 2021, 6-8 p.m.
- North County Inland: Monday, June 28, 2021, 6-8 p.m.
- Central San Diego: Wednesday, June 30, 2021, 6-8 p.m.

To join the virtual open houses via Zoom webinar, use this link: zoom.us/j/98792658224

To join via telephone, dial +1.669.900.6833 or international numbers available: zoom.us/j/98792658224

Webinar ID: 987 9265 8224

In addition to the virtual open houses, two virtual public hearings to accept public comments are scheduled for

- SANDAG Transportation Committee: Friday, July 16, 2021, 9 a.m.
- SANDAG Board of Directors: Friday, July 23, 2021, 9 a.m.

Additional virtual event information is available at: SDForward.com

Spanish interpretation will be available. If you require assistance in a language other than Spanish or special equipment to accommodate a disability in order to participate, please contact SANDAG at 619.699.1900 at least 72 hours in advance of the virtual open houses and public hearings. TTY: 619.699.1904.

During the virtual open houses and virtual public hearings, participants will be afforded a variety of means to submit comments on the draft 2021 Regional Plan, including filling out online comment cards. Comments also may be submitted via sandag.org/RegionalPlanComments, directly through email at SDForward@sandag.org; via telephone at 619.699.1934, toll free 877.277.5736 and TTY 619.699.1904, via fax at 619.699.1995; through the mail to Attention: 2021 Regional Plan, 401 B Street, Suite 800, San Diego CA, 92101; and in person by dropping off written comments at SANDAG offices at the last written address once the SANDAG offices are reopened to the public.

SANDAG anticipates circulating the draft Environmental Impact Report (EIR) in late summer 2021, for public comments.

**Mike Bullock
1800 Bayberry Drive
Oceanside, CA 92054**

October 11, 2021

San Diego Association of Governments
401 B Street, Suite 800
San Diego, CA 92101
C/O Kirsten Uchitel, Associate Planner

Via E-mail: RegionalPlanEIR@sandag.org
Subject: Regional Plan DEIR

SANDAG,

I appreciate the opportunity to comment on this important subject.

Since the DEIR is based on the 2021 Regional Transportation Plan, I will start by considering that plan and what environmental impacts it will cause.

Environmental Impact Consideration of the Region Transportation Plan

Chapter 1: A Bold New Vision for the 2021 Regional Plan

You introduce the 5 “Big Moves,” an approach which seems to reflect a recognition that we need fundamental change. However, before you even identify the strategies, this sentence appears, suggesting a falsehood. The falsehood it suggests is that the primary task is to enhance mobility while achieving “state and federal requirements”, regarding climate change and air pollution.

You write, regarding the 5 Big Move, that you are about to identify (emphasis added in bold type):

*These interdependent strategies are designed to address the greatest transportation and mobility challenges that we face: safety and traffic congestion, social inequities, and **state and federal requirements to reduce greenhouse gas (GHG) emissions and air pollution.***

This statement shows a fundamental misunderstanding of the climate emergency that we face. By far, our greatest “mobility challenge” is to design and adopt a regional transportation plan (RTP) that will guarantee that the GHG emissions from *cars and light-duty trucks* (the “Light-Duty Vehicle” or “LDV” category called out in SB 375) will meet the climate-stabilizing requirements provided by climate science. The first climate-stabilizing requirement is for LDVs to emit GHG at no more than 80% below the level they emitted in 1990, by no later than the end of 2030 (Reference 1). The later requirement will be relatively easy, if we meet the 2030 requirement, or “target.”

The later requirement is to have LDVs and all other GHG emitters emit no more than what can be offset by carbon sequestration. This is the “net zero” emission level of 2045 or perhaps 2050. Often, governments only speak of the “net zero” requirement of 2045 or 2050, without mentioning the more-difficult 2030 requirement. This may be because plans to achieve the 2030 requirement must be built upon the math connecting fleet efficiency in year 2030 and the per-capita driving in 2030 with the 2030 climate-stabilization requirement. The math must account for the percent of our electricity that is renewable.

Therefore, the math must derive the following two items:

- So-called, “fleet efficiency” (CO2 emitted per mile of all the cars on the road, for a given year, given the percent of electricity that is from renewables) and
- per-capita driving

that will combine to achieve the “80% below 1990 level” requirement.

The peer-reviewed Reference 1 does this. It shows 4 cases of fleet-efficiency requirements and the per-capita driving that could be allowed, given the 2030, climate-stabilization requirement stated above.

For the benefit of readers that don’t want to look at Reference 1, here is Table 1, showing the 4 cases:

Table 1 4 Cases that Support the 2030 Climate-Stabilizing Requirement

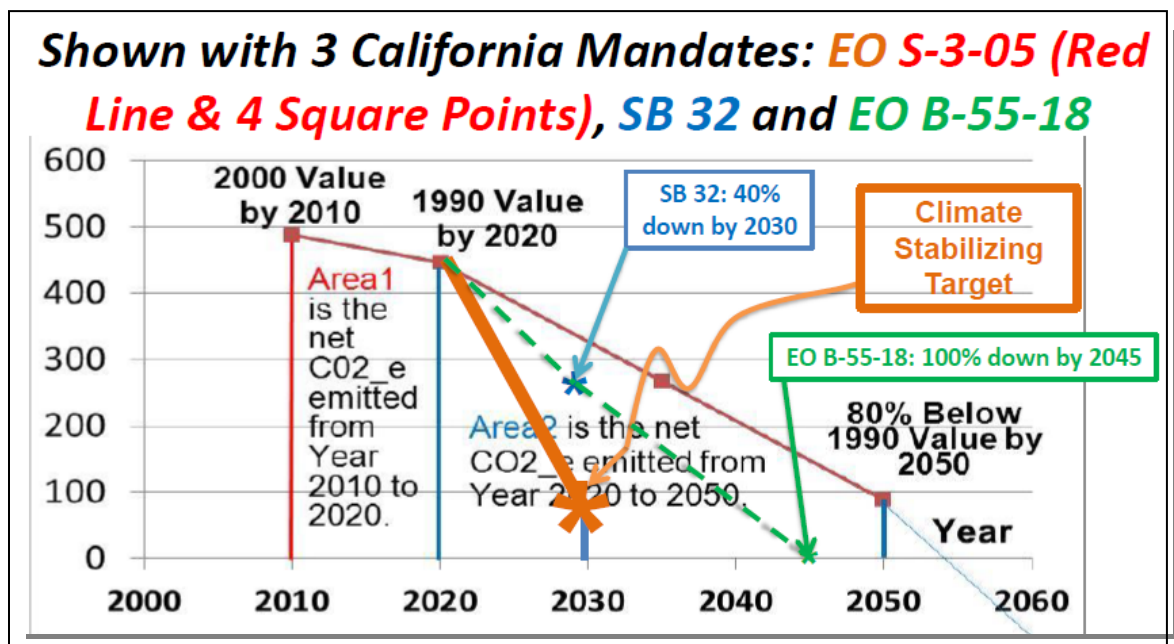
Note: Purple denotes difficult; red, impossible.

	Case Designations			
	Balanced_1	Balanced_2	2005 Driving	Mary Nichols
% Renewable Electricity	85.0%	90.0%	90.0%	90.00%
% ZEVs, Year 2016	2.0%	2.0%	2.0%	2.70%
% ZEVs, Year 2017	2.0%	2.0%	2.0%	2.70%
% ZEVs, Year 2018	3.0%	3.0%	3.0%	5.11%
% ZEVs, Year 2019	4.0%	4.0%	4.0%	7.53%
% ZEVs, Year 2020	8.0%	8.0%	8.0%	9.94%
% ZEVs, Year 2021	20.0%	15.0%	82.0%	12.35%
% ZEVs, Year 2022	35.0%	25.0%	97.0%	14.76%
% ZEVs, Year 2023	55.0%	45.0%	99.0%	17.18%
% ZEVs, Year 2024	80.0%	70.0%	99.0%	19.59%
% ZEVs, Year 2025	94.0%	95.0%	99.0%	22.00%
% ZEVs, Year 2026	97.0%	97.0%	99.0%	37.60%
% ZEVs, Year 2027	98.0%	98.0%	99.0%	53.20%
% ZEVs, Year 2028	99.0%	99.0%	99.0%	68.80%
% ZEVs, Year 2029	99.0%	99.0%	99.0%	84.40%
% ZEVs, Year 2030	99.0%	99.0%	99.0%	100.00%
% Reduction in Per-Capita Driving With Respect to Year 2005	32.0%	32.0%	0%	50.5%

The only difference between the “Balanced_1” case and the “Balanced_2” case is the increased percentage of electricity that is from renewables, goes from 85% to 90%. That improvement allows the per-cent of new cars that are ZEVs to increase at a less-difficult pace. The “2005 Driving” case is done to prove that it is not feasible. It proves that we must reduce driving. The Mary Nichols case is based on statements made by the retired CARB Chair. CARB does not seem capable of understanding the more-complex 2030 requirement. Therefore, I doubt that Former-Chair Nichols understood that her schedule would need per-capita driving to drop 50.5%, which would be very difficult. CARB and indeed the state of California seem to be pretending that if we achieve the net-zero requirement by 2045, the earth’s climate will not destabilize. However, SANDAG cannot go along with this misinformation.

The derivation of the 2030 climate-stabilizing requirement (target) is shown on Page 6 of Reference 1. Reference 2 is used to present Reference 1. The derivation of the 2030 climate-stabilizing requirement (target) is shown on Slides 11 and 12 of Reference 2. That result is shown here in Figure 1.

Figure 1 The 2030 Climate Stabilization Target Compared to State Mandates



It should be noted that Reference 1 is exactly what the most important environmental-advocacy organization in California, the California Democratic Party (the CDP, AKA the CADEM) has in their Platform. The Party Platform is their official policy. This can be seen in Reference 3, where it says, “Demand a state plan specifying how cars and light-duty trucks can meet climate-stabilizing targets by defining enforceable measures to achieve necessary fleet efficiency and per-capita driving limits.”

Such a plan is noted here as a “Plan”. CARB has no such Plan. Nor does SANDAG. Given our climate predicament, any project that needs an EIR, that has to do with driving, needs such a Plan. If any discretionary project that has to do with driving needs an EIR, such as the RTP being considered, if it cannot be shown to conform to such a plan, then it must be assumed to be contributing to climate destabilization.

Critical Information Left Out of Chapter 1 and the Regional Transportation Plan (RTP)

Many of the fatal errors of Chapter 1, and the RTP/DEIR in general, can be attributed to the RTP not explaining, up front, the parameter of humanity’s Code Red Climate Emergency, as if it plays no role in writing an EIR for the 2021 Regional Transportation Plan. At the front of the RTP’s EIR, the following information is needed.

Figure 2 shows the rise of the world’s atmospheric CO₂ over the last 50 years. Figure 3 shows both atmospheric temperature (averaged over a year and averaged over the earth, derived from an isotope analysis) and atmospheric CO₂ (from air bubbles in ice-core samples), over 800,000 years. It could be noted that our species is only around 300,000 years old. Figure 3 shows that when climate deniers say that climate is always changing and so therefore climate change is normal, they are correct, except for one important consideration. There is nothing normal about the outrageous, recent run-up of atmospheric CO₂, to over 410 PPM, in such a short time that it appears to be an instantaneous spike, on Figure 3. Figure 4 shows just 1% (which is just 1,000 years) of the distance on Figure 3, from current time to 100,000 years into the past. For Figure 4, the conventions have been switched: the red line is the earth’s atmospheric CO₂ and temperature is blue. Figure 4 shows that the CO₂ spike is the result of our combustion of fossil fuels because it starts at the start of our industrial revolution. Figure 4 covers the time of the development of our civilization. It shows that everything was normal until about 150 years ago, which is the start of our industrial revolution, when we started to burn fossil fuels. By doing extensive calculations, we know how much CO₂ we have produced from the combustion of fossil fuels. Then, by directly measuring the atmospheric CO₂ and the acidity of the oceans, we know where that CO₂ currently resides. We also know that atmospheric CO₂ traps heat. There is no doubt that we have an Anthropogenic Global Warming catastrophe in the making. We are living in a spike of CO₂. Neither the magnitude nor the slope have occurred in millions of years. Achieving climate-stabilizing requirements (targets) is our only hope.

It should also be clearly stated that LDVs, by far, emit more GHG than any other category of emission. Electricity emits the 2nd most. However, electricity has a good chance to achieve the 2030 climate-stabilization requirement derived in Reference 1 and shown in Figure 1. Unfortunately, that cannot be said for LDVs. The implementation of Reference 1 or some other Plan like Reference 1 is our only hope, for LDVs.

Figure 2 Atmospheric CO₂, Increasing Over Recent Decades

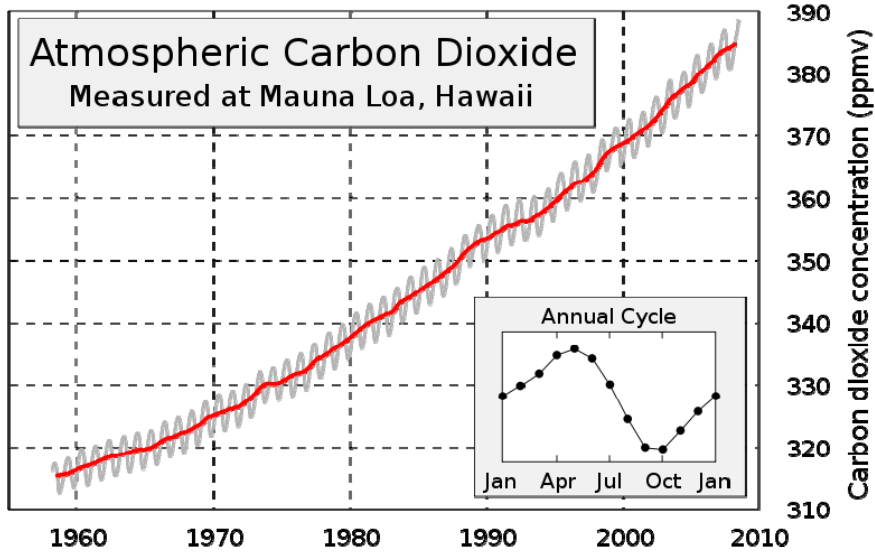


Figure 3 Atmospheric CO₂ and Mean Temperature, from 800,000 Years Ago, with Current CO₂ Spike

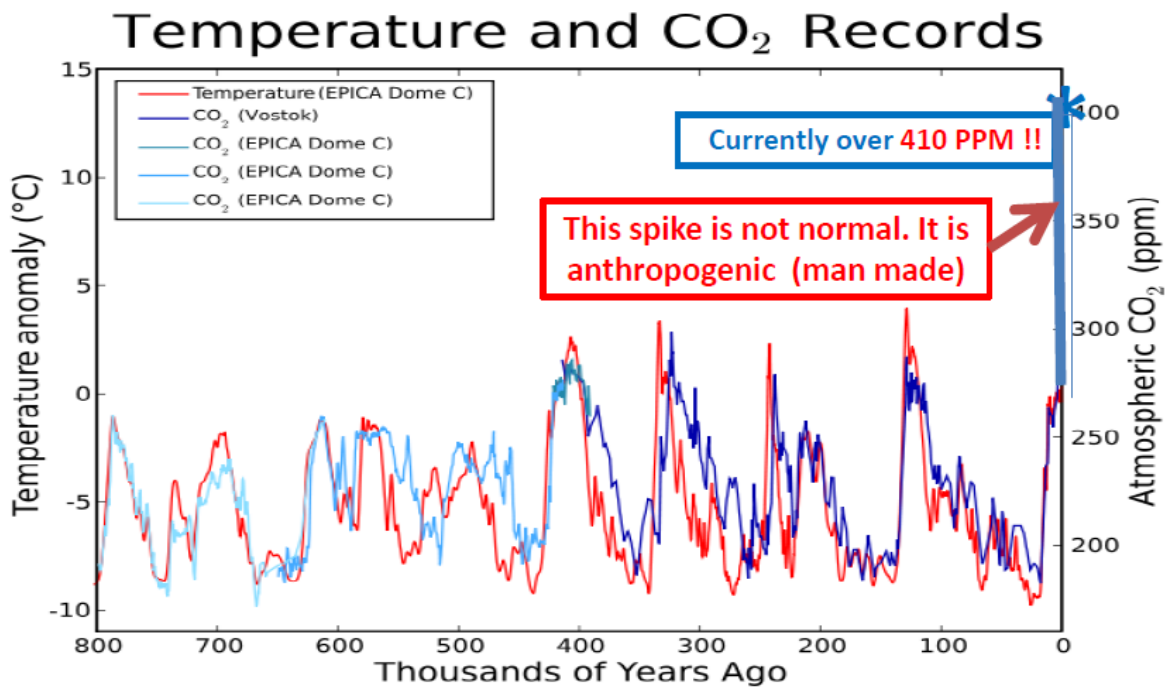
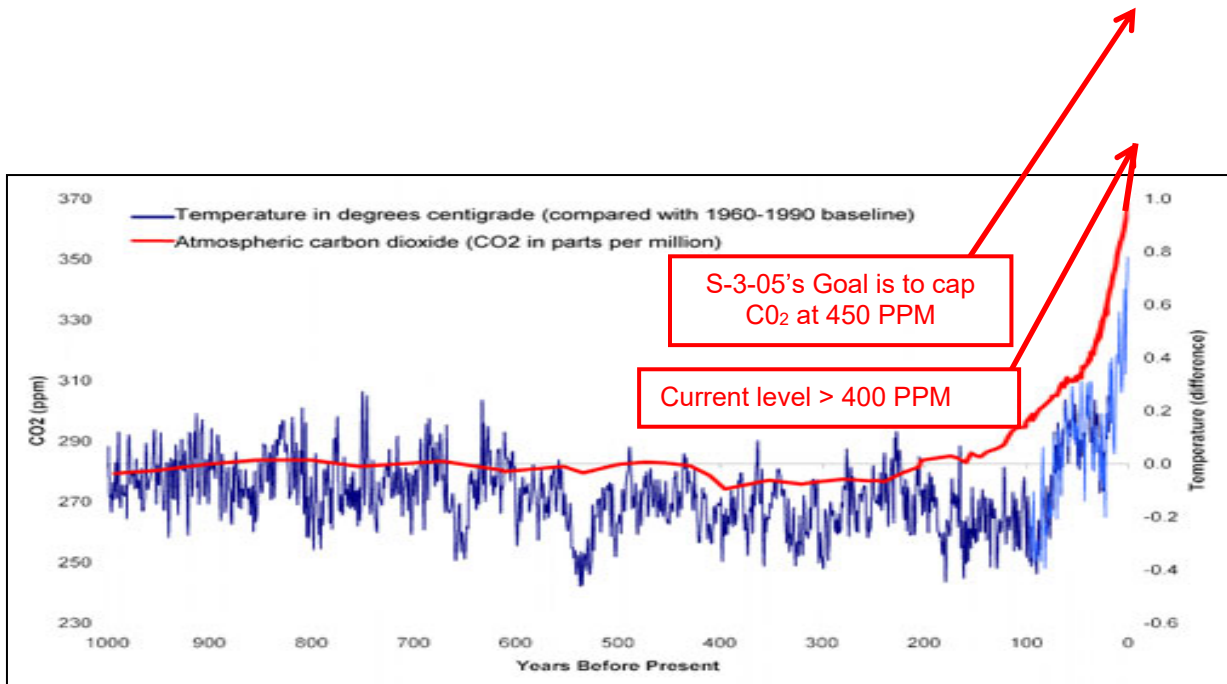


Figure 4

Atmospheric CO2 and Mean Temperature, Over the Last 1,000 Years



Primary Challenges Misstated

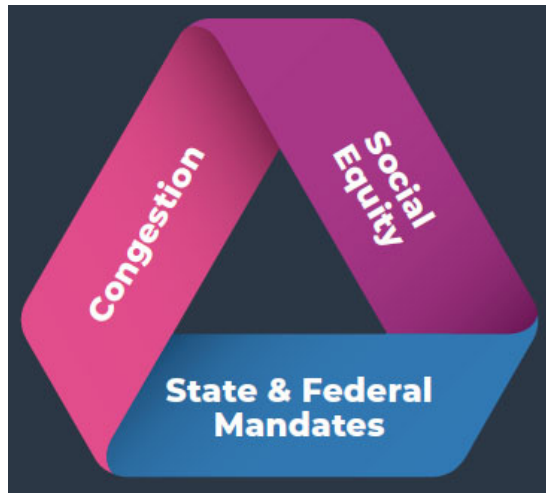
Figure 5 is from Section 1 of the EIR of the RTP. It is said to show our “three primary challenges”

Our *Code Red Climate emergency* is mankind’s primary challenge. It means that our *Region’s* primary challenge is to do its part to ensure that the emission of GHG from our LDVs support climate stabilization.

Reference 1 shows how that can be done. We will need to significantly reduce VMT, as proven in Reference 1 and as shown in Table 1. When that is done, there will be no congestion and, given that fact, it is not correct to assert that *Congestion* is a primary challenge. *Social Equity* is a goal, like “*Democracy*” or “*Equal Opportunity*” that we must always move towards, as fast as we can. However, when “*Social Equity*” is discussed in the context of our Anthropogenic climate change problem, the harm of living close to pollution caused by our reliance on fossil fuels is often mentioned. That harm will be reduced and, in some cases (refineries will be closed), eliminated, if we meet our climate-change challenge. The largest “*Social Inequity*” would be climate destabilization because it would cause a “devastating collapse of the human population” to quote from the June 2008 issue of *Scientific American’s* article, *Ethics and Economics of Climate Change*. Many reliable sources write that human extinction will be an outcome of climate change failure, which is the path we are on now. This will be the ultimate *inequity* if it happens and make no mistake, it will probably happen.

Climate destabilization, as described in Reference 1, will end most life forms and almost certainly our own species. This environmental impact must be fully explained in a legal EIR. The DEIR has no such discussion or explanation.

Figure 5 **The DEIR’s Erroneous Claim of
“Three Primary Challenges”, for our Region**



Need to Reimagine

I agree with Chapter 1’s Page 7 statement that there is an “urgent need to reimagine our regional transportation system”.

Reimagine Example Left Out

That is one of the places (Chapter 1’s Page 7) where SANDAG should state that we must stop widening freeways. Instead of widening freeways, as called for in the current, fatally flawed, version of the *Transnet* sales tax, we should be reducing the size of our freeways. The well-understood principal of *Induced Traffic Demand* informs us that adding more lanes will not reduce congestion, but it will increase VMT. *Induced Traffic Demand* also informs us that removing lanes will not increase congestion, but it will decrease VMT. As shown in Reference 1 and Table 1, we must reduce VMT. The *Transnet Ordinance* can be changed in an emergency. We have an emergency.

Vision, Goals, Strategies, and Actions Are Useless if Our Earth’s Climate is Destabilized

Page 13 starts a discussion which seems to be written for some other planet or for some other time on our planet. Climate destabilization would lead to a collapse of our human population that would lead to our extinction. Therefore, Page 13’s

- *Vision, Goals, Strategies, and Actions*

must be replaced with

- *A Requirement, Vision, Goals, Strategies, and Actions,*

The *Requirement* is to ensure that our transportation system supports the climate-stabilization requirement of 2030, as shown in Figure 1 of this letter. Reference 1 shows how this can be done, for LDVs. Most of the fleet-efficiency requirements are shown in Table 1 of this letter. (All of the needed fleet-efficiency requirements are described in Reference 1.) Table 1 also shows the driving reduction that is computed in Reference 1. It is a 32% reduction in per-capita VMT, with respect to year 2005. It's expressed using the SB 375 conventions for expressing driving reductions. Even though SB 375 states that it is about a *GHG* reduction, it is really about a *VMT* reduction, because SB 375 clearly states that the Metropolitan Planning Organizations (MPOs, like SANDAG) can take no credit for GHG reductions accomplished by the state. The state has the fleet-efficiency responsibility. The Metropolitan Planning Organizations (MPOs, like SANDAG) have the responsibility to reduce driving. Therefore, the SB 375 reductions in LDV GHG must be produced by SANDAG measures to reduce LDV VMT. In other words, SANDAG's responsibility is to reduce driving.

The Fatal Flaw of Not Saying What's Important

On Page 13 of Chapter 1, it says, "The 2021 Regional Plan reduces per capita GHG emissions from cars and light duty trucks by 20% below 2005 by 2035". The document does not say whether-or-not this is enough to support climate stabilization. Tragically, it is *not* enough to support climate stabilization. The 2030 climate-stabilization requirement is derived in Reference 1 and is shown in Figure 1 of this letter.

Similarly, Chapter 1 lists key goals, policies, and Executive Orders that were considered. They are shown in Figure 6.

The problem is that the document is supposed to be an EIR, which is to say it must report on the environmental impacts of what is being done. The environmental impacts are what will happen in the physical world, not in the legislative or judicial world. To figure out what will happen in the physical world, the resulting emissions need to be compared to what the climate scientist are telling us we must accomplish if we want to stabilize the climate at a livable level.

That information is nowhere to be found in the current DEIR. That is clearly illegal because the decision makers and the public need to understand what will happen to our planet if all transportation planning followed the path described by SANDAG as in the "cumulative effects" consideration.

The "cumulative impacts" consideration means that no one can get by using an argument that a discretionary project being considered is "too small to matter".

Figure 6 is an admission of guilt because it is described as containing SANDAG's "key goals". No climate-stabilization requirement is listed. SANDAG might be, technically, within CEQA law for the 2045 to 2050 requirement of zero net emissions because this happens to be covered by the EO B-55-18 executive order. However, SANDAG needs to state that zero net emissions by 2045 is our second climate-stabilizing target and that is covered by EO B-55-18. Where SANDAG clearly is in violation of CEQA law is that it does not state that the industrialized world's first climate-stabilization requirement (target), which is for 2030, is to emit GHG at no more than 80% below

what we emitted in 1990. SANDAG needs to redo its RTP using a Plan like that shown in Reference 1.

Figure 6 SANDAG’s Admission of Guilt Because These Do NOT Cover Achieving the Industrial World’s 2030 Climate-Stabilizing Target.

- Key State goals, policies, and Executive Orders considered in the 2021 Regional Plan:**
- SB 375 and SCS Program and Evaluation Guidelines
 - California Assembly Bill 805 (Gonzalez Fletcher, 2017): Identification of disadvantaged communities, inclusion of strategies to reduce pollution exposure in those communities, and use of a skilled and trained workforce
 - 2017 Regional Transportation Plan Guidelines for Metropolitan Planning Organizations⁵
 - California Transportation Plan 2050
 - California Senate Bill 32 (Pavley, 2016): Reduce GHG emissions 40% below 1990 levels by 2030
 - EO B-55-18: Carbon Neutrality by 2045
 - EO S-3-05: Reduce GHG emissions 80% below 1990 levels by 2050
 - EO N-79-20: 100% zero-emission vehicle sales by 2035
 - EO N-82-20: Conserve at least 30% of California's land and coastal waters by 2030

Achieving the industrialized world’s 2030 Climate-Stabilizing Requirement would obviously be a “Key policy” and accomplishment for SANDAG. Figure 6 and the stated organization of the DEIR means that there is no need for me to read further to know that SANDAG has made no effort to consider what it would take for the RTP to conform to achieving the 2030, climate-stabilizing requirement. Page 13 of Chapter 1 presents the RTP’s Visions and Goals. There is nothing there about stabilizing the climate at a livable level. That is shown in Figure 6, which is taken from Chapter 1 of the RTP.

Also, Chapter 2 is defined on Page 15 of Chapter 1. It says there that Chapter 2, the Transportation Plan’s Regional Sustainable Community Strategy (SCS, which is required by SB 375), describes “the land use strategies, and programs that will achieve our Vision and Goals.”

Chapter 1 has described SANDAG’s “Vision and Goals”. None of them include achieving the 2030 climate-stabilizing requirement, or “target”.

Figure 7 SANDAG’s Admission of Guilt Because These Statements, From Page 19 of the RTP’s Chapter 2, Show that the SCS Does Not Come Close to Achieving the Industrial World’s 2030 Climate-Stabilizing Target.

Sustainable Communities Strategy

The 2021 Regional Plan includes a Sustainable Communities Strategy (SCS), as required by California Senate Bill 375 (Steinberg, 2008) (SB 375), for the San Diego region. This SCS describes coordinated transportation and land use planning that exceeds the state’s target for reducing per capita GHG emissions set by the California Air Resources Board. The state-mandated target is a 19% reduction in per capita GHG emissions from cars and light duty trucks, compared with 2005, by 2035. The 2021 Regional Plan achieves a 20% reduction by then.

The title of this letter’s Figure 7 is true because Reference 1 shows that even with an extremely aggressive schedule of fleet electrification (such as 70% of new car sales be for electric cars, by 2024, as shown in Table 1 of this report), the per-capita driving reduction needs to be 32%, which is far larger than the 20% documented in Figure 7. Because SANDAG cannot take credit for fleet efficiency improvements, the phrase “GHG Emissions”, used in Figure 1, is actually “VMT”.

Chapter 3 covers financing. The 30 appendices provide the details and background of how the “Vision and Goals”, which do not include the 2030 climate-stabilizing requirement, are achieved.

The 2030 climate-stabilizing requirement that is shown above in Figure 1 and is described repeatedly in this letter can be achieved. To do that requires using a set of aggressive, fleet-efficiency measures, that are defined in Reference 1, and a set of driving-reduction mitigation measures, that are identified in Table 2. Those mitigation measures are described in Reference 1 and several of them are described in Reference 3.

The third line is a measure that SANDAG could implement for its own employees, using a third-party vendor that will work hard to earn the trust of employees and sell the car-parking system to other employers that want to do the best they can for their employees and want to be recognized for their commitment to sustainability.

Table 2 Enforceable Measures to Reduce 2030 Per Capita Driving By 32% With Respect to 2005 Per Capita Driving

Driving-Reduction Requirments	Per-Cent Reduction	Factor
Legislated (SB 375) Plans to Reduce Driving	12%	0.88
→ Value-Priced Road Use Charge (RUC)	10%	0.90
→ Value-Priced Parking (Unbundling the Cost)	8%	0.92
Transfer Highway Expansion Funds to Transit	2%	0.98
Increase Height & Density by Transit Stations	2%	0.98
"Complete Streets", "Road Diet" (walk/bike)	1%	0.99
Pay-to-Graduate Bicycle Traffic-Skills Class	1%	0.99
Bicycle Projects to Improve Access	1%	0.99
Product of Factors		0.68
% Reduction		32%

California designs and implements this

Local governments do this with a 3rd party vendor

The first line, “Legislated (SB 375) Plans to Reduce Driving” reflects an assumption that the RTPs in California, which are often required to achieve 19% by 2035, will achieve 12%, five years before the 2nd year target of SB 375, which is 2035. Reference 4 has more detail about the 3rd line’s Value-Priced, car-Parking system. Reference 5 describes the system for all types of parking and even includes a congestion-pricing algorithm. Reference 6 describes the system with an emphasis on employee car parking and how the system could earn extra money for all employees. Reference 7 is a Draft *Requirements Document* that would support an RFP process to identify the best 3rd party vendor to design, install, and operate the car-parking system. The selected 3rd party vendor would also be good at financing, building, and operating solar canopies; selling electricity to energy districts; and financing, building, and operating charging stations. These tasks need to be added to Reference 7. Reference 8 has more detail about the 2nd line’s Road Use Charge. It the kind of Road Use Charge (RUC) we need in California. SANDAG and other MPOs need to lobby California to design and implement such a system, ASAP.

Consideration of the Draft EIR for the Region Transportation Plan

Executive Summary

Table ES-1, Summary of Environmental Impacts and Mitigation Measures

The GHG-3 line says:

GHG-3 Conflict with or impede achievement of an at least 30% reduction in per capita GHG emissions from the entire on-road transportation sector by 2035 compared to existing conditions (2016)

There are no mitigation measures and yet the “Level of Significance After Mitigation” is shown to be “Less-than-significant impact in 2035.”

California did not meet its 2020 EO S-3-05 target, which was our 1990 emission level, until around 2019. (This was a case where California achieved a target early.) Therefore, our emission in 2016 exceeded our 1990 level of emission. Therefore, only achieving a “30% reduction in per capita GHG emissions from the entire on-road transportation sector by 2035 compared to existing conditions (2016)” would be an unmitigated environmental disaster. If other MPOs followed this example, we would be unable to stabilize our climate because we would be well past our (the industrialized world’s) 2030 climate-stabilizing requirement, of 80% below our 1990 level.

The line for GHG-5 is too vague, in terms of mitigation measures. To have any hope of achieving significant reductions by 2030, measures need to be mature enough to start soon. The mitigation measures shown in this line are little more than wishful thinking. As San Diego County Superior Court Judge Taylor wrote in a ruling in favor of the plaintiffs in their CEQA complaint against the County’s woefully inadequate Climate Action Plan, “enforceable measures are needed now”. That ruling was issued 9 years ago. SANDAG too often does not listen to me or others that urge enforceable measures that can be started now.

SANDAG instead seems to like words like (these are also from the GHG-5’s, “mitigation measures”):

TRA-2 Achieve Further VMT Reductions for Transportation and Development Projects”,

How would that be done? The “measure” is too ill defined to have any value.

Alternative 3 should be improved upon to conform with Reference 1 and then implemented as fast as possible. TRANSNET need to be modified to align with the improved-upon Alternative 3.

Table 2-8, Proposed Plan Estimated SB 375 Greenhouse Gas Emissions Reductions for Cars and Light Trucks

The Proposed Plan’s 2035 reduction of 20% is so small that it would help to bring about an environmental disaster.

Phased Next OS Network Improvements and Investments, Page 2-66

Considering our 2030 climate-stabilization target and the derivations of Reference 1, the car-parking system described in References 1 through 7 needs to have numerous successful implementations and be well on the way to being widely implemented by 2025. The words “dynamic curb management”, for 2035, is not encouraging. The car-parking system proposed by this letter and since 2010 by this author certainly includes dynamic curb management. However, SANDAG needs to reach out to get help on this important aspect of the Next OS. I hope we can meet soon.

Likewise, on Pages 2-66 to 2-67 and on Page 2-71 to 2-72, there are hopeful signs that SANDAG could help to foster the changes we need. I would love to meet to discuss these topics.

Climate Change Destabilization Could Include our Weather

Page 3-1 has a description of our current climate and how climate change could change our weather. It needs a statement that destabilization of climate systems (such as the melting of our permafrost or unleashing large amounts of methane from beneath our arctic region, or burning up an enormous expanse of forests, including our Amazon rain forest) could cause much larger variations if these destabilizing systems accelerate and set off other climate-destabilizing systems. The freeze experienced by Texas and measurement of 120 Degrees in Canada show that, when it comes to climate, we are already in uncharted territory. The description of San Diego County’s “current climate” needs a statement that, given the fact that our atmospheric CO2 is at 420 PPM, when it should be at 280 PPM, we really don’t know what might be possible, in terms of current weather.

Mitigation Measures for *Existing* Development

On Page 4-3, it says, “The EIR includes three broad types of mitigation measures: (1) plan- and policy-level mitigation measures assigned to SANDAG; (2) mitigation measures for transportation network improvements and programs, assigned to SANDAG and other transportation project sponsors; and (3) mitigation measures for development projects implementing regional growth and land use changes, which local jurisdictions implement.”

This will be too little too late and it is an arbitrary decision to do what is easiest. It does not make sense, given the fact of our Code Red Climate Emergency, as explained in this letter. For example, TDM Ordinances need to apply to *existing* developments. SANDAG should provide no help to municipal governments that fail to have a powerful TDM for their own employees, to set an example, for other employers. The TDM would include the car-parking system described in Reference 1 – 7. SANDAG should do this for their own employees, ASAP, using Reference 7 to start the generation of a Systems Definition document to support an RFP process to identify a good 3rd party vendor.

4.8’s Paragraph on “Global Climate Change”

This paragraph needs to quantify what we have done to our earth's atmospheric level of CO₂. We should be at 280 PPM. We are at 420 PPM. This letter's Figures 1, 2, and 3 should be included. The text should make it clear that we are living in a dangerous CO₂ spike.

The paragraph should make the difference between climate change (before the spike) and Anthropogenic climate change (within the spike) clear to the reader.

Thank you for including the 280 PPM and 413 PPM (in 2020) levels in the paragraph on Carbon Dioxide. This needs to be elevated to the first paragraph with the plots. The plot of 800,000 years, showing how outrageous it is that we have created the spike of CO₂, needs to be shown.

The discussion at the top of Page 4.8-6 should introduce the reader to the concept of "destabilization" or going over a "climate tipping point" or a "climate cliff." It is a lie by omission to not state that we are in line to experience a devastating collapse of the human population, leading to extinction or near extinction. Our Code Red Climate Emergency should not be hidden. We are in great danger. Some say climate change is an existential threat. In fact, it is a near certainty that anthropogenic climate change will end our existence. Theoretically we could still stabilize the climate at a livable level. We should not give up. However, given what is needed by 2030, along with the public's general disinterest in the details, it is highly unlikely we will avoid destabilization, leading to our demise.

CARB Does Too Little Too Late

On Page 4.8-10 it says, "**Mobile Source Strategy**. Developed by CARB to provide an integrated planning perspective and common vision for transforming the mobile sector to achieve air quality and climate change goals."

We know from the other statements in this document that the "climate change goals" do not include achieving the 2030 climate-stabilizing target of 80% below our 1990 level. This is one reason why Reference 1 is important. Reference 1 derives the mathematical relationships between achieve a reduction in emissions, fleet efficiency, per-capita driving, a low-carbon fuel standard, and the renewable content of electricity.

Section 4.8: Greenhouse Gas Emissions

4.8.4 Significance

CEQA's Appendix G asks as follows:

VII. GREENHOUSE GAS EMISSIONS. Would the project:

a) Generate greenhouse gas emissions, either directly or indirectly,

that may have a significant impact on the environment?

Considering cumulative effects of the proposed RTP, the answer is yes, especially for LDVs. The next question about conflicting with an applicable plan does not matter, given the result of the “letter a” criterion.

Section XVII also applies because it explicitly mentions cumulative impacts and asks:

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Nothing short of a full exchange of nuclear weapons could be worse for people than climate destabilization.

From OPR’s Reference 9 with emphasis added:

Each public agency that serves as a CEQA lead agency should develop its own approach to performing a climate change analysis for projects that generate greenhouse gas emissions. A consistent approach should be applied for the analysis of projects, and the analysis must keep pace with scientific knowledge and regulatory schemes. (*Cleveland National Forest Foundation v. San Diego Assn. of Governments, supra*, 3 Cal.5th at 519.) For these projects, compliance with CEQA entails three basic steps: identify and quantify the greenhouse gas emissions; determine the significance of those emissions **in the context of climate change**; and if the impact is found to be significant, identify alternatives and/or mitigation measures that will reduce the impact below significance.

“In the context of climate change” means that the climate science must be applied to the situation. From that, to be legal, a project that will have significant impacts on driving, including its feasible (technologically possible and cost effective) mitigation measures, must conform to a plan showing how LDVs can achieve our climate-stabilizing targets, especially our 2030 target because it occurs so soon. This again shows the importance of Reference 1 or some other such Plan.

Thank you for Tables 4.8-7 and 4.8-8 showing the importance of reducing VMT.

Table 4.8-9 is key. However, its results are insufficient to support climate stabilization. Reference 1 shows we need a 32% value by 2030, which is 5 years sooner than 2035.

Figure 7 shows that the DEIR does not consider what the climate scientists are telling us, which is what we must achieve to stabilize the climate at a livable level. The state mandates shown are not enough to achieve our 2030 climate-stabilizing requirement, which is to emit at a level that is no more than 80% below our 1990 emission level.

**Figure 7 SANDAG’s DEIR Section on GHG
Does NOT Consider Achieving the Industrial World’s 2030
Climate-Stabilizing Target.**

7.2.9 GREENHOUSE GAS EMISSIONS

Compared to existing conditions, the proposed Plan's GHG emissions would decrease for all horizon years (2025, 2035, and 2050). Under maximum theoretical buildout conditions, regional growth and land use change would result in some increases in GHG emissions, but there would still be net decreases compared to existing conditions.

Development under the maximum theoretical buildout scenario would likely continue in a similar pattern as under the proposed Plan, which encourages compact development, supporting rather than impeding adopted Climate Action Plans (CAPs), GHG reduction plans, and/or sustainability plans relevant to the proposed Plan. Because 2030 GHG emissions under the proposed Plan are higher than the AB 32-based regional reference point, emissions under maximum theoretical buildout are expected to continue to exceed this reference point, which would be a significant impact related to conflicts with AB 32.

Under maximum theoretical buildout, development would likely continue in a similar pattern as under the proposed Plan, which encourages compact development, although per capita GHG emissions from passenger vehicles would somewhat increase. However, the maximum theoretical buildout scenario would likely still achieve, and not conflict with, Senate Bill (SB) 375's per capita GHG emission reduction targets set by the California Air Resources Board (CARB) for the San Diego region.

The proposed Plan would be inconsistent with the State's ability to achieve 2045 and 2050 reference points of net zero and 5.2 million metric tons of carbon dioxide equivalence (MMTCO₂e), respectively (based on the goals of Executive Orders S-3-05 and B-55-18). Because GHG emissions would be higher under maximum theoretical buildout, these inconsistencies, which are a significant impact, would be worse. As with the proposed Plan, this would be reduced with the mitigation identified in Section 4.8, *Greenhouse Gas Emissions*, but impacts would remain significant and unavoidable.

The second paragraph states that the 2030 emissions under the proposed Plan are higher than the AB 32-based regional reference point. Figure 1 of this letter shows that this means the 2030 value is worse than the SB 32 value (40% down from the 1990 value) which is much more emission than the climate-stabilizing value of 80% down.

In Closing

Thank you for your leadership in performing your critical work. Thank you for reading this material and for providing the comments and response as required for any comment letter on a DEIR. Please let me know if you would like to meet to discuss this letter or related topics.

Regards,



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References

All references were attached to the email sent with this letter. They are all available from Mike Bullock at mike_bullock@earthlink.net.

Deriving a Climate-Stabilizing Solution Set of *Fleet-Efficiency and Driving-Level* Requirements, for Light-Duty Vehicles in California

Paper #796315

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ABSTRACT

An Introduction is provided, including the importance of light-duty vehicles (LDVs: cars and light duty trucks) and the top-level LDV requirements to limit their carbon dioxide (“CO₂”) emissions.

Climate crisis fundamentals are presented, including its cause, its potential for harm, California mandates, and a greenhouse gas (GHG) reduction road map to avoid disaster.

A 2030 climate-stabilizing GHG reduction target value is calculated, using statements by climate experts. The formula for GHG emissions, as a function of per-capita driving, population, fleet CO₂ emissions per mile, and the applicable low-carbon fuel standard is given. The ratio of the 2015 value of car-emission-per-mile to the 2005 value of car-emission-per-mile is obtained.

Internal Combustion Engine (ICE) mileage values from 2000 to 2030 are identified, as either mandates or new requirements. A table is presented that estimates 2015 LDV fleet mileage.

Zero Emission Vehicle (ZEV) parameters are given. Methods are derived to compute equivalent 2030 mileage. Four cases are defined and overall equivalent mileage is computed for each. Those equivalent fleet mileage values are used to compute their corresponding required per-capita driving reductions, with respect to 2005. Measures to achieve the most reasonable per-capita driving reduction are described, with reductions allocated to each measure.

A conclusion is presented.

INTRODUCTION

Humanity’s top-level requirement is to stabilize our climate at a livable level. This top-level requirement must flow down to cars and light-duty trucks, also known as Light-Duty Vehicles (LDVs), due to the significant size of their emissions. As an example, LDVs emit 41% of the GHG in San Diego County¹.

From a systems engineering perspective, the needed top-level LDV requirements are an upper bound on greenhouse gas (GHG) emissions per mile driven, applicable to all of the vehicles on the road, in the year of interest, and an upper bound on per-capita driving, given population growth. These two upper bounds must achieve the climate-stabilizing GHG emission target level. This paper will do a calculation of required driving levels, based on calculations of how clean our cars and fuels could be, predicted population growth, and the latest, science-based, climate-

stabilizing target, or requirement. All three categories of LDV emission-reduction strategies will be used: cleaner cars, cleaner fuels, and less driving. Four cases will be considered.

BACKGROUND: OUR CLIMATE PREDICAMENT

Basic Cause

Our climate crisis exists primarily because of these two facts²: First, our combustion of fossil fuels puts “great quantities” of CO₂ into our atmosphere; second, atmospheric CO₂ traps heat.

California’s Primary CO₂ Emission-Reduction Mandates

California’s Governor’s Executive Order S-3-05³ is based on the greenhouse gas (GHG) reduction limits that were recommended by climate scientists, for industrialized nations, in 2005. In 2005, climate scientists believed that if the industrialized nations of the world achieved the reduction-targets of S-3-05 (and other nations did something less), the Earth’s climate could be stabilized at a livable level, with a reasonably high level of certainty. More specifically, this executive order aims for an average, over-the-year, atmospheric, temperature rise of “only” 2 degree Celsius, above the preindustrial temperature. It attempts to do this by limiting atmospheric CO₂ to 450 PPM by 2050 and then reducing emissions further, so that atmospheric levels would come down to more tolerable levels in subsequent years. The S-3-05 emission targets are the 2000 emission level by 2010, the 1990 level by 2020, and 80% below the 1990 level by 2050.

It was thought that if the industrialized world achieved S-3-05 (and the non-industrialized world achieved an easier task), there would be a 50% chance that the maximum temperature rise will be less than 2 degrees Celsius, thus leaving a 50% chance that it would be larger than 2 degrees Celsius. A 2 degree increase would put over a billion people on the planet into a position described as “water stress” and it would mean a loss of 97% of our coral reefs.

There would also be a 30% chance that the temperature increase would be greater than 3 degrees Celsius. A temperature change of 3 degree Celsius is described in Reference 3 as being “exponentially worse” than a 2 degree Celsius increase.

The second California climate mandate is AB 32, the *Global Warming Solutions Act of 2006*. It includes provisions for a cap and trade program, to ensure meeting S-3-05’s 2020 target, which is to be emitting at no more than the 1990 level of emissions. AB 32 was to continue after 2020. AB 32 required CARB to always implement measures that achieved the maximum *technologically feasible and cost-effective* (words taken from AB 32) greenhouse-gas-emission reductions.

In 2015 Governor Brown signed B-30-15. This Executive Order established a mandate for 40% below 2020 emissions by 2030, as can be seen by a Google search. If S-3-05 is interpreted as a straight line between its 2020 and its 2050 targets, then the B-30-15 target of 2030 is the same as the S-3-05 implied target of 2035, because 2035 is halfway between 2020 and 2050 and 40% is halfway to 80%. More recently, California adopted SB 32, which made achieving B-30-15 legally binding. Finally, in 2018, the Governors Executive Order B-55-18 established a mandate of zero net emissions by the year 2045.

California achieved the second GHG emission target of S-3-05 (to emit at the 1990 level by 2020) in 2018, which is two years early. However, the world emission levels have, for most years, been increasing, contrary to the S-3-05 trajectory. Because the world has been consistently failing to follow S-3-05's 2010-to-2020 trajectory, if California, still wants to lead the way to human survival, it must do far better than S-3-05, going forward, as will be shown.

Failing to Achieve these Climate Mandates

What could happen if we fail to achieve S-3-05, AB 32, and B-30-15 or if we achieve them but they turn out to be too little too late and other states and countries follow our example or do less?

It has been written⁴ that, "A recent string of reports from impeccable mainstream institutions - the International Energy Agency, the World Bank, the accounting firm of PricewaterhouseCoopers - have warned that the Earth is on a trajectory to warm by at least 4 Degrees Celsius and this would be incompatible with continued human survival."

It has also been written⁵ that, "Lags in the replacement of fossil-fuel use by clean energy use have put the world on a pace for 6 degree Celsius by the end of this century. Such a large temperature rise occurred 250 million years ago and extinguished 90 percent of the life on Earth. The current rise is of the same magnitude but is occurring faster."

Pictures That Are Worth a Thousand Words

Figure 1 shows (1) atmospheric CO₂ (in blue) and (2) averaged-over-a-year-then-averaged-over-the-surface-of-the-earth, atmospheric temperature (in red). This temperature is with respect to a recent preindustrial revolution value. The data starts 800,000 years ago. It shows that the current value of atmospheric CO₂, which is over 410 PPM, far exceeds the values of the last 800,000 years. It also shows that we might expect the corresponding temperature to eventually be over 12 degrees above preindustrial temperatures. This would bring about a human disaster^{3, 4, 5}.

Figure 2 shows the average yearly temperature (in blue) with respect to the 1960-to-1990 baseline temperature. It also shows atmospheric levels of CO₂ (in red). The CO₂ spike of Figure 1 is seen on Figure 2 to be an accelerating ramp up, starting at the time of our industrial revolution. The S-3-05 goal of 450 PPM is literally "off the chart", in Figure 2. Figure 2 shows that, as expected, temperatures are starting to rise along with the rising levels of CO₂. The large variations in temperature that are observed are primarily due to the random nature of the amount of solar energy being received by the earth.

FURTHER BACKGROUND: CALIFORNIA'S SB 375 AND AN IMPORTANT DATA SET

As shown in the Introduction, LDVs emit significant amounts of CO₂. The question arises: will driving need to be reduced or can cleaner cars and cleaner fuels arrive in time to avoid such behavioral change? Steve Winkelman, of the Center for Clean Air Policy (CCAP), worked on this problem and his results probably inspired California's SB 375.

SB 375, the Sustainable Communities and Climate Protection Act of 2008

Under SB 375, the California Air Resources Board (CARB) has given each Metropolitan Planning Organization (MPO) in California driving-reduction targets, for the years 2020 and 2035. "Driving" means yearly, per capita, vehicle miles travelled (VMT), by LDVs, with respect to 2005. The CARB-provided values are shown at this Wikipedia link, http://en.wikipedia.org/wiki/SB_375. It is important to note that although this link and many other sources show the targets to be "GHG" and not "VMT", SB 375 clearly states that the reductions are to be the result of the MPO's Regional Transportation Plan (RTP), or, more specifically, the Sustainable Communities Strategy (SCS) portion of the RTP. Nothing in the SCS will improve average mileage. That will be done by the state and federal governments by their Corporate Average Fleet Efficiency (CAFÉ) standards and any other laws or regulations that they might adopt. The SCS can only reduce GHG by reducing VMT.

Figure 1 Atmospheric CO₂ and Mean Temperature from 800,000 Years Ago

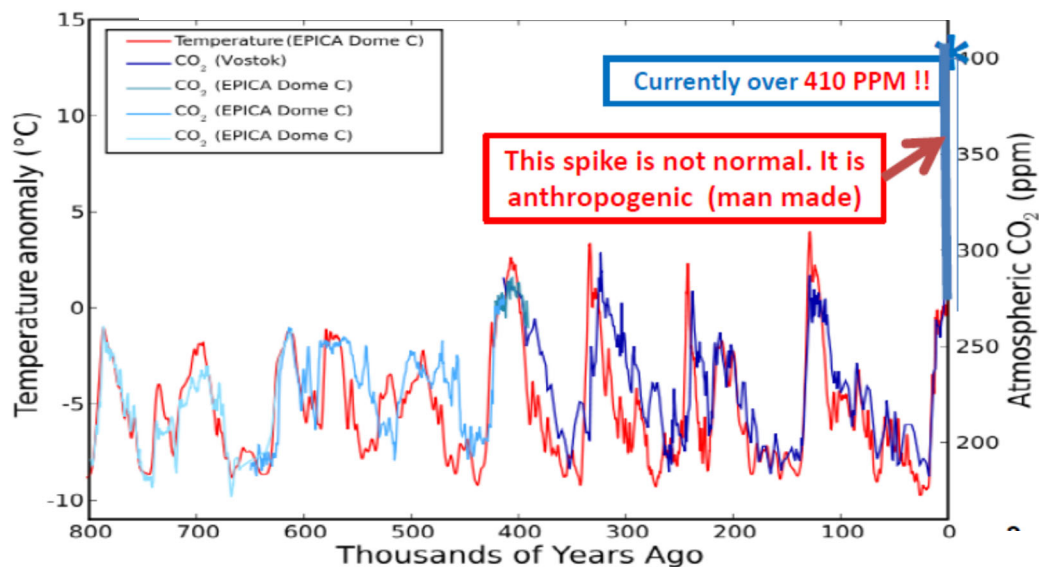
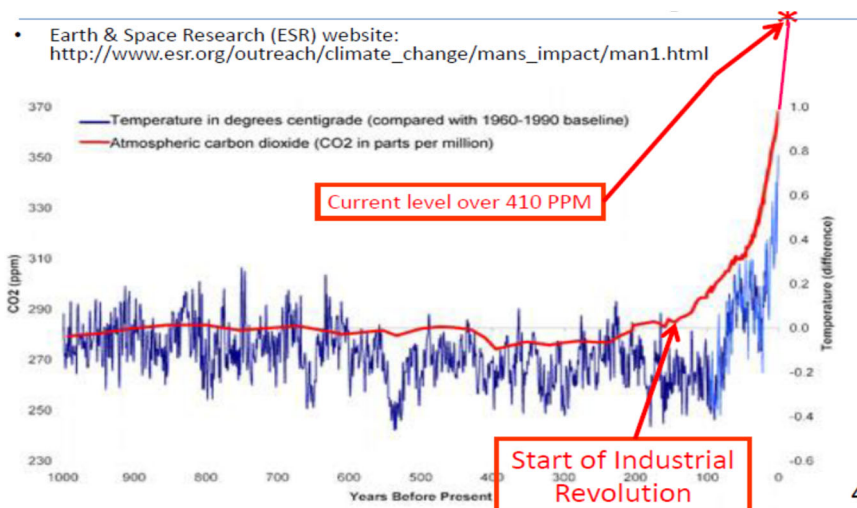


Figure 2 Atmospheric CO₂ and Mean Temperature, Over the Last 1,000 Years



Under SB 375, every Regional Transportation Plan (RTP) must include a section called a Sustainable Communities Strategy (SCS). The SCS must include driving reduction predictions corresponding to the CARB targets. Each SCS must include only *feasible* transportation, land use, and transportation-related policy data. If the SCS driving-reduction predictions fail to meet the CARB-provided targets, the MPO must prepare an Alternative Planning Strategy (APS). An APS uses *infeasible* transportation, land use, and transportation-related policy assumptions. The total reductions, resulting from both the SCS and the APS, must at least meet the CARB-provided targets.

Useful Factors from Steve Winkelman’s Data

Figure 3⁶. shows 5 variables as a percent of their 2005 value and also the 1990 emission value (turquoise) related to the 2005 CO2 emission value (the blue line). All of the variables are for LDVs. The year 2005 is the baseline year of SB 375. The red line is the Caltrans prediction of VMT. The purple line is California’s current mandate for a Low Carbon Fuel Standard (LCFS). The LCFS also can be used to get the equivalent mileage from the actual mileage by dividing the actual mileage by the LCFS. The LCFS can be used to get the equivalent CO2 per mile driven by multiplying the actual CO2 per mile driven by the LCFS. As shown, by 2020, fuel in California must emit 10% less per gallon than in 2005. As written above, the turquoise line is the 1990 GHG emission in California. As shown, it is 12% below the 2005 level. This is important because S-3-05 specifies that in 2020, state GHG emission levels must be at the 1990 level. The green line is the CO2 emitted per mile, as specified by AB 1493, also known as “Pavley 1 and 2” named after Senator Fran Pavley. The values shown do not account for the LCFS. The yellow (or gold) line is the S-3-05 mandate, referenced to 2005 emission levels. The blue line is the product of the red (miles), the green (CO2 per mile), and the purple line (LCFS, which reduces emission per mile) and is the percentage of GHG emissions compared to 2005. Since VMT is not being adequately controlled, the blue line is not achieving the S-3-05 line. Figure 3 shows that driving must be reduced. For this reason, Steve Winkelman can be thought of as the true father of SB 375.

Figure 3 The S-3-05 Trajectory (the Gold Line) AND the CO₂ Emitted from Personal Driving (the Blue Line), where that CO₂ is a Function (the Product) of the California-Fleet-Average CO₂ per Mile (the Green Line), The Predicted Driving (VMT, the Red Line), and the Low-Carbon Fuel Standard (the Purple Line)

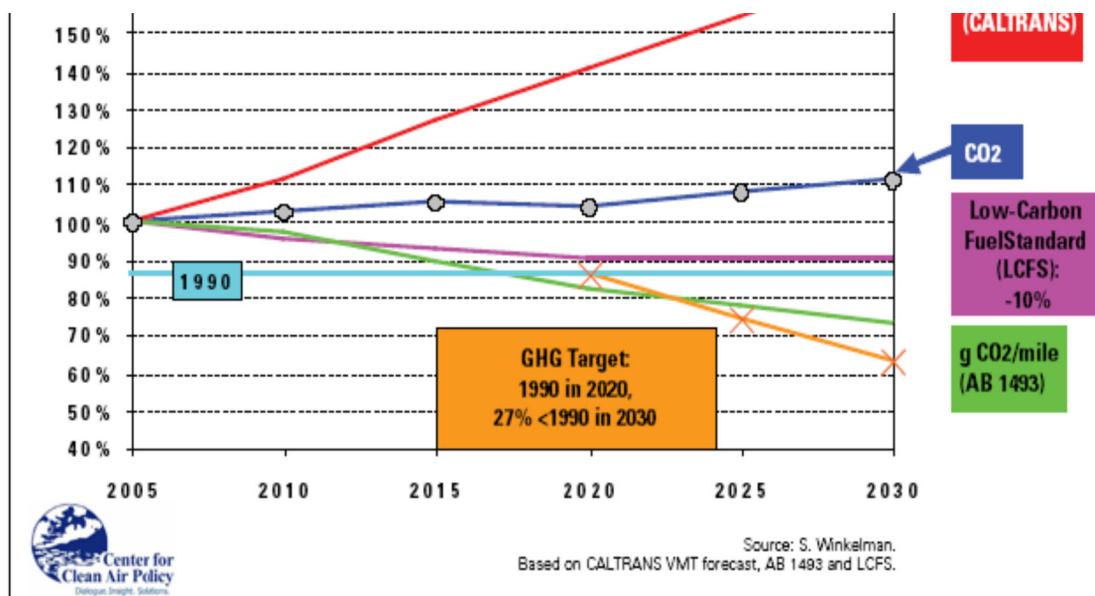


Figure 3 provides inspiration for a road map to climate success for LDVs. Climate-stabilization targets must be identified (from the climate scientists) and achieved by a set of requirements that will increase fleet efficiency and another set that will reduce per-capita driving.

THE DERIVATION OF CALIFORNIA'S TOP-LEVEL LDV REQUIREMENTS TO SUPPORT CLIMATE STABILIZATION

It is clear that more efficient (less CO₂ emitted per mile) LDVs will be needed and this can be achieved with appropriate requirements. Significant improvements in efficiency will be needed if driving reductions are going to remain within what many people would consider politically achievable. Mileage and equivalent mileage will need to be specified. A significant fleet-fraction of Zero-Emission Vehicles (ZEVs, either Battery-Electric LDVs or Hydrogen Fuel Cell LDVs) will be needed. Since mileage and equivalent mileage are more heuristic than CO₂ emissions per mile, they will be used in the derivations. CO₂ per mile driven will not appear in the final equations.

Since the SB-375 work used 2005 as the reference year, that convention will be used. It will be assumed that cars last 15 years.

GHG Emission Target to Support Climate Stabilization

The primary problem with S-3-05 is that California's resolve and actions have been largely ignored by other states, our federal government, and many countries. Therefore, rather than achieving 2000 levels by 2010 (the first target of S-3-05) and 1990 levels by 2020 (the 2nd target of S-3-05), world emission has been increasing for nearly all of the years since 2010. (California, on the other hand achieved its 1990 emission level in 2018. This is two years sooner than the 2nd target of the S-3-05 requirement.) Reference 7 states on Page 14 that the required rate of reduction, if commenced in 2020, would be 15%. That rate means that the factor of 0.85 must be achieved, year after year. If this were done for 10 years, the factor would be $(0.85)^{10} = 0.2$, by 2030. This reduction of 80% down from the 2020 value matches the 2050 target requirement of S-3-5, which is 80% below the 1990 value. According to S-3-05, the 2020 emission value should be the same as the 1990 emission value. As noted above, the S-3-05 emission of 2050 was designed to support capping atmospheric CO₂ at 450 PPM³. "Capping" means that the sum of all emissions (anthropogenic and natural) equals the sum of all sequestration (mostly photosynthesis.) Therefore, the author of the Reference 7 statement wanted the world to achieve the third target of S-3-05 to get the atmospheric CO₂ to stop going up 20 years sooner than what S-3-05 was written to achieve. This shows the urgent nature of our climate crisis. Therefore, if California wants to do its part by setting an example for the world, the correct requirement for California is to achieve emissions that are reduced to 80% below California's 1990 value by 2030. The world's reduction rate is not anywhere near the needed 15% as we move towards the end of 2020. Therefore, the target, of 80% below 1990 levels by 2030 is considered to be correct for California. Reference 7 also calls into question the advisability of aiming for a 2 degree Celsius increase, given the possibilities of positive feedbacks that would increase warming. This concern for positive feedbacks is another reason that this paper will work towards identifying LDV requirement sets that will support LDVs achieving 80% below the 1990 value by 2030.

Thinking that LDVs can, for some reason, fail to achieve this target is dangerous thinking. As stated above, LDVs emit, by far, the most CO2 of all categories.

Notes on Methods

The base year is 2005. An intermediate year of 2015 is used. The car efficiency factor of 2015 with respect to 2005 is taken directly from Figure 3. The car efficiency factor of 2030 with respect to 2015 is derived herein, resulting in a set of car-efficiency requirements.

It is assumed that cars last 15 years. This is equivalent to assuming that the effect of the cars that last more than 15 years, thus increasing emissions, will be offset by the effect of the older cars that don't last as long as 15 years, thus reducing old-car emissions. As will be seen, there will also have to be some sort of an additional action to remove many of the older Internal Combustion Engine cars that are 15, through just 8 years old. Natural attrition will take care of some of this since as cars get older the probability that they will be taken out of service increases. However, some sort of "cash for gas guzzlers" program will be needed. How this is done is not covered in this paper. This is not unique. As another example, the car manufacturers will have to figure out how to produce the needed cars and batteries.

Primary Variables Used

Table 1 defines the primary variables that are used.

Fundamental Equations

The emissions are equal to the CO2 per mile driven multiplied by the per-capita driving multiplied by the population, since per-capita driving multiplied by the population is total driving. This is true for any given year.

$$\text{Future Year } k: \quad e_k = c_k * d_k * p_k \quad (\text{Eq. 1})$$

$$\text{Base Year } i: \quad e_i = c_i * d_i * p_i \quad (\text{Eq. 2})$$

Dividing both sides of Equation 1 by equal values results in an equality. The terms on the right side of the equation can be associated as shown here:

$$\frac{e_k}{e_i} = \frac{c_k}{c_i} * \frac{d_k}{d_i} * \frac{p_k}{p_i} \quad (\text{Eq. 3})$$

Table 1 Variable Definitions

Variable Definitions	
e_k	LDV Emitted CO2, in Year "k"
L_k	Low Carbon Fuel Standard (LCFS) Factor that reduces the Per-Gallon CO2 emissions, in Year "k"
C_k	LDV CO2 emitted per mile driven, average, in Year "k", not accounting for the Low Carbon Fuel Standard (LCFS) Factor
c_k	LDV CO2 emitted per mile driven, average, in Year "k", accounting for the Low Carbon Fuel Standard (LCFS) Factor

p_k	Population, in Year “k”
d_k	Per-capita LDV driving, in Year “k”
D_k	LDV Driving, in Year “k”
M_k	LDV Mileage, miles per gallon, in Year “k”
m_k	LDV Equivalent Mileage, miles per gallon, in Year “k” accounting for Low Carbon Fuel Standard (LCFS) Factor, so this is M_k/L_k
N	Number of pounds of CO2 per gallon of fuel but not accounting for the Low Carbon Fuel Standard (LCFS) Factor

Since CO2 per mile (“c”) is a constant (use “A”, noting that it is equal to about 20 pounds per gallon) multiplied by the number of Gallons (“G”) and since number of gallons is distance (use “D”) divided by mileage (use “m”), then $c = A * D / m$. this shows that the ratio of the “c” values in different years is going to be equal to the reciprocal of the “m” values in those different years because the other variables will cancel out. Therefore:

$$\text{To work with mileage: } \frac{m_i}{m_k} = \frac{c_k}{c_i} \quad (\text{Eq. 4})$$

Putting Equation 4 into Equation 5 results in the following equation:

$$\frac{e_k}{e_i} = \frac{m_i}{m_k} * \frac{d_k}{d_i} * \frac{p_k}{p_i} \quad (\text{Eq. 5})$$

Showing the base year of 2005, the future year of 2030, introducing the intermediate year of 2015 and the year of 1990 (since emissions in 2030 are with respect to the 1990 value) results in Equation 6.

$$\frac{e_{2030}}{e_{1990}} * \frac{e_{1990}}{e_{2005}} = \frac{c_{2030}}{c_{2015}} * \frac{c_{2015}}{c_{2005}} * \frac{d_{2030}}{d_{2005}} * \frac{p_{2030}}{p_{2005}} \quad (\text{Eq. 6})$$

The ratio on the far left is the climate-stabilizing target, which is the factor of the 2030 emission to the 1990 emission. It has been shown that this is 0.20 or 80% less. The next ratio is the emission of 1990 compared to 2005. It is the turquoise line of Figure 3, which is 0.87. The first ratio on the right side of the equation is the fleet emission per mile in 2030 compared to the value in 2015. This ratio will be derived in this report and it will result in a set of car-efficiency requirements. Moving to the right, the next ratio is the car efficiency in 2015 compared to 2005. It can be obtained by multiplying the purple line 2015 value times the green line 2015 value, which is $0.90 * 0.93$. The next term, still going from right to left, is the independent variable. It is the per-capita driving reduction required, with respect to the 2005 level of driving. The final term on the far right is the ratio of the population in 2030 to the population in 2005. Reference 8 shows that California’s population in 2005 was 35,985,582. Reference 9 shows that California’s population in 2030 is predicted to be 42,263,654. Therefore,

$$p_{2030} / p_{2005} = 42263654 \div 35985582 = 1.17446076 \quad (\text{Eq. 7})$$

Putting in the known values results in Equation 8:

$$0.20 * 0.87 = \frac{c_{2030}}{c_{2015}} * 0.90 * 0.93 * \frac{d_{2030}}{d_{2005}} * 1.17446076 \quad (\text{Eq. 8})$$

Combining the values, solving for the independent variable (the per-capita driving ratio), and changing from emission-per-mile to equivalent-miles-per-gallon results in the following:

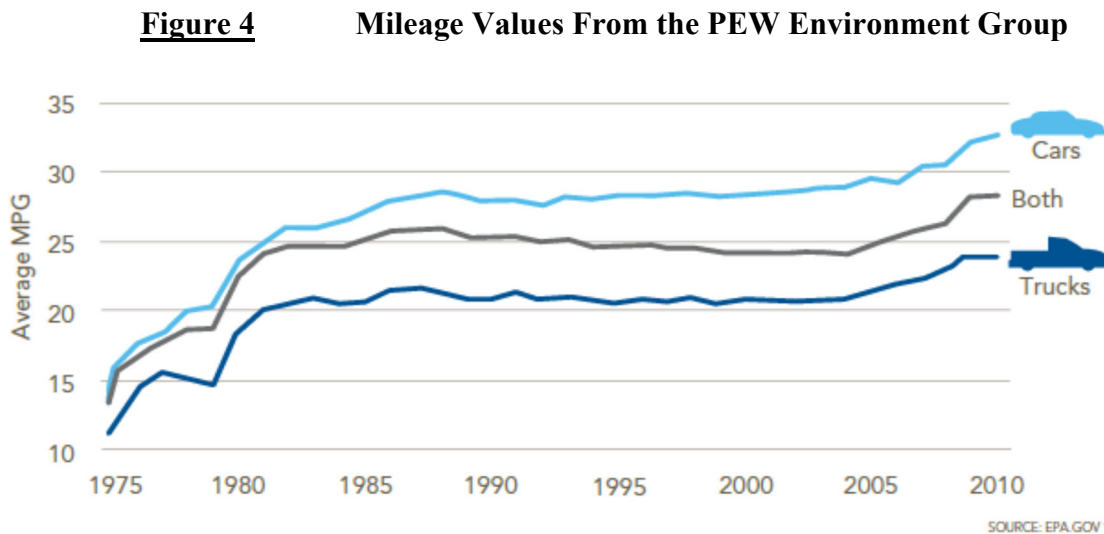
$$\frac{d_{2030}}{d_{2005}} = 0.177004896 * \frac{m_{2030}}{m_{2015}} \quad (\text{Eq. 9})$$

With the coefficient being so small, it is doubtful that we can get the equivalent mileage in 2030 to be high enough to keep the driving ratio from falling below one. The mileage of the 2015 fleet will be based on the best data we can get and by assuming cars last 15 years. The equivalent mileage in 2030 will need to be as high as possible to keep the driving-reduction factor from going too far below 1, because it is difficult to reduce driving too much. The equivalent mileage will be dependent on the fleet-efficiency requirements in the near future and going out to 2030. Those requirements are among the primary results of this report.

Internal Combustion Engine (ICE) Mileage, from Year 2000 to Year 2030

The years from 2000 to 2011 are taken from a plot produced by the PEW Environment Group, http://www.pewenvironment.org/uploadedFiles/PEG/Publications/Fact_Sheet/History%20of%20Fuel%20Economy%20Clean%20Energy%20Factsheet.pdf

The plot is shown here as Figure 6. The “Both” values are used.



The values from 2012 to 2025 are taken from the US Energy Information Agency (EIA) as shown on their website, http://www.eia.doe.gov/federal/executive/vehicle-standards#ldv_2012_to_2025. They are the LDV Corporate Average Fleet Efficiency (CAFÉ) values enacted into law in the first term of President Obama. From 2025 to 2030, it is assumed that the yearly ICE improvement in CAFÉ will be 2.5 MPG.

Overall Mileage of California’s LDV Fleet in 2015

Table 2 uses these values of the Internal Combustion Engine (ICE) LDV mileage to compute the mileage of the LDV fleet in 2015. It assumes that the fraction of ZEVs being used over these years is small enough to be ignored. The 100 miles driven, nominally, by each set of cars, is an arbitrary value and inconsequential in the final calculation, because it will divide out. It is never-the-less used, so that it is possible to compare the gallons of fuel used for the different years. The “f” factor could be used to account for a set of cars being driven less. It was decided to not use this option by setting all of the values to 1. The Low Carbon Fuel Standard (LCFS) values are taken from Figure 3. The gallons of fuel are computed as shown in Equation 10, using the definition for L_k that is shown in Table 2.

$$\text{Gallons Used per } f * 100 \text{ miles} = \frac{f \times 100}{(\text{CAFE MPG})/L_k} \quad (\text{Eq. 10})$$

As shown in Table 2, using the definitions in Eq. 9:

$$m_{2015} = 27.63$$

If it is deemed acceptable to have per-capita driving in 2030 be reduced 32% with respect to 2005 driving, then the left side of Eq. 9 becomes 0.68 and it is possible to use Eq. 9 to solve for the 2030 mileage as:

$$m_{2030} = (27.63) * 0.68 * \left(\frac{1}{0.177004896} \right) = 106.1462 \quad (\text{Eq. 11})$$

Likewise if it is decided that the per-capita driving in 2030 should equal the per-capita driving in 2005 then:

$$m_{2030} = (27.63) * 1.00 * \left(\frac{1}{0.177004896} \right) = 156.0974 \quad (\text{Eq. 12})$$

These values will provide the targets for the tables that compute the mileage values for 2030.

How ICE Mileage Values Will Be Used with ZEV Equivalent Mileage Values

To have LDVs achieve our climate-stabilizing target, after 2015, the net (computed using both ICE and ZEV vehicles) mileage values for each year will need to greatly improve by having a significant fraction of ZEVs. The ICE CAFÉ standards are used in this report as just the ICE contribution to fleet MPG. The ICE MPG values are inadequate by themselves and will therefore need to become less important; the ZEVs sales will need to overtake the ICE sales.

Federal requirements will need to change significantly. Currently, federally-mandated corporate average fuel efficiency (CAFÉ) standards have been implemented, from 2000 to 2025. These standards require that each corporation produce and sell their fleet of cars and light-duty trucks in the needed proportions, so that the combined mileage of all of the cars they sell (total miles driven in all cars sold in the year of interest divided by the total gallons used by all those cars, for any arbitrary distance) at least meets the specified mileage.

Table 2 Calculation of the Fleet MPG for 2015

LDV Set	Years Old	Model Year	CAFE MPG	LCFS Factor L _{Year}	Factor Driven f	Gallons Used Per f*100 Miles
1	14-15	2001	24.0	1.0	1.0	4.17
2	13-14	2002	24.0	1.0	1.0	4.17
3	12-13	2003	24.0	1.0	1.0	4.17
4	11-12	2004	24.0	1.0	1.0	4.17
5	10-11	2005	25.0	1.0	1.0	4.00
6	9-10	2006	25.7	.9933	1.0	3.87
7	8-9	2007	26.3	.9867	1.0	3.75
8	7-8	2008	27.0	.9800	1.0	3.63
9	6-7	2009	28.0	.9733	1.0	3.48
10	5-6	2010	28.0	.9667	1.0	3.45
11	4-5	2011	29.1	.9600	1.0	3.30
12	3-4	2012	29.8	.9533	1.0	3.20
13	2-3	2013	30.6	.9467	1.0	3.09
14	1-2	2014	31.4	.9400	1.0	2.99
15	0-1	2015	32.6	.9333	1.0	2.86
Sum of Gallons:						54.29
Miles = 100*Sum(f's):						1500
MPG = Miles/(Sum of Gallons):						27.63

The car companies want to maximize their profits while achieving the required CAFÉ standard. In California, the car companies are already be required to sell a specified number of electric vehicles, which have a particularly-high, equivalent-value of miles-per-gallon. If the laws are not changed, this situation will allow companies to take advantage of their ZEV vehicles to sell more low-mileage, high-profit cars and light-duty trucks, and still achieve the federal CAFÉ standard.

It will be better to apply the CAFÉ standards to only the ICEs and then require, in addition to the CAFÉ standards, that the fleet of LDVs sold achieve some mandated fraction of ZEVs. The ZEVs will get ever-improving equivalent mileage, as our electrical grid is powered by a larger percent of renewable energy. In other words, their equivalent mileage is not fixed, but will improve over the years. Requirements developed here are for 2030. Therefore a high percentage of all the electricity generated in the state, including both the “in front of the meter” (known as the “Renewable Portfolio Standard” or “RPS”) portion and the “behind the meter” portion is assumed to come from sources that do not emit CO₂. The values of 85% and 90% are assumed. The values become one of the important fleet-efficiency requirements for cases that are considered. Hopefully these assumptions are reasonable. San Diego’s Climate Action Plan (CAP) was the first to specify 100% renewable energy by 2035. Many other cities have followed San Diego’s lead in this regard.

How to Compute the ZEV Equivalent Mileage Values

To calculate the equivalent mileage of the 2030 fleet of LDVs, it is necessary to derive a formula to compute the equivalent mileage of ZEVs, as a function of the percent of electricity that is generated without emitting CO₂ (the mixed case), the equivalent ZEV mileage if the electricity is from 100% fossil fuel (the “West Virginia” case), and the equivalent ZEV mileage if the electricity is from 100% renewable sources (the ideal case), which is not infinity because it is assumed that the manufacturing of the car emits CO₂. The variable definitions in Table 3 are used.

Table 3 Variables Used in the Calculation of ZEV Equivalent Mileage

Variable	Definition
m_z	ZEV Equivalent mileage
m_{zr}	ZEV Equivalent mileage if the electricity is from renewables
m_{zf}	ZEV Equivalent mileage if the electricity is from fossil fuels
r	fraction of electricity generated from renewable sources
G	Gallons of equivalent fuel used
D	Arbitrary distance travelled
Num	$m_{zr} * m_{zf}$
Den	$r * m_{zf} + (1 - r) * m_{zr}$

The derivation of the equation for equivalent ZEV mileage is based on the notion that the ZEV can be imagined to travel “r” fraction of the time on electricity generated from renewables and “(1-r)” fraction of the time on fossil fuel. If the vehicle travels “D” miles, then, using the definitions shown in Table 4, the following equation can be written.

$$G = \frac{r*D}{m_{zr}} + \frac{(1-r)*D}{m_{zf}} \quad (\text{Eq. 13})$$

$$m_z = D/G = D / \left(\frac{r*D}{m_{zr}} + \frac{(1-r)*D}{m_{zf}} \right) \quad (\text{Eq. 14})$$

Dividing the numerator and the denominator by D and multiplying the numerator and the denominator by the product of the two equivalent mileage values (m_{zr} and m_{zf}) results in Equations 31.

$$m_z = m_{zr} * m_{zf} / (r * m_{zf} + (1 - r) * m_{zr}) \quad (\text{Eq. 15})$$

Using the definitions in Table 3:

$$m_z = Num / (Den) \quad (\text{Eq. 16})$$

Table 4 shows 3 assignments of assumed values in which the fraction of electricity generated from renewables is varied and the results, using Equations 15 and 16, results in the three values of ZEV equivalent mileage. This shows the urgent need to move towards cleaner electricity.

Table 4 Variable Assignment and the Resulting ZEV Mileages

m_{zr}	m_{zf}	r	1-r	Num	Den	m_z
5000	70	0.80	0.20	350000.00	1056.00	331.44
5000	70	0.85	0.15	350000.00	809.50	432.37
5000	70	0.90	0.10	350000.00	563.00	621.67

Additional Variables Needed to Compute the Overall Equivalent Mileage in 2030, Taking Into Account Both ICEs and ZEVs

Table 5 shows the additional definitions that will be used in the calculation of 2030 overall mileage.

Table 5 Additional Variables Used in the Calculation of 2030 LDV Mileage

Variable	Definition
D_i	Distance travelled by ICE vehicles
D_z	Distance travelled by ZEV vehicles
G_i	Gallons of equivalent fuel used by ICE vehicles
G_z	Gallons of equivalent fuel used by ZEVs

Computing an LDV Overall Equivalent Fleet Mileage, for the *Balanced_1* Case

Table 6 shows the calculation for the overall equivalent mileage for all the cars on the road, in the year of 2030, for the *Balanced_1* case.

The name, *Balanced_1*, comes from the attempt to *balance* the difficulty of achieving the fleet efficiency-related requirements with the difficulty of achieving the driving-reduction related requirements. The *Balanced_1* case assumes that electricity is 85% renewable, which is also difficult.

There will also be a *Balanced_2* case that assumes that electricity is 90% renewable. Both the *Balanced_1* and the *Balanced_2* cases assume that it is reasonable to have per-capita driving in 2030 reduced 32%, with respect to 2005 per-capita driving. That assumption, along with the 85% renewable electricity assumption, was used to select the z values of Table 6 to result in the Equation 11 value of overall 2030 mileage, which is 106.1263 Miles Per Gallon (MPG). From Table 4, 85% renewable electricity results in a ZEV equivalent mileage of 432.37 MPG. That value of equivalent ZEV mileage in 2030, when electricity is 85% renewable, is used for all of the ZEV model years, for

this case. Note that this is overlooking the fact that not all BEVs are equally efficient. In order to simplify this analysis, the Table 4 values of m_{zr} and m_{zf} are considered to be applicable to all the ZEV models. Therefore, the 432.37 MPG value can be divided into each D_z value to compute the corresponding G_z value, in all of the model years being considered.

To reduce the miles driven in poor-mileage ICE's, the "f" factor is used. For example, if "f" is set to 0.30, as it is in 2016, then the miles driven is reduced by 70%. Achieving the required "f" values may require some type of "cash-for-gas-guzzlers" program. However, it could also be noted that when older cars are second or third cars in multi-car families in which family members have the luxury of choosing which car to drive, family members will usually choose the car that is cheaper to operate, thus making the "f" factors easier to achieve. Finally, the Low Carbon Fuel Standard (LCFS) is assumed to continue to improve from the currently mandated value of 0.9 by the end of 2019. This is another method of reducing the CO2 emissions of the ICE vehicles.

For the ICE vehicles, the G_i values are computed as the D_i value divided by the equivalent MPG value. The equivalent MPG is the CAFÉ MPG divided by the LCFS factor.

It is arbitrarily assumed that the cars, for each year being considered (the models for that year, both ZEVs and ICEs), go a total of 100 miles. Although this is an extremely small fraction of the actual miles that will be driven, it doesn't change the result because the number of gallons of equivalent gasoline is always proportional to miles. The fraction of cars that are ZEVs (z) is used to divide up this value of 100 Miles. However, the factor "f" reduces the miles driven by the ICE vehicles and this brings down the total miles driven for the years in which the "f" term is less than 1. For each year, the total miles per gallon (MPG) is computed as the total miles driven divided by the total gallons used. However, this value is not used in the calculation of the entire fleet equivalent mileage. The overall equivalent mileage is computed as the total miles driven divided by the total gallons used, where these quantities are summed over all of the 15 categories (years) of LDVs.

The following formulas are used to compute the overall equivalent mileage in 2030, of all of the LDVs on the road.

For the ICE calculations, for 2016, where

- "L_k" is defined in Table 1 (LCFS factor for year "k") and is the value in the "LCFS" column of Table 6 and
- "z" is from the "z" column and is the fraction of cars sold in the year that are ZEVs and
- "m_i" is the value from the CAFÉ MPG column:

$$D_i = 100 * f * (1 - z) \quad (\text{Eq. 17})$$

$$G_i = D_i / (m_i / L_{2016}) \quad (\text{Eq. 18})$$

For the ZEV calculations:

$$D_z = 100 * z \quad (\text{Eq. 17})$$

$$G_z = D_z / (432.37) \quad (\text{Eq. 18})$$

In updating this report from its 2015 version, the fleet fraction of ZEVs ("z"), from 2015 to 2019, had to be reduced to approximate the low values that actually occurred from 2015 to 2019. However,

in 2020, it is assumed that the fraction will be at least as large as 8%, which is not such a trivial value. If it is actually larger than 8%, then there will be some margin built into the requirements derived in this report.

Table 6 Calculation of 2030 LDV Mileage Assuming the *Balanced_1* Case

Year	ICE Parameters and Calculations						ZEVs			Yearly Totals		
	CAFÉ MPG	LCFS	Eq. MPG	f	D_i	G_i	z	D_z	G_z	Total Miles	Total Gallons	2030 MPG
2016	34.3	.9267	37.01	.3	29.4	0.7943	.02	2	.005	31.40	0.7989	39.30
2017	35.1	.9200	38.15	.4	39.2	1.0275	.02	2	.005	41.20	1.0321	39.92
2018	36.1	.9133	39.53	.5	48.5	1.2271	.03	3	.007	51.50	1.2340	41.73
2019	37.1	.9067	40.92	.6	57.6	1.4077	.04	4	.009	61.60	1.4169	43.47
2020	38.3	.9000	42.56	.7	64.4	1.5133	.08	8	.019	72.40	1.5318	47.26
2021	40.3	.8500	47.41	.8	64.0	1.3499	.20	20	.046	84.00	1.3961	60.17
2022	42.3	.8000	52.88	.9	58.5	1.1064	.35	35	.081	93.50	1.1873	78.75
2023	44.3	.8000	55.38	1.0	45.0	0.8126	.55	55	.127	100.00	0.9398	106.40
2024	46.5	.8000	58.13	1.0	20.0	0.3441	.80	80	.185	100.00	0.5291	188.99
2025	48.7	.8000	60.88	1.0	6.0	0.0986	.94	94	.217	100.00	0.3160	316.48
2026	51.2	.8000	64.00	1.0	3.0	0.0469	.97	97	.224	100.00	0.2712	368.70
2027	53.7	.8000	67.13	1.0	2.0	0.0298	.98	98	.227	100.00	0.2565	389.93
2028	56.2	.8000	70.25	1.0	1.0	0.0142	.99	99	.229	100.00	0.2432	411.17
2029	58.7	.8000	73.38	1.0	1.0	0.0136	.99	99	.229	100.00	0.2426	412.20
2030	61.2	.8000	76.50	1.0	1.0	0.0131	.99	99	.229	100.00	0.2420	413.15
Sum of Miles and then Gallons of Equivalent Fuel:										1235.60	11.64	
Equivalent MPG of LDV Fleet in 2030:										106.17		
Sum of ZEV Miles = 795. Fraction of Miles Driven by ZEVs = 64.3%												

There is probably some margin from the 2016 to 2019 values as well. The difficult values are for 2022, 2023, and 2024, with 2024 requiring that ZEV sales are 80% of all the cars purchased in California. The purple color of the z values denotes difficulty. This shows that the government will need to require that the car companies achieve the z values or buy credits from a company such as Tesla, which sells 100% ZEVs.

The Table 6 z values were put into an EXCEL spread sheet that looks like Table 6. It produced the values shown in Table 6. The values were selected to try to get to the 106.1462 value that was computed in Eq. 11.

Using the result of 106.17 MPG into Equation 9, gives the following result:

$$\frac{d_{2030}}{d_{2005}} = 0.17700 * \frac{m_{2030}}{m_{2015}} = 0.17700 * \frac{106.17}{27.63} = 0.68016 \quad (\text{Eq. 19})$$

This is the 32% reduction desired. It will be difficult to achieve. However, the required schedule of ZEV adoption is also difficult. The values of z from the years 2021 to 2025 will be at least as difficult as achieving the 32% reduction. This situation motivates the next case. If electricity could be made cleaner sooner, the years from 2021 to 2025 could be less difficult.

Computing an LDV Overall Equivalent Fleet Mileage, for the *Balanced_2* Case

The *Balanced_2* case is shown in Table 7.

The *Balanced_2* case is the same as the *Balanced_1* case except it includes an assumption that electricity is 90% renewable in 2030 instead of 85%. Table 7 shows the results using that assumption, which becomes a requirement for this case. For the *Balanced_2* case, the values of z are once again assigned to achieve the desired driving-reduction value of 32%.

From the second line of Table 4, this means that the equivalent mileage of the ZEV vehicles is 621.67 MPG.

Eq. 18 becomes:

$$G_z = D_z / (621.67) \quad (\text{Eq. 20})$$

This is used to compute the gallons of equivalent fuel from the distance, for the ZEV vehicles in Table 7.

The Table 7 z values were put into an EXCEL spread sheet that looks like Table 7. It produced the values shown in Table 7. The z values were selected to try to get to the 106.1462 value that was computed in Eq. 11.

Using the Table 7 result of 106.22 MPG into Equation 9, gives the following result:

$$\frac{d_{2030}}{d_{2005}} = 0.17700 * \frac{m_{2030}}{m_{2015}} = 0.17700 * \frac{106.22}{27.63} = 0.68045 \quad (\text{Eq. 21})$$

Table 7 Calculation of 2030 LDV Mileage Assuming the *Balanced_2* Case

Year	ICE Parameters and Calculations						ZEVs			Yearly Totals		
	CAFÉ MPG	LCFS	Eq. MPG	f	D_i	G_i	z	D_z	G_z	Total Miles	Total Gallons	2030 MPG
2016	34.3	.927	37.01	.3	29.4	0.7943	.02	2	.003	31.40	.7975	39.37
2017	35.1	.920	38.15	.4	39.2	1.0275	.02	2	.003	41.20	1.0307	39.97
2018	36.1	.913	39.53	.5	48.5	1.2271	.03	3	.005	51.50	1.2319	41.81
2019	37.1	.907	40.92	.6	57.6	1.4077	.04	4	.006	61.60	1.4141	43.56
2020	38.3	.900	42.56	.7	64.4	1.5133	.08	8	.013	72.40	1.5262	47.44
2021	40.3	.850	47.41	.8	68.0	1.4342	.15	15	.024	83.00	1.4584	56.91
2022	42.3	.800	52.88	.9	67.5	1.2766	.25	25	.040	92.50	1.3168	70.25
2023	44.3	.800	55.38	1.0	55.0	0.9932	.45	45	.072	100.00	1.0656	93.84
2024	46.5	.800	58.13	1.0	30.0	0.5161	.70	70	.113	100.00	.6287	159.05
2025	48.7	.800	60.88	1.0	5.0	0.0821	.95	95	.153	100.00	.2349	425.62
2026	51.2	.800	64.00	1.0	3.0	0.0469	.97	97	.156	100.00	.2029	492.84
2027	53.7	.800	67.13	1.0	2.0	0.0298	.98	98	.158	100.00	.1874	533.52
2028	56.2	.800	70.25	1.0	1.0	0.0142	.99	99	.159	100.00	.1735	576.42
2029	58.7	.800	73.38	1.0	1.0	0.0136	.99	99	.159	100.00	.1729	578.45
2030	61.2	.800	76.50	1.0	1.0	0.0131	.99	99	.159	100.00	.1723	580.31
Sum of Miles and then Gallons of Equivalent Fuel:										1233.60	11.61	
Equivalent MPG of LDV Fleet in 2030:										106.22		
Sum of ZEV Miles = 761. Fraction of Miles Driven by ZEVs = 61.7%												

This is the 32% reduction desired. It will be difficult to achieve. However, the required schedule of ZEV adoption is also difficult. The values of z from the years 2021 to 2025 will be at least as difficult as achieving the 32% reduction. However, they are easier to achieve than the values needed in the *Balanced_1* Case. This quantifies the benefit of increasing the renewable fraction of electricity from 85% to 90%.

Computing an LDV Overall Equivalent Fleet Mileage, for the *2005_Driving* Case

When climate change and transportation policies are discussed, the opinion that we should simply electrify our fleet as soon as possible is often expressed. The idea is that the per-capita driving level does not have to be reduced, if we electrify our fleet fast enough. The relationships developed in this paper enable an analysis to see how this would work. This gives rise to the *2005_Driving* Case. For this case, it is assumed that electricity is 90% renewable.

From the third line of Table 4, this means that the equivalent mileage of the ZEV vehicles is 621.67 MPG. Therefore, the relationship shown in Eq. 20 is used.

The *2005_Driving* case is shown in Table 8.

For the *2005_Driving* case, the values of z are assigned to achieve the overall equivalent mileage (MPG) value computed in Eq. 12, which is 156.0974, because that value was computed for there being no change in the per-capita driving from the 2005 value.

Using the result of 155.99 MPG into Equation 9, gives the following result:

$$\frac{d_{2030}}{d_{2005}} = 0.17700 * \frac{m_{2030}}{m_{2015}} = 0.17700 * \frac{155.99}{27.63} = 0.99930 \quad (\text{Eq. 22})$$

This is the 0% reduction desired. However, the required schedule of ZEV adoption is not possible. Jumping from 8% in 2020 to 82% in 2021 defies reason. It appears that our best bet, to do our part to avoid human extinction, is to proceed with the assumption (and thus requirement) that we are going to have to reduce per-capita driving, as shown in either the *Balanced_1* or the *Balance_2* case.

Computing an LDV Overall Equivalent Fleet Mileage, for the *Mary_Nichols* Case

Mary Nichols was first appointed to the California Air Resource Board (CARB) in 1975 and became Chair in 1979. After leaving CARB, she founded the Los Angeles Chapter of the Natural Resources Defense Council (NRDC) in 1989. She was reappointed to the position of Chair of

CARB in 2007 by Governor Arnold Schwarzenegger and she is still serving in that position today.

Table 8 Calculation of 2030 LDV Mileage Assuming the 2005_Driving Case

Year	ICE Parameters and Calculations						ZEVs			Yearly Totals		
	CAFÉ MPG	LCFS	Eq. MPG	f	D_i	G_i	z	D_z	G_z	Total Miles	Total Gallons	2030 MPG
2016	34.3	.9267	37.01	.3	29.4	.7943	.02	2.0	.003	31.40	0.7975	39.37
2017	35.1	.9200	38.15	.4	39.2	1.0275	.02	2.0	.003	41.20	1.0307	39.97
2018	36.1	.9133	39.53	.5	48.5	1.2271	.03	3.0	.005	51.50	1.2319	41.81
2019	37.1	.9067	40.92	.6	57.6	1.4077	.04	4.0	.006	61.60	1.4141	43.56
2020	38.3	.9000	42.56	.7	64.4	1.5133	.08	8.0	.013	72.40	1.5262	47.44
2021	40.3	.8500	47.41	.8	14.4	.3037	<u>.82</u>	82.0	.132	96.40	0.4356	221.29
2022	42.3	.8000	52.88	.9	2.7	.0511	.97	97.0	.156	99.70	0.2071	481.42
2023	44.3	.8000	55.38	1.0	1.0	.0181	.99	99.0	.159	100.00	0.1773	563.99
2024	46.5	.8000	58.13	1.0	1.0	.0172	.99	99.0	.159	100.00	0.1765	566.72
2025	48.7	.8000	60.88	1.0	1.0	.0164	.99	99.0	.159	100.00	0.1757	569.23
2026	51.2	.8000	64.00	1.0	1.0	.0156	.99	99.0	.159	100.00	0.1749	571.84
2027	53.7	.8000	67.13	1.0	1.0	.0149	.99	99.0	.159	100.00	0.1741	574.23
2028	56.2	.8000	70.25	1.0	1.0	.0142	.99	99.0	.159	100.00	0.1735	576.42
2029	58.7	.8000	73.38	1.0	1.0	.0136	.99	99.0	.159	100.00	0.1729	578.45
2030	61.2	.8000	76.50	1.0	1.0	.0131	.99	99.0	.159	100.00	0.1723	580.31
Sum of Miles and then Gallons of Equivalent Fuel:										1254.20	8.04	
Equivalent MPG of LDV Fleet in 2030:										155.99		
Sum of ZEV Miles = 990.0 Fraction of Miles Driven by ZEVs = 78.9%												

The following quote¹³ inspires the *Mary_Nichols* Case:

Regulations on the books in California, set in 2012, require that 2.7 percent of new cars sold in the state this year be, in the regulatory jargon, ZEVs. These are defined as battery-only or fuel-cell cars, and plug-in hybrids. The quota rises every year starting in 2018 and reaches 22 percent in 2025. Nichols wants 100 percent of the new vehicles sold to be zero- or almost-zero-emissions by 2030

The mathematical relationships developed in this paper make it possible to determine the driving reduction that would be required if it is desired to stabilize the climate at a livable level, assuming the schedule of fleet electrification implied by the above quote. Electricity is required to be 90% renewable. The results of the *Mary_Nichols Case* are shown in Table 9.

The corresponding driving reduction is computed using Eq. 9.

$$\frac{d_{2030}}{d_{2005}} = 0.177005 * \frac{m_{2030}}{m_{2015}} = 0.177055 * \frac{77.24}{27.63} = 0.495 \text{ (Eq. 14)}$$

This means that the per-capita driving will need to be about 50% less in 2030 than in year 2005. It is not known if CARB understands this.

The official policy of the California Democratic Party (CDP) is expressed in its Platform. A statement that applies to this report and to CARB can be viewed by looking at the California Democratic Party (CDP) website, then select “About Us”, “Standing Committees”, “Platform Committee”, “2020 Platform”, and finally “Energy and Environment Plank”. In that Plank, the following statement is found

- *Demand a state plan specifying how cars and light-duty trucks can meet climate-stabilizing targets by defining enforceable measures to achieve necessary fleet efficiency and per-capita driving limits;*

However, your author’s efforts to get CARB to do such a “state plan”, or to convince a state legislator to write legislation to direct CARB to do such a plan, have not been successful.

If CARB would do such a plan or would consider the results of this report, they would perhaps decide to push for a more ambitious fleet electrification schedule and would also push for state legislation and regulation to enact measures to reduce VMT.

Preliminary Conclusions Drawn from the Results of the Four Cases Run

Table 10 is a summary showing the most important results of the four cases considered. The purple-colored entries denote difficult requirements; red denotes nearly impossible.

Considering the *Balance_1* and the *Balanced_2* cases and the fleet electrification schedules for each, it is first concluded that California needs to work to get its electricity to be at least 85% renewable by 2030 and furthermore that getting it to be 90% from renewables by 2030 would make the electrification schedule much easier.

Table 9 Calculation of 2030 LDV Mileage Assuming the *Mary_Nichols* Case

Year	ICE Parameters and Calculations						ZEVs			Yearly Totals		
	CAFÉ MPG	LCFS	Eq. MPG	f	D_i	G_i	z	D_z	G_z	Total Miles	Total Gallons	2030 MPG
2016	34.3	.9267	37.01	.3	29.2	.7886	.027	2.7	.004	31.89	0.7930	40.22
2017	35.1	.9200	38.15	.4	38.9	1.0201	.027	2.7	.004	41.62	1.0245	40.63
2018	36.1	.9133	39.53	.5	47.4	1.2003	.051	5.1	.008	52.56	1.2086	43.49
2019	37.1	.9067	40.92	.6	55.5	1.3560	.075	7.5	.012	63.01	1.3681	46.06
2020	38.3	.9000	42.56	.7	63.0	1.4814	.099	9.9	.016	72.98	1.4974	48.74
2021	40.3	.8500	47.41	.8	70.1	1.4790	.124	12.4	.020	82.47	1.4988	55.02
2022	42.3	.8000	52.88	.9	76.7	1.4509	.148	14.8	.024	91.48	1.4746	62.03
2023	44.3	.8000	55.38	1.0	82.8	1.4957	.172	17.2	.028	100.00	1.5233	65.65
2024	46.5	.8000	58.13	1.0	80.4	1.3834	.196	19.6	.032	100.00	1.4149	70.67
2025	48.7	.8000	60.88	1.0	78.0	1.2813	.220	22.0	.035	100.00	1.3167	75.95
2026	51.2	.8000	64.00	1.0	62.4	0.9750	.376	37.6	.060	100.00	1.0355	96.57
2027	53.7	.8000	67.13	1.0	46.8	0.6972	.532	53.2	.086	100.00	0.7828	127.75
2028	56.2	.8000	70.25	1.0	31.2	0.4441	.688	68.8	.111	100.00	0.5548	180.25
2029	58.7	.8000	73.38	1.0	15.6	0.2126	.844	84.4	.136	100.00	0.3484	287.05
2030	61.2	.8000	76.50	1.0	0.0	0.0000	1.000	100.0	.161	100.00	0.1609	621.67
Sum of Miles and then Gallons of Equivalent Fuel:										1236.00	16.00	
Equivalent MPG of LDV Fleet in 2030:										77.24		
Sum of ZEV Miles = 457.9. Fraction of Miles Driven by ZEVs = 37.0%												

Certainly, achieving a 32% reduction in driving in 2030 compared to the 2005 level will be difficult. However, increasing the rate of fleet electrification, from what is shown in the *Balanced_1* and *Balanced_2* cases (z, in Tables 6 and 7) would be even more difficult.

Table 10

Four-Case Summary of Requirements

	Case Designations			
	Balanced_1	Balanced_2	2005 Driving	Mary Nichols
% Renewable Electricity	85.0%	90.0%	90.0%	90.00%
% ZEVs, Year 2016	2.0%	2.0%	2.0%	2.70%
% ZEVs, Year 2017	2.0%	2.0%	2.0%	2.70%
% ZEVs, Year 2018	3.0%	3.0%	3.0%	5.11%
% ZEVs, Year 2019	4.0%	4.0%	4.0%	7.53%
% ZEVs, Year 2020	8.0%	8.0%	8.0%	9.94%
% ZEVs, Year 2021	20.0%	15.0%	82.0%	12.35%
% ZEVs, Year 2022	35.0%	25.0%	97.0%	14.76%
% ZEVs, Year 2023	55.0%	45.0%	99.0%	17.18%
% ZEVs, Year 2024	80.0%	70.0%	99.0%	19.59%
% ZEVs, Year 2025	94.0%	95.0%	99.0%	22.00%
% ZEVs, Year 2026	97.0%	97.0%	99.0%	37.60%
% ZEVs, Year 2027	98.0%	98.0%	99.0%	53.20%
% ZEVs, Year 2028	99.0%	99.0%	99.0%	68.80%
% ZEVs, Year 2029	99.0%	99.0%	99.0%	84.40%
% ZEVs, Year 2030	99.0%	99.0%	99.0%	100.00%
% Reduction in Per-Capita Driving With Respect to Year 2005	32.0%	32.0%	0%	50.5%

Besides that, it should be recognized that California alone cannot stabilize our earth's climate. California's best hope is to set an example for other states and other countries. Taking too many of the world's production of electric vehicles will not work. For a more specific example, lithium batteries may be in short supply and so it may be counterproductive for California to have more than its fair share, thus preventing other states and countries from electrifying their fleet at the required rate. The rates of electrification shown for the *Balanced_1* and the *Balanced_2* cases are aggressive enough, as shown by the purple-colored entries.

California needs to adopt a set of requirements to achieve the 32% reduction. If CARB wants to work to have California legislate requirements to achieve the *Mary Nichol's* case of a 50% reduction in driving, that would also work and allow more electric cars to go to other states and countries. However the 50% reduction in per-capita driving might be politically impossible at this time.

Since the 32% reduction seems prudent, it begs the question as to what this means in terms of roadway congestion.

The net (as opposed to the per-capita) driving change, going from 2005 to 2030 can be computed by multiplying the per-capita driving factor corresponding to the 32% reduction, which is 0.68, by the population factor of 1.1744, computed in Equation 7. The product of these two values is 0.7986. This means that, even with the 17% increase in California's population, the net driving will have to drop by the factor of about 0.80, or by 20%. If this LDV-driving-reduction requirement (of 0.68) is selected, all of California's transportation money can be used to improve transit, improve active transportation (mainly walking and biking), and maintain, but not expand, roads. There can be little or no congestion because California highway capacity now is larger than it was in 2005 while the state's net driving must drop by 20%.

ACHIEVING THE REQUIRED DRIVING REDUCTION OF THE *BALANCED_1* AND THE *BALANCED_2* CASES

As shown in Equation 19, for the *Balanced_1* case, and in Equation 21 for the *Balanced_2* Case, in 2030, the per-capita driving will need to be 32% below the 2005 value. As shown in this link, https://en.wikipedia.org/wiki/Sustainable_Communities_and_Climate_Protection_Act_of_2008, California's Metropolitan Planning Organizations (MPOs) are adopting Region Transportation Plans (RTPs) that will achieve reductions in year 2020 and 2035. The convention adopted in this report for these reductions, specifically the per-capita driving reduction with respect to the per-capita driving in 2005, matches the SB 375 convention. As shown in the link, the targets, for year 2035, range from 0% for the Shasta MPO to 16% for Sacramento Area Council of Governments. However, it may be true that some of the 2035 requirements have been revised upwards, to be as large as 19% for some MPOs. Since the climate stabilization target year here is 2030 instead of 2035, and to be reasonably conservative, it is assumed here that the state (this is for all MPOs) will achieve a 12% reduction in per-capita driving, in 2030, compared to 2005. This leaves approximately 20% to be achieved by new requirements.

The title of each of the following subsections contains the estimated per-capita driving reduction each strategy will achieve, by 2030.

Reallocate Funds Earmarked for Highway Expansion to Transit and Consider Transit-Design Upgrades (2%)

San Diego County has a sales tax measure called “TransNet”, which allocates approximately one-third for highway expansion, one-third for transit, and one-third for road maintenance. It has a provision that allows for a reallocation of funds, if supported by at least two-thirds of SANDAG Board members, including a so-called weighted vote, where governments are given a portion of 100 votes, proportional to their population. This requirement would be to reallocate the TransNet amount, earmarked for highway expansion, to transit and to do similar reallocations throughout California.

This money could be used to fund additional transit systems; improve transit operations; and/or fund the redesign and implementation of the redesign of existing transit systems. The redesign could include electrification and automation (including automation of fare collection and such features as screening passengers to prevent them from boarding if they have a fever or are in a “test positive” database) or even upgrading to a different transit technology.

A Comprehensive Road-Use Charge (RUC) Pricing and Payout System to Unbundle the Cost of Operating Roads (10%)

Comprehensive means that pricing would be set to cover all costs (including road maintenance and externalities such as harm to the environment and health); that privacy and the interests of low-income drivers doing necessary driving would be protected; that the incentive to drive fuel-efficient cars would be at least as large as it is under the current fuels excise tax; and finally, as good technology becomes available, congestion pricing is used to protect critical driving from congestion.

The words *payout* and *unbundle* mean that some of the money collected would go to people that are losing money under the current system.

User fees (gas taxes and tolls) are not enough to cover road costs¹⁰ and California is not properly maintaining its roads. Reference 10 shows that in California user fees amount to only 24.1% of what is spent on roads. Besides this, the improved mileage of the ICEs and the large number of ZEVs mean that gas tax revenues will drop precipitously.

This RUC system could be used to help reduce the ICE LDV miles driven in 2016 to 2022, as shown in the “F” column of Tables 6 through 9. This system could probably be implemented in less than 2 years if the urgency of our climate crisis is recognized..

Unbundling the Cost of Car Parking (8%)

Unbundling the cost of car parking¹¹ throughout California is conservatively estimated to decrease driving by 8%, based on Table 1 of Reference 11. That table shows driving reductions that occur in response to introducing a price, for 10 cases. Its average reduction in driving is 25% and its smallest reduction is 15%. However, these numbers are for individual cases whereas the 8% is the decrease in driving in California, due to introducing value pricing where there is a zero price today, or where the price is below its value price. These concepts are explained in Reference 11.

The first such systems should be installed by a (RFP is Request for Proposal) RFP-process-identified, third-party vendor, such as Google, Qualcomm, Uber, or Lime Bicycle, for municipal government employees, as part of the government’s Climate Action Plan. The system would be operated for the financial gain of the employees, with a hard requirement in the RFP that even

employees that continue to drive every day would at least break even. The winning third-party vendor would be skilled at monetizing parking whenever it is not being used by the employees and skilled at monetizing data. The parking system would be fully automated, like Uber, except with a more useful phone app that would find the best parking at the user-specified price and walk-distance. The parking would be available to all drivers driving a car registered in the system. Briefly stated, the system is value priced, shared, automated, and provides earnings to all the people that are effectively losing wages or paying higher costs because the parking is being provided. The vendor would also be good at expanding the system both geographically and over all types of uses, in an economically disruptive way; as Uber and Lyft did to the taxi cab industry. The system would be as easy to use as “free” parking, once the car is registered. It would utilize congestion pricing to protect the desired maximum-occupancy rate.

Good Bicycle Projects

The best criterion for spending money for bicycle transportation is the estimated reduction in driving per the amount spent. The following strategies may come close to maximizing this parameter.

Projects to Improve Bicycle Access (1%)

All of the smart-growth neighborhoods, central business districts, and other high-trip destinations or origins, both existing and planned, should be checked to see if bicycle access could be substantially improved with either a traffic calming project, a “complete streets” project, more shoulder width, or a project to overcome some natural or made-made obstacle. For example, in some cases, long stretches of freeways cut off bicycle passage on surface streets that are perpendicular to the freeway. In some of these cases, a bicycle bridge over the freeway would be cost effective.

League-of-American-Bicyclist-Certified (LCI) Instruction of “Traffic Skills 101” (1%)

Most serious injuries to bike riders occur in accidents that do not involve a motor vehicle¹². Most car-bike accidents are caused by wrong-way riding and errors in intersections; the clear-cut-hit-from-behind accident is rare¹².

After attending *Traffic Skills 101*, students that pass a rigorous written test and demonstrate proficiency in riding in traffic and other challenging conditions, in passing an on-road-riding test, would be paid for their time and effort.

As an example of what could be done in San Diego County, if the average class size was 3 riders per instructor and each rider passes both tests and earns \$100 and if the instructor, with overhead, costs \$500 dollars, for a total of \$800 for each 3 students, that would mean that \$160M could teach $\$160M/\$800 = 200,000$ classes of 3 students, for a total of 600,000 students. The population of San Diego County is around 3 million.

Eliminate or Greatly Increase the Maximum Height and Density Limits Close to Transit Stops that Meet Appropriate Service Standards (2%)

As sprawl is reduced, more compact, transit-oriented development (TOD) will need to be built. This strategy will incentivize a consideration of what level of transit service will be needed, how it can be achieved, and what levels of maximum height and density are appropriate. Having no limits at all is reasonable if models show that the development can function without harming the existing adjacent

neighborhoods, given the level of transit service and other supporting transportation policies (such as car parking that unbundles the cost and supports the full sharing of parking¹²) that can be assumed.

Complete Streets (Streets designed for all users), “Road Diets”, and “Traffic Calming”, Such as Replacing Signalized Intersections with Roundabouts (1%)

These projects will encourage active transportation, such as bicycling and walking. These projects also fit well with the addition of TOD and increasing density. They will reduce speeds and therefore reduce noise. The noise reduction and increased safety will encourage people to want to live on and around the redesigned arterials where they would not want to have lived before. People will also be more inclined to shop and to work in such surroundings.

Net Driving Reduction from All Identified Strategies

By 2030, the sum of these strategies should be realized as shown in Table 11.

CONCLUSION

The urgency of our climate crisis dictates that California should develop plans such as the cases considered in this paper for a climate-stabilizing target year of 2030. The state needs to select a case and move forward with legislation and implementation. The cases considered in this paper indicate that California should achieve electricity that is at least 85% from renewable sources and a per-capita driving reduction of at least 32% with respect to 2005 driving levels. The eight driving-reducing requirements described in this paper are an example of how this could be done.

Table 11 Requirements to Achieve a 32% Reduction in 2030 Per-Capita Driving, with Respect to 2005

Driving Reduction Requirements	Percent Reduction	Factor
Legislated (SB 375) Plans to Reduce Driving	12%	0.88
Value-Priced Road Use Charge (RUC)	10%	0.90
Value-Priced Parking (Unbundling the Cost)	8%	0.92
Transfer Highway Expansion Funds to Transit	2%	0.98
Increase Height & Density by Transit Stations	2%	0.98
"Complete Streets", "Road Diet" (walk/bike)	1%	0.99
<i>Pay-to-Graduate</i> Bicycle Traffic-Skills Class	1%	0.99
Bicycle Projects to Improve Access	1%	0.99
Product of Factors		0.68
% Reduction		32%

ABBREVIATIONS AND ACRONYMS

AB 1493	California’s Assembly Bill 1493	ICE	Internal Combustion Engine LDV
AB 32	California’s Assembly Bill 32	kW-h	Kilo Watt-hour
APS	Alternative Planning Strategy	LCFS	Low Carbon Fuel Standard
CAFE	Corporate Average Fleet Efficiency	LDV	Light-Duty Vehicle
CARB	California Air Resources Board	MPO	Metropolitan Planning Organization
CBD	Center for Biological Diversity	Pavley	Senator Pavley’s AB 1493
CEQA	California Environmental Quality Act	PPM	Parts per Million
CCAP	Center for Clean Air Policy	RPS	Renewable Portfolio Standard
CNFF	Cleveland National Forest Foundation	RTP	Regional Transportation Plan
SB 375	California’s Senate Bill 375	S-3-05	Governor’s Executive Order S-3-05
CO₂	Carbon Dioxide	SANDAG	San Diego Association of Governments
CO₂_e	Carbon Dioxide Equivalent GHG	SCS	Sustainable Community Strategy
EHM	“Extra Heroic Measures” LDV Case	TransNet	San Diego County sales tax
GEO	Governor’s Executive Order		

GHG	Greenhouse gas	URL	Universal Resource Locator
GW-h	Giga Watt-Hours	VMT	Vehicle Miles Travelled
HM	“Heroic Measures” LDV Case	ZEV	Zero Emission Vehicle LDV

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Bullock Letter Response:

This letter is the same letter as received on the Draft EIR. Please see responses to comment letter number 5 in Appendix P of the Final EIR.



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December 9, 2021

SANDAG Board of Directors
401 B Street, Suite 800
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Re: 2021 Regional Plan and Environmental Impact Report

SANDAG Board Members:

Save Our Forest and Ranchlands (SOFAR) and the Cleveland National Forest Foundation (CNFF), two organizations dedicated to progressive land use planning and the protection of vital natural resources, submit this letter in connection with the 2021 Regional Transportation Plan (Plan or RTP) and its Environmental Impact Report (EIR).

San Diego faces a triple emergency: a climate crisis, a housing crisis, and an ecological crisis all at once. We need to change the way we've done things in this county, and we need to do it now. It is for this reason that CNFF and SOFAR have been vehemently advocating for a sea change in the region's approach to transportation. With each iteration of the RTP over the last twenty years, we have offered alternative approaches to transportation, explaining that we cannot respond to this emergency without a dramatic and immediate shift to public transportation. The 2021 RTP offers a step in the right direction but it is not enough to address the unprecedented crisis we are facing.

When SANDAG was preparing its transportation network scenarios for the 2021 RTP, we prepared an alternative to the RTP. (*See* May 26, 2021 letter to the Board of Directors). We requested that SANDAG evaluate the merits of this alternative—referred to as the Climate, Housing, and Transit (CHT) Alternative—because it is capable of meeting the region's housing, vehicle miles traveled (VMT) and greenhouse gas (GHG) reduction goals that have been set collectively by the state of California, the City of San Diego, and SANDAG. (*See* October 7, 2021 letter to SANDAG). Critically, the CHT Alternative would also reduce the RTP's significant and unavoidable VMT and GHG-related impacts. Rather than seriously study its merits, the DEIR and the FEIR mischaracterize key components of the Alternative. Like every other alternative SOFAR and CNFF have presented to SANDAG over the last two decades, SANDAG has rejected the CHT Alternative from serious consideration.

For the reasons discussed in our prior letters and as we explain below, SANDAG's refusal to consider the CHT Alternative is both improper and unsupported. Moreover, because the EIR fails to include an alternative that would result in a meaningful reduction in VMT, the FEIR fails to remedy the deficiency identified by the California Court of Appeal in *Cleveland National Forest Foundation v. San Diego Association of Governments*. (17 Cal.App.5th 413, 435-437 (2017)). For these reasons, the FEIR fails to comply with the California Environmental Quality Act (CEQA).

The FEIR Fails to Adequately Analyze the CHT Alternative and Therefore Lacks a Legal or Factual Basis For Rejecting This Alternative.

The FEIR rejects the CHT Alternative claiming that the proposed Plan and Alternative 3 (All Growth in Mobility Hubs and More Progressive Value Pricing and User Fee Policies) align with many of the elements of the CHT Alternative. (FEIR, p. P1-6). The FEIR further asserts that the CHT Alternative would achieve commensurate reductions in VMT and GHG emissions compared to Alternative 3. (FEIR, pp. P1-396; P1-408). This is incorrect. In reaching this determination, the FEIR purports to have relied on "data from model runs." (FEIR p. P1-396). The FEIR does not identify the model, disclose its technical assumptions, or describe the "model runs." Nor does the FEIR include the modeling output data. Without any of this information, neither the public nor decisionmakers can verify the accuracy of the FEIR's conclusory assertions.

In addition, it seems implausible that Alternative 3 could achieve reductions in VMT and GHG emissions equivalent to those of the CHT Alternative. The CHT Alternative is premised on building a regional mobility system, beginning with a foundational first-phase area-complete transit, bike, and walk system in the urban core that is competitive with the automobile (i.e., that achieves at least a 50% transit, bike, and walk mode share in the urban core area). Although the EIR does not identify mode share statistics for the urban core or within Mobility Hubs, and it is therefore impossible to conduct a direct comparison of the Plan, Alternative 3 and the CHT Alternative, it seems evident that neither the proposed Plan nor Alternative 3 would achieve anything close to the mode share statistics identified in the CHT Alternative. This is because the Plan would achieve a modest 5% transit mode share in 2050, while Alternative 3 would achieve a 6% transit mode share. (DEIR Appendix T (Table T6: Supporting Measure) and FEIR, Table O-2, Appendices A-O, p. 687 of 3384).

Moreover, as we have explained, the CHT Alternative does not include any roadway or freeway projects because building a real regional transit network will require all the region's transportation investment dollars for the foreseeable future. Unlike the CHT Alternative, the proposed Plan and Alternative 3 include an identical transportation network, which calls for a massive increase in road and freeway projects. The FEIR would have us believe that the Plan's freeway projects are limited to Managed Lanes and that these Managed Lanes will not be new lanes, but rather will convert General Purpose lanes and shoulders to facilitate additional transit and HOV travel. (FEIR p. P1-391 (response 35-3)). Based on this assumption, the FEIR goes so far as to state that in 2050 there would be more lane miles of General Purpose lanes under the CHT Alternative than under the proposed Plan. (FEIR p. P1-403 (response 35-14)). This conclusion is preposterous.

As transportation expert Norm Marshall explains, the FEIR misrepresents the proposed Plan. (*See* Memorandum from Norman Marshall, Smart Mobility (“Smart Mobility Memo”) to D. McFetridge, December 7, 2021, p. 1, attached). The FEIR clearly shows that there would be no reduction in General Purpose lanes under the proposed Plan. In fact, the Plan would result in an increase in General Purpose lanes. (*See* Smart Mobility memo, p. 1, citing to FEIR Table A.1 (Revenue Constrained Projects), Volume 2, Appendix A (Transportation Projects, Costs, and Phasing), pdf p. 702 of 3384).

Moreover, as we explained above, and as the FEIR clearly acknowledges, the CHT Alternative includes no roadway improvements. (FEIR, p. P1-403). Therefore, the number of General Purpose freeway lanes under the CHT Alternative should be equal to the number of General Purpose lanes in the existing transportation network. If the CHT Alternative network was modeled with more General Purpose lanes than the proposed Plan’s roadway network—as implied by the FEIR—the modeling is invalid and the conclusion that the CHT Alternative would result in equivalent VMT and GHG reductions to the proposed Plan is also invalid. (Smart Mobility Memo, p. 2).

Neither the RTP Nor its Alternatives Result in a Substantial Reduction in VMT.

The FEIR, like the DEIR, fails to consider an alternative that substantially reduces VMT. The FEIR states that it is “infeasible” for SANDAG to reduce VMT below existing levels. (*See* Response 35-12, p. P1-400). The document lacks sufficient factual support for this claim. The FEIR asserts that reducing VMT would require State and federal legislative changes, including changes in state road pricing policy, land use policies and parking policies. (FEIR p. P1-400). The FEIR never discloses the specific legislative changes that would be required to produce a plan that reduces VMT. Nor does the FEIR explain any action that SANDAG has taken to pursue these legislative changes. The FEIR also does not identify the specific land use policies or parking policies that would be required to result in a reduction in VMT. Nor does it provide any explanation as to whether SANDAG has taken any action to advocate for such policy changes.

The FEIR also asserts that there are regulatory constraints on directing roadway funds to transit. (FEIR pp. P1-400, P1-401). Once again, the document fails to identify the specific regulatory changes that would be required to produce a transportation plan that substantially reduces VMT. For example, if there are funding restrictions that prevent major shifts in funding from highway projects to transit, the FEIR must provide detail regarding these restrictions. Here, the FEIR simply mentions certain funds that are purportedly restricted (e.g., SHOPP funds), but it does not describe the nature of these funds nor their restrictions. Nor does the document make any attempt to explain whether SANDAG has made any effort to investigate other sources of funding that could facilitate increasing transit in the region.

Again, the reason that neither the RTP nor Alternative 3 results in a substantial reduction in VMT is because both call for \$50 billion in roadway expenditures. As SANDAG is well aware, projects that increase roadway capacity will continue to exacerbate far-flung sprawl development, which in turn will increase VMT. Alternative 3 calls for more progressive value pricing and user fee policies (DEIR, p. 6-7), yet its transportation network is identical to that of

the proposed Plan. SANDAG certainly could have crafted Alternative 3 to use those progressive funding sources to fund transit rather than highways. Similarly, Alternative 3 could have assumed that SANDAG passes a sales tax revenue measure that earmarks substantially more dollars to transit than roadway projects.

Constructing the Managed Lanes Component of the RTP Will Likely Make It Impossible to Achieve the Plan's VMT Goals.

The FEIR asserts that the RTP proposes a land use scenario that accommodates the Regional Housing Needs Assessment and, when combined with the transportation system, would allow the region to meet its SB 375 GHG reduction target. (FEIR, Response 35-3. p. P1-393). We applaud SANDAG for its use of an RTP land use scenario that relies on the Series 14 Regional Growth Forecast. The Series 14 Growth Forecast involves a major shift of planned housing units from rural to urban areas. (FEIR, p. P1-70).

Despite its forward-thinking land use scenario, however, the RTP's proposed roadway network continues to be auto-dominated as is evidenced by its reliance on Managed Lanes. SANDAG asserts that these Managed Lanes are critical because they support transit. (FEIR, p. P1-46). However, constructing roadway projects that *may* serve transit is clearly not as beneficial as directly funding transit infrastructure and transit operations. As the Smart Mobility Memo explains, the RTP's emphasis on Managed Lanes is nothing more than an outdated enormous road construction plan that will result in increases in VMT and GHG emissions. (Smart Mobility Memo, p. 4). This is because Managed Lanes will induce additional auto-based travel. Mr. Marshall determined that the RTP's Managed Lanes could generate an additional 4,300 million VMT per year. (Smart Mobility Memo, p. 4). This equals 13% of the total regional VMT that the FEIR estimates for 2050 with the proposed Plan. *Id.* Thus, constructing the Managed Lanes component of the RTP would likely make it impossible for the region to achieve the RTP's VMT reduction goals. (*Id.*)

SANDAG could help municipalities achieve the Series 14 allocations by shifting all transportation spending towards transit and non-motorized (walk and bike) infrastructure. This is precisely what the CHT Alternative does.

SANDAG Can and Should Do More Regarding Land Use.

While we understand that SANDAG does not have land use authority and that local jurisdictions are responsible for decisions regarding development projects, there are actions SANDAG can and should take to ensure that the RTP achieves substantive VMT reductions. First, there are tremendous opportunities associated with the Series 14 Forecasts. While some jurisdictions rely on Series 14, others do not. For example, had San Diego County relied on the Series 14 Forecasts, it would have used reduced growth predictions for ongoing community plan updates. If the County continues to approve massive increases in residential development in remote areas, there is no chance the region will be able to achieve the RTP's targeted VMT reductions. Shifting population growth to the cities in the County would not just shift VMT from one place to another, it would reduce total VMT because of the lower average VMT per household in cities.

Consequently, in order to achieve real VMT and GHG reductions, there are several actions SANDAG must take. First, SANDAG must convince jurisdictions of the importance of adopting the Series 14 Forecasts. To this end, SANDAG could limit or restrict altogether funding for local jurisdictions' transportation projects unless these jurisdictions have adopted and are using the Series 14 Forecasts to guide their land use planning. Relatedly, SANDAG intends to embark on developing a Regional Housing Incentive Program that will support jurisdictions in the development and adoption of policies to accelerate housing production in urbanized locations in the County. (FEIR, p. P1-10). As part of this Program, SANDAG should provide grant funding only for those jurisdictions that use the Series 14 Forecasts. Moreover, because it is critical to focus growth in Mobility Hubs, SANDAG should withhold grant funding for any transportation projects located outside of Mobility Hubs.


The FEIR Fails to Resolve the RTP's Reliance on Speculative Funding Sources.

In our previous letter, we criticized the RTP's reliance on speculative funding sources, explaining that there was no assurance that the Plan's transit projects would be funded. The FEIR responds by stating that the State is currently studying implementation of a road user charge and that it would be unreasonable for SANDAG to disregard the State's actions. (FEIR p. P1-397). Now, just days before the RTP is slated for consideration by the SANDAG Board of Directors, the Board is being "asked to consider whether to direct staff to immediately begin evaluation of a potential update to the 2021 Regional Plan for Board consideration, including evaluating alternatives to the regional road usage charge program in light of the availability of new federal transportation funding." (Board December 10, 2021 Agenda, p. 3). Any decision to revise a key funding component after approval of the RTP makes the funding for the RTP even more speculative and uncertain. In our view, road usage fees could be implemented more equitably and effectively than gas or sales taxes. The Board should resist this proposal to immediately start undermining the mix of funding sources for the Plan, which is already speculative enough.

Conclusion.

For the reasons discussed above, the FEIR improperly rejects the CHT Alternative and fails to set forth an alternative that substantially reduces VMT. For these reasons, the FEIR fails to comply with CEQA.

Sincerely,



Duncan McFetridge
Director, CNFF
President, SOFAR

Attachment: Smart Mobility Memorandum

Memorandum

To: Duncan McFetridge, CNFF and SOFAR
From: Norman Marshall
Subject: SANDAG 2021 Regional Plan FEIR
Date: December 8, 2021



I have reviewed key aspects of SANDAG’s 2021 Regional Plan Final Environmental Impact Report (FEIR) response to SOFAR’s and CNFF’s Climate, Housing, Transit (CHT) Alternative and conclude:

- 1) The FEIR misrepresents the number of freeway general purpose lanes in both the proposed Plan and the SOFAR/CNFF alternative – therefore the modeling comparison is invalid.
- 2) The FEIR indicates that the proposed Plan would result in a reduction in vehicle miles traveled (VMT) per capita of 15.4% in 2050 relative to the base year 2016. However, these reductions are predicated on an assumed major shift towards compact walkable urban development that the proposed Plan undermines by continuing a failed policy of highway expansion.
- 3) Constructing the managed lanes in the proposed Plan would increase regional VMT and greenhouse gas emissions by at least 10% relative to an alternative without the managed lanes program. If the SANDAG model does not show this; the model has significant problems.

The FEIR states:

Where possible, rather than adding new roads, the proposed Plan repurposes general purpose lanes or shoulders to create Managed Lanes. (Appendix P, p. P1-403)

This statement misrepresents the proposed Plan. In the Managed Lanes/Toll Lanes Projects section of the Revenue Constrained Projects list (Appendices A-O p. 702 of 3384), there are no road segments where there is a reduction in general purpose lanes. Therefore, the statement that general purpose lanes are repurposed is simply wrong. There are, in fact, three segments with increases in general purpose lanes in addition to the managed lanes:

- I-5 between SR 54 and SR 15 increasing from 8 to 10 general purpose lanes,
- SR 15 from I-5 to SR 94 increasing from 6 to 8 general purpose lanes, and
- SR 125 from SR 94 to I-8 increasing from 8 to 10 general purpose lanes.

The statement that shoulders are repurposed is misleading. Many of the projects add four managed lanes which clearly goes beyond shoulder conversion and adds significant width. Even in those projects where shoulder lanes are converted, added width is necessary to meet minimal safety requirements. The actual cross sections for these managed lanes will not be known until designs are completed. The FEIR assumes a standard cross section of 12-foot shoulders on both sides plus a 4-foot buffer lane for calculating impacts. (p. 4.2-19 – 4.2-20) This represents an additional 32 feet of pavement width with two managed lanes and an additional 54 feet of pavement width with four managed lanes.

Regarding SOFAR’s comment letter, the FEIR states:

In 2050, under the proposed Plan, the region has 2,122 miles of general-purpose freeway lanes (including auxiliary lanes) due to existing lane conversions. In 2050, under SOFAR’s proposed Climate, Housing and Transit Alternative, which includes no roadway

improvements, the region has 2,352 miles of general-purpose freeway lanes (including auxiliary lanes). (Appendix P, p. P1-403)

The FEIR gives these numbers for general-purpose freeway lanes:

- 2016: 2,415 (Table 4.16-6, p. 4.16-33)
- 2025: 2,438 (Table 4.16-6, p. 4.16-33)
- 2035: 2,223 (Table 4.16-10, p. 4.16-38)
- 2050: 2,122 (Table 4-16-14, p. 4.16-42)

The 2050 number (2,122) matches the number in the excerpt above. However, it makes no sense given that no general-purpose lanes are converted, and shoulders are not counted as lanes. The FEIR appears to imply that the reduction is caused by converting auxiliary lanes to managed lanes despite never stating this anywhere. The FEIR defines auxiliary lanes as “extra lane constructed between on- and off-ramps that allows drivers a safe way to merge into traffic while also preventing bottlenecks caused by drivers attempting to enter or exit the freeway. Auxiliary lanes are short. It is impossible to eliminate hundreds of miles of auxiliary lanes from the network that would be required to make the FEIR math work. In any case, these auxiliary lanes will still be required for safety if the managed lanes are constructed and will be in the final designs – whether SANDAG modeled them or not.

A more plausible explanation is that the 2,122 number is simply wrong. In addition to the added general-purpose lanes in the three managed lanes projects listed above, the FEIR Revenue Constrained Project list includes seven other freeway expansion projects that would each add to the regional total of freeway general purpose lanes: (Appendices A-O, p. 702 of 3384)

- I-8 from 2nd Street to Los Coches from 4/6 lanes to 6 lanes,
- SR-52 from I-5 to I-805 from 4 lanes to 6 lanes,
- SR 52 from Mast Blvd. to SR 125 from 4 lanes to 6 lanes,
- SR 56 from I-5 to I-15 from 4 lanes to 6 lanes,
- SR 94 from SR 125 to Avocado Blvd. from 4 lanes to 6 lanes,
- SR 125 from San Miguel Rd. to SR 54 from 4 lanes to 8 lanes, and
- SR 125 from SR 905 to San Miquel Rd. from 4 toll lanes to 8 freeway lanes.

In the excerpt above, the FEIR acknowledges that the Climate, Housing and Transit alternative includes “no roadway improvements.” Therefore, the number of general-purpose freeway lanes should be equal to the existing network, i.e., somewhere in the range of the numbers give above for 2016 and 2025. As the number given, 2,352, is lower than either the 2016 number or the 2025 number, it also appears to be wrong. Obviously, the “no-roadway improvements” Climate, Housing and Transit alternative transportation network includes significantly fewer general purpose lane miles than the proposed Plan roadway network. If the Climate, Housing and Transit alternative network was modeled with more general-purpose lanes than the proposed Plan roadway network as implied by the FEIR excerpt, the modeling is invalid and the conclusion that the CHT alternative would result in more VMT than the proposed Plan also is invalid.

The FEIR states that one of the objectives of the RTP is to: “Meet greenhouse gas emissions targets established for the San Diego region by the California Air Resources Board and the SANDAG Board of Directors. (p. ES-1) This objective is to be realized, in part, through another of the EIR’s objectives: “Provide transportation investments and land use patterns that reduce vehicle miles traveled and improve air quality.” (p. ES-1)

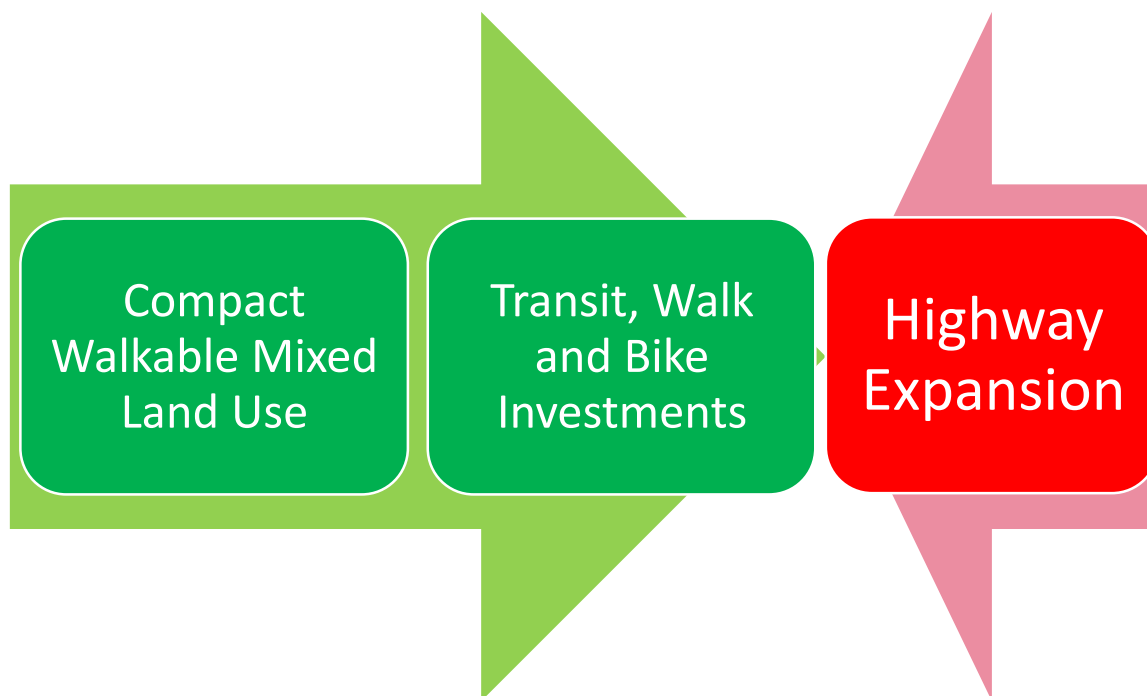
A CARB 2019 report sets a target of reducing VMT by 14.3% by 2050. The FEIR uses this value as a threshold to evaluate whether this objective is met. (p. 4-16-47) FEIR Table 4.16-19 (p. 4.16-54) shows a reduction of 15.4% per capita between 2050 and 2016, and this reduction would meet the required threshold by a very small margin.

However, the most important reasons for the modeled reduction in VMT per capita in the proposed Plan are two other EIR objectives: “Focus population and employment growth in mobility hubs and existing urban areas to protect sensitive habitat and natural resource areas” and “Provide transportation investments and land use patterns that reduce vehicle miles traveled and improve air quality.”

The Series 14 housing and employment allocations are a positive step. However, in the past, the allocations have been aspirational but not enforced. The FEIR acknowledges that:

Mitigation regarding inducement of substantial unplanned population growth by the proposed Plan was found to be infeasible. As described in Section 4.14, SANDAG has no control over the amount of growth the region would experience during the implementation of the proposed Plan. For the same reasons, mitigation to reduce population growth in Southern California and northern Baja would also be considered infeasible. (p. 5-59)

SANDAG can help the municipalities achieve the Series 14 allocations by shifting all transportation spending towards transit and non-motorized (walk and bike) infrastructure. Freeway investment, including managed lanes projects, undermines the positive effects of the non-auto investments.



The FEIR fails to analyze induced travel that would result from freeway construction, including managed lanes. It states:

The proposed Plan includes 821 miles of HOV/Managed Lanes, which SOFAR inaccurately suggests will continue to contribute to substantial increases in VMT and GHG emissions. (Appendix P, p. P1-403)

The managed lanes represent an outdated enormous road construction plan that would certainly cause significant increases in VMT and GHG emissions. The California Office of Planning and Research published a Technical Advisory on Evaluating Transportation Impacts in CEQA (December 2018). This document recommends applying an Induced Travel Calculator developed at the National Center for Sustainable Transportation at the University of California Davis.¹ Applying this calculator to the SANDAG region, 821 lane miles of freeway would add 5700 million additional VMT per year.

There has not been enough research yet to determine whether adding managed lanes results in less induced travel than adding the same number of general-purpose lanes, but it is plausible that there would be some reduction – perhaps 25% less. In this case, the added VMT would be 4300 million per year. This equals 13% of the total regional VMT that the FEIR estimates for 2050 with the proposed plan.

Numerous comments on the EIR were made about induced travel. The FEIR response is that induced demand was dealt with in Regional Transportation Plan Appendix D Attachment 3. This 5-page document claims that induced VMT was estimated by a procedure that includes the SANDAG regional model (ABM2) in combination with the Induced Demand Calculator discussed above. However, the documentation is very questionable; it appears a series of assumptions were made including a critical one that managed lanes do not induce much travel. The document also suggests that much of the managed lanes system will be repurposed from existing general-purpose lanes which is inconsistent with the FEIR as is discussed above. The inventory of lane miles includes only 301 managed lane miles which is inconsistent with the 821 miles of HOV/managed lanes in the FEIR. The resulting estimate of induced travel is much too low – apparently due to a combination of applying too small an increase in lane miles and undocumented assumptions including managed lanes produce little induced travel.

Constructing the managed lanes program likely would make it impossible for the region to achieve the VMT reduction goals set out in the RTP. Although there is some uncertainty about the magnitude of the VMT induced by the managed lanes, it would be greater than 10% of forecast regional VMT. The assertion in the FEIR that the increase in induced VMT would not be “substantial” is preposterous. Adding managed lanes would divert traffic from congested general-purpose lanes and the general-purpose lanes would fill with traffic until they were congested again. Otherwise, there would be no reason for travelers to pay to travel in the managed lanes. If the SANDAG modeling fails to show such increases in VMT, this is just evidence of serious problems in the SANDAG modeling.

¹ <https://ncst.ucdavis.edu/research-product/induced-travel-calculator>

SOFAR Letter Response:

SANDAG staff received SOFAR's comment on 12/9/2021 and is working on the response. The response will be provided by 8:30 am on 12/10/2021.

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December 9, 2021

Via E-mail (RegionalPlanEIR@sandag.org)

Kirsten Uchitel
Associate Planner, SANDAG
401 B Street, Suite 800
San Diego CA, 92101

Dear Ms. Uchitel,

On behalf of the San Diego Chapter of the Sierra Club (“Sierra Club”), we provide the following comments on the Final 2021 SANDAG Regional Plan (“Regional Plan”) and Final Environmental Impact Report (“FEIR”). Sierra Club has provided its own individual comments on the Regional Plan.

We thank SANDAG for its responses to the comments and questions we submitted on the Draft Regional Plan and Draft Environmental Impact Report (“DEIR”) and appreciate that SANDAG made some corresponding revisions in the FEIR. However, the Final Regional Plan still depends heavily on roadway expansion and skirts its responsibility to sufficiently reduce transportation-related greenhouse gases (GHGs) and vehicle miles travelled (VMT) to meet the state’s climate action goals. This is a missed opportunity—much more can and must be accomplished with this Regional Plan. As the regional decisionmaker, SANDAG is best equipped, and responsible, for ensuring that San Diego does not impede state climate goals.

Lastly, the Final Regional Plan fails to cure many of the Draft Regional Plan’s violations of the California Environmental Quality Act (“CEQA”), as detailed below. If SANDAG proceeds with adoption of the Regional Plan, it must select the environmentally superior Alternative 3, adopt all feasible mitigation measures to ensure consistency with state GHG reduction goals, and strengthen the FEIR’s existing mitigation measures.

I. The Regional Plan Must Sufficiently Reduce GHG Emissions

As we noted in our previous letter regarding the DEIR, dated October 11, 2021, the FEIR admits significant and unavoidable impacts to GHG emissions due to its inhibition of statewide GHG reduction goals (Impact GHG-5.) SANDAG can and must fully mitigate the Regional Plan’s significant GHG impacts. Further, the FEIR’s current GHG measures must be strengthened to comply with CEQA.

A. The FEIR Must Include All Feasible Mitigation Measures

Impact GHG-5 will be significant and unavoidable because the Regional Plan's GHG emissions in the San Diego region will exceed SB 32 targets. (FEIR, p. 4.8-33.) SANDAG avoids its responsibility as the regional planning agency to fully mitigate this impact and claims that achieving the necessary reductions to meet state goals will require a coordinated effort across state, regional, and local agencies that is "well beyond the scope and jurisdiction of SANDAG alone." (P1-369.)

Yet, Senate Bill 375 clearly identified the state's reliance on regional transportation planners in its goal to reduce transportation-related emissions. (See Stats. 2008, ch. 728 § 1, subd. (a); subd. (c) ["Greenhouse gas emissions from automobiles and light trucks can be substantially reduced by new vehicle technology and by the increased use of low carbon fuel. However, even taking these measures into account, it will be necessary to achieve significant additional greenhouse gas reductions from changed land use patterns and improved transportation. Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32."].)

In its response to our comments, SANDAG noted the DEIR provides a detailed discussion of the actions required to achieve statewide GHG reductions (FEIR pp. P1-369, see 4.8-54 [describing necessary measures]), yet does not demonstrate why SANDAG cannot incorporate these actions further into the Regional Plan or as mitigation measures (for example, electrification of the transportation sector, investment into healthy soils, decarbonization of new construction, carbon dioxide removal strategies).

Further, the FEIR states, "Additional Plan-level measures to reduce GHG emissions are included as components of the project alternatives in Chapter 6, rather than as individual mitigation measures in this section. These include still more compact land use patterns and policies to reduce transit fares, increase parking prices, and establish road user fees." (FEIR, p. 4.8-37.) These should have been included as feasible mitigation measures, and must be included if Alternative 3 is not selected.

Additionally, as a Project-level mitigation measure, SANDAG should require all transportation projects that tier from this FEIR to achieve net zero emissions, conduct a GHG analysis that mitigates for the true lifetime of the project, require *local* off-site GHG mitigation (where necessary), and identify minimum feasible measures to mitigate GHGs based on the category of the project.

Finally, SANDAG should consider the placement of a road use charge on non-electric commercial freight trucks to fund a program that mitigates the GHG and air quality impacts from increased goods movement, especially in the local communities

bearing these environmental harms. In an appendix, the Regional Plan notes these environmental justice impacts: “The negative impacts of goods movement have historically been disproportionately borne by socioeconomically disadvantaged and marginalized communities.” (Plan, Appendix Y-4.) This measure could also increase funding for the existing GHG mitigation measures. A commercial road-use charge would incentivize private companies to reduce their transportation GHGs and invest in electric vehicles. This measure is necessary as commercial shipping giants, including Amazon and Walmart, are rapidly expanding their footprint—and associated GHG emissions—in the San Diego region in contravention of the region’s and state’s climate goals.¹

The Regional Plan notes that while measures to increase the efficiency of freight operations “may succeed in improving economic productivity, they may also have adverse effects like increased noise, congestion, or pollution if innovative strategies are not used to mitigate these impacts.” (Plan, Y-4.) The Plan includes several projects to increase goods movement and must mitigate accordingly.

B. The FEIR’s GHG Mitigation Measures Violate CEQA

1. The FEIR Improperly Defers Mitigation Measures Without Adequate Performance Criteria

In responding to our comments on the DEIR, SANDAG points to the Regional Plan’s status as a program-level EIR to condone its impermissibly deferred mitigation, use of overly generalized mitigation criteria, and reliance on future studies. (FEIR, P1-355.)

First, that the FEIR is a program-level EIR does not excuse SANDAG from mitigating the Project’s known impacts to fullest extent possible. Further, an EIR must address the environmental impacts consistently with the underlying activity being approved. The Regional Plan sets forth the specific locations for its planned roadway expansion projects and increase in roadway miles and plans to fund those projects at the expense of further VMT-reducing projects. SANDAG is aware of the extent that it fails to meet state GHG reduction goals—the mitigation measures should require quantified, substantial GHG reductions to mitigate the Regional Plan’s GHG impacts.

SANDAG claims measures GHG-5a through GHG-5d include “specific performance standards,” yet only points to generalized goals that fail to demonstrate *how*

¹ <https://www.sandiegouniontribune.com/business/growth-development/story/2021-11-13/amazon-keeps-growing-in-san-diego-and-tijuana-chances-are-it-wont-stop>;
<https://www.sandiegouniontribune.com/business/nation/story/2021-06-30/amazon-says-its-carbon-footprint-grew-19-last-year>; see also Plan Appendix, pp. Y-67, 217.)

the measures will accomplish GHG reductions. (See *Golden Door Properties, LLC v. County of San Diego* (2020) 50 Cal.App.5th 467, 520; *King & Gardiner Farms, LLC, v. County of Kern* (2020) 45 Cal.App.5th 814, 856.) These measures must include specific performance criteria to ensure actual, significant GHG reductions and prevent inhibition of the state's climate goals.

Ultimately, the FEIR's mitigation measures GHG-5a through GHG-5d consist of the formation of grant programs that delay implementation for two to four years and lack objective, enforceable performance standards. The measures omit any commitment by SANDAG to ensure *specified* GHG reductions. SANDAG should include specific, enforceable targets of GHG reductions through these measures. Each mitigation measure is discussed in turn.

i. Measure GHG-5a: Allocate Competitive Grant Funding to Projects that Reduce GHG Emissions and for Updates to CAPs or GHG Reduction Plans

In its response to our comments, SANDAG asserts that GHG-5a includes performance criteria via its requirement to achieve "additional annual GHG emissions reductions . . . by implementing projects ahead of schedule." (FEIR, pp. P1-355-356.) First, Sierra Club questions whether this standard really constitutes "additional" GHG reductions. (*Golden Door, supra*, 50 Cal.App.5th at 514.) Further, merely including a definition, such as "additional," without objective criteria is insufficient. (*Id.* at 523.) Finally, GHG-5a fails to require or include objective standards to ensure the Program accomplishes GHG reductions that are real, verifiable, permanent, and quantifiable.

Merely requiring funding applicants to demonstrate, "to SANDAG's satisfaction, that their project would not be financially feasible . . . in the absence of SANDAG funding" is insufficient. (FEIR, p. P1-356.) GHG-5a lacks objective criteria to demonstrate how this will be determined, impermissibly relying on the vague determination of SANDAG's "satisfaction." (*Golden Door, supra*, 50 Cal.App.5th at 521-22)

SANDAG's second claimed performance criteria only require applicants to (1) show the project is included in an adopted CAP/GHG reduction plan that quantifies strategies to meet a reduction target and (2) estimate GHG emission reductions from projects "subject to review and approval by SANDAG" (FEIR, p. P1-356.) These claimed criteria do not require SANDAG to ensure the project will ensure substantial, effective reductions. It does not require SANDAG to take any responsibility for quantification of applicant projects or to require a certain level of reductions. SANDAG

claims GHG-5a includes a commitment to structure the grant program using “evaluation criteria,” yet does not provide any information on this. (FEIR, p. P1-356.)

We appreciate that SANDAG revised GHG-5a in response to our comments. However, these revisions still do not cure the measure’s deficiencies. Even though implementation now must begin no later than December 2023, this still delays implementation for two years. Projects that receive funding will then take even longer to implement. We urge SANDAG to accelerate implementation. Further, the measure still fails to demonstrate how it will ensure real, additional reductions, and fails to commit SANDAG to an enforceable reduction target. (FEIR, p. P1-357)

Finally, the Program’s allotted \$40 million is a trivial percentage of overall funding, especially compared to the Regional Plan’s overall planned investment. GHG-5a’s paltry funding is highlighted when compared to SANDAG’s projections that selective highway widening will cost \$40.2 million *per mile*. (Regional Plan, p. U-3.) The miniscule funding diminishes the ability of GHG-5a to mitigate the Regional Plan’s GHG impacts.

ii. Measure GHG-5b: Establish New Funding Programs for Zero-Emissions Vehicles and Infrastructure

CBCM appreciates SANDAG’S revisions to clarify the timing and add details of GHG-5b’s implementation. (FEIR, p. P1-360.) SANDAG should further strengthen the measure by incorporating factors and requirements for where incentives will be directed. For example, no information is provided on how SANDAG will prioritize who receives funding for one of the program’s 200 electric bikes. (FEIR, p. 4.8-48.) SANDAG should add a requirement to focus on equity in distribution of these incentives in the mitigation measure itself.

Contrary to SANDAG’s claims, the funding itself is not performance criteria when it relates to ensuring GHG mitigation. (FEIR, p. P1-357) This measure should be strengthened by indicating criteria for receipt of the grants and requiring quantification of achieved GHG reductions.

Finally, as noted above, SANDAG should evaluate the placement of a road use charge on non-electric commercial vehicles. While GHG-5b notes that beginning 2022, “SANDAG will begin two planning strategies to inform transition to zero-emission goods movement,” SANDAG should strengthen this measure to require the evaluation of a charge and the establishment of a program to mitigate the GHG and air quality impacts of planned increased goods movement on affected communities.

iii. **Measure GHG-5c: Implement Nature-Based Climate Solutions to Remove Carbon Dioxide from the Atmosphere.**

We thank SANDAG for clarifying the timing to begin the Nature-Based Climate Solutions Program, however allowing an adoption deadline of the next Regional Plan (2025) still greatly delays mitigation. (FEIR, p. P1-362.) Further, generally requiring an “increase” in the rate of carbon sequestration over baseline conditions does not constitute specific performance criteria. The measure should include sequestration targets and protocols. (*Golden Door*, supra, 50 Cal.App.5th at 520.)

iv. **Measure GHG-5d: Develop and Implement Regional Digital Equity Strategy and Action Plan**

Despite SANDAG’s assertions that GHG-5d includes “performance criteria,” the FEIR fails to include any objective measures of success, enforceable targets or commitments. (FEIR, p. P1-367.) In contrast, a commitment to achieve a percentage increase in access to broadband service, or including a target level of GHG reductions, would provide specific performance criteria. SANDAG only vaguely requires itself to quantify, “where possible,” GHG reductions from an action plan and provide annual reports. (FEIR, p. P1-364.) These “criteria” do not provide objective, specific measures to ensure successful implementation of the mitigation measure and GHG reductions.

2. The FEIR Must Ensure Implementation of Project-Level Mitigation Measures GHG-5e and GHG-5f

Project-Level Mitigation Measure GHG-5e states that “transportation project sponsors *can and should* implement measures to reduce GHG emissions.” (DEIR, p. 4.8-48, emphasis added.) We applaud SANDAG’s response that it will require implementation of Project-level mitigation measures for projects it directly approves, including grants of TransNet funds. (FEIR, p. P1-10.) Yet from SANDAG’s master response, “Ensuring Enforcement,” SANDAG does not explain why it cannot apply Project-level conditions when acting as a “pass-through agency.” (FEIR, p. P1-10.)

While SANDAG may not be the lead agency for the second-tier projects implementing the proposed Regional Plan, each of those projects must analyze consistency with the Regional Plan. At the very minimum, the FEIR should clarify in its discussion of mitigation measures—in the body of the FEIR—that a failure to incorporate the FEIR’s Project-level mitigation measure precludes reliance on the FEIR for tiering. We reiterate our assertion that all projects relying on the Regional Plan FEIR must incorporate its mitigation measures (CEQA Guidelines § 15168, subd. (c)(3).) In its response, SANDAG asserts that Projects only need to require “feasible” mitigation

measures, therefore “this Draft EIR cannot definitively say whether the mitigation measures . . . will or will not be incorporated into any specific project that tiers from this analysis.” (FEIR, p. P1-368.) Yet, the Regional Plan details the locations and projects, including anticipated roadway expansions, under the Regional Plan, which allow it to determine specific feasible measures that must be included in projects. (Appendix B.)

Even if the FEIR cannot identify every feasible Project-level mitigation measure, SANDAG must require implementation of mitigation measures that are feasible and applicable to *all projects* under the Regional Plan. This includes the requirement that all Project GHG emissions be mitigated locally in San Diego County.

3. Calculations of GHG Emissions from Projects Contemplated by the Regional Plan Must Include the Actual Lifespan of the Projects

CEQA Guidelines section 15064.4, subd. (a) requires an agency to make a “good-faith effort, based to the extent possible on scientific and factual data,” to calculate the full GHG emissions expected from a project. In our letter on the DEIR, we had noted the impropriety of choosing an arbitrary lifetimes, such as a 30-year project lifetime. (FEIR, p. P1-369, comment 34-9.) In its response, SANDAG notes that the FEIR analyzes Plan impacts at the “same level of detail as the proposed Plan and does not analyze project-specific impacts of individual projects.” (P1-370 to 371.) The FEIR should require projects tiering off of this FEIR to adequately analyze and fully mitigate their GHG impacts based on the actual lifespan of the project.

4. The Regional Plan Must Disclose the Extent That It Impacts State GHG Goals

An EIR’s designation of a particular adverse environmental effect as “significant” does not excuse its failure to reasonably describe the nature and magnitude of the adverse effect. (See *Berkeley Keep Jets Over the Bay Committee v. Board of Port Comrs.* (2001) 91 Cal.App.4th 1344, 1371.)

In its analysis of the Regional Plan’s GHG impacts, SANDAG combines the projected population growth and land use change, anticipated state measures to reduce GHGs, and its proposed transportation plan. (FEIR, p. 4.8-35 [“reductions from the entire on-road transportation sector account for the land use and transportation components of the proposed Plan as well as the federal and State regulations improving vehicle efficiency and increasing use of zero-emission vehicles.”]) The FEIR does not clearly show what GHG reductions the Plan itself accomplishes versus the extent its claimed reductions actually rely on state measures. This conflated analysis fails to disclose how the Regional Plan’s reliance on roadway expansion impedes state goals. In responding to

comments, SANDAG states that the projected VMT increases are associated with anticipated population and employment growth and not directly associated with increased roadway miles, (FEIR, p. P1-378), yet simultaneously admits that the Regional Plan’s increase in roadway miles has the potential to induce travel (FEIR, p. P1-374.) The analysis is further conflated by the fact that general plan land use assumptions are used to develop the regional growth forecast. (FEIR, p. 4.11-17.) Yet, subsequently enacted plans and projects will need to analyze their consistency with this RTP. The FEIR should better disclose, in the main body of the FEIR, the Regional Plan’s projected reductions from state actions versus SANDAG’s actions in a manner that the average reader understands.

5. The FEIR Must Fully Analyze Inconsistency with Climate Action Plans

Threshold GHG-4 finds that the Regional Plan is consistent with Climate Actions Plans (CAPs) under SANDAG’s jurisdiction. (FEIR, p. 4.8-31) The FEIR notes that a “major objective of the proposed Plan is to reduce GHG emissions Therefore, many transportation network improvements and programs that would be implemented under the proposed Plan would complement these existing and future local efforts to reduce GHG emissions from the on-road transportation sector.” (FEIR, p. 4.8-31) Yet, SANDAG fails to meaningfully analyze and disclose the Regional Plan’s divergence from many of the local CAP’s higher reduction targets to meet the state’s more GHG reduction goals or inconsistencies in GHG projections.² San Diego’s member cities and counties are looking to SANDAG for leadership.

II. Significant Transportation Impacts Require Further Mitigation

A. SANDAG Must Reduce its Reliance on Roadway Expansion to Meet State and Federal Transportation Goals

As we noted in our comment letter on the DEIR, the Regional Plan fails to meaningfully reduce trip length, instead relying on roadway expansion in contravention of state and federal goals. In its response, SANDAG acknowledged the EIR mischaracterized the Regional Plan’s planned 11.5 percent roadway increase as “slight,” and noted it removed this phrasing in the FEIR. (P1-374.)

² As another example, FEIR notes: “Although the Regional Plan’s total regional GHG emissions percentage reductions from all sources would be lower than the [City of Carlsbad’s CAP] percentage reductions, there is no conflict because the City’s CAP makes **different assumptions about federal, state**, and, in particular, local GHG reduction measures that would be implemented to achieve the City’s target.” (Appendix J-1, emphasis added.) SANDAG should have analyzed the Regional Plan’s consistency with CAP targets and assumptions to ensure a unified regional approach in modeling and targets. Otherwise, local, regional, and state agencies will continue to point fingers about who is responsible for ensuring reductions.

SANDAG claims a successful decrease in roadway mode share, yet simultaneously admits that implementation of the Regional Plan and increased roadway miles could result in the “potential for induced travel.” (FEIR, p. P1-373.) Recent research has detailed how EIRs fail to accurately analyze induced VMT from highway expansion projects. (**Exhibit A.**) This research presented the National Center for Sustainable Transportation’s Induced Travel Calculator. SANDAG notes that it only “borrowed elements” from the National Center for Sustainable Transportation (NCST) in calculating Induced Demand. (Plan, D3-1 to 2.) What affect did this have on the inducement factor? CNFF has submitted expert comments on the sufficiency of the FEIR’s VMT inducement analysis.

In response to our earlier comments, SANDAG relies on the fact that much of the increased lane miles will be for managed lanes. As we mentioned in our comment on the DEIR, these lanes will be open to use by fee-payer vehicles. (FEIR, p. P1-367.) SANDAG refused to provide information on existing Rapid Bus service, despite existing managed lanes that could be studied for reference. (P1-376.) This information should have been included in analyzing the efficacy of the Regional Plan’s planned reliance on expansion of roadways and managed lanes that still allow paying single passenger vehicles to access.

While SANDAG correctly notes in its response that the interpolated interim VMT per capita targets were not used to determine impact significance (P1-384), these targets are still improperly used to assert that the Regional Plan VMT per capita reductions “remain on target.” (DEIR, p. 4-16-47 to 49) These assertions still serve to downplay the impacts of the Regional Plan on state and federal VMT reduction goals, through induced travel from its reliance on roadway expansions at the expense of investing in more effective public transit opportunities.

Finally, the FEIR admits significant impacts in TRA-2, yet fails to adequately and fully mitigate the VMT increases. On its face, the Regional Plan itself asserts: “Our region simply cannot meet these mandates without reducing the number of miles that people drive on our roadways.” (Plan, p. 44.) Therefore, we reiterate our request from our previous comment that SANDAG strengthen its mitigation measure TRA-2 to clarify that projects tiering off of the FEIR that do not project-level VMT are inconsistent with the RTP. (FEIR, p. P1-383.)

III. The FEIR Must Fully Mitigate Impacts to Biological Resources

We note and thank SANDAG for its commitment to fund regional habitat conservation fund. We request that SANDAG prioritizes securing this funding as soon as possible. (Appendix B-8, p. 9.)

We reiterate our request from our previous comments that SANDAG strengthen its mitigation measures (FEIR, p. P1-387). At the minimum, SANDAG must clarify in the FEIR that projects that fail to incorporate the FEIR's mitigation measures are inconsistent with the Regional Plan.

IV. SANDAG Should Select the Environmentally Superior Alternative 3

While we had previously requested that SANDAG include an alternative that substantially reduces the Plan's VMT impacts and biological impacts (FEIR, p. P1-387), in the alternative we express support for Alternative 3: All Growth in Mobility Hubs and More Progressive Value Pricing and User Fee Policies. The FEIR designated Alternative 3 as the environmentally superior alternative. (FEIR, p. 6-9.) While it still does not achieve the necessary VMT reductions, Alternative 3 would achieve the greatest reductions of VMT, GHG emissions, and air quality emissions. (*Id.*) Therefore, SANDAG must adopt Alternative 3, or at the least adopt its focus on all growth in mobility hubs.

V. Conclusion

Based on the foregoing comments, we respectfully request that SANDAG revise the Regional Plan to achieve the necessary GHG and VMT reductions, improve protections for biological resources, and resolve the issues addressed in this letter.

Thank you for your consideration.

Sincerely,



Kathryn Pettit
Josh Chatten-Brown
Attorneys for Sierra Club San Diego

Exhibit A

UC Davis

Policy Briefs

Title

Environmental Reviews Fail to Accurately Analyze Induced Vehicle Travel from Highway Expansion Projects

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Environmental Reviews Fail to Accurately Analyze Induced Vehicle Travel from Highway Expansion Projects

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January 2021

POLICY BRIEF

Issue

Induced travel is a well-documented effect in which expanding highway capacity increases the average travel speed on the highway, which in turn reduces the perceived “cost” of driving and thereby induces more driving.¹ This increase in vehicle miles traveled (VMT) increases congestion (often back to pre-expansion levels) and air pollutant emissions, reducing or eliminating the purported benefits of the expansion (Figure 1). Yet highway expansion projects continue to be proposed across California, often using congestion relief—and sometimes greenhouse gas reductions—as a justification for adding lanes. These rosy projections about the benefits of highway expansion projects indicate that the induced travel effect is often not fully accounted for in travel demand models or in the projects’ environmental review process.

With this problem in mind, researchers at the University of California, Davis developed an online tool to help agencies estimate the VMT induced annually by adding lanes to major roadways in California’s urbanized counties. The Induced Travel Calculator estimates project-induced VMT using the project length (in lane miles) entered by the user, lane-mile and VMT data from Caltrans, and estimates of elasticities (the percentage change in VMT that results from a 1% increase in lane miles) from peer-reviewed studies.

The researchers also applied the calculator to estimate the vehicle travel induced by

five highway expansion projects in California that had gone through environmental review within the past 12 years. They then compared their estimates with the induced travel analysis completed for the projects’ actual environmental impact assessments. The five projects include (1) the U.S. Highway 101 High-Occupancy Vehicle (HOV) Widening (Marin-Sonoma Narrows), (2) the State Route 1 Corridor Analysis of HOV Lanes (Santa Cruz), (3) the State Route 210 Mixed-Flow Lane Addition (San Bernardino), (4) the State Route 99 South Stockton Six-Lane Project, and (5) the Interstate 405 HOV Widening.

Key Findings

Environmental reviews of highway expansion projects include inconsistent, if any, analysis of induced vehicle travel. The environmental analysis documents for the five projects varied wildly in their discussion of induced vehicle travel impacts. Two documents did not discuss the induced travel phenomenon at all. And the only two documents to analyze it in detail did so in responses to comments, not in the original analysis. Even when the documents did analyze induced travel in detail, the discussion of the effect was contradictory within the documents and inconsistent with the induced travel literature.

Projects’ environmental review documents underestimate induced vehicle travel. Only three of the five documents reported estimates of induced VMT. All three estimates were lower than what the researchers estimated using the

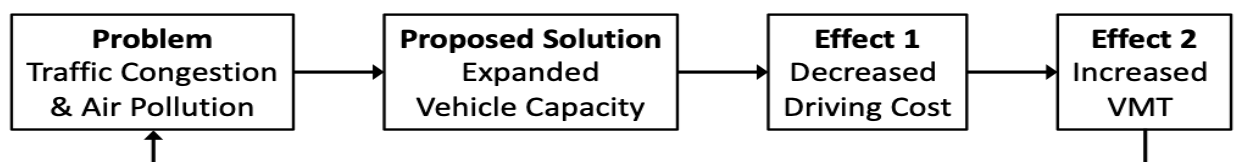


Figure 1. Induced vehicle travel effect of highway capacity expansions

Induced Travel Calculator. In two of the three cases, the estimates were an order of magnitude lower (Figure 2).

Policy Implications

The results provide additional evidence that environmental analyses often fail to consistently and accurately discuss—let alone estimate—the induced travel effects of highway capacity expansion projects. Going forward, the Induced Travel Calculator can help agencies consistently quantify induced travel by using elasticity-based estimates of VMT levels derived from the project’s lane-mile changes. Indeed, Caltrans’ 2020 Transportation Analysis Framework recommends that the Induced Travel Calculator be used where possible to estimate or at least benchmark induced VMT for California state highway system projects.

More Information

This policy brief is drawn from “Induced Vehicle Travel in the Environmental Review Process,” a paper in the *Transportation Research Record: Journal of the Transportation Research Board* by Jamey M.B. Volker, Amy E. Lee, and Susan Handy of the University of California, Davis. The article is available at <https://ncst.ucdavis.edu/research-product/induced-vehicle-travel-environmental-review-process>.

NCST’s Induced Travel Calculator can be accessed at <https://ncst.ucdavis.edu/research-product/induced-travel-calculator>.

For more information about the findings presented in this brief, please contact Jamey Volker at jvolker@ucdavis.edu.

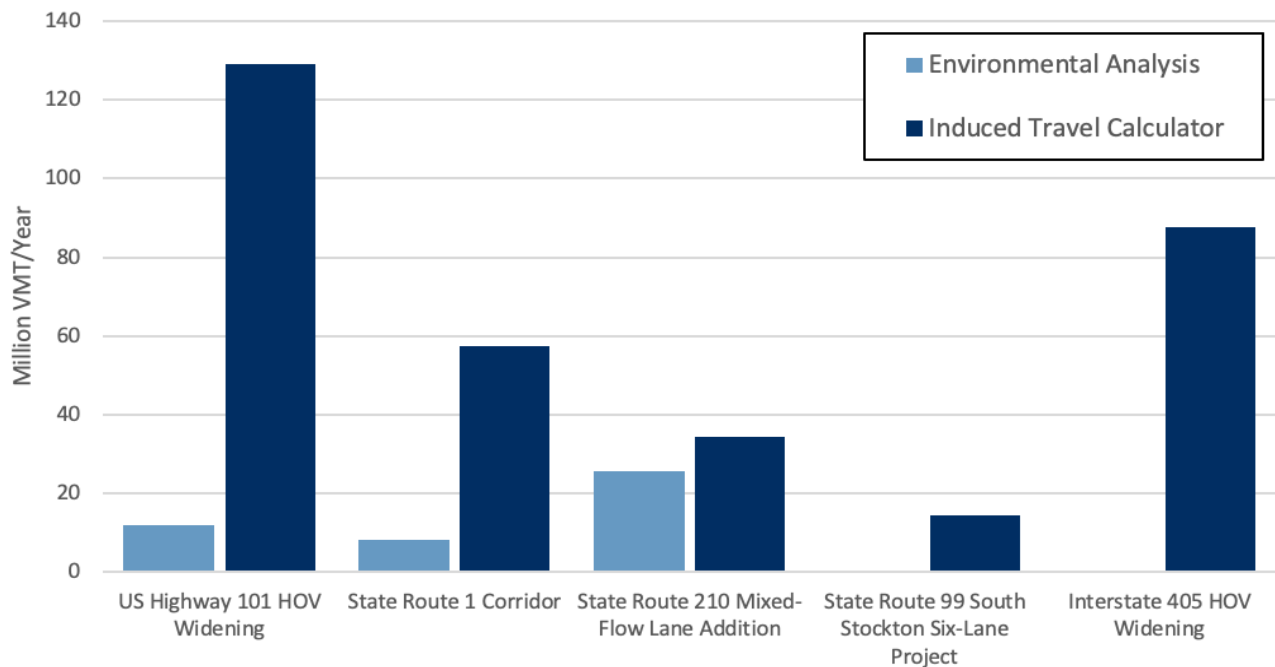


Figure 2. Comparison of induced VMT estimates in highway expansion project environmental analyses versus the Induced Travel Calculator (analyses for the State Route 99 and Interstate 405 projects did not estimate induced travel)

¹Handy, S. (2015). *Increasing Highway Capacity Unlikely to Relieve Traffic Congestion*. UC Davis: National Center for Sustainable Transportation. <https://escholarship.org/uc/item/58x8436d>

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Chatten-Brown, Carstens & Minter LLP Letter Response:

SANDAG staff received Chatten-Brown's comment on 12/9/2021 and is working on the response. The response will be provided by 8:30 am on 12/10/2021.