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MPO Planning and Implementation of State Policy Goals

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Publication Date

2021-12-01

DOI

10.7922/G27D2SFQ



MPO Planning and Implementation of State Policy Goals

WHITE PAPER

PART 1

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PART 2

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December 2021

DOI: 10.7922/G27D2SFQ



MPO Planning and Implementation of State Policy Goals

This research was conducted with funding, in part, from the State of California Strategic Growth Council. The opinions expressed herein are those of the authors and not necessarily those of the Strategic Growth Council.

WHITE PAPERS IN THE SERIES INCLUDE:

Evaluation of California State and Regional Transportation Plans and Their Prospects for Attaining State Goals: Summary and Synthesis

A Brief History of Transportation Policies and Institutions

Review of Statewide Transportation Plans for California

Examination of Key Transportation Funding Programs in California and Their Context

Flexibility in California Transportation Funding Programs and Implications for More Climate-Aligned Spending

Forward

Assembly Bill (AB) 285 (Friedman, 2019) requires the California Strategic Growth Council (SGC) to submit a report to the Legislature by January 31, 2022, that includes the following:

- An overview of the California Transportation Plan (CTP) 2050
- An overview of all regional Sustainable Communities Strategies and any alternative planning strategies, as needed
- An assessment of how the implementation of the CTP and regional plans “will influence the configuration of the statewide integrated multimodal transportation system”
- A “review of the potential impacts and opportunities for coordination” of key state funding programs” to be conducted in consultation with the administering agencies
- Recommendations for improving these programs and other relevant transportation funding programs to better align the programs to meet long-term common goals, including the goals outlined in the CTP

In spring 2021, the SGC contracted with the University of California (UC) to provide materials supporting their report to the Legislature. Researchers at the UC Berkeley, UC Davis, and UCLA Institutes of Transportation Studies and the UC School of Berkeley Law joined forces to prepare a series of white papers to provide the evidentiary basis for the project. Elizabeth Deakin, the UC Berkeley principal investigator, coordinated the work.

Background

California has adopted ambitious goals for its transportation systems. The state has pledged to reduce greenhouse gas (GHG) emissions by 40 percent compared to 1990 levels and by 80 percent by 2050, and has also committed to achieve carbon neutrality by 2045. With transportation a major emitter, substantial changes in transportation vehicles, fuels, operations, and user choices must be achieved to meet these goals.

As pressing as climate change goals must be, other goals remain important. California has pledged to maintain its transportation infrastructure in a state of good repair, provide for safe operations, support economic development, meet air quality standards, protect the state’s natural environment, coordinate urban transportation with housing policies, and do so in a way that is equitable for all. This ambitious set of goals places considerable responsibility on transportation planners and decision-makers.

A series of state initiatives has moved the state toward zero-emissions vehicles, cleaner fuels, and planning for transportation and land use measures that reduce vehicle miles traveled (VMT). Nevertheless, a 2018 assessment by the California Air Resources Board (CARB) found that the State of California is at risk of missing its 2030 GHG emissions reduction target for transportation-related emissions, in part due to increases in VMT. Since then, CARB has taken steps to tighten its requirements, the California Department of Transportation (Caltrans) has updated its plans and planning guidance, and metropolitan planning agencies and their partners (transit agencies, county transportation commissions, cities) have updated their plans and programs, which include both transportation and land use elements.

California's transportation plans for the most part have been developed in a context of anticipated growth in population and the economy. In a business-as-usual context, such growth is associated with increases in VMT. Nationwide, for example, the Federal Highway Administration has projected that VMT will continue to increase as the result of population increases, rising disposable income, increased GDP, growth in the goods component of GDP, and relatively steady fuel prices. For California to buck these trends would require a large-scale, concerted effort.

However, in the past two years, the COVID-19 pandemic has disrupted daily life and led to massive changes in travel behavior. As recovery from the pandemic occurs in fits and starts, whether and to what extent pandemic-induced changes in travel will persist remains in question. Major issues include whether telecommuting and e-commerce will remain popular and whether avoidance of shared modes will continue.

At the same time, new transportation options, from high-speed rail to bike sharing, are being added to California's transportation systems, and transportation technologies continue to evolve—electrification and automation are examples. Such changes need to be considered in plans that aim to steer actions for 20, 30, or even 50 years, along with other driving forces, including fuel prices and turnover rates for the vehicle fleet. How these factors are dealt with in plans can make a difference in how well the plans comport with actual experiences in the future.

The UC team has evaluated California's state and metropolitan transportation plans, financing for transportation, and the legal framework in this broad and uncertain context while taking into consideration the legacies of successive transportation technologies and the institutions that shaped and were shaped by them and the implications for change.

Research Methods

The UC team carried out its work based on 1) reviewing and analyzing previous research on the topic, including government reports, assessment document, and scholarly literature; 2) discussions with SGC staff and the staff of state agencies involved in transportation planning and related activities in California; and 3) interviews with key informants. A series of white papers was prepared to address the topics to be included in the report to the Legislature.

White Papers and Summary

Each white paper is designed to be read as a stand-alone document. In addition, a separate summary synthesizes the findings and recommendations.

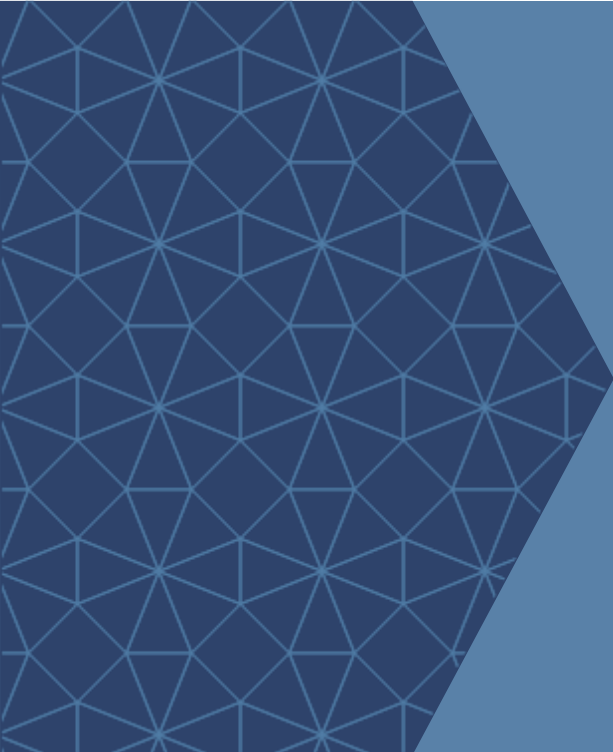
Evaluation of California State and Regional Transportation Plans and Their Prospects for Attaining State Goals: Summary and Synthesis pulls together the key findings and recommendations of all the white papers. It assesses the prospects for achieving the state's diverse goals through its transportation planning and programming processes and identifies strengths and weaknesses of current policies and practices. It also provides the authors' recommendations for changes to policy and practice that could improve overall system performance and achievement of state goals for climate, equity, environment, safety, infrastructure, and the economy.

A Brief History of Transportation Policy and Institutions presents the development of transportation systems in the United States, with particular attention to California. The review includes key technological advances in transportation and the institutions that were developed to implement them. The paper also discusses the problem of organizational inertia and the issues associated with changing organizational culture to better reflect the problems of the day. **Review of Statewide Transportation Plans for California** reviews the most recently adopted CTP and other key transportation plans adopted by state agencies, discusses the special attention given to new technologies in the CTP, and presents the findings from over 80 interviews with stakeholders across California who were asked to weigh in on the strengths and weaknesses of transportation planning practices in the state.

MPO Planning and Implementation of State Policy Goals evaluates California metropolitan planning organizations' regional transportation plans and sustainable communities strategies and looks at the relationship between MPO plans and what is actually funded through transportation improvement programs.

Examination of Key Transportation Funding Programs in California and Their Context assesses the congruence between funding programs and state goals for transportation. Particular attention is given to major funding sources, such as the State Operation and Protection Program, and programs designed to promote key state goals, including the Affordable Housing and Sustainable Communities program, the Transit and Intercity Rail Capital Program, the Transformative Climate Communities program, and the Sustainable Transportation Planning Grant program.

Flexibility in California Transportation Funding Programs and Implications for More Climate-Aligned Spending examines key features of the legislative authority for transportation planning and finance in California, including local option sales taxes for transportation, and assesses the amount of flexibility that current laws and practices allow for reprioritizing projects as problems and priorities change.



Role and Capacity of California MPOs for Supporting State Policy Goals for Climate Protection and Sustainable Transport

PART 1

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Executive Summary

California's 18 metropolitan planning organizations (MPOs)—federally mandated regional transportation planning agencies operating in the state's urban regions—play a central role in planning and programming transportation projects. This paper examines their role in the state's decision-making and governance structure for transportation, and how and whether MPOs are helping achieve state goals for climate protection and sustainability.

California assigns more responsibility to its MPOs than most other US states. In California, MPOs plan and program all transportation projects in urban areas through their periodically updated long-range (20+ year) regional transportation plans (RTPs) and shorter-range transportation investment plans (TIPs). Since the passage of Senate Bill (SB) 375 in 2008, the MPOs have been required to produce RTPs that can, in combination with land-use plans called Sustainable Communities Strategies (SCSs) developed by the MPO in coordination with localities, achieve state-mandated targets for reducing per capita greenhouse gas (GHG) emissions from cars and light-duty trucks. Under SB 375, MPOs must also at the same time align their RTPs with regional plans for allocating housing for all income levels among the localities within the region, as required by the Regional Housing Needs Assessment (RHNA) process.

SB 375 represents a groundbreaking effort to achieve more efficient development patterns through coordinated planning for transportation and land use at a regional scale. All the MPOs have developed RTP/SCSs deemed capable of achieving the state-mandated GHG reduction targets assigned under SB 375. Research indicates that many post-SB 375 RTP/SCSs have been more ambitious than pre-SB 375 regional plans in encouraging more compact growth patterns, mode shifts toward sustainable transport, such as transit, biking, and walking, and greater reductions in vehicle miles traveled (VMT). Examining the most recently adopted RTP/SCSs, we found that most MPOs had included more performance objectives and measures aimed at improving accessibility (oriented to achieving efficient, multimodal travel patterns) than automobility (oriented to reducing driver delay). In addressing their GHG reduction targets, some MPOs have faced difficult challenges, such as for housing all the projected population growth for the region within its borders rather than allowing for spillover into surrounding areas, and for determining how and whether to forego desired roadway projects. These challenges have prompted some MPOs to devise innovative techniques to reward municipalities that adopt land use policies that support regional plan goals and to subject transportation projects being considered for inclusion in the RTP/SCS to rigorous cost-benefit and social equity analysis and ranking.

Notwithstanding these achievements, SB 375 has come under scrutiny for failing, so far, to achieve its goals. In a report to the legislature in 2018, the California Air Resources Board (CARB) concluded that "California is not on track to meet GHG reductions expected under SB 375," with a particularly worrisome trend being an observed rise in VMT and associated GHGs from cars and light trucks starting after 2013.

What accounts for the disappointing performance of RTP/SCSs in achieving the desired outcomes? Various observers have long warned of structural flaws in SB 375 in terms of a mismatch of MPO responsibility with inadequate authority or resources to carry it out. To achieve plan goals, MPOs need state and local government support and cooperation, which so far have been inadequate.

The need for local cooperation has been evident from the start. SB 375 relies on MPOs to coordinate transportation and land use at a regional scale. Plan analyses consistently show the synergistic benefits of this approach for reducing VMT and GHGs. But to achieve their SB 375 targets, the MPOs have relied on land use policy changes not yet adopted by many localities and which veer away from current local general plans and zoning ordinances. The MPOs do not control land use policymaking, which is the prerogative of local governments.

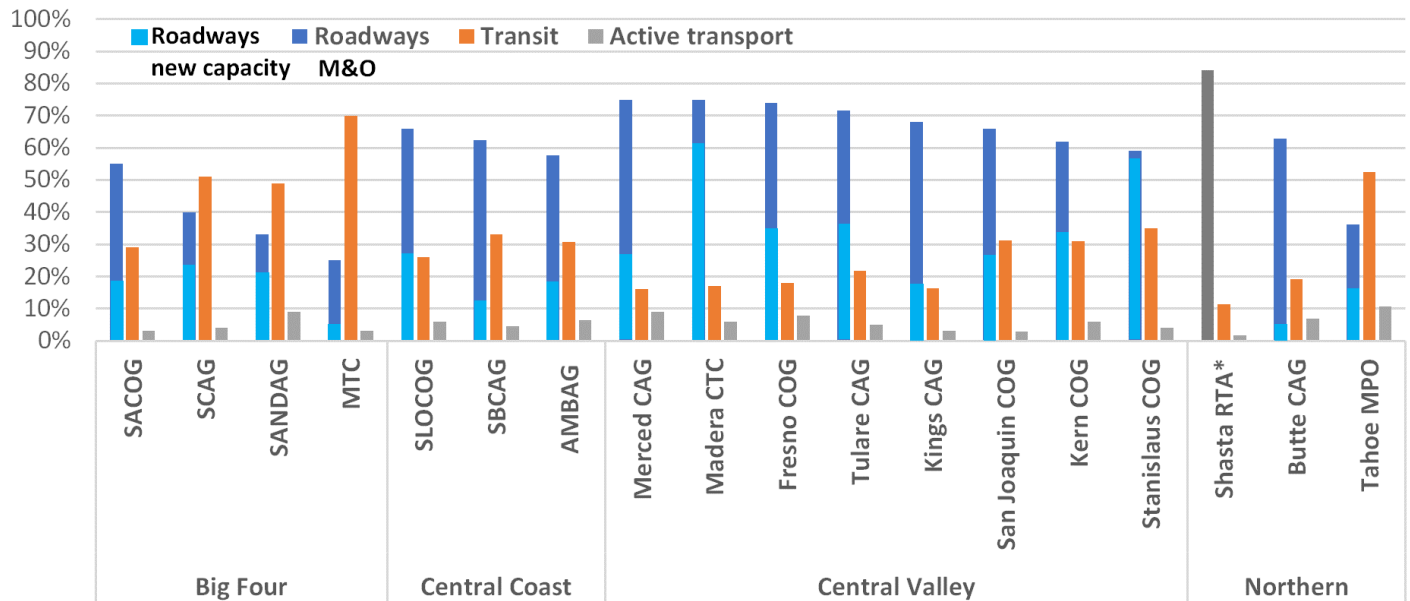
The need for state action became more apparent when CARB renegotiated GHG reduction targets with the MPOs in 2018 in response to updated state GHG reduction goals, proposing stiffer targets for 2035 than those adopted originally under SB 375. The MPOs in the state's four largest regions countered that achieving the deeper reductions would be infeasible absent adoption by the state government of certain policies to support SB 375, including road and parking pricing, more funds dedicated to multimodal transport, and more direct support for local infill development. CARB adopted more stringent MPO targets, although not as stiff as its own analysis had deemed necessary to help achieve the state's overall GHG reduction target. To address the gap, CARB committed to conducting ongoing deliberations with MPOs on the new policy measures. In this fashion, the target renegotiation process became a venue for debate and deliberation on roles and responsibilities at different levels of government for ensuring the success of SB 375.

How do MPO plans allocate funding?

Our analysis of the most-recent adopted RTP/SCSs indicates that most MPO plans allocate more funds toward roadways than transit (see following figure), but most allocate more roadway funding toward maintenance and operations (M&O) than new facilities. Central Valley and northern-state MPOs are more likely to direct funds to roadways than coastal MPOs. When considering capital spending for new facilities by the “big four” MPOs (Bay Area, LA, San Diego, and Sacramento), the Bay Area MPO spends more for new transit than new roadways, while the others spend more for new roadways than transit. Compared to funding shares allocated under SB 1, the state's recent gas tax increase program, spending by the “big four” MPOs is allocated more toward transit than roadways, but also less toward M&O than new facilities.

These recent developments have brought the Achilles heel of SB 375—MPOs' institutional weakness for ensuring implementation—into sharper view. MPOs provide a crucial planning interface to align federal, state, and local projects and priorities, and their plans demonstrate how each region could help achieve the state's goals for sustainable transport if the projects and policies included in the plans are carried out. But MPOs cannot mandate local land use policy changes, and they have only limited discretion for initiating transportation projects, most of which are controlled by other levels of government, with the MPO role being to coordinate and prioritize project spending within regions. To achieve their now-tougher SB 375 targets, recent RTP/SCSs call for securing hundreds of billions of dollars of new revenue through state- and local-led pricing and funding strategies, which the MPOs cannot directly and autonomously pursue. In its evaluation reports, CARB has critiqued some recent RTP/SCSs for relying on unsecured and uncertain revenue sources, but MPOs have no choice but to bank on more ambitious state and local action to be able to achieve their mandated goals.

MPO planned expenditures by mode as reported in the most recent RTP/SCSs



Note: Values do not sum to 100% if an RTP includes spending for other purposes than shown.

* Shasta RTPA's RTP/SCS does not break down roadway new capacity versus M&O.

Sources: Most recently adopted or in-draft RTP/SCSs, see reference list at end of paper. AMBAG RTP: Table 3.2; BCAG RTP: Figure 4-8, p. 4-19; FCOG RTP: Table 5-1; Kern COG RTP: Figure 6-2, and 2018 through 2042-Summary of Constrained Projects, p. 5-8; Kings CAG RTP: Figure 11-2; MCTC RTP: Table 1-4 and p. 1-12; Merced CAG RTP: Table 10.1; MTC RTP: Technical Assumptions Report, Tables 1 and 2; SACOG RTP: page 75; SANDAG RTP: Appendix U, Table U.2; SBCAG RTP: Figure 126 and p. 207; SCAG RTP: Table 4.6.2; Shasta RTA RTP: Chart 1; SJOAG RTP: Table 4.1; SLOCOG RTP: Figure 6-1; StanCOG RTP: Figure 10.1; Tahoe MPO RTP: Appendix B; Tulare CAG RTP: Table A-18.

The divergence between what-if scenarios and existing conditions is underscored when considering how RTP/SCSs relate to the state's long-range California Transportation Plan 2050 (CTP 2050). Unlike the RTP/SCSs, the CTP 2050 is not required to be "fiscally constrained" to "reasonably anticipated" revenue sources. The CTP 2050 aims to identify "policies and strategies required to close the gap between what the regional transportation plans (RTPs) aim to achieve and how much more is required to meet 2050 goals" for the transportation sector. However, some unconstrained, aspirational funding strategies modeled for the CTP 2050, such as per-mile road user fees, are also included in RTP/SCSs, which then direct the new funds toward transit and other purposes. The inclusion of aspirational revenue sources in the RTP/SCSs raises questions about overlap between the regional plans and the CTP 2050. The lack of a sharp delineation between constrained and unconstrained funding makes it difficult to determine exactly what more needs to be done beyond the RTP/SCSs to achieve state goals.

But more crucially, the RTP/SCSs and the CTP 2050 underscore the same message—if California intends to achieve its climate policy goals, a more ambitious multilevel policy package is needed, which includes roadway pricing, support for compact development, and greater investment in non-auto modes. Rather than criticize MPOs for devising ambitious plans that fail to deliver on the ground, it would be more useful to ask whether state and local policymakers are ready to pursue the visions described in CTP 2050 and the RTP/SCSs and adopt the supporting policies needed for them—and SB 375—to succeed.

Disputes over whether local-, regional-, or state-level inaction is more to blame for inadequate SB 375 implementation are misplaced because stronger efforts are required at all levels. The multilevel policy combination advanced in the CTP 2050, and mirrored in many RTP/SCSs, would be more effective if pursued in a concerted fashion, enabling Californians to see the synergistic benefits that could follow—if voters understand that roadway pricing can fund real alternatives to driving, that can make compact development more attractive.

SB 375 is at a critical turning point, with recent analysis and negotiations, as described above, serving to raise concerns about the law’s efficacy. However, these developments point not to the law’s failure to accomplish its central mandate for MPOs to develop and adopt long-range plans deemed capable of achieving state goals for sustainable transport—but rather they call attention to the law’s built-in implementation deficit, which was apparent from the start but has not been adequately addressed. Like the CTP 2050, the MPO plans help show the way forward to achieving sustainable transport. Now the critical question is whether we will take the necessary steps to reach that destination.

Recommendations for further action from state policymakers to strengthen SB 375 and its implementation include:

- Align transportation funding to sustainability performance
 - Direct state dollars only to VMT-reducing projects
 - Link statewide transportation funding to project performance standards for decreasing VMT and GHGs as well as other criteria, such as cost effectiveness, increased public health benefits, and priority for disadvantaged communities
 - Develop methods that build on relevant experience, such as the project-level assessment methods of the Metropolitan Transportation Commission (MTC), the Bay Area MPO, and the project-selection criteria for the state’s California Climate Investment programs (such as the Affordable Housing and Sustainable Communities program)
 - Focus MPO plans on funding VMT-reducing projects
 - In addition to requiring *plan*-level performance on SB 375 goals, require that MPOs conduct *project*-level performance analysis, similar to MTC’s, for determining which projects to include and exclude from RTP/SCSs
 - Help MPOs implement transit and active transport strategies
 - Support planning for multimodal corridors linked to mobility hubs (areas where people live, work, and shop, with strategies for facilitating efficient transport access), such as in the San Diego area’s most recent regional plan
 - Facilitate bus priority lanes and signalization, and transit system integration for fares and service
- Adopt and support pricing strategies to reduce driving and provide funds for alternatives
 - Adopt state-level roadway pricing pegged to reducing fuel consumption or GHG emissions
 - Set prices high enough to discourage driving and not just to substitute for current gas taxes
 - Address equity concerns without incentivizing driving
 - Help MPOs and localities to advance pricing and value-capture strategies
 - Help MPOs adopt regional roadway user fees, parking pricing, and value-capture strategies, such as infrastructure financing districts to support transit and active transport
 - Strengthen tax increment financing options available for VMT-reducing projects consistent with RTP/SCS goals
 - Ensure that localities perform on land use tied to RTP/SCS goals
 - Tie local transportation dollars and other state-directed funds (such as for planning) to land use performance for achieving RHNA production goals and RTP/SCS conformity
 - Provide substantial new funding for affordable housing development located near high-quality transit and in resource-rich neighborhoods (for example, near jobs and good schools)
 - Mandate or reward localities that upzone more systematically near transit and job centers

- Provide planning funds and strengthen California Environmental Quality Act (CEQA) streamlining for development of specific plans that facilitate RHNA performance and RTP/SCS conformity
- Require that localities eliminate mandated parking minimums for new development
- Improve RTP/SCS performance
 - Determine regional-local plan consistency and impose consequences
 - Require that localities regularly report to their MPO on their actions taken to implement the RTP/SCS and to support achievement of the region's GHG emission reduction targets
 - Require that MPOs identify localities whose land use policies do not accommodate the growth projected in the RTP/SCS or conflict with RTP/SCS goals and objectives
 - Tie state mandates or rewards to RTP/SCS conformity
 - Have state agencies and MPOs consult in a coordinated fashion with localities whose land use policies are inconsistent with RTP/SCS development goals
 - Expand programs that align state and regional goals and implementation methods
 - Make the Regional Early Action Program (REAP) permanent, and identify an ongoing funding source (this program funds MPOs to support local strategies that advance RHNA and RTP/SCS land use objectives simultaneously)
 - Build on REAP to provide MPOs with more ongoing resources for rewarding local projects that support and integrate state and regional performance goals
 - Ensure that such programs prioritize solutions in disadvantaged communities
 - Provide financial and technical resources to MPOs to aid in plan development, implementation, and impact analysis connected to implementing an expanded REAP-style program
- Improve RTP/SCS reporting, transparency, and accountability
 - Require more explicit, systematic, and consistent reporting in RTP/SCSs of budget allocations by mode and purpose
 - Require that MPOs more explicitly determine and depict the degree to which adopted RTP/SCS land use scenarios diverge from existing land use policies
 - Track RTP/SCS performance along the plan trajectory for both on-the-ground outcomes of interest, such as measured VMT trends, and adoption of implementation measures in the RTP/SCS; impose consequences on MPOs for getting off track
- Revisit MPO governing structures
 - Investigate and address (lack of) representation on MPO governing board structures where jurisdictional representation does not match one-person one-vote
 - Evaluate whether to reconfigure any MPO boundaries to coincide with today's economic regions; facilitate cross-border planning among neighboring MPOs where appropriate
- Align county sales tax measures for transportation more closely to SB 375 goals
 - Place a ballot measure before voters to amend the Constitution to allow 55 percent voter approval for passing county sales tax measures for expenditure plans that include VMT-reducing projects and cover all life-cycle costs for project maintenance and operations

1. MPO History and Structure

California has vested its 18 metropolitan planning organizations (MPOs) with significant responsibility for helping achieve the state's goals for climate policy and sustainable development. These federally mandated regional transportation agencies are responsible for programming transportation investments in California's urban areas, and since 2008, they also must ensure that their long-range transportation plans achieve state-mandated targets for reducing greenhouse gas (GHG) emissions, as called for under the Sustainable Communities and Climate Protection Act, also known as Senate Bill (SB) 375. This report provides an institutional analysis of the MPO role in helping achieve California's goals for climate policy and sustainable transportation, considering achievements and obstacles in accomplishing SB 375 objectives, and evaluating the relationship of MPO plans to the California Transportation Plan 2050 (CTP 2050), the state's long-range transportation plan.

The establishment of MPOs traces back to the 1962 Federal Aid Highway Act, which called for "a continuing, comprehensive transportation planning process carried on cooperatively by States and local communities" (Sciara and Handy, 2017). This so-called 3-C process, still in place today, was solidified during the 1970s by federal requirements for states and localities to establish MPOs as largely advisory bodies for transportation planning in urban regions.

MPOs provide a planning interface for transportation programs and investments initiated by multiple sources. MPOs coordinate, in their periodically updated long-range (20+ year) regional transportation plans (RTPs) and associated shorter-range transportation investment plans (TIPs), multiple projects funded by federal, state, and local agencies. California has given its MPOs more responsibility than most US states. SB 45, adopted in 1997, made MPOs responsible for programming state transportation funds allocated to the urban regions (75 percent of all these funds statewide). This programming authority carries important consequences, because a project not included in a California RTP is ineligible to seek matching funds from the federal level, and most locally generated transportation projects rely on multiple sources of funding (Sciara and Handy, 2017). MPO plans are required under 49 USC 5303 to be "fiscally constrained," meaning that their funding must be reasonably assured.

These provisions ensure that when it comes to planning and programming transportation expenditures, California MPOs exert a significant degree of influence and discretion. However, this planning and programming authority should not be confused with project sponsorship, funding, or administration. MPOs exert little autonomous authority when it comes to directly initiating projects or levying funds to pay for them. One California study conducted in 2011 found that, on average, MPOs directly controlled only 15 percent of capital funds in RTPs (Rose, 2011). This situation means that MPOs do not directly sponsor or implement most of the transportation projects and policies included in RTPs and TIPs. Instead, their regional plans depend on action from others.

The projects that MPOs can elect to include in their RTPs and TIPs are constrained by various rules governing available funding streams, such as for use of funds by mode or purpose (for example, for capital spending on new roadways or transit facilities versus operating funds for existing facilities) (Sciara and Lee, 2018). An example of this sort of constraint is the prohibition under Article 19 of the California Constitution regarding using state gas tax funds for transit operations or transit rolling stock (Elkind, 2015).

Another example of an external influence on MPO expenditure choices is the ability of counties to fund transportation through sales tax ballot measures, a funding mechanism that became popular over recent decades as federal funds began to decline. A county-level ballot measure is placed before voters to enact sales tax increases—typically between .5 and 1 percent—for a specified number of years (often many decades) to fund specific transportation projects and

programs. Sales tax measures of this sort are currently in place in 25 of California’s counties, home to more than four-fifths of the state’s population (Wachs et al., 2020).

To be enacted, a county sales tax measure for transportation must be approved by a supermajority of two-thirds of the voters casting ballots. This requirement impels measure sponsors to strive to create geographically balanced expenditure plans that serve different interest groups across the county and to fund multiple transport modes aimed at appealing to diverse voter preferences (Elkind, 2015; Wachs et al., 2020). Some observers contend that the county sales tax measures substitute “ballot box planning” and political logrolling for more systematic performance-based planning. In any case, the measures’ expenditure plans reflect complex negotiations within counties (ibid).

Considering the historical accretion of various and multiple funding programs for transportation in California, two scholars recently observed that “funding is distributed by formulae more reflective of historical political deals and statewide geopolitics than of contemporary climate policy... [and] the majority of inherited claims to state transportation funding are for automobile infrastructure and for the administration and enforcement of laws governing vehicles that use this infrastructure” (Sciara and Lee, 2018, pp. 2, 10). Another similar study of transportation funding streams in California concluded that decision-making “happens at multiple, often uncoordinated levels, without requirement that those dollars are spent to align with AB 32 or SB 375 implementation” (Elkind, 2015, p. 11).

Another implicit constraint on MPO decision-making traces to governing structure. Most California MPOs are constituted as Councils of Government, with governing boards composed mainly of local government representatives and transit agency officials. This federalist structure fosters consensus building, but it also works to ensure that decisions are oriented to meeting locally defined needs and priorities, more so than defining, prioritizing, and furthering regionally focused goals and objectives. Furthermore, because MPO governing board representation tends to be jurisdiction-based (for example, one city equals one vote) rather than population-based (one person, one vote), the decision-making power on MPO boards can skew in favor of some jurisdictions compared to others when considered relative to population distribution. For example, this situation might raise concerns if a larger city’s representation on an MPO governing board is underweighted compared to the representation of smaller but more numerous suburban jurisdictions. Further research would be warranted on California MPO governing board structures to better understand how and whether they influence decision-making patterns.

2. SB 375: MPOs’ Role in Promoting Sustainable Transportation and Climate Policy Goals in California

In 2008, California broadened the responsibilities of MPOs in adopting the Sustainable Communities and Climate Protection Act (SB 375), which calls for the state’s MPOs to help achieve climate and sustainability goals through coordinated planning for transportation and land use. Called “the nation’s first law to combat greenhouse gas emissions by reducing sprawl” (Office of the Governor of California, 2008), SB 375 requires that each MPO develop, in conjunction with its periodically updated RTP, a Sustainable Communities Strategy (SCS), which is a projected “development pattern ... [that, when] integrated with the transportation network, and other transportation measures and policies,” is designed to achieve specific per capita GHG reduction targets set by the California Air Resources Board (CARB) for automobiles and light trucks over the duration of the RTP/SCS.

SB 375 further requires that RTP/SCSs be consistent with local government land use plans for accommodating housing at all income levels, required under the state’s Regional Housing Needs Assessment (RHNA) process. Councils of Government, which in California coincide with MPOs in most cases, administer RHNA plans, but in the past, they had not been required to be consistent with RTPs. Under these plans, each local jurisdiction is allocated its so-called “fair share” of projected regional housing needs to be accommodated through appropriate zoning measures. While the RHNA process was originally designed primarily as a fair housing law, it has increasingly also been used as a policy tool to increase housing production and to encourage infill. An additional land use requirement imposed by SB 375 is that RTP/SCSs provide for enough new housing within each region’s borders to accommodate projected household growth over the plan’s duration, a mandate aimed at discouraging “sprawl” development.

Certain elements of SB 375 make the law a robust mandate for promoting sustainable development. SB 375 combines an environmental mandate for transportation (the GHG reduction target) with land use planning requirements aimed at promoting equity and environmental efficiency (through RHNA consistency and the “no spillover growth” mandate), ensuring that RTP/SCSs must address and integrate the “3 Es” of sustainable development (economic development, equity, and environmental quality) simultaneously. Furthermore, SB 375 integrates long- and short-range planning for transportation and land use in an ongoing, iterative fashion because MPOs must make their long-range RTPs consistent with their short-range (four-year) TIPs, and with local eight-year RHNA plans. Additionally, SB 375 beefed up requirements for public participation in plan development, thereby helping make the planning process more transparent and capable of incorporating stakeholder input.

SB 375 also supports sustainable transportation by calling on MPOs to evaluate strategies found to be useful in reducing the need to drive (and associated harmful emissions), including expanding transit and active transportation facilities and service, land use measures (such as zoning) to facilitate compact development near transit, support for carpooling and other transportation demand management (TDM) strategies, and pricing techniques that make solo driving less competitive compared with other modes (Transportation Research Board, 2009; Cambridge Systematics, 2009; Burbank, 2009; US DOT, 2010; Greene and Plotkin, 2011; Brown et al., 2021). SB 375 also implicitly supports “fix it first,” emphasizing maintenance and operations (M&O) and rehabilitation of existing assets rather than expansion to maximize the value of past investments in existing communities and stretch limited resources (Kahn and Levinson, 2011). More specifically, SB 375 called for new state guidelines (adopted in 2010) for MPO modeling techniques to evaluate land use and transport interactions, modal splits, maintenance and rehabilitation needs, and accessibility and equity measures to “assess the effects of policy choices, such as residential development patterns, expanded transit service and accessibility, the walkability of communities, and the use of economic incentives and disincentives.”

Alongside these attributes of SB 375 that promote sustainable transport and land use, other aspects of the law have undermined its chance of success, and these weaknesses were evident from the start. In particular, the lack of adequate provisions to ensure RTP/SCS implementation has hampered the law’s success, proving to be its Achilles heel. MPOs do not control land use, and SB 375 explicitly defers to local authority over land use decisions, meaning that local governments are not required to alter plans and policies to conform to regional plan goals. Furthermore, for many years, few state programs provided concrete support to achieve SB 375 goals. Indeed, in the years immediately after SB 375’s passage, the state government removed or constrained important policy tools that had supported infill development and multimodal mobility by cutting billions of dollars in transit operating funds and eliminating the redevelopment powers of local governments (by which they used tax-increment financing authority to fund downtown redevelopment and affordable housing).

The main incentive included in SB 375 to ensure local compliance with RTP/SCS land use strategies was to provide some streamlining of environmental review required under the California Environmental Quality Act (CEQA) for development

projects deemed to be consistent with RTP/SCS goals. However, the method for determining consistency was not spelled out and adoption of the streamlining provisions has been limited. A survey conducted in 2016 by the Governor’s Office of Planning and Research found that less than 5 percent of responding localities had made use of the primary CEQA streamlining provision in SB 375, called a Sustainable Communities Environmental Assessment (OPR, 2016).

For these reasons, various observers complained from early on that SB 375 does not effectively match the responsibility assigned to MPOs for GHG reduction with adequate authority or resources to carry out policies and programs deemed necessary to achieve plan goals (Barbour and Deakin, 2012; Barbour, 2016; Sciara, 2014, 2020). Because SB 375 relies essentially on voluntary cooperation and coordination among localities for plan development and implementation, its success depends on the wider framework of policies and incentives that influence local land use choices, and whether that framework induces localities to want to comply with regional plan goals. Given that the state government determines the legal framework of fiscal, regulatory, and planning authority and responsibility enjoyed by local governments, the capacity and incentive for localities to comply with RTP/SCS goals and objectives can be seen to be as at least as much a state-level as a local responsibility.

Do California Localities Support Infill Development?

In alignment with state policy goals for SB 375 and sustainable development more broadly, most local jurisdictions in California say they seek infill development near transit, or transit-oriented development (TOD), to support neighborhood revitalization, mobility and accessibility improvements, and affordable housing (Barbour et al., 2021). Localities use a variety of tools to support TOD, in particular, density bonuses, coordination and streamlining of environmental review as required under the California Environmental Quality Act (CEQA), development of neighborhood plans, upzoning and mixed-use zoning, and reduced parking requirements, according to recent surveys (ibid).

Nevertheless, TOD remains more challenging to implement than new “greenfield” development at the edge of urban areas, due to physical, market-related, and political factors (Barbour et al., 2021). In general, infill development involving more complicated planning, finance, and regulatory techniques and entails higher costs for land and construction than greenfield development (Carlton and Fleissig, 2014; Fleissig and Carlton, 2009). Furthermore, city leaders could face complicated trade-offs in negotiating among policy goals and stakeholder interests for infill areas, for example, in addressing resident concerns about retaining “neighborhood character” and how to keep housing affordable near transit while also upgrading infrastructure to support new, often upscale, market-rate development.

Research indicates that substantial physical capacity exists in California’s metropolitan areas to absorb new infill development at densities matching the surrounding area (Landis and Hood, 2005; Baron et al., 2018). The market has responded, as multifamily housing units have increased statewide over recent decades for reasons including attractiveness of lower priced homes, mobility/accessibility benefits, and demographic shifts that favor more compact homes. After comprising generally below one-quarter of all housing permits issued annually in the state during the 1990s, the multifamily share of permits began growing in the 2000s, and has exceeded half of annual permits in most years since 2010 (author’s calculation from US Census Housing Permits Survey data).

If development were allowed to occur more densely than is permitted within existing adopted limits across California, infill capacity would be even higher. Various research studies indicate that land use constraints, including low-density zoning, exacerbate California’s housing under-supply, leading to higher prices and more crowding (Quigley and Raphael, 2005; Kahn et al., 2010; Kok et al., 2014; LAO, 2015; Jackson, 2016). Single-family zoning is common, with about two-thirds of land in California localities zoned for single-family housing, and less than one quarter for multifamily development

(Mawhorter et al., 2018). This pattern has pertained even in central cities. For example, in San Francisco, the share of residential land zoned for single-family is about 38 percent, in Los Angeles about 70 percent, and in San Jose nearly 90 percent (Manville et al. 2020). Even the central cities have generally targeted infill development for designated growth zones while protecting single-family neighborhoods from upzoning (Barbour et al., 2021).

However, even permissive zoning provides no automatic guarantee that more infill housing will be built in a given local because market feasibility can be challenging (California Tax Credit Allocation Committee et al., 2014). High development costs in infill zones can be traced to high land costs, the need for clearance or site remediation, and high construction costs, among other factors. Another challenge in infill areas is difficulty in assembling land parcels when available parcels are small, noncontiguous, or oddly shaped. This has presented a problem especially since the state government eliminated redevelopment finance authority of local governments, whereby localities were able to use tax increment financing to redevelop downtown areas and to fund affordable housing (with a 20 percent set-aside of levied revenue required to be directed for the purpose), in 2012. Although some tax increment financing authority has been restored, such as through provisions enabling localities to create Enhanced Infrastructure Financing Districts, the lost redevelopment powers have not been fully restored.

Meanwhile, political barriers to TOD can also be significant, and not just in single-family zones. As cities have attempted to funnel infill along existing transit corridors, they have sometimes also funneled controversies about densification and its impacts into such areas, which are often home to low- and middle-income households living in existing multi-unit housing. Although research indicates that gentrification does not, overall, lead to displacement of existing residents (LAO, 2015; Chapple and Zuk, 2020), such findings do not serve to allay fears about localized impacts in many places. For example, worries about gentrification and displacement have led some residents of San Francisco's Mission District and of Southeast Los Angeles to oppose new market-rate housing development so vehemently that some projects have effectively been halted (Barbour et al., 2021). State policies that can help alleviate such concerns include providing substantial new funding for affordable housing development located near high-quality transit, as well as near jobs and other important resources such as good schools. The state could also mandate and/or reward localities that upzone more systematically near transit and job centers.

In spite of high-visibility conflicts over infill proposals in some areas, when considering barriers to achieving TOD goals, overall California planners rank certain policy-related factors, in particular difficulty in assembling land parcels and lack of adequate transit facilities and service levels, as more of a challenge than either resident opposition or lack of market interest (Barbour et al., 2021). The finding on transit provision points to the inseparable need to address TOD and transport goals in a coordinated way. The most vocal resistance that arises to new TOD projects often relates to mobility impacts, and planners must be prepared to respond.

Some California cities have been experimenting with how best to align sometimes competing goals for improving housing production and multimodal transport options and access, while addressing local concerns about "neighborhood character" and making development less costly and contentious for developers. One promising approach, pursued effectively in cities including Los Angeles and El Cerrito, has been to develop neighborhood plans (called Specific Plans) that include upzoning and affordable housing requirements, while also providing a basis for CEQA streamlining and other permit streamlining to ease new development (Barbour et al., 2021).

Lessons for the state government from such efforts include the value of CEQA streamlining as a basis for easing development, and the value of supporting local capacity to develop neighborhood plans that ease development, address neighborhood concerns, and accomplish state and regional goals for TOD. The state could support this approach by funding neighborhood planning to implement performance targets such as for RHNA housing production and RTP/SCS conformity, linked to benefits from stronger CEQA streamlining for development pursuant to the plans.

Post-SB 375 Regional Plans

MPO plans developed after the passage of SB 375 have allocated more new housing and commercial development in the SCS land use component of the plans to designated infill zones than pre-SB 375 plans. Furthermore, post-SB 375 plans have allocated more spending for transit than for highways and roads, and for maintenance, operations, and rehabilitation of existing facilities than for expansion, than pre-SB 375 plans (Barbour, 2016, 2020). Most recent plans have incorporated the nexus of strategies discussed earlier, associated with promoting sustainable transportation: expansion of transit and active transportation facilities and service, land use policies to facilitate compact development near transit, TDM strategies, and pricing techniques that make solo driving less competitive compared with other modes.

Compared to pre-SB 375 plans, however, the changes have been mainly incremental. The shift in MPO plans was incremental, in part, because many California MPOs were already moving in the direction of more sustainability-oriented plans and programs. The “big four” MPOs (in the San Francisco Bay Area, Los Angeles, San Diego, and Sacramento metro areas) had already, for more than a decade before SB 375 was adopted, been developing plans with objectives and performance measures extending well beyond improving auto-mobility to improving multimodal accessibility and environmental, equity, and economic productivity impacts of plans. Housing goals and impacts also became far more central for MPOs post-SB 375, reflecting the law’s new requirement to align RTPs with RHNA as well as growing concerns statewide about housing affordability.

To achieve SB 375 requirements, some MPOs became policy innovators to prod local action to support RTP/SCS goals and objectives. For example, to help achieve the region’s ambitious compact growth strategy, the San Francisco Bay Area MPO created the One Bay Area Grant (OBAG) program, which has allocated more than \$100 million annually to local transportation enhancement projects, to be located mainly in Priority Development Areas designated by localities for infill development. The OBAG program conditions the awarding of funds, many of which had previously been provided without strings attached, upon local RHNA compliance, actual housing production, and adoption of “complete streets” policies by localities. By combining the PDA mechanism linking regional and local plans and priorities with significant regional funding for local projects, conditioned on local action to support compact growth and equity goals, the Bay Area MPO has laid out a strategy for translating plan goals into concrete, on-the-ground implementation, inducing local cooperation.

SB 375–Supportive Policies

By the mid to late 2010s, the state government began to adopt policies and programs that explicitly aimed to help support SB 375, among other objectives. SB 743, passed in 2013, and its implementing guidelines, published in 2018, serve to reorient analysis and mitigation (remediation) of transportation impacts of development, required under CEQA, to focus on reducing VMT rather than on alleviating traffic delay. Given that meeting CEQA requirements can significantly affect the cost and contours of development projects in California, this new law will provide substantial support for SB 375 goals as localities transition to its implementation (still underway). Also in 2013, the state began funding California Climate Investments programs on an ongoing basis using GHG cap-and-trade revenue, providing competitive grants to locally initiated projects for affordable housing, transit, and active transport projects projected to help reduce GHG emissions.

The state government took further steps in the late 2010s to address transportation and housing concerns. SB 1, adopted in 2017, doubled the state’s base gas excise tax, and is projected to provide \$5 billion annually in ongoing funds for transportation purposes, including for transit and active, but mainly for roadways (LAO, 2017). State lawmakers also

have adopted numerous housing bills in recent years, which cumulatively constitute a “wholesale transformation” of the state’s housing policy (Fulton, 2019, October). The legislation has stiffened enforcement of RHNA compliance, streamlined housing approval procedures, strengthened the state’s density bonus law, facilitated approval of accessory dwelling units, extended inclusionary housing requirements to apply to residential rental projects, and provided for “ministerial” (automatic) approval of subdivision of single-family lots, among other objectives. The result of these measures has been to induce localities to update their housing policies and to promulgate clearer, more systematic and upfront conditions of development approval, so as to limit negotiation and delay (Elmendorf, 2019; Stephens, 2020, February; Barbour et al., 2021).

Cracks in the SB 375 Foundation: Questioning the Law’s Effectiveness

By the late 2010s, concerns about housing affordability, traffic congestion and mobility, and climate policy in California converged to draw attention to the need for more efficient and equitable development patterns. Scrutiny of SB 375 intensified, and some CARB-MPO tensions emerged, in the wake of state adoption of new climate policy goals to achieve by 2030.

In 2016, the legislature and governor extended California’s overall GHG reduction target beyond its original sunset date of 2020, codifying a new goal of a 40 percent reduction in GHGs from 1990 levels by 2030 across all sectors of the economy. Pursuant to this action, in 2017 and 2018 CARB renegotiated GHG reduction targets with MPOs, proposing stiffer targets for MPOs for 2035 than those adopted originally in 2010, to achieve a 25 percent reduction in per capita GHGs. In response, the four largest MPOs countered that deeper GHG reductions would be difficult to achieve absent adoption by the state government of certain policies to support SB 375, including road and parking pricing, mileage-based user fees, more dedicated funds for multimodal transport, and direct support for regional plan implementation through state incentives for infill (CARB, 2018a). The four MPOs proposed a new target for per capita GHG reductions of 18 percent—considerably lower than CARB’s proposed target. (The MPOs’ letter is at https://www.arb.ca.gov/cc/sb375/big_4_target_recommendation_may_2017_v2.pdf.)

CARB adopted new per capita VMT reduction targets in 2018 of 19 percent for the “big four” MPOs and 18 percent overall for all other MPOs—not as stiff as the 25 percent overall reduction it had originally identified. To address the gap between the adopted targets and the level CARB identified as necessary, CARB committed to ongoing deliberations with MPOs on adoption of new policy measures (CARB, 2018a). In this fashion, the target renegotiation process became a venue for debate and deliberation on roles and responsibilities at different levels of government for ensuring the success of SB 375.

Concerns about SB 375 were also fueled in 2018 by CARB’s release of a required progress report to the state legislature on MPO progress under the law. The report concluded that “California is not on track to meet greenhouse gas reductions expected under SB 375” (CARB, 2018b, p. 3). This conclusion was based on evaluation of 24 data-supported indicators, of which the most concerning was a recent rise in VMT and GHGs per capita starting after 2013. The report also identified various barriers to SB 375 success, one being local zoning and permitting practices that constrain housing production and/or make it more expensive.

Despite the disheartening recent trend in travel related GHGs in California, the ongoing debates on SB 375 implementation have been useful in prompting discussion about roles and responsibilities for achieving the law’s goals. Scrutiny of SB 375 progress has heightened attention to the implementation gap described earlier. In response to these concerns, CARB adopted a new direction for monitoring SB 375 implementation in 2018, aiming to pay less attention to

technical aspects of MPO scenario modeling, and more to performance monitoring and adoption and implementation of best practice programs and strategies from plan to plan (CARB, 2018a). At the same time, the MPOs' stance in target setting negotiations with CARB underscores questions about the state government's responsibility for achieving SB 375 objectives. We explore these questions further in the next sections, which assess recent RTP/SCS objectives and their connection to the CTP 2050.

3. Assessing Recent RTP/SCSs

To evaluate goals and priorities in current MPO plans, we examined the eighteen California MPOs' most recently adopted or final draft RTP/SCSs, focusing in particular on adopted performance objectives and metrics and budget allocations by mode (roadways versus transit versus active transport) and purpose (new capacity versus operations, maintenance, and rehabilitation). Adopted performance metrics help assess the objectives that MPOs seek to maximize, while budget allocations help examine how MPOs intend to achieve their objectives through specific projects and programs. Funding allocations by mode and purpose provide a broad-brush estimate of how green a given MPO's spending is, because new roadway capacity can be expected to induce more driving, while funding for other purposes might not, either because the funding provides a more environmentally efficient alternative mode choice (transit or active transport [AT]), or because the funding is for "fix it first" (maintenance, operations, and rehab) rather than new capacity. Our admittedly broad-brush analysis permits comparison across MPO plans throughout the state, but, as we discuss further below, even this somewhat cursory comparison is hampered by inconsistencies between MPOs in how they present and categorize budget information.

We evaluated some additional aspects of recent RTP/SCSs in greater depth for the four largest MPOs in the state, whose borders encompass 82 percent of the state's population. In the following sections, we discuss the discrepancy between plan aspirations and policy for land use and transportation funding on the one hand, and existing conditions on the ground on the other, and we consider implications of the discrepancies. We also discuss some recent planning and policy innovations in recent RTP/SCSs.

We categorized adopted performance metrics in the most recently adopted or final-draft RTP/SCSs according to the following typology:

- Automobility-oriented measures (pertaining to travel speed and cost for driving, congested driving, and roadway conditions, in particular)
- Accessibility-oriented measures (for example, VMT, ability to reach desirable destinations, ability to reach destinations within a certain distance or time, mode shares, multimodal transportation access)
- Equity measures (measures compared for average impacts versus impacts for communities of concern, such as low income or other disadvantaged communities)
- Environment and health measures (for example, conversion of open space or natural/sensitive resource areas to urban development, pollution impacts)
- Economic development and productivity measures (for example, goods movement impacts, farmland conversion, cost-effectiveness measures such as transit trips per revenue hour, impacts on jobs, and/or overall economic productivity)
- Land use measures (for example, development density or housing type objectives, such as multifamily versus single family housing shares; development concentration by neighborhood type, such as targeted infill growth zones; and/or land development footprint, such as acres consumed)

For each RTP/SCS, we analyzed the performance metrics presented in the main RTP/SCS document. MPOs are required by federal and state law to complete air quality conformity and equity analyses, with results often presented in separate appendix reports. We did not include all performance metrics utilized in such supplemental analyses; instead, we sought to concentrate on the set of measures identified in the main RTP/SCS plan for assessing overall plan performance. For this reason, our analysis does not include the SB 375–required performance metric for GHG emissions nor measures of criteria pollutant emissions, because all MPOs are required to assess those impacts.

We found that, on average, the adopted plan performance objectives and metrics presented in the MPO plans are oriented significantly more to achieving accessibility than automobility goals, and they include land use, equity, economic, and environmental as well as transport performance objectives (Table 1; see also the Appendix for a complete list of these performance measures). The “big four” MPOs are most focused on accessibility metrics, while Central Valley MPOs are least so.

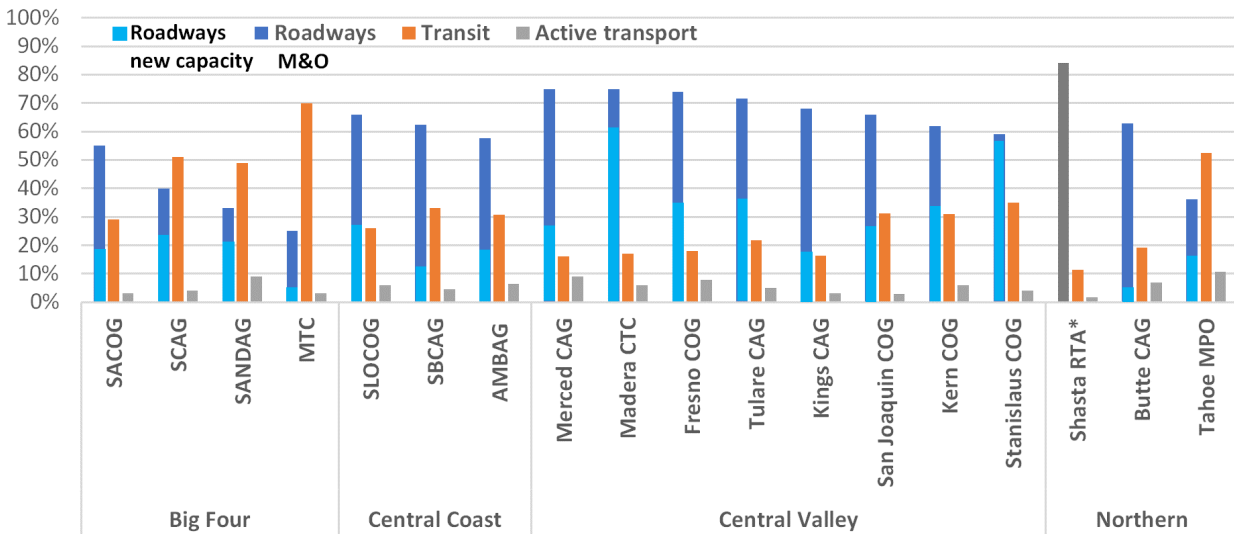
Table 1. MPO performance measures by category, from most recent adopted or in-draft RTP/SCS

	MPO	Mobility	Accessibility	Equity	Environment & Health	Economic Development	Land Use
Big Four	MTC	5%	33%	24%	24%	14%	0%
	SACOG	8%	69%	0%	0%	0%	23%
	SANDAG	15%	60%	10%	0%	15%	0%
	SCAG	11%	33%	19%	11%	15%	11%
	Region average	10%	49%	13%	9%	11%	9%
Central Coast	AMBAG	14%	29%	29%	14%	14%	0%
	San Luis Obispo COG	23%	41%	0%	14%	14%	9%
	SBCAG	24%	36%	12%	4%	8%	16%
	Region average	20%	35%	14%	11%	12%	8%
Central Valley	Fresno COG	12%	36%	15%	18%	6%	12%
	Kings CAG	na	na	na	na	na	na
	Kern COG	29%	14%	7%	21%	29%	0%
	Madera CTC	22%	33%	0%	11%	17%	17%
	Merced CAG	22%	39%	13%	4%	9%	13%
	San Joaquin COG	6%	38%	6%	13%	13%	25%
	Stanislaus COG	19%	29%	33%	0%	5%	14%
	Tulare CAG	18%	36%	0%	18%	9%	18%
Region average	18%	32%	11%	12%	12%	14%	
Northern	Butte CAG	26%	26%	16%	16%	11%	5%
	Shasta RTA	33%	50%	0%	8%	8%	0%
	Tahoe MPO	28%	44%	6%	6%	17%	0%
	Region average	29%	40%	7%	10%	12%	2%
Total	State average	19%	38%	11%	11%	12%	10%

Sources (from most recent adopted or in-draft RTP/SCS for each MPO): AMBAG RTP: Table 5.1; BCAG RTP: Appendix 8, Tables 12-18; Fresno COG RTP: Appendix I, Item 8; Kern COG RTP: Table 2-3; MCTC RTP: Table 6-5; Merced CAG: Appendix L; MTC RTP: Performance Report p. 48; SACOG RTP: EIR Table 18-2; SANDAG RTP: Appendix T, Tables T-5 and T-8; SJCOG RTP: Appendix M, Table M1; SLOCOG RTP: Figure 5-1; SBCAG RTP: Table 7; Shasta RTA: Table 18; StanCOG RTP: Appendix L; SCAG RTP: Table 5.1; Tahoe MPO RTP: Table 24; Tulare CAG RTP: Table SCS-6.

Examining RTP/SCS budget allocations, we found that most MPO plans allocate more funds toward roadways than transit (Figure 1). Inland (Central Valley and Northern) MPOs are more likely to direct funds to roadways than coastal MPOs. The “big four” MPOs, with the exception of SACOG in the Sacramento region, direct considerably more funding toward transit than other MPOs in the state.

Figure 1. RTP/SCS funding allocations by mode, from most recent adopted or in-draft RTP/SCSs



Note: Values do not sum to 100% if an RTP includes spending for other purposes than shown.
 * Shasta RTPA's RTP/SCS does not break down roadway new capacity versus M&O.
 Sources: See references at end of chapter for most recent RTP/SCSs; for specific budget data sources, see Table 2.

Note that these budget allocations are taken from information presented in the RTP/SCSs, but MPOs do not categorize and present information in the same way. Some of the differences are evident in the information presented in Table 2, which shows funding breakdowns by mode and also by purpose. As shown, many MPOs do not break down transit funding into new capacity versus M&O. Furthermore, MPOs employ different methods for defining a residual “other” funding category. This situation makes general comparisons possible but not strict apples-to-apples comparisons across MPOs. Additionally, note that the regional averages shown in Table 2 are calculated across funding shares in all the MPO plans, not accounting for the variation in total funding levels for different plans. In other words, the regional averages should not be interpreted as indicating funding-weighted aggregate total shares. The table also shows an unweighted statewide average reflecting the same calculation method. A second statewide average is also shown, which is weighted by total plan funding, so it represents a breakdown of total RTP/SCS funding aggregated statewide.

Among California MPOs, MTC (in the Bay Area) is an extreme outlier, providing far more funding for transit, and also for fix-it-first (M&O and rehabilitation), than any other MPO (Table 2, Figure 2). Given the large size of MTC’s overall budget, its predilection for transit spending skews the weighted average transit share of spending (the share of total aggregate spending for transit across all plans) significantly higher, at 56 percent, than it would be if MTC were excluded.

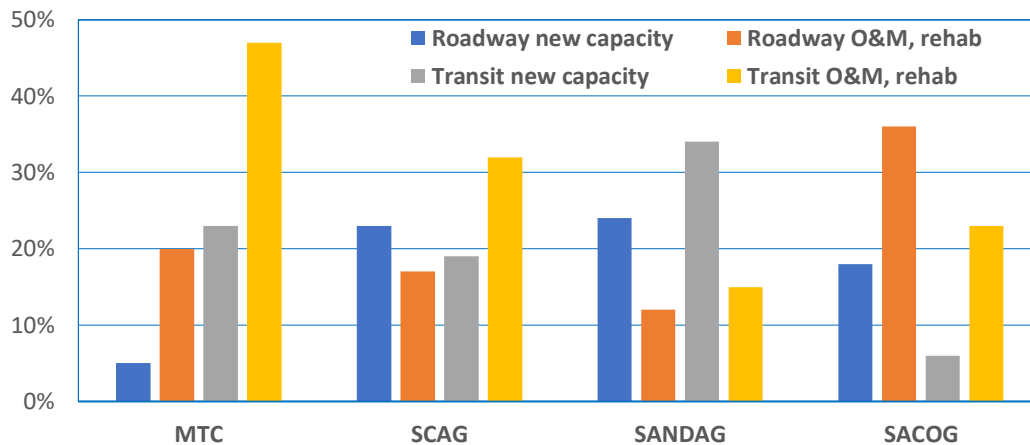
Meanwhile, the two southern California “big four” MPOs are spending the most for new roadways among the “big four.” Total aggregate spending for new roadway capacity included in the “big four” MPOs’ RTP/SCSs comes to nearly \$250 billion, in year-of-expenditure dollars. The ratio of capital spending for new transit capacity compared to capital spending for roadway capacity is 1.4 for all four MPOs, but if MTC is excluded, the ratio drops to 1.0.

Table 2. RTP/SCS expenditures by mode and purpose, from most recent adopted or in-draft RTP/SCS

Region	MPO	Funding breakdown by mode							Funding by purpose for roads, transit, AT*		Total plan expenditure (based on "reasonably expected revenue," in year-of-expenditure project cost dollars)	
		Roads			Transit			Active Transportation	Other	Percent new capacity		Percent O&M, rehab
		New capacity	O&M, rehab	Total	New capacity	O&M, rehab	Total					
The Big 4	MTC	5%	20%	25%	23%	47%	71%	3%	1%	31%	67%	\$ 579,000,000,000
	SCAG	23%	17%	40%	19%	32%	51%	4%	6% for debt service	46%	49%	\$ 638,900,000,000
	SACOG	19%	36%	55%	6%	23%	29%	4%**	16% for AT, ITS, smart growth programs	28%	59%	\$ 46,297,000,000
	SANDAG	21%	12%	33%	34%	15%	49%	9%	8% debt service &TDM	64%	27%	\$ 265,601,000,000
	Region average	17%	21%	38%	21%	29%	50%	5%		42%	51%	
Mid-Coastal	AMBAG	19%	39%	58%	8%	22%	31%	6%	5% airports, ITS, TDM	34%	61%	\$ 9,940,177,000
	San Luis Obispo COG	27%	39%	66%	N/A	N/A	26%	6%	3% system efficiency	N/A	N/A	\$ 3,036,000,000
	SBCAG	13%	49%	62%	N/A	N/A	33%	5%		N/A	N/A	\$ 6,050,709,000
	Region average	20%	42%	62%	8%	22%	30%	6%		34%	61%	
Central Valley	Fresno COG	34%	40%	74%	N/A	N/A	18%	8%		N/A	N/A	\$ 6,945,236,300
	Kern COG***	34%	28%	62%	18%	13%	31%	6%	1% for freight rail	58%	41%	\$ 723,850,000
	Kings CAG	18%	50%****	68%	N/A	N/A	16%	3%	9% safety, 3% airports	N/A	N/A	\$ 13,342,186,000
	Madera CTC	62%	13%	75%	5%	12%	17%	6%	2% for TSM, other	73%	25%	\$ 1,608,000,000
	Merced CAG	26%	49%	75%	N/A	N/A	16%	9%	1% for aviation	N/A	N/A	\$ 3,964,878,000
	San Joaquin COG	27%	39%	66%	N/A	N/A	31%	3%		N/A	N/A	\$ 11,461,000,000
	Stanislaus COG	57%	2%	59%	N/A	N/A	35%	4%	2% aviation and other	N/A	N/A	\$ 7,227,122,099
	Tulare CAG	36%	36%	72%	13%	9%	22%	5%	2% debt and TDM	53%	45%	\$ 5,793,000,000
	Region average	37%	32%	69%	12%	11%	23%	5%		61%	37%	
Northern Mountains	Butte CAG	5%	58%	63%	N/A	N/A	19%	7%	11% aviation, rail, other	N/A	N/A	\$ 1,386,500,000
	Shasta RTA*****	N/A	N/A	84%	N/A	N/A	11%	2%	3% for aviation	N/A	N/A	\$ 1,628,754,000
	Tahoe MPO	16%	20%	36%	N/A	N/A	52%	11%	0.7% for technology	N/A	N/A	\$ 2,420,913,000
	Region average	11%	39%	61%	N/A	N/A	28%	6%		N/A	N/A	
Total Statewide	Average across plans (unweighted)	27%	31%	60%	16%	22%	31%	6%				
	Funding-weighted average*****			35%			56%	4%				

Note: "N/A" indicates that the plan did not include the particular breakdown shown (for example, transit spending broken down by purpose). For this reason, note that only the "total" regional and state averages by mode are taken from all plans.
 *Spending for "other" is retained as a share of total spending in all calculations, so values do not sum to 100% if an RTP includes "other" spending; note also that spending for active transport is included as new capacity. ** From data compiled by Amy Lee. *** Transit is lumped together with HSR and HOV. **** O&M not broken down by mode in the RTP. ***** Breakdown based on "total available funds" ***** Weighted by RTP/SCS total plan funding amounts, i.e. revenue/expenditure amounts.
 Sources: Most recently adopted or in-draft RTP/SCSs, see reference list at end of paper. AMBAG RTP: Table 3.2; BCAG RTP: Figure 4-8, p. 4-19; FCOG RTP: Table 5-1; Kern COG RTP: Figure 6-2, and 2018 through 2042-Summary of Constrained Projects, p. 5-8; Kings CAG RTP: Figure 11-2; MCTC RTP: Table 1-4 and p. 1-12; Merced CAG RTP: Table 10.1; MTC RTP: Technical Assumptions Report, Tables 1 and 2; SACOG RTP: page 75; SANDAG RTP: Appendix U, Table U.2; SBCAG RTP: Figure 126 and p. 207; SCAG RTP: Table 4.6.2; Shasta RTA RTP: Chart 1; SJOAG RTP: Table 4.1; SLOCOG RTP: Figure 6-1; StanCOG RTP: Figure 10.1; Tahoe MPO RTP: Appendix B; Tulare CAG RTP: Table A-18.

Figure 2. RTP/SCS funding allocations by mode and purpose for the “big four” MPOs



Sources (from most recent adopted or in-draft RTP/SCS for each MPO): MTC RTP: Technical Assumptions Report, Tables 1 and 2; SACOG RTP: p.75; SANDAG RTP: Appendix U, Table U.2; SCAG RTP: Table 4.6.2.

Comparing State, Regional, and Local Spending Priorities

To gain a sense of how MPO spending allocations compare to state-level and local-level funding priorities, we compared aggregate spending allocations by mode and purpose for the “big four” MPOs, taken from their most recent adopted or in-draft RTP/SCSs, to the funding breakdown established for SB 1 revenues, the state’s recent gas tax increase program, and also to aggregate spending from county sales tax measures for transportation adopted and active in the same “big four” regions (Table 3). This comparison provides some indication of how MPO plan spending compares to current state-level and local (county-level) funding priorities.

Fuel excise taxes, levied per gallon sold, provide the majority of California state funds for road investment (LAO, 2018). Set at 18 cents per gallon since 1993, the state’s base gasoline excise tax was raised to 30 cents per gallon in 2017 with passage of Senate Bill (SB) 1, the Road Repair and Accountability Act (Beall, Chapter 5, Statutes of 2017), which also indexed the gas tax to inflation, and increased other fuel taxes (for example, for diesel) and transportation fees. SB 1 is expected to provide \$5 billion annually in ongoing funds to be used for the purposes shown in Table 3 (LAO, 2017).

Comparing aggregate spending by the “big four” MPOs in their most recent RTP/SCSs to expenditures prescribed for SB 1 revenue, we see that RTP/SCS spending is allocated more toward transit than roadways, but less toward M&O than new facilities, than the program for SB 1 spending (Table 3). More than three-quarters of SB 1 funds are directed toward roadway M&O.

We see the reverse situation in place when considering how RTP/SCS spending allocations by mode and purpose in the “big four” regions compare to spending allocations from active county transportation sales tax measures in the same regions (Table 3). As discussed previously, county sales tax measures for transportation purposes have become a popular means for localities to raise revenue over recent decades, as federal transportation revenue has declined (Wachs et al., 2020).

Table 3. Planned expenditures by mode and purpose compared for the statewide SB 1 spending program, RTP/SCS spending by the “big four” MPOs, and active (in FY 2018–19) county transportation sales tax ballot measures in the “big four” regions

	Roads			Transit				AT
	New capacity	M&O, rehab	Total roads	New capacity	M&O, rehab	Both new capacity & M&O/rehab	Total transit	Total AT
SB 1 program	3%	78%	81%	6%		11%	17%	2%
Aggregate (weighted) spending in "big four" MPO RTP/SCSs	17%	19%	35%	24%	36%		60%	5%
Aggregate annual spending (FY18-19) from county sales tax measures in "big four" regions, not including "local return"*	21%	5%	26%	26%	24%	22%	73%	1%

Note: Data for SB 1 spending excludes Trade and Congested Corridor Programs, which can support state highways, local streets and roads, or transit. * Also excludes spending for "other" and administration.

Sources: LAO (2017) for SB1 program breakdown; latest RTP/SCSs for MPO breakdown, based on data from the following tables, aggregated across the four MPOs by total plan spending: MTC RTP: Technical Assumptions Report, Tables 1 and 2; SACOG RTP: p.75; SANDAG RTP: Appendix U, Table U.2; SCAG RTP: Table 4.6.2; for county sales tax measures, see description of methods in footnote 1.

Revenue from county sales tax measures comprises a substantial share of all RTP/SCS revenue sources in the “big four” regions, comprising 19 percent of total local and regional core revenue and 12 percent of total plan core revenue for MTC’s latest RTP/SCS; 57 percent of total local core revenue and 34 percent of total plan core revenue for the Southern California Association of Governments’ latest RTP/SCS (SCAG, the MPO for the Los Angeles region); 17 percent of total local core revenue and 9 percent of total plan core revenue for the San Diego Association of Governments’ latest RTP/SCS (SANDAG, the MPO for the San Diego region); and 27 percent of total local revenue and 17 percent of total plan revenue anticipated for the Sacramento Area Council of Governments’ latest RTP/SCS (SACOG, the MPO for the Sacramento area). Core revenue, the bulk of revenue included in the RTP/SCSs, excludes new, anticipated revenue sources which are considered less secure than core sources.

For our analysis, we identified funding shares by mode and purpose for every county transportation sales tax measure actively in place in FY 2018–19 in all counties located within the boundaries of the “big four” MPO regions, and weighted the aggregate results using FY 2018–19 sales tax receipts for all the measures.¹ Thus, the comparison shown in Table 3 indicates the aggregate breakdown of current spending from all active measures (in FY 2018–19) in the four regions. It is important to note that our calculations exclude revenue allocated by the measures to “local return,” administration, and a small catchall “other” category. Across the four regions, and weighted for sales tax receipts, the “local return” category comprised 15 percent of all revenue raised from the measures in FY 2018–19. We do not include local return because the use of these funds is generally not specified in the sales tax measure expenditure plans, and rather is left up to local governments to determine; we might assume that the bulk of local return funds are used for roadway maintenance.

Our results (shown in Table 3) indicate that spending from sales tax measures in the “big four” regions is more heavily weighted toward transit and less toward roadway spending than funding in the regional RTP/SCSs. However, the sales tax measures overall are dedicating a smaller percentage of funding toward operations and maintenance and rehabilitation (M&O) of all kinds than the RTP/SCSs do. One reason might be that local return funding is expected to be spent on road repairs or other M&O purposes, such as the operation of local transit services, including paratransit.

These findings should be encouraging to observers concerned that county sales tax measures might be skewing RTP/SCS spending more toward roadways versus transit than would otherwise be the case in their absence; indeed, we find the reverse to be true. The (revenue-weighted) transit share of funding from county sales tax measures is especially high in the San Francisco Bay and Los Angeles regions, and considerably lower in the Sacramento and San Diego regions (Table 4). On the other hand, our findings also indicate that the sales tax measures do skew funding more toward new capacity and less toward M&O than the RTP/SCSs (with the important caveat that our analysis does not include “local return”).

Some transportation experts have complained about an institutional disconnect separating the sales tax measure process from SB 375, because sales tax measures are not subject to the same environmental performance criteria as are regional RTP/SCSs, even though the tax measures raise significant funds (and leverage even more) and persist in place over long durations (Elkind, 2015). Policy actions to better connect sales tax measures to state sustainability goals might include lowering (through ballot approval of a Constitutional amendment) the required voter-approval threshold for passage of the sales tax measures from two-thirds to 55 percent, for ballot measures that meet specified environmental and equity criteria, such as for funding only VMT-reducing projects and/or ensuring life-cycle maintenance and operations for infrastructure in existing housing and jobs centers (Elkind, 2015).

¹ As noted, our results are based on aggregated revenue for all county transportation sales tax measure actively in place in FY 2018-19 in all counties located within the boundaries of the “big four” MPO regions. We determined funding splits for each measure by mode and purpose from the original expenditure plans in the original ballot measures, or from county transportation authorities. For this purpose, we made use of a dataset compiled by researchers at UCLA, cited in Wachs et al. (2020) and available at:

<https://docs.google.com/spreadsheets/d/1PA62StlclFJXSxABsasVTvAMgQhirtxMA6cuGnxCfl/edit#gid=207788548>. Then, we weighted the funding data using the FY 2018–19 sales tax receipts raised from each measure, sourced from Comprehensive Annual Financial Reports for FY 2018–19 from the appropriate county transportation agency or other authority. The county sales tax measures included in our analysis are: Alameda County Measure BB (2014), Contra Costa County Measure J (2004), Imperial County Measure D (2008), Los Angeles County Proposition A (1980), Los Angeles County Proposition C (1990), Los Angeles County Measure R (2008), Los Angeles County Measure M (2016), Marin County Measure A (2004), Marin County Measure AA (2018), Napa County Measure T (2012), Orange County Measure M2 (2006), Riverside County Measure A2 (2002), Sacramento County Measure A2 (2004), San Bernardino County Measure I2 (2004), San Diego County TransNet2 (Proposition A) (2004), San Francisco County Proposition K (2003), San Mateo County Measure A2 (2004), Santa Clara County Measure A1 (1976), Santa Clara County Measure A (2000), Santa Clara County Measure B (2008), Santa Clara County Measure B (2016), Sonoma County Measure M (2004), and Marin-Sonoma Counties Measure Q (2008).

Table 4. Planned expenditures by mode and purpose compared for RTP/SCSs by the “big four” MPOs, and active (in FY 2018–19) county transportation sales tax ballot measures in the “big four” regions

Region/ MPO	Plan/ measure	Roads			Transit				Active Transportation	Local Return	Other	Admin
		New capacity	O&M&R	Total	New capacity	O&M&R	Both	Total				
MTC	RTP/SCS	5%	20%	25%	23%	47%	0%	71%	3%	0%	1%	0%
	County sales tax measures*	12%	2%	16%	25%	16%	22%	63%	3%	13%	4%	1%
SCAG	RTP/SCS	23%	17%	40%	19%	32%	0%	51%	4%	0%	6%	0%
	County sales tax measures*	18%	4%	22%	21%	22%	19%	62%	0%	15%	1%	1%
SACOG	RTP/SCS	19%	36%	55%	6%	23%	0%	29%	4%	0%	12%	0%
	County sales tax measures*	12%	38%	50%	4%	39%	0%	43%	5%	0%	2%	1%
SANDAG	RTP/SCS	21%	12%	33%	34%	15%	0%	49%	9%	0%	8%	0%
	County sales tax measures*	37%	0%	37%	16%	8%	0%	24%	2%	28%	8%	1%
Total	RTP/SCS	17%	19%	35%	24%	36%	0%	60%	5%	0%	0%	0%
	County sales tax measures*	17%	4%	22%	22%	20%	18%	60%	1%	15%	2%	1%

* Aggregate annual spending for FY18-19; see description of data methods in footnote 1.

Sources: Latest RTP/SCSs for MPO breakdown, based on data from the following tables: MTC RTP: Technical Assumptions Report, Tables 1 and 2; SACOG RTP: p.75; SANDAG RTP: Appendix U, Table U.2; SCAG RTP: Table 4.6.2.

Considering Reasonable Assumptions for Transportation Finance and Land Use in RTP/SCSs

We investigated the most recent RTP/SCSs produced by the state’s “big four” MPOs, to consider how they are addressing the more stringent GHG performance targets imposed by CARB in 2018. We found evidence of considerable policy innovation particularly in the San Francisco Bay and San Diego area RTP/SCSs. We also found that, in line with adopting more ambitious policy directions, the RTP/SCSs are calling for ambitious new state and local revenue-raising strategies that veer widely away from existing conditions. Given the concerns already raised in CARB’s progress report on SB 375 about weak implementation to date of RTP/SCS strategies, this situation warrants further attention.

By law, MPOs must constrain their projected spending in RTP/SCSs to “fiscally constrained” revenue— revenue that can be “reasonably expected” to materialize over the time of the plan’s duration. Similarly, land use assumptions employed in developing the SCS portion of MPO plans must be based on “recent planning assumptions, considering local general plans and other factors.”

However, we found that revenue, policy, and land assumptions contained in the most recent RTP/SCSs produced by the state’s “big four” MPOs veer away from existing conditions to a considerable degree. On the one hand, it is to be expected that an RTP/SCS will embody a vision for policy changes, including for raising revenue, that MPOs themselves do not control. As discussed above, MPOs have no direct authority over state or federal government policy any more than they do over local land use decision-making. This reality underlies the built-in weakness in the SB 375 process for ensuring RTP/SCS implementation, discussed earlier. On the other hand, if RTP/SCSs rely on policymaking by other level of government that is unlikely to occur, then they become merely aspirational and not realizable on the ground. In this regard, especially as they now face tougher GHG reduction targets, the state’s MPOs face a catch-22, as they have no choice but to bank on more ambitious state and local action to be able to achieve their more ambitious mandated goals, even though they cannot ensure that desired policies will actually be implemented.

The most recent adopted or final-draft RTP/SCSs by the “big four” MPOs contain some very ambitious policy and finance assumptions. For example, MTC’s Plan Bay Area 2050 (PBA 2050) expands its vision and strategies well beyond the traditional RTP focus just on transportation planning. PBA 2050’s housing strategies include preserving existing affordable housing, at a projected implementation cost of \$237 billion, and constructing enough deed-restricted affordable homes to meet needs for all low-income households, at a projected cost of \$219 billion to implement. The plan’s economic development strategies include establishing a statewide guaranteed universal basic income to provide Bay Area households with \$500 per month on average, a strategy expected to cost \$205 billion to implement. The total cost for these three strategies alone exceeds the entire RTP/SCS budget for transportation projects and programs.

PBA 2050 acknowledges that funding is not secured to implement these housing and economic development strategies. Indeed, the RTP/SCS plainly states that about three-quarters of funding needed to implement the plan’s housing strategies, and none of the funding needed to implement the plan’s economic development strategies, has been identified.

MTC has a history of pushing the envelope in aiming for more ambitious plan objectives than other MPOs in California (and nationally). But MTC’s newest RTP/SCS is more ambitious by far than any preceding plan. What prompted MTC to develop such an ambitious plan? One answer is that equity stakeholders in the region, such as affordable housing advocates, have pushed MTC to address equity concerns. Another explanation for the housing and income strategies has to do with a lawsuit that MTC settled in 2014 with the Building Industry Association, subsequent to completing a previous RTP/SCS; under its terms, MTC must meet the stipulation in SB 375 that projected household growth for the region, associated with projected employment growth, be housed within the MPO regional boundaries.

The challenge faced by MTC in accommodating projected household growth within the region reflects historical circumstances that are something of an anomaly. MTC’s official boundaries, encompassing the well-known nine-county region, were designated many decades ago. However, since then, so much spillover growth has occurred that the US Census now designates five additional surrounding counties as falling within the greater regional Consolidated Statistical Area, based on commuting patterns. In other words, the economic scale of the Bay Area has long exceeded the official, historical designated MPO boundaries, presenting a governance problem that other MPOs in the state do not face.

The RTP/SCS notes:

The Regional Housing Control Total in the Plan Bay Area 2050 Final Regional Growth Forecast, also known as the year 2050 total housing units projection, reflects [a] “Backward Arrow” linkage... which captures the impact of increasing housing supply at all income levels and lowering housing prices, ... [as] nearly a quarter of the housing stock in 2050 would be deed-restricted affordable housing units in

the Plan... Overall, the Regional Growth Forecast provides enough housing to make it affordable for the in-commuters who today are forced to live outside the region due to high housing cost or a lack of housing choices to move into the region in the future... The number of housing units reflects a plan for no net growth in the in-commute into the region, consistent with State law and MTC's and ABAG's legal settlement with the Building Industry Association (MTC/ABAG, PBA 2050 Forecasting and Modeling Report, p. 24, and Draft EIR, pp. 2–30).

This discussion about MTC's housing strategy is intended to address more than just insider baseball. Instead, it provides a salient example of the catch-22 described above—the conundrum that MPOs face in developing RTP/SCSs that are capable of meeting state requirements, but which, in doing so, must rely on action by others to ensure their plans are realized. As MPOs now face tougher GHG reduction targets but lack implementation capacity, SB 375 is increasingly becoming an unfunded mandate. If state and local policymakers fail to adopt the strategies envisioned in the RTP/SCSs, SB 375 might continue to crack under the weight of its built-in implementation deficit.

Aside from questions about the feasibility of PBA 2050's ambitious housing and guaranteed income strategies, another feasibility question arises in regard to the plan's land use assumptions, which veer away from existing local zoning policies. For its plan development analysis, MTC modeled a “no-project” scenario (required under CEQA) which:

... Assumes current land use regulations captured in the base zoning do not change between now and 2050... In the Final Blueprint [however], zoning is modified to broaden allowable building types and increase development density in Transit-Rich Areas (TRAs) and High-Resource Areas (HRAs) to encourage growth near transit and in high-resource neighborhoods... [and furthermore] certain costs associated with housing development are limited, such as project review times and parking requirements... The incorporation of a relaxation of local land use constraints into the regional growth forecast... results in no increase in the regional in-commute... [but] among the Bay Area's High Resource Areas eligible for PDA designation, only a handful have been designated by local governments... [and] nearly 50% of areas within a half-mile of regional rail stations, ferry terminals, and rapid bus stops have not been designated PDAs, despite meeting eligibility criteria (MTC/ABAG, PBA 2050 Forecasting Modeling Report, pp. 35, 45, 48, and Futures Final Report, pp. 51, 52).

These excerpts from PBA 2050 indicate that its adopted land use forecast veers away from current in-place zoning policies. However, the plan does not clearly or explicitly delineate the degree to which the adopted land use assumptions are infeasible under currently adopted local policies, nor does it discuss which locations, in which jurisdictions, currently fail to accommodate projected denser development.

MTC is not the only MPO that has developed plans that contain a “wedge of uncertainty,” or discrepancy, between adopted land use assumptions and current local land use policies. Indeed, this issue constitutes another example of the plan-versus-reality divergence that increasingly characterizes the SB 375 process. For example, the Southern California Association of Government (SCAG), the Los Angeles area MPO, begins its most recent adopted RTP/SCS by underscoring repeatedly that localities are not required to alter policies to conform to regional plan goals. The plan asserts that “it is important to note that SCAG does not have a direct role in implementing the Sustainable Communities Strategy neither through decisions about what type of development goes where, nor what transportation projects are ultimately built” (SCAG RTP, 2020, p. 48).

Similar to MTC's RTP/SCS, SCAG's RTP/SCS then shows performance results for various modeled land use-plus-transport scenarios, including an “Existing Plans – Local Input” scenario designed to reflect “locally envisioned growth as

conveyed by local jurisdictions” (SCAG, 2020 RTP/SCS, SCS Technical Report, p. 16) and to “incorporate local general plans and land use information” (SCAG, 2020, EIR Alternatives Report, p. 4.0-13). Modeled performance results for the “existing plans” scenario diverge from the final adopted plan scenario in various ways, including in projecting 55 percent growth in multifamily housing and 66 percent growth for compact housing by 2045, compared to growth rates of 69 percent and 76 percent, respectively, projected for the adopted land use forecast (see SCAG 2020 RTP/SCS, SCS Technical Report, Tables 3 and 4). However, as in the case of PBA 2050, the SCAG RTP/SCS does not describe clearly or explicitly where existing local plans and policies diverge from regional plan goals. Nevertheless, the adopted plan projects a doubling of the annual household growth rate in designated growth target areas, compared to recent trends (see SCAG 2020 RTP/SCS, Demographics and Growth Forecast Report, Table 15).

The plan-versus-reality discrepancy also characterizes transportation financing strategies in RTP/SCSs, which have become increasingly ambitious, incorporating, for example, the projected adoption of per-mile user fees at the federal, state, and/or regional levels, congestion pricing on managed lanes at the regional level, and cordon pricing, parking pricing, and tax increment value capture strategies at the regional and local levels. The plans envision per-mile tolling not just as a revenue-raising technique, but also as a way to discourage excessive driving and make other modes more competitive. For example, SCAG’s plan describes projected impacts on VMT from establishing cordon/area pricing through a modeled “Westside Go Zone,” which could reduce VMT by 21 percent and single-occupancy vehicles entering the area by 22 percent. The revenue that could be raised through such strategies is substantial; for example, SCAG’s plan incorporates a projected replacement of gas taxes with mileage-based user fees starting in 2030, to raise \$42.7 billion by 2045 (see SCAG RTP/SCS, p. 59, and Table 4.5.4).

In recent evaluations of RTP/SCSs, CARB has critiqued some MPOs for relying on uncertain and insecure strategies, including many of those described above. For example, CARB’s evaluation of SCAG’s RTP/SCS notes that “CARB staff has significant concerns that SCAG will not be able to implement the transportation strategies in the 2020 SCS to achieve its GHG reduction and planned outcome benefits” (CARB, 2020, p. 42). CARB’s evaluation notes repeatedly, in reference to various plan strategies, that “funding from pricing strategies is extremely uncertain because of the need for legislative changes and local buy-in” (CARB, 2020).

CARB’s expressed concerns about implementation feasibility are clearly warranted, given how ambitious recent RTP/SCSs have become, which follows immediately on the heels of CARB’s assessment that regional plans under SB 375 have not been adequately implemented. However, CARB’s critiques do not fully acknowledge nor address the implementation dilemma that MPOs face. To meet CARB’s stiffer GHG reduction targets, the MPOs are not powerless. They can, for example, exert their authority to reject projects that increase VMT and GHGs; indeed, below we discuss how the San Francisco Bay Area and San Diego MPOs have done just that. However, that option does not align well with state programs that still fund new roadway projects. MPOs can also use the limited resources they control directly to incentivize supportive land use policymaking by localities; below we discuss how the Bay Area has done so, and how a promising new state program, called Regional Early Action Planning (REAP), builds on that model. But pricing strategies are also a critical part of the needed policy mix, and in that regard, as well as for many other implementation measures, MPOs have little choice but to count on stronger action from the state and local levels—the entities with actual implementation authority. Rather than complain about overly ambitious, infeasible MPO plans, attention might be better directed toward considering how to foster adoption of the state, regional, and local policies that are needed to ensure that SB 375 can succeed.

Policy Innovation in Recent RTP/SCSs

One salient achievement of SB 375 has been to foster policy innovation by some MPOs, especially when they have faced challenges in meeting the law's requirements. The policy innovations are models for the state to build on in strengthening SB 375.

One prominent example is how MTC responded to SB 375 in relation to land use planning and policy. Post-SB 375, MTC adopted a very compact growth strategy for the Bay Area, deemed necessary to help achieve the region's mandated GHG reduction target and the law's no-spillover mandate (Barbour, 2016). To help implement the strategy, MTC developed the One Bay Area Grant (OBAG) program, which has conditioned allocation of more than \$100 million annually for local transportation enhancement projects located mainly in designated Priority Development Areas (PDAs) (upon local RHNA compliance), actual housing production, and adoption of "complete streets" policies by localities. The OBAG program provides a model for other MPOs and the state government generally for operationalizing the "transportation-land use connection"—for translating regional plan goals into concrete, on-the-ground implementation measures that incentivize local support. Below, we discuss a new state program called REAP that builds on this model.

The most recent round of RTP/SCSs by the "big four" MPOs has produced new policy innovations. A prominent example is MTC's project assessment method, utilized for developing its newest RTP/SCS. MTC designed a unique approach to plan performance assessment which combines scenario analysis of alternative packages of land use and transport options, with scrutiny of individual projects for inclusion in the plan. With the intention of understanding how individual projects and strategies could perform in an uncertain future, MTC first designed three what-if scenarios depicting different contextual conditions that could arise due to different economic growth rates, and varying levels of federal environmental and immigration regulation. Then, project-level analysis was conducted using social cost-benefit analysis and equity scoring to examine performance under the three different sets of conditions. Strategies and projects that performed well across multiple futures were considered to be more resilient to uncertainty and were prioritized for inclusion in PBA 2050. Lower-cost improvements, such as urban bus rapid transit lines and sea level rise protection for heavily used freeways, were deemed to be the best bet in an uncertain future. Region-wide micromobility investments and transit fare integration combined with transit capacity expansion also scored well. Improvements to the BART system also performed well and were included.

The plan's proposed per-mile freeway tolling strategy was estimated to be the most effective means for managing congestion and curbing VMT and GHG emissions, even with means-based and carpooling discounts put in place. The freeway pricing strategy was projected to prevent a 20 to 30 percent rise in travel times on freeways, while enhancing transit ridership and exerting a greater impact on reducing GHG emissions, than all of the transit projects included in PBA 2050 combined, totaling more than \$100 billion in costs. However, road pricing was also found to present equity concerns without mitigations and complementary transit and last-mile strategies put in place, and if revenues were not reinvested toward enhancing transportation alternatives.

MTC's approach to performance assessment is innovative not just in applying an objective procedure for evaluating and comparing projects. In addition, project sponsors were allowed to submit commitment letters detailing how they could improve their project's performance, in order to be eligible for regional discretionary monies. As in the case of the OBAG program, this strategy provides an incentive and method for plan stakeholders to buy in to achieving plan goals.

The San Diego area MPO adopted a similar performance assessment approach for its most recent draft RTP/SCS, only it focused on corridor-level evaluation of multiple strategies, rather than individual projects. The MPO was severely challenged during the last few years by lawsuits over the environmental performance of its prior RTP/SCSs, as well as a

financial scandal involving revenue shortfalls from the county's sales tax measure for transportation, which led to the resignation of the MPO director and passage of state legislation to reform the agency's governing structure so as to provide more voting power to the larger, urban cities in the region (Jaffe, 2014; Smith, 2017; Keatts, 2021).

These conflicts and concerns underscore the points made about MPOs' external constraints, because the San Diego MPO argued that its highway spending focus was necessitated by passage of the county's sales tax measure for transportation, adopted prior to SB 375, entailing an ongoing commitment to the voters who had approved the measure (Curry, 2019; Puterski, 2019; Stickney, 2019; Keatts, 2019a). Indeed, as noted above, the San Diego sales tax measure, called Transnet, is oriented much more toward spending for new roadway facilities (at 59 percent of funds raised) and "local return" (at 28 percent of funds raised) and less toward transit expenditure than most of the other county sales tax measures in place in the "big four" regions (see Table 4). Combined with state and federal money, Transnet revenue was intended to build 37 freeway and 11 transit projects to ease congestion. However, by 2016, it had become clear that only about half of the promised projects were likely to be completed, due to overly optimistic revenue and cost forecasts in the original measure (Keatts, 2019b, 2021).

In response to these challenges, the San Diego area MPO overhauled its most recent regional plan, taking a radical departure from its previous approach. Signaling a "big shift in priorities away from highway expansion and toward more sustainable modes of transportation," the new plan integrates development of multimodal corridors with network connection strategies and mobility hubs, or transit-oriented neighborhoods that can benefit from the enhanced network connectivity (Keatts, 2019, 2021; Curry, 2021b; Circulate San Diego, 2021). This sort of strategy to promote TOD, not just in an isolated fashion at the neighborhood scale but in a coordinated way along transit corridors, has been found to be critical to the success of cities that have substantially reduced VMT and improved transit performance (Cervero, 1998; Suzuki, Cervero, and Iuchi, 2013).

The plan combines transit expansion with new pricing policies to make solo driving more expensive and fund transit alternatives. Earlier plans to expand freeways in the region were scrapped, and instead the new plan aims to build hundreds of rail lane miles and to address congestion using managed roadway lanes for carpools, buses, and drivers who pay tolls. No significant expansion of highway right-of-way is proposed for the managed lanes; instead, to build them, the plan calls for converting existing lanes, rather than widening highways or adding new lanes. Such a large-scale conversion of existing lanes to managed lanes is unprecedented in California (Keatts, 2021; Curry, 2021b; Circulate San Diego, 2021). The plan aims to expand transit service more rapidly than envisioned in the previous RTP/SCS. More than two-thirds of local bus routes will see upgrades, mostly frequency improvements, by 2025. New rapid and local bus routes are planned, and bus service will benefit from faster travel times due to the creation of the regional managed lane network. Additionally, the plan includes more than 120 active transportation projects (ibid).

Even as many observers have lauded San Diego's new regional plan, questions have been raised about its financial feasibility. The new managed lane network is expected to pay for itself through tolls, even though tolling is not widely popular among voters (Circulate San Diego, 2021). Some project funding relies on a new transportation sales tax measure, which would need to be passed by voters, although voters rejected such a ballot measure in 2016. The plan also relies heavily on a proposed new regional road user charge and a new state road user charge to raise \$60 billion. But no state road user charge is currently in place, and neither is legal authority for adopting a regional charge. Given SANDAG's recent history of financial mismanagement, even enthusiastic plan advocates are worried about overly optimistic funding assumptions (Circulate San Diego, 2021).

Some useful lessons can be gleaned from the recent San Diego experience. First, it shows that an MPO can change course substantially when pressed by state-imposed performance standards. Just as MTC was pushed to develop a very compact growth scenario in order to avoid spillover growth beyond the region's borders, as stipulated in SB 375, the San Diego area MPO has been forced to revisit its longstanding plans for roadway expansion. Other useful lessons more directly relate to the institutional disconnect between the county sales tax measure process and SB 375. The San Diego experience corroborates the concern that sales tax measures can hamper an MPO's ability to change direction in the face of new priorities and requirements. Most county sales tax ballot measures do include stipulations that permit administering agencies to alter implementation plans, but doing so is considered politically risky (Wachs et al., 2020). Thus, the San Diego experience underscores the need for state policymakers to consider how they might better ensure that county sales tax measures effectively address state transportation sustainability goals.

The new San Diego area regional plan also shows how California's biggest MPOs are advancing the synergistic "push-pull" policy combination endorsed in SB 375, combining strategies to support compact transit-oriented development with better transit and AT provision, and roadway pricing that not only raises revenue for funding alternative modes but also makes them more attractive in comparison to driving. However, concerns about plan feasibility point to the need to assess whether increasingly ambitious regional plans such as San Diego's can be achieved on the ground. SB 375 is at a critical turning point in terms of assessing whether it can achieve its goals in current conditions, and what can be done about it, if not. The next section addresses this question by considering the relationship of RTP/SCSs to the CTP 2050, the state's long-range plan aimed at identifying strategies needed to achieve the state's goals for sustainable transportation.

Connection Between RTP/SCSs and the CTP 2050

The CTP 2050 models strategies to reduce transportation sector GHGs to 80 percent below 1990 levels by 2050, as called for by the state's climate policy goals. The divergence between the plan's modeled what-if scenarios and existing conditions, discussed previously in relation to RTP/SCS scenario modeling, is even more apparent when considering the strategies included in the CTP 2050.

Unlike the RTP/SCSs, the CTP 2050 is not required to be fiscally constrained to reasonably anticipated revenue sources; instead, it aims to identify "policies and strategies required to close the gap between what the regional transportation plans (RTPs) aim to achieve and how much more is required to meet 2050 goals" for the transportation sector. The CTP 2050's baseline scenario was designed to include projects and land use assumptions obtained from current adopted RTP/SCSs, as well as other policies and projects from existing state-level transport plans; against this baseline scenario, more aspirational scenarios were then developed to evaluate what more policy action would be needed to attain state climate policy goals for the transportation sector.

However, some unconstrained funding strategies modeled for the CTP 2050, such as per-mile road user fees, are also included in RTP/SCSs, which then direct the anticipated revenue raised to funding of new transit projects and other objectives. The inclusion of aspirational revenue sources for funding of projects included in the RTP/SCSs raises questions about overlap between the regional plans and the CTP 2050. The lack of sharp delineation between constrained and unconstrained funding makes it difficult to determine exactly what more needs to be done beyond RTP/SCSs to achieve state goals.

But more crucially, the RTP/SCSs and the CTP 2050 underscore the same message—that a more ambitious multilevel policy package that includes roadway pricing, policy support for compact development, and greater investment in non-auto modes is needed if California intends to achieve its climate policy goals. Against its baseline scenario, the CTP 2050 modeled and compared a more aspirational transportation scenario, a more aspirational land use scenario, and a “combined” transportation and land use scenario. Figure 3 shows that modeled increases in teleworking, road pricing, and denser land use were determined to be potentially most useful for reducing VMT in the “combined” scenario, with associated benefits for reducing GHGs. (Note that in the figure, “CAV” refers to “connected and automated vehicles.”)

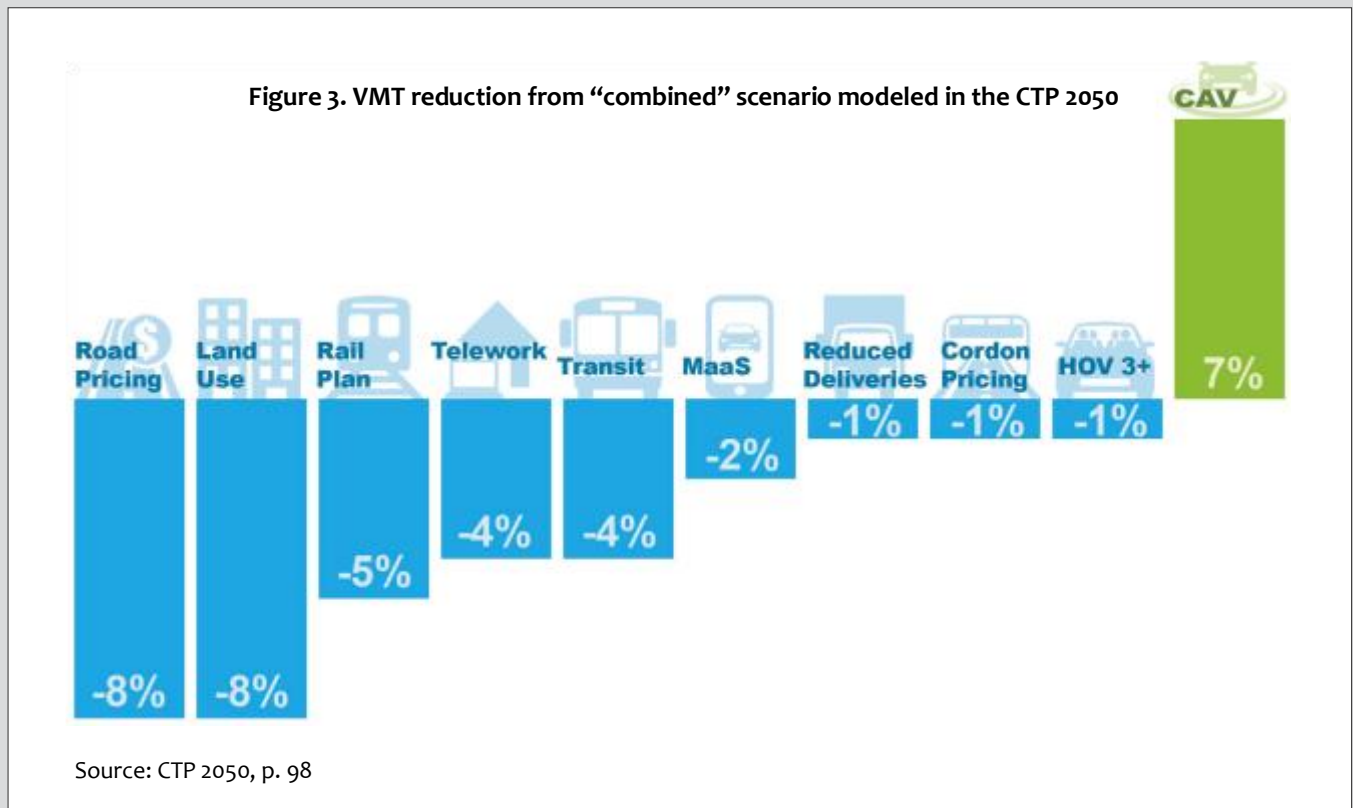
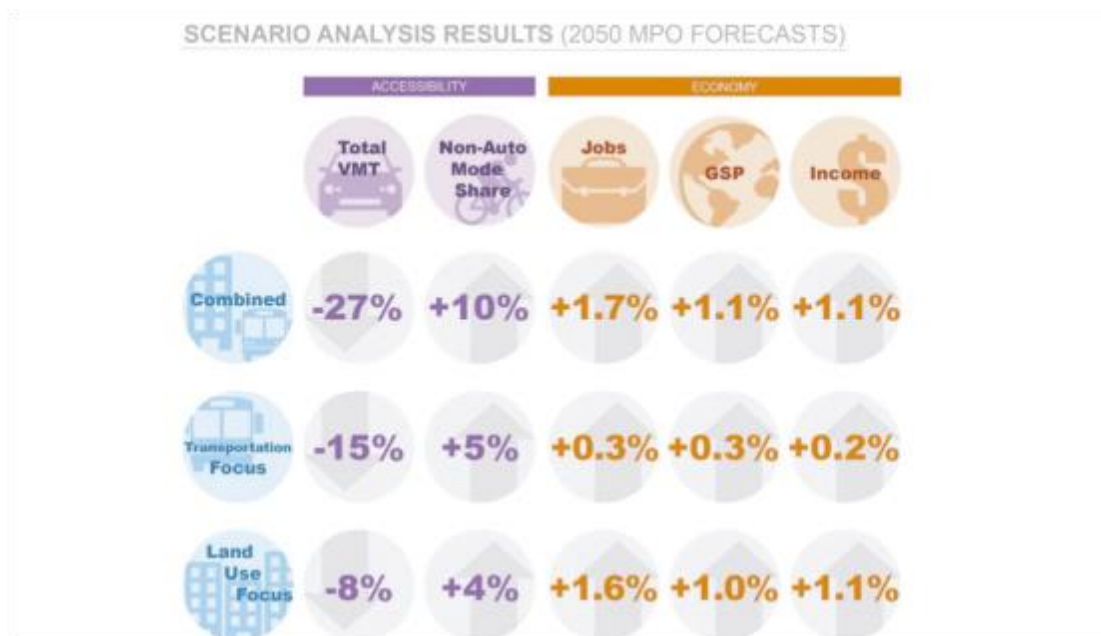


Figure 4 underscores the benefits of combining transportation and land use strategies. Combined strategies produce synergies, achieving more than is possible from the sum of the individual parts. These results support the same message found in the RTP/SCSs, that a multilevel policy package is needed, with more concerted action from both the state and local levels, if California is to achieve its goals for sustainable transportation.

Figure 4. Performance results of different scenarios modeled in the CTP 2050



Source: CTP 2050, p. 93

Value of Synergistic Policy Combinations for Reducing VMT

Research confirms the synergistic benefits of the policy package advanced in the CTP 2050 and in the MPOs' RTP/SCSs for producing “push-pull” effects for reducing auto travel by altering the relative costs of using different modes, thereby affecting accessibility cost differentials. A recently completed multi-year modeling project conducted by scholars from various University of California (UC) campuses (Brown et al., 2021) concluded, similar to the CTP 2050, that combining roadway pricing, support for multimodal transport options, and more compact development would produce synergistic benefits that could help the state achieve its climate policy goals. The study explained why the success of each element of the policy mix depends on the others:

We find that to achieve the defined target of at least 15% per capita VMT reduction by 2045 relative to the BAU [business-as-usual scenario], an integrated policy strategy is required, combining all of the main elements examined here... Changes to the built environment may make it possible to drive less, but these measures will reach their full potential only if people have viable alternatives to driving. To make these alternatives attractive, it is typically necessary to discourage driving by increasing its generalized cost, i.e., by implementing pricing policies that target vehicle miles traveled and parking in core urban centers. Similarly, pricing policies will have more impact if combined with changes to the built environment that enhance viable alternatives to driving (Brown et al., 2021, pp. 237, 365).

Pricing policies, which can include imposing higher gas taxes or VMT fees for roadway use, congestion pricing for slow-moving freeways, and parking pricing in central business districts, play a critical role in this policy mix. The attractiveness of driving has been shown to be substantially affected by the price of gasoline (including gasoline taxes) and parking provision (Alberini et al., 2021; Goetzke and Vance, 2021; Manville and Shoup, 2005; Chatman, 2013). Like the CTP 2050, the UC research project demonstrated that modeled pricing policies, including VMT fees and parking pricing, could reduce GHGs more effectively when considered on their own, than could modeled infill development improvements or new transit and AT facilities and service, also considered on their own (Brown et al., 2021; Caltrans, 2021). However, the two studies also found that combining these strategies would produce synergistic benefits (achieving more than the sum of the individual strategies on their own). Thus, pricing, transit and AT provision, and infill development should be viewed as complementary strategies—and even more so, as interdependent for their effectiveness in reducing VMT and GHGs.

These conclusions about policy synergies are further buttressed by findings from empirical research studies (as opposed to modeling efforts) on the topic. The impact of gasoline prices on transit ridership was found to be greater in US urban areas with higher densities and regional containment policies (Lee and Lee, 2013). Congestion pricing was found to have a larger impact on VMT reduction in urban than in suburban neighborhoods in Portland, Oregon, attributable to more mode options available in dense and mixed-use urban settings (Guo et al., 2011). The effect of travel cost on the choice between driving alone or using non-motorized modes was found to be larger in neighborhoods in Austin, Texas, that were located closer to activity centers and that had higher sidewalk densities (Zhang and Zhang, 2018). Research has also found synergistic effects between built environment variables and parking pricing and transit/vanpooling subsidies, indicating that land use policies could be more effective where supportive transportation policies are in place (Ding et al., 2018).

This research on policy synergies underscores why focusing only on land use policymaking, in relation to SB 375, is inadequate. The wider (indeed voluminous) body of research examining impacts of the built environment—land use factors—on travel behavior supports the importance of considering land use in a regional frame in relation to transport network connectivity. This body of research generally finds that neighborhoods with mixed land uses, compact development, and tightly woven street grids tend to support more walking, biking, and public transit use than traditional suburban low-density, single-family neighborhoods that separate housing from commercial areas and services (Ewing and Cervero, 2010; Stevens, 2017). But in considering built environment effects, the factor found to be most strongly associated with auto use and VMT is regional accessibility, where greater accessibility from a given location to jobs, in particular, is associated with lower VMT. This was the finding of two widely cited meta-analyses of over 100 research studies from around the world (ibid).

The importance of examining interactions of land use with transportation network connectivity at a regional scale is corroborated by research comparing metro-scale to local characteristics and effects. Gallivan and coauthors (2015) found that the compactness of urban development in 300 US urban areas is associated with transit service levels; absent transit systems to support compact development, population densities in US urban areas overall would be 27 percent lower than they currently are, according to the study. Similarly, a study by Bento and coauthors (2005) found that regional connectivity is at least as important as neighborhood connectivity, or walkability, in affecting key travel outcomes. Examining travel behavior in conjunction with local and regionwide urban form measures for 114 US metropolitan areas, these authors found that when tested locally, the effects of individual built environment measures were significant but small, but when considered in the wider urban context, cumulative effects were striking. For example, if all households were moved from a city with Atlanta's urban form to live instead in a city with Boston's urban form, VMT would decrease by 25 percent, according to the study.

These research findings have implications for climate policy. They indicate that isolated transit- and bike/walk-friendly neighborhoods are less effective at reducing VMT than multiple, complementary, and interconnected districts that exist region-wide and along specific transit corridors. Indeed, cities and regions that have successfully induced high transit mode shares and VMT reductions did so through concerted long-term policy action to integrate land use and transit improvements at multiple scales and locations (Suzuki et al., 2013; Cervero et al., 2017). A key conclusion for policymaking is thus the importance of applying policy commitments in a concerted fashion over time and at multiple geographic scales to support coordinated transit-oriented development, transit, and active transport synergies—in other words, to implement the very strategies called for in MPOs’ RTP/SCSs developed under SB 375.

4. Promising Policy Directions

MPOs’ RTP/SCSs and the CTP 2050 are consistent in what they call for to achieve California’s policy goals for climate protection and sustainability from the transportation sector. They concur in demonstrating that a multilevel policy package is needed, requiring more concerted action to support compact development, transit and AT provision, and roadway pricing. This clear message leaves today’s policymakers with the question of whether they are willing to take the required steps, or if instead they will allow SB 375 to continue to falter under the weight of its built-in implementation deficiencies.

State-level action is needed to advance the trifecta of policies recommended in this paper. Land use is a key lever for ensuring SB 375 success, but it should not be viewed only as a matter of local policymaking. This situation prompts the question of what sort of state policies could be most effective for increasing infill development, and how does this question relate to MPO action and authority. Should the state government directly increase MPO authority and capacity to reward supportive local land use policy action, or instead enact state-level mandates and programs that address local land use, but which only indirectly support SB 375 goals? Or would a combination of these approaches be best?

So far, the state government has mainly pursued the latter approach, enacting policies to support housing production, including infill, but without directly increasing MPOs’ power and authority in the bargain, even though MPOs have complained about lack of adequate resources for implementing their compact growth strategies. This issue came to the fore when the state government designed the Affordable Housing and Sustainable Communities Program, which since 2014 has received 20 percent of ongoing funds from the state’s GHG cap-and-trade program to fund affordable housing projects combined with transit and/or active transport facilities upgrades. The Affordable Housing and Sustainable Communities program’s design provoked substantial debate among stakeholders, including some complaints that MPOs should have been provided a larger role in administration to help ensure RTP/SCS implementation (see Barbour, 2020, for more details). These debates are part of the larger question about how to properly assign roles and responsibilities for sustainable development at different levels of government.

Recently, the legislature has enacted a flurry of new housing legislation to increase housing production, but mostly without directly increasing MPO authority in the process. As noted earlier, recent state legislation has strengthened RHNA enforcement, streamlined housing approval procedures, strengthened the state’s density bonus law, and provided for “ministerial” (automatic) approval of subdivision of single-family lots, among other objectives.

In this situation, the question arises how and whether the state’s new housing legislation works to strengthen implementation of RTP/SCS land use visions. By facilitating more housing production, including in built up areas, the recent legislation will indirectly support RTP/SCS compact land use patterns. But the legislation does not directly work to

ensure that transit-proximate growth zones designated for development in RTP/SCSs actually receive the desired development. Indeed, in some respects, RHNA objectives stand in tension with SB 375 goals, because RHNA aims primarily to ensure that all localities increase housing production as much as possible, rather than to funnel development to specific geographies identified in RTP/SCSs as most conducive to reducing VMT and GHGs.

For this reason, state policymakers should strengthen MPOs' hand in fostering local land use policymaking that specifically supports regional RTP/SCS goals. Very recently, state policymakers took a significant new step in this direction with the launch of the REAP program in 2019. With this program, the state finally began to empower MPOs with resources to help improve housing production in a manner that aligns with RTP/SCS goals, while also working to ensure RHNA compliance.

Funded at \$125 million for FY 2019–20, and at \$600 million for FY 2021–22 (with grants extending through 2024), REAP provides grants to MPOs and other regional entities for planning activities to accelerate housing production and facilitate RHNA compliance (see <https://www.hcd.ca.gov/grants-funding/active-funding/reap2.shtml>). The program aims to align multiple sustainability goals; according to the state's Housing and Community Development Department (HCD), which is administering REAP, the program aims to “accelerate progress toward our state housing goals and climate commitments through a strengthened partnership between the state, its regions, and local entities to collectively accelerate infill development, housing, and VMT reductions in ways that advance equity... [REAP is] specifically designed to provide Metropolitan Planning Organizations (MPOs) and other eligible applicants with tools and resources to help implement and advance plans, primarily including sustainable communities strategies (SCSs) as part of Regional Transportation Plans (RTPs)” (ibid). Eligible uses must combine planning and implementation activities for projects that accelerate infill housing production, realize multimodal communities, shift travel behavior through reducing driving, and/or increase transit ridership.

The REAP program is a watershed in advancing the state's efforts to empower MPOs to induce local land use policymaking that supports RTP/SCS goals, while also advancing RHNA compliance. The state government should make the REAP program permanent and identify an ongoing funding source.

However, taking that step will not be enough to ensure the success of SB 375. While the REAP program will strengthen the land use leg of the three-part policy package recommended in this paper, it does not address the other two—the transportation-related strategies. Those strategies will require further action from state lawmakers if SB 375 is to succeed; land use policy action will not be enough on its own.

As discussed above, the transportation strategies modeled for the CTP 2050, and recommended by the “big four” MPOs in their target-setting negotiations with CARB, include roadway (mobility) pricing and increased funding for non-auto modes. These strategies are connected because if driving alone is more expensive, roadway pricing can discourage driving while also raising revenue to fund alternatives to driving. But mobility pricing is challenging, given that pricing evokes more public debate and opposition than other climate policies, even as evidence also indicates that opposition can be somewhat overcome through careful design (such as revenue recycling) and clear, positive framing about goals and potential benefits (Axsen et al., 2020).

Mobility pricing can include carbon pricing and fuel taxes, but in practice the concept is more often used to refer to cordon pricing (a charge to drive into a particular area), congestion-based pricing (higher prices at peak times), distance-based pricing (such as “pay as you go” insurance plans), and parking pricing (Cavallaro et al., 2018). These strategies are most commonly conceived of as a means to fund road management, to regulate the demand for traffic and to reduce the number of private vehicles circulating in urban areas—in other words, to reduce congestion (ibid).

California lawmakers recognize the need to replace the state's gas tax with something that works better, given increasing market penetration of electric and hybrid vehicles (Curry, 2021a). California has been conducting a pilot study of a possible per-mile roadway charge program, but policymakers anticipate that various concerns will need to be addressed in implementing such a policy, related especially to privacy but also fairness (ibid). Provisions will need to be adopted to ensure that lower-income travelers are not disproportionately penalized for driving, while also ensuring that all drivers are encouraged to drive less and select other travel modes.

However, for the policy combination recommended by the CTP 2050 to succeed, roadway prices will need to be set high enough to discourage solo driving and to make other travel options significantly more attractive, rather than just serve as a substitute for the gas tax. Road pricing schemes are most effective at carbon dioxide mitigation if they are designed to reduce travel distances or fuel consumption rather than providing congestion relief (Axsen et al., 2020). Road pricing, if set high enough, can also mitigate the anticipated rebound effects from cheap travel offered by future transport innovations, including electrification, automation, and ride hailing (ibid).

The level of roadway pricing modeled in the CTP 2050 as necessary (in combination with other policies) to meet the state's climate policy goals for transportation is a 50 percent increase in auto operating costs in the state's most urban counties (in the "big four" MPO regions), with an exemption for the lowest income quintile. In addition, the CTP 2050 includes a modeled \$10 cordon pricing scheme for the state's five largest central cities.

This level of pricing could be politically risky for state policymakers to enact, but that situation is no different than the one facing local elected officials who must address resistance to policies such as upzoning that might be unpopular with city residents. Disputes over whether local- or state-level inaction is more to blame for inadequate SB 375 implementation are misplaced, because stronger efforts are needed at all levels. The policy combination advanced in the CTP 2050 and mirrored in many RTP/SCSs requires concerted multilevel action. Advancing and promoting this policy package as a synergistic combination might help Californians perceive the synergistic benefits that could follow—that roadway pricing can fund real alternatives to driving, which in turn can help make compact development more attractive.

SB 375 is at a critical turning point, following the dispiriting findings of the SB 150 report and the disputes that arose over target setting in 2018. However, these developments point not to the law's failure to accomplish its central mandate, for MPOs to develop and adopt long-range plans deemed capable of achieving state goals for sustainable transport. Instead, they call attention to the law's built-in implementation deficit, which was apparent from the start, but which has not been adequately addressed. It makes little sense to complain about overly ambitious MPO plans if the state and local policymakers capable of adopting the policies needed to implement the plans are unwilling to do so.

MPOs have always provided an interface between different levels of government and agencies, in developing regional strategies to integrate transportation and land use. The benefits of this planning integration are meaningful, however, only if they advance effective policymaking, rather than just sketching out idealistic what-if scenarios that are never realized. Like the CTP 2050, MPOs' plans help show the way forward. Now the critical question is whether we will take steps to reach that destination.

If SB 375 continues to falter, significant reductions in transport-related GHGs will still be possible through the technology-forcing aspects of the state's policy portfolio—from continuing slated improvements to engine and fuel efficiency, in particular. However, in that case, rising VMT could undermine GHG reductions from the technological improvements, and co-benefits of more efficient development patterns such as for public health and livability will also not be achieved. As we enter a new era of rapid change in mobility options—prompted by transport innovations including electrification, automation, and ride hailing—roadway pricing and expansion of non-auto modes can help address anticipated rebound effects (increased VMT) from cheaper auto travel.

Thus, a mid-course correction is warranted for improving the chances of SB 375's success. This requires action at all levels, with state-level action needed just as much for land use as for transportation decision-making. Given that the state government determines the fiscal, regulatory, and planning constraints and powers that condition local land use choices, the state government is as responsible for ensuring local adherence to SB 375 goals as are localities. If the state government fails to improve accountability and responsibility for achieving the inter-governmental compact embodied in SB 375, the law will likely continue to falter and fail to achieve its intended goals.

Recommendations for further action from state policymakers to advance the policies recommended in this paper and to strengthen SB 375 and its implementation include:

- Align transportation funding to sustainability performance
 - Direct state dollars only to VMT-reducing projects
 - Link statewide transportation funding to project performance standards for decreasing VMT and GHGs as well as other criteria, such as cost effectiveness, increased public health benefits, and priority for disadvantaged communities
 - Develop methods that build on relevant experience, such as the project-level assessment methods of the Metropolitan Transportation Commission (MTC), the Bay Area MPO, and the project-selection criteria for the state's California Climate Investment programs (such as the Affordable Housing and Sustainable Communities program)
 - Focus MPO plans on funding VMT-reducing projects
 - In addition to requiring *plan*-level performance on SB 375 goals, require that MPOs conduct *project*-level performance analysis, similar to MTC's, for determining which projects to include and exclude from RTP/SCSs
 - Help MPOs implement transit and active transport strategies
 - Support planning for multimodal corridors linked to mobility hubs (areas where people live, work, and shop, with strategies for facilitating efficient transport access), such as in the San Diego area's most recent regional plan
 - Facilitate bus priority lanes and signalization, and transit system integration for fares and service
- Adopt and support pricing strategies to reduce driving and provide funds for alternatives
 - Adopt state-level roadway pricing pegged to reducing fuel consumption or GHG emissions
 - Set prices high enough to discourage driving and not just to substitute for current gas taxes
 - Address equity concerns without incentivizing driving
 - Help MPOs and localities to advance pricing and value-capture strategies
 - Help MPOs adopt regional roadway user fees, parking pricing, and value-capture strategies, such as infrastructure financing districts to support transit and active transport
 - Strengthen tax increment financing options available for VMT-reducing projects consistent with RTP/SCS goals
 - Ensure that localities perform on land use tied to RTP/SCS goals
 - Tie local transportation dollars and other state-directed funds (such as for planning) to land use performance for achieving RHNA production goals and RTP/SCS conformity
 - Provide substantial new funding for affordable housing development located near high-quality transit and in resource-rich neighborhoods (for example, near jobs and good schools)
 - Mandate or reward localities that upzone more systematically near transit and job centers
 - Require that localities eliminate mandated parking minimums for new development

- Provide planning funds and strengthen California Environmental Quality Act (CEQA) streamlining for development of specific plans that facilitate RHNA performance and RTP/SCS conformity
- Improve RTP/SCS performance
 - Determine regional-local plan consistency and impose consequences
 - Require that localities regularly report to their MPO on their actions taken to implement the RTP/SCS and to support achievement of the region’s GHG emission reduction targets
 - Require that MPOs identify localities whose land use policies do not accommodate the growth projected in the RTP/SCS or conflict with RTP/SCS goals and objectives
 - Tie state mandates or rewards to RTP/SCS conformity
 - Have state agencies and MPOs consult in a coordinated fashion with localities whose land use policies are inconsistent with RTP/SCS development goals
 - Expand programs that align state and regional goals and implementation methods
 - Make the Regional Early Action Program (REAP) permanent, and identify an ongoing funding source (this program funds MPOs to support local strategies that advance RHNA and RTP/SCS land use objectives simultaneously)
 - Build on REAP to provide MPOs with more ongoing resources for rewarding local projects that support and integrate state and regional performance goals
 - Ensure that such programs prioritize solutions in disadvantaged communities
 - Provide financial and technical resources to MPOs to aid in plan development, implementation, and impact analysis connected to implementing an expanded REAP-style program
- Improve RTP/SCS reporting, transparency, and accountability
 - Require more explicit, systematic, and consistent reporting in RTP/SCSs of budget allocations by mode and purpose
 - Require that MPOs more explicitly determine and depict the degree to which adopted RTP/SCS land use scenarios diverge from existing land use policies
 - Track RTP/SCS performance along the plan trajectory for both on-the-ground outcomes of interest, such measured VMT trends, and adoption of implementation measures in the RTP/SCS; impose consequences on MPOs for getting off track
- Revisit MPO governing structures
 - Investigate and address (lack of) representation on MPO governing board structures where jurisdictional representation does not match one-person one-vote
 - Evaluate whether to reconfigure any MPO boundaries to coincide with today’s economic regions; facilitate cross-border planning among neighboring MPOs where appropriate
- Align county sales tax measures for transportation more closely to SB 375 goals
 - Place a ballot measure before voters to amend the Constitution to allow 55 percent voter approval for passing county sales tax measures for expenditure plans that include VMT-reducing projects and cover all life-cycle costs for project maintenance and operations

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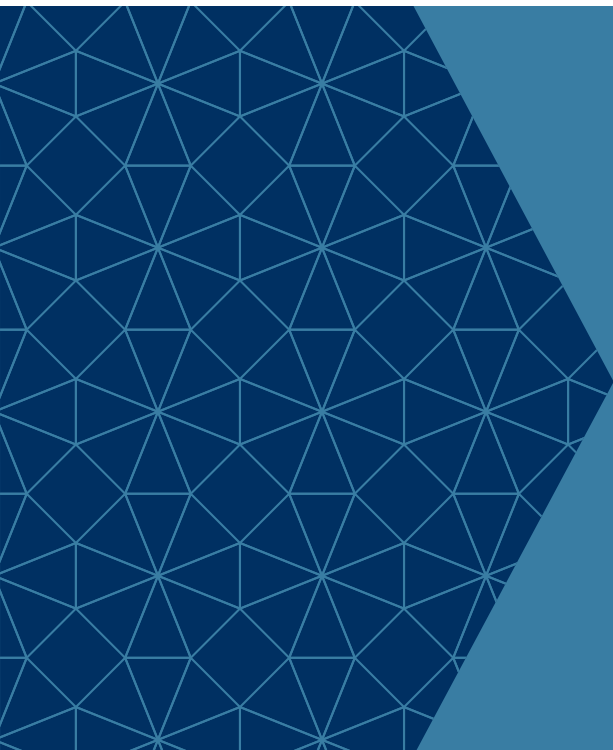
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Putting Our Cash Where Our Climate Policy Is: Transportation Funding versus Planning for Climate Protection Among California MPOs

PART 2

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Executive Summary

We examine and compare regional transportation planning and regional transportation funding—programming—using a detailed analysis of long-range regional transportation plans (RTP) and short-range transportation improvement programs (TIP) for five metropolitan planning organizations (MPO) in California. We develop and use a common coding scheme to categorize transportation projects in both the RTPs and TIPs and compare expenditures planned in the long-range RTP to the funds committed in the near-term TIP for automobile, transit, and active transportation infrastructure.

RTPs and TIPs serve related but distinct purposes in the transportation planning process. RTPs in California are a regional strategy for a transportation system. A core component, called a Sustainable Communities Strategy (SCS), is an integrated land development and transportation investment plan that together meet regional goals and decrease transportation-related greenhouse gas (GHG) emissions per California’s Senate Bill (SB) 375. TIPs are spending plans—they budget funds to specific projects and are meant to implement the RTP. A TIP tracks in detail the transportation investments made with federal and state funding sources or that are “regionally significant,” regardless of funding source. Thus, a TIP gives a nearly comprehensive picture of the role of state and federal funds in attaining the goals of the RTP.

Our findings (Figure 1) show that among the five case study regions, the state and federal—and in some cases, local—expenditures programmed in TIPs are generally less multimodal and more auto-centric than the investments outlined in MPOs’ long-range transportation plans. The three largest MPOs program a larger share of funds for auto infrastructure and a smaller share of funds for transit than the planned expenditures in their respective RTP/SCSs. Auto infrastructure (for example, new capacity, road rehabilitation, operations) receives the majority of planned and programmed funds in all regions except the San Francisco Bay Area. New auto capacity (for example, new or wider roads, new auxiliary or toll lanes, new or wider interchanges and ramps) makes up a significant share of planned and programmed funding in all regions, particularly in the Central Valley and suburban areas of the Bay Area. Indeed, new auto capacity receives the plurality of programmed funds in two of the five case regions, the Sacramento area (SACOG) and Tulare County (TCAG).

These results indicate that despite ambitious multimodal investment plans in some RTP/SCSs, the TIPs tend to frontload auto infrastructure and backload transit with their state and federal funding. This leaves local governments with the responsibility for using their local funds to develop the projects that will realize much of the GHG reductions envisioned in the RTP/SCSs. But local governments have their own priorities that might or might not align with state and regional GHG reduction goals. The state needs to align its transportation funding sources with its transportation policy, and MPOs need policy mechanisms to compel their local jurisdictions to spend local transportation dollars on GHG reducing projects. And because TIPs inconsistently capture local spending, MPOs need a way to systematically monitor and report RTP/SCS implementation across all sources of transportation funds.

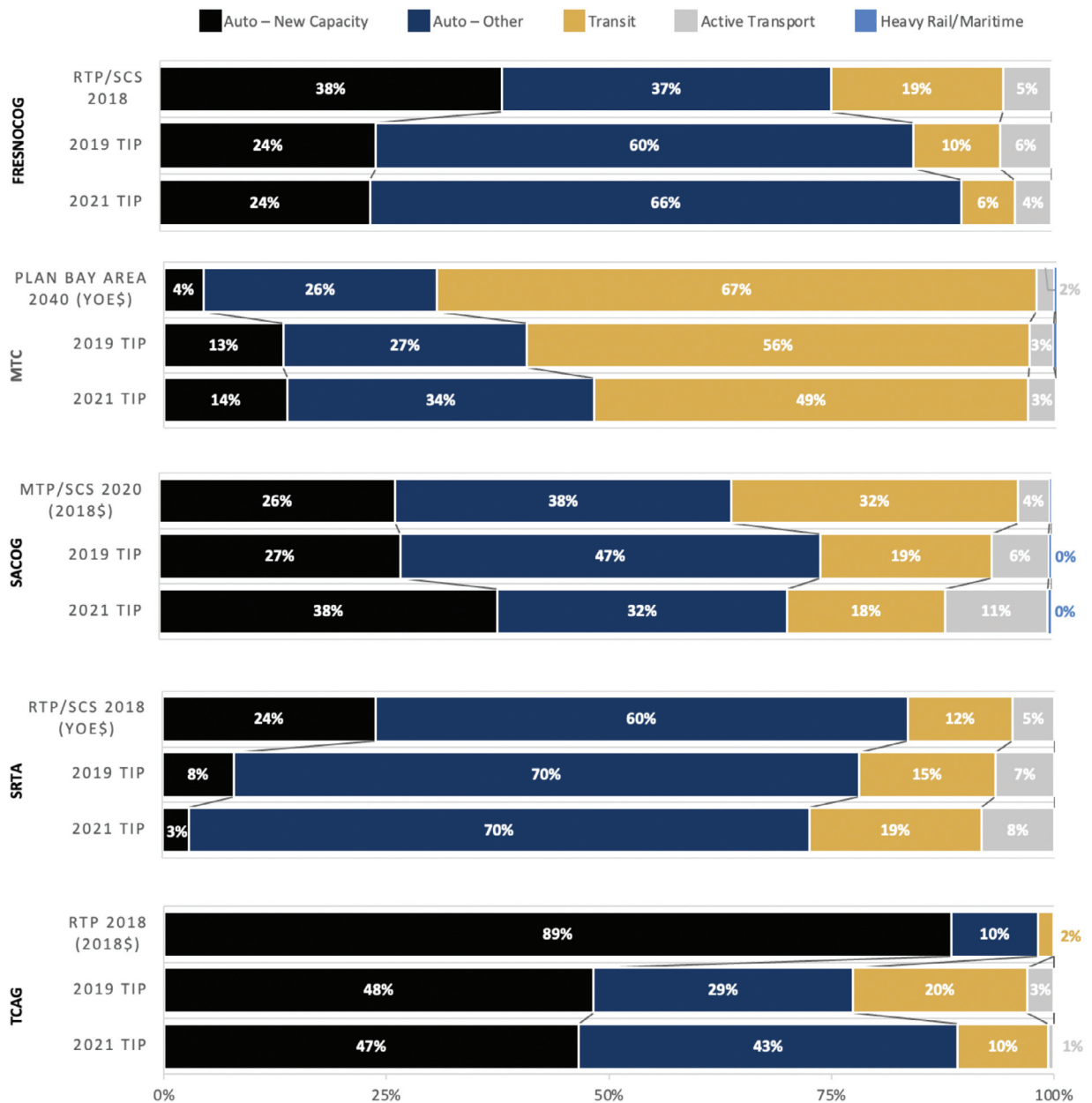
This pattern of investment, particularly the near-term prioritization of vehicle-miles traveled (VMT)-inducing roadway expansion,¹ contravenes California’s GHG reduction goals and hinders the decreased auto dependence that RTP/SCSs aim

¹ Duranton and Turner 2011

to achieve. To implement the GHG reductions envisioned and budgeted in California’s regional plans, policy is needed to redirect California’s core transportation funding programs, such as the STIP and SHOPP, and the local project development and prioritization processes away from auto-capacity projects and toward investments that reduce auto dependence, such as transit and active transportation.

Figure 1. Regional plan investments vs. programmed investments for the five case study MPOs

Fresno Council of Governments (Fresno COG); Bay Area Metropolitan Transportation Commission (MTC); Sacramento Area Council of Governments (SACOG); Shasta Regional Transportation Agency (SRTA); and Tulare County Association of Governments (TCAG)



1. Introduction and Background

Planning, funding, construction, and governance of the transportation system span a complex network of players at multiple levels of government. Legislatures, elected officials, agencies, departments, and commissions play key roles at the federal, state, regional, and local governments. In California, the state legislature put regional transportation agencies—metropolitan transportation organizations (MPO)—at the helm of reducing transportation-related GHG emissions when it enacted Senate Bill (SB) 375 in 2008, tasking MPOs with developing long-range transportation plans that attenuate automobile use and shift travel toward transit, bicycling, and walking. A core component of these regional plans, called a Sustainable Communities Strategy (SCS), is an integrated land development and transportation investment plan that will reduce GHG emissions from passenger vehicles. Since 2008, most MPOs in California have adopted three rounds of regional transportation plans (RTP) under SB 375 that have demonstrated that they can hit the greenhouse gases (GHG) emissions targets set by the California Air Resources Board (CARB).

But California’s on-the-ground progress toward meeting its GHG goals is alarming. In its 2018 progress report of SB 375, CARB found not only that “California is not on track to meet the greenhouse gas reductions expected under SB 375 for 2020,” but it also found “emissions from statewide passenger vehicle travel per capita increasing and going in the wrong direction.”² The progress report emphasized that “California—at the state, regional, and local levels—has not yet gone far enough in making the systemic and structural changes to how we build and invest in communities that are needed to meet state climate goals” and that the state “will not achieve the necessary greenhouse gas emissions reductions to meet mandates for 2030 and beyond without significant changes to how communities and transportation systems are planned, funded, and built.” CARB calls for structural changes to the transportation planning process to make the magnitude of change that is necessary to meet climate targets, in part by changing transportation investment patterns. Shifting investment toward transit and active transport networks and away from vehicle-miles traveled (VMT)-inducing roadway expansions will be a necessary part of that structural change.

California’s MPOs have created the plans to ostensibly reduce VMT and transportation-related GHG emissions. What is the nature of the transportation investments in those long-range plans? And are those plans being implemented in a way that reflects their GHG reduction goals? We examine the transportation planning and programming process and analyze five case study regions to answer these questions.

Transportation Planning and Programming Process

The federal government sets broad national policy goals, generates revenues for transportation, and allocates transportation funds to state, regional, local, and tribal agencies to implement the federal goals.³

State-level transportation planning in California is carried out by several entities. The state legislature sets broad policy priorities and establishes funding sources and their allocation priorities through state statute. Various state agencies and commissions advise on transportation policies and programs and have responsibility for programming and allocating state and federal funds to transportation projects. The California Department of Transportation, Caltrans, is responsible for planning, designing, constructing, and maintaining the state highway system for automobiles, transit, and active transportation.

² California Air Resources Board 2018 Progress Report

³ Caltrans, 2020

Local governments—cities, counties, and special districts, such as public transit agencies—have responsibility for the transportation system within their local jurisdictions. Local government agencies set policy goals in the plans and ordinances adopted by their councils and boards and can impose local tax measures to fund them.⁴ City and county public works departments are responsible for planning, designing, constructing, and maintaining their respective streets and roads, which often include bicycling and walking facilities, using funds from state fuel tax subventions⁵ and local tax measures.⁶ Transit agencies are responsible for the planning and provision of public bus and rail services within their jurisdictional boundaries.

But when local governments, transit agencies, and Caltrans plan to make certain investments in their transportation systems—projects that are regionally significant or receive state and federal funds—these implementing agencies nominate those projects for funding to their regional MPO. Regionally significant projects must be included in the investment lists of MPOs’ long-range regional transportation plans (RTP) and programmed in MPOs’ regional transportation improvement programs (TIP).⁷ Implementing agencies are responsible for conceiving of and building projects that expand, modify, operate, and maintain the transportation system, but MPOs play an important role in the transportation planning process.⁸

Regional Planning Process

MPOs are responsible for “planning, coordinating, and administering federal, state, and local funds that enhance their region’s multimodal transportation network.”⁹ Federal policy makes MPOs responsible for two key aspects of the transportation system: (1) developing long-range transportation plans, a process by which regions establish a vision for their desired future and determine the investments and policies that will direct them toward that future; and (2) near-term funding, or programming, of transportation projects where MPOs commit state and federal funds to individual projects in their jurisdictional boundaries.¹⁰ These long-range RTPs document the MPO’s vision and strategy for its regional transportation system. The TIPs document projects that have been programmed for funding.

Both RTPs and TIPs must “provide for the development and integrated management and operation of transportation systems and facilities (including accessible pedestrian walkways, bicycle transportation facilities, and intermodal facilities that support intercity transportation, including intercity buses and intercity bus facilities and commuter vanpool providers) that will function as an intermodal transportation system for the metropolitan planning area.”¹¹ And the process of developing both RTPs and TIPs involves review and approval at multiple levels of government, including adoption by the MPO board, approval by the state and the US Department of Transportation, and involvement of many stakeholders throughout the process.¹²

Regional Transportation Plan

The RTP communicates the region’s vision for its transportation system, looking at least twenty years into the future, and guides policies and investments to reach that goal. Federal and California statute states that RTPs shall direct regions

⁴ Agrawal et al. 2021

⁵ Sciara & Lee 2018

⁶ Agrawal et al. 2021

⁷ Sciara & Handy 2017

⁸ Sciara & Handy 2017

⁹ Caltrans 2020 Transportation Funding

¹⁰ 23 U.S. Code § 134(c)(1)

¹¹ 23 U.S. Code § 134(c)(2)

¹² Sciara & Handy 2017

toward a “balanced regional transportation system” for a wide variety of people and freight, “including, but not limited to, mass transportation, highway, railroad, maritime, bicycle, pedestrian, goods movement, and aviation,” and be “action-oriented and pragmatic.”¹³,¹⁴

California Senate Bill 375, enacted in 2008, requires that RTPs contain a Sustainable Communities Strategy (SCS), with an integrated land development pattern and transportation network that will reduce GHG emissions from automobiles and light-duty trucks.¹⁵ Increasingly stringent GHG reduction targets are set for each region by CARB.¹⁶

To carry out the planning process for the RTP, MPOs evaluate the current conditions and performance of the regional transportation system, as well as regional trends (for example, population growth, land use, mode share). They set performance targets for the plan’s horizon year. Federal Policy requires that MPOs use a performance-based approach to planning, though they leave the actual target to the MPO’s discretion,¹⁷ and California’s SB 375 requires that the RTP demonstrate that it can hit its GHG reduction target.¹⁸ MPOs then generally put out a call for projects to the implementing agencies and develop a list of proposed transportation investments to meet those targets. The list of proposed investments becomes the core of the long-range plan.¹⁹

The RTP must be “fiscally constrained,” meaning that the list of investments cannot be an unbounded wish list of projects nominated by local governments and other implementing agencies. Rather, the project list must be within the budget of a realistic projection of available revenues.²⁰ RTPs are also subject to the federal Clean Air Act, where the MPOs must demonstrate the effect of the plan on transportation-related air quality standards. The process of conformity with air quality standards and plans is complex, but ultimately, MPOs that are “unable to show air quality conformity could experience sanctions, including withholding of federal transportation funds.”²¹ So while MPOs depend on implementing agencies to carry out the goals of the RTP, the requirements of fiscal constraint and air quality conformity offer a few points of regional leverage.

And once adopted by the MPO board, the RTP is implemented through the TIP. Per state statute and the state RTP Guidelines, the RTP must “serve as the foundation the Federal Transportation Improvement Program (FTIP).
... The California Transportation Commission (CTC) cannot program projects that are not in the RTP.”²²

Transportation Improvement Program

The TIP is a spending plan that includes the projects listed in the long-range RTP that have been prioritized for near-term investment. The TIP must contain projects that are consistent with and reflect the investment priorities established in the current metropolitan transportation plan.²³ As the MPO for the Fresno region puts it: “The basic premise behind an FTIP is that it is the incremental implementation of the long-range RTP.”²⁴

¹³ 7 CGC § 65080(a)

¹⁴ 23 CFR 450.306(b)

¹⁵ 7 CGC § 65080(b)(2)(B)

¹⁶ 7 CGC § 65080(b)(2)(A)

¹⁷ 23 U.S. Code 150(b)

¹⁸ California Senate Bill 375, 2008

¹⁹ Sciara & Handy 2017

²⁰ 7 CGC § 65080(a)(4)(A)

²¹ Sciara & Handy 2017

²² CTC 2017 RTP Guidelines

²³ 23 U.S. Code § 450.326

²⁴ Fresno COG 2021 FTIP

TIPs are developed and formally adopted by an MPO as part of the metropolitan transportation planning process.²⁵ That is, their adoption is a policy decision by an MPO board. Upon adoption by their board, MPOs submit TIPs to the Caltrans for approval and inclusion in the Federal Statewide Transportation Improvement Program, which Caltrans sends to the Federal Highway Administration and Federal Transit Administration (FTA) for approval.²⁶ As with projects in the RTP, the list of transportation projects in the TIP are nominated by implementing agencies such as local governments, public transit operators, and Caltrans, and not (or very rarely) by the MPO.²⁷

Like the long-range plan, the projects programmed, or budgeted, for funding in the TIP have certain constraints. TIPs are also financially constrained—the TIP “shall include a project, or a phase of a project, only if full funding can reasonably be anticipated to be available for the project within the time period contemplated for completion of the project.”²⁸ And per the Clean Air Act, MPOs must demonstrate that the TIP will conform to federal air quality standards.²⁹ These requirements “enable MPOs to assert regional priorities more firmly when selecting projects than if they had to include all projects proposed by local governments.”³⁰

And only certain projects from the RTP are programmed in the TIP. Federal policy requires that TIPs include projects that receive federal funding, require federal action, or are “regionally significant” regardless of funding source.³¹ Thus, every transportation project that receives federal funding or approval must be programmed in the TIP. The Clean Air Act requires that projects that are not exempt (for example, roadway capacity expansions) be included in the TIP. State guidelines say that projects funded by two of the biggest state programs—the State Transportation Improvement Program (STIP) and the State Highway Operation and Protection Program (SHOPP)—are also to be included in MPOs’ TIPs.³² Projects that do not tend to show up in TIPs are those funded exclusively with local or regional dollars that affect only local circulation and, of course, those that are exempt from air quality conformity. These can include bicycle and pedestrian facilities, transit operations, and local road maintenance.

But some MPOs take a more liberal tack with what they include in their TIP. One regional planner said³³ that their MPO relies on the TIP to be “the one place to record and remember all of [the MPO’s] programming decisions,” and therefore includes nearly all projects funded with any type of state or federal funds, not just STIP and SHOPP funds, in addition to what is minimally required by federal law and the Clean Air Act.

What constitutes a “regionally significant” project, and thus requires that a project be listed in the TIP, has more grey area than its funding source. Federal code defines a regionally significant project as one that “is on a facility that serves regional transportation needs”—for example, projects that provide “access to and from the area outside the region; major activity centers in the region; major planned developments such as new retail malls, sports complexes or employment centers; or transportation terminals,” such that they “would normally be included in the modeling of the metropolitan area’s transportation network.”³⁴ Ostensibly, roadway classification and the technical capacity of the travel demand model could be factors in determining a project’s regional significance.

²⁵ 23 CFR § 450.104 – Definitions

²⁶ Caltrans 2021 FSTIP

²⁷ Sciara & Handy 2017

²⁸ 23 CFR 450.326(k)

²⁹ 23 CFR 450.326(a)

³⁰ Sciara & Handy 2017

³¹ 23 CFR 450.326(f)

³² Caltrans 2021 FSTIP

³³ Personal correspondence, Fall 2021

³⁴ 23 CFR § 450.104

Planners at MPOs in California spoke to the methods they have developed to navigate the grey area of “regional significance” and to determine which projects make the cut.³⁵ Multiple planners pointed to the Clean Air Act and the projects that it defines as “exempt from the requirement to determine [air quality] conformity”³⁶ as their proxy for a firm definition of regional significance: projects that are not exempt are considered regionally significant and thus included in the TIP. One planner said that any project that increases capacity on a roadway that is classified as a minor arterial or above is considered regionally significant, again referring to the Clean Air Act as a statutory basis. A complex project involving multiple implementing agencies, like a multi-modal transportation hub, would also likely be considered regionally significant, even if it would not increase roadway nor transit capacity.

RTPs, TIPs, and the Project Development Process

Both RTPs and TIPs list a project-level inventory of transportation investments. However, a “project” in a long-range plan is often conceptually different from a “project” in a TIP. This is particularly true for large, complex projects and projects further in the future. TIPs, with their financial constraint and four-year timeframe, include only near-term projects that are sufficiently developed such that their implementing agencies have firm cost estimates for each project phase and are essentially ready start construction. Implementing agencies—local governments in the case of local street and road projects, Caltrans in the case of highway projects, transit agencies in the case of bus or rail projects—propose and guide individual projects through the project development process from concept, design, and engineering to environmental review to construction and, ultimately, to maintenance and rehabilitation.³⁷

Sources and Strings of Transportation Funds

Funding for transportation projects comes from an array of federal, state, local, and—in rare cases—regional sources. Federal, state, and local governments generate the majority of revenues for transportation (for example, they levy taxes or fees), which they then allocate through an often complex series of statutes, frameworks, rules, and distribution formulae, earmarking funds with varying degrees of specificity for certain modes, systems, and services.³⁸

In an analysis of California’s state transportation revenues and allocation formulae, researchers showed that state and local governments relies on “a handful of key allocation rules of thumb” such as a jurisdiction’s population, centerline miles of roadway, number of registered vehicles, a historical grouping of northern and southern counties, and an “often repeated” city and county formula.³⁹ And crucially, the distribution formulae for state transportation funding is “more reflective of historical political deals and statewide geopolitics than of contemporary climate policy.”⁴⁰ Senate Bill 1, the California Legislature’s most recent bill to generate new transportation revenue, “largely inherited formulae that have been negotiated to broker the politics of modal siloes; administrative geographic, and jurisdictional divides; and competition for state resources.”⁴¹

Further, local governments generate the majority of California’s transportation funding—just under half of total transportation funding.⁴² Locally adopted sales tax measures fund the transportation system in nearly two-thirds of MPOs in California,⁴³ and those sales tax measures must include an expenditure plan. The expenditure plan often includes a specific list of transportation projects, which can direct local transportation priorities for decades.

³⁵ Personal correspondence, Fall 2021

³⁶ 40 CFR § 93.126

³⁷ Sciara & Handy 2017

³⁸ Sciara & Lee 2018

³⁹ Sciara & Lee 2018

⁴⁰ Sciara & Lee 2018

⁴¹ Sciara & Lee 2018

⁴² Agrawal et al. 2021

⁴³ Sciara 2020

MPOs rarely generate their own revenues and “have little independent authority over how most funds are expended” because nearly all funds have strings attached.⁴⁴ Building the RTP’s investment list thus becomes somewhat of a “matchmaking process,” as one regional planner put it,⁴⁵ between projects that are consistent with the regional plan’s goals and that satisfy the requirements of the federal, state, and local funding sources. The TIP process has a similar matchmaking process: “[The TIP] programs transportation funding from a wide variety of sources. All of these fund sources have eligibility criteria that a project must meet in order to be considered for the fund source.”⁴⁶ These state and local strings tied to funding and project prioritization make for “governance mismatch, collective action problems, and information asymmetries that hamstring SB 375’s success.”⁴⁷

Comparing RTP and TIP Project Lists

What, then, should we consider when comparing investments lists in the RTP and TIP? First, all projects in the TIP must be consistent with the long-range plan—“as such, the TIP represents a four-year snapshot that is a small part of the [long-range] plan.”⁴⁸ But MPOs have some discretion over what projects they list in the TIP in addition to the minimum federal and state requirements, so TIP projects listings will vary by MPO.

Second, the list of projects included in a TIP will have some systematic differences from the RTP. TIPs provide a nearly comprehensive list of projects that receive federal and state funds, even if the projects have some portion of local funding as a “match,” and a list of projects that are not exempt from air quality conformity. That is, the projects are not any of the facilities listed in 40 CFR § 93.126, such as pavement rehabilitation, transit operating assistance, replacement transit vehicles, bikeways, or walkways. But because of the administrative burden of using federal funds, MPOs sometimes aggregate federal funding onto larger, usually capital projects that will be “federalized” at some point in their life cycles. MPOs trade funding sources from one project to another, within the constraints of the fund sources, a process a planner called “money washing.”⁴⁹ Swapping local funds for federal funds allows smaller projects to avoid the burden and delay that come with federal funds—or avoid “getting STIPed,” as it is begrudgingly called by local agencies. The money washing process skews which projects get programmed with federal and state funds, and thus which projects reliably show up in the TIP. Smaller projects that are exempt under the Clean Air Act—for example, bikeways or walkways paid for exclusively by the local government—will often be excluded from TIPs.

The Metropolitan Transportation Commission, the MPO for the San Francisco Bay Area, compared its 2021 TIP to its long-range plan and described the caveats for interpreting the results:⁵⁰

“...there is an important difference between these two documents that complicates any side-by-side comparison. While the Plan includes the universe of revenues reasonably expected to be available (federal, state, local, and private funds) to implement planned transportation projects, program, and strategies, the TIP is much more focused on projects with federal funding or that affect air quality conformity. This means that the TIP is more heavily weighted toward large capital projects, such as transit and highway expansions, that are more likely to require federal funds or action. The vast majority of funds that go to operate, maintain, and manage the region’s existing transportation system, a top priority of the long-range plan, are not typically captured in a TIP as they tend to be locally funded.”

⁴⁴ Sciara & Handy 2017

⁴⁵ Personal correspondence, Fall 2021

⁴⁶ SACOG 2021 MTIP

⁴⁷ Sciara 2020

⁴⁸ MTC 2021 TIP Investment Analysis

⁴⁹ Personal correspondence, Fall 2021

⁵⁰ MTC 2021 TIP Investment Analysis

We can better understand the context and limitations of a side-by-side, RTP-to-TIP comparison by evaluating not just the “universe of revenues reasonably expected to be available,” but also the universe of funds programmed in the TIP, both of which are required components in order to show fiscal constraint. Figure 2 compares the revenues generated in the region to the dollars programmed for three MPOs in California. It shows that in their 2019 and 2021 TIPs, the MPOs programmed nearly every dollar of state and federal revenues available (apportioned) to them, though only programmed a portion of locally and regionally generated revenues. The remainder of local and regional funds are spent at the discretion of local agencies for projects that may not be programmed by the MPO. Thus, for these three MPOs, TIPs will give a fairly comprehensive picture of the nature of projects that receive state and federal funds but “will have a gap for a large swath of local and regional dollars.

But some regions—for example, Fresno Council of Governments and Tulare County Association of Governments, shown in Figure 3—also programmed all the reasonably expected local and regional transportation revenues in their 2019 and 2021 TIPs. This is evidenced by the equal magnitudes of revenue and programmed funds across all fund sources.

Figure 2. Revenues and programmed funds, 2021 and 2019 TIPs, \$ in millions

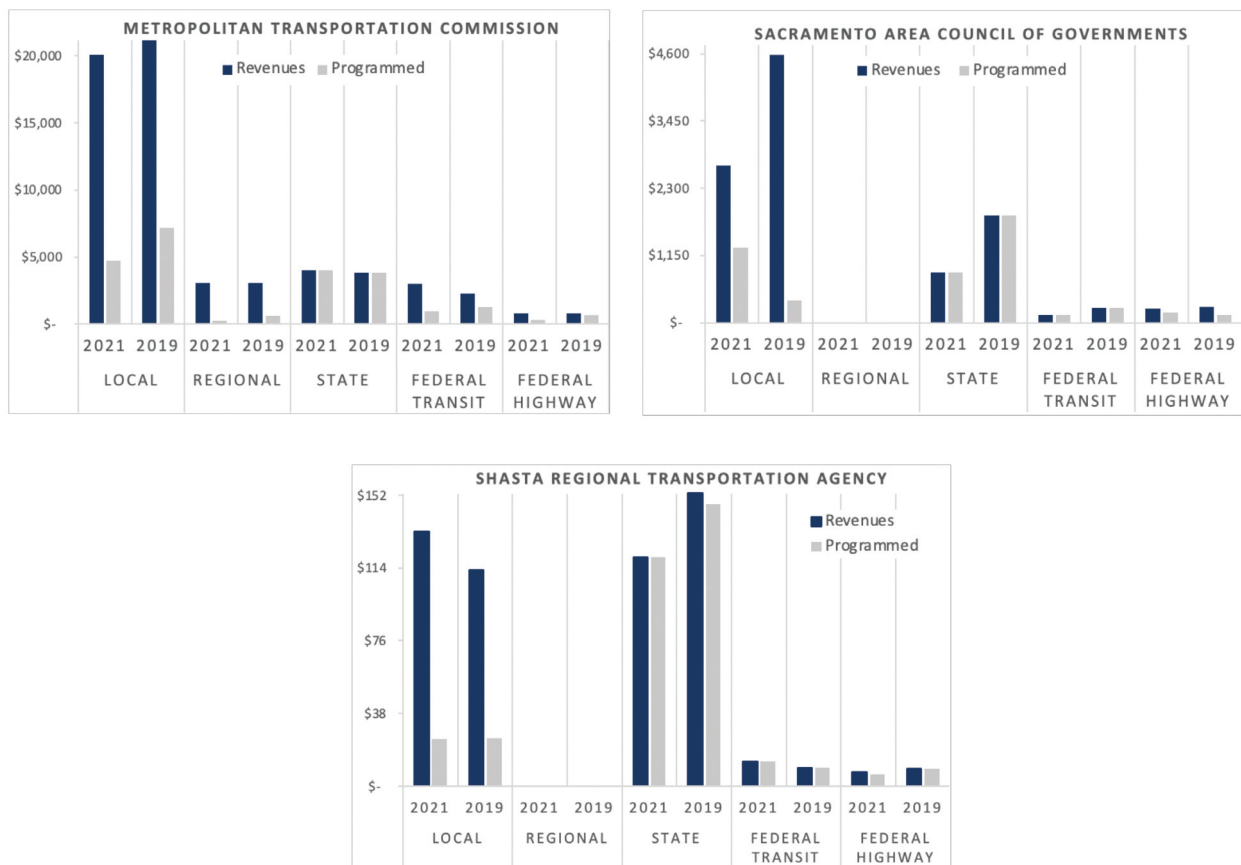
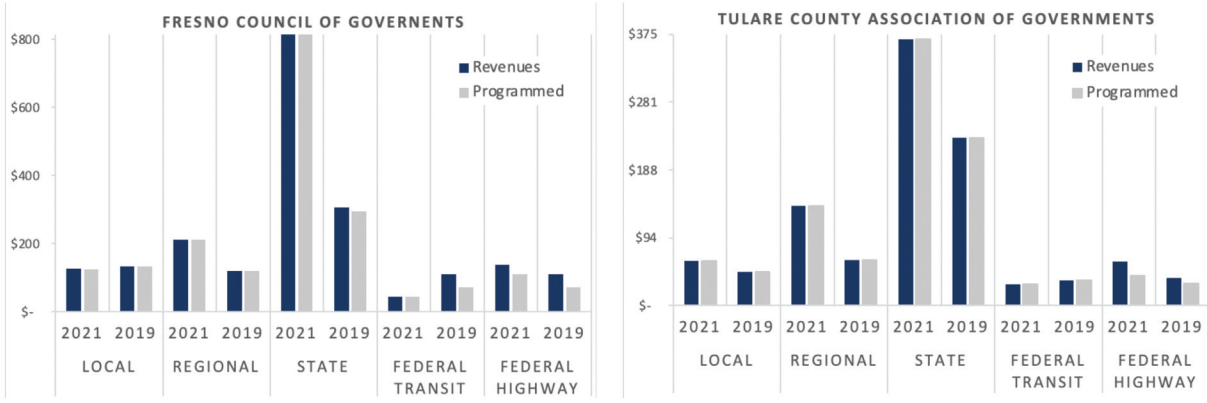


Figure 3. Revenues and programmed funds, 2019 and 2021 TIPs, \$ in millions



So across the board, a comparison of TIPs to RTPs demonstrates the types of projects that receive state and federal investment and how well those projects reflect or contravene the investment priorities of the long-range plan. And in the cases where programming includes all local and regional revenues, this comparison demonstrates how well the region’s entire portfolio of transportation spending aligns with the GHG reduction goals of the long-range plan.

2. Research Question

California’s MPOs have been tasked with the challenge of reining in the state’s auto dependence by planning for a future that shifts transportation onto a wider array of modes—fewer trips by auto and more by bus, walking, and biking—and helps implement the state’s climate policy goals. MPOs have demonstrated a pathway to ostensibly reduce transportation GHG emissions with their RTP/SCSs and strategic investments in the transportation network. But because of the paradoxical governance structure of transportation planning and SB 375, MPOs depend on federal, state, and local entities to realize those plans and achieve the GHG emissions reductions.

And “real-world results are falling significantly short of the SB 375 targets and are moving in the wrong direction,”⁵¹ so what pathway are local, regional, and state governments following? Do the proposed and funded projects align with the GHG reduction goals in the long-range plans? Or is investment prioritizing certain types of projects, leaving other VMT-reducing projects to be implemented in later years? A TIP, while somewhat truncated in scope, gives the most comprehensive view into the RTP/SCS’s progress or failure to implement. We examine funding patterns across long-range plans and short-term TIPs in five case study regions to answer these questions.

⁵¹ CARB 2018 Progress Report

3. Case Study Regions

We examine five MPOs, selected for a diversity of size, geography, and urban development patterns:

- Fresno Council of Governments (Fresno COG)
- Bay Area Metropolitan Transportation Commission (MTC)
- Sacramento Area Council of Governments (SACOG)
- Shasta Regional Transportation Agency (SRTA)
- Tulare County Association of Governments (TCAG)

The five case study MPOs are summarized in Table 1 and shown geographically in Figure 4.⁵²

Per SB 375, CARB assigns each MPO a GHG reduction target for its RTP. MPOs must demonstrate that their long-range plan can meet the GHG target through planned transportation investments and land use patterns. CARB periodically updates these GHG targets, making them increasingly more stringent. GHG reduction targets for each of the case study regions are summarized in Table 2, showing the first set of regional targets (set in 2010) and the more recent set (updated in 2018).⁵³ No similar regional GHG reduction targets exist for the regional TIPs.⁵⁴



Table 1: Case study MPOs

MPO (North to South)	Jurisdictions	Population, 2020	RTP/SCS Analyzed (Year Adopted)	TIPs Analyzed (FFYs)
● Shasta Regional Transportation Agency (SRTA)	1 county, 3 cities	182,155	2018 RTP & SCS (2018)	2019–2022 2021–2024
● Sacramento Council of Governments (SACOG)	6 counties, 22 cities (excluding the Tahoe Basin)	2,578,590	2020 MTP/SCS (2019)	2019–2022* 2021–2024*
● Metropolitan Transportation Commission (MTC)	9 counties, 101 cities	7,765,640	Plan Bay Area 2040 (2017)	2019–2022 2021–2024
● Fresno Council of Governments (Fresno COG)	1 county, 16 cities	1,008,654	RTP/SCS 2018–2042 (2017)	2019–2022* 2021–2024*
● Tulare County Association of Governments (TCAG)	1 county, 8 cities	473,117	RTP 2018 (2018)	2019–2022 2021–2024

*Including TIP amendments

⁵² We initially planned to include SANDAG as a Southern California example but were unable to do so because their project listings and project data necessary for this analysis are not available in a single document and creating a database from the multiple sources in which the needed information resides is beyond the scope of this project.

⁵³ CARB 2021: SB 375 Regional Plan Climate Targets

⁵⁴ Sciara & Lee 2018

Table 2. SB 375 regional plan climate targets, percent change in per capita passenger vehicle GHG relative to 2005

MPO	Targets through September 2018		Targets beginning October 2018	
	2020	2035	2020	2035
Fresno COG	-5%	-10%	-6%	-13%
MTC	-7%	-15%	-10%	-19%
SACOG	-7%	-16%	-7%	-19%
Shasta RTA	0%	0%	-4%	-4%
Tulare CAG	-5%	-10%	-13%	-16%

Source: California Air Resources Board 2021

We collected, coded, and analyzed two sets of data from each MPO: (1) the financially constrained transportation project listings from the most recently adopted RTP/SCS, and (2) project listings from the two most recent federal TIPs. Project listings summarize the details of project-level investments that MPOs plan to fund over the long-range horizon of the RTP/SCS and that MPOs have programmed for funding in the four-year horizon of the TIP.

Regional Transportation Plan/Sustainable Communities Strategy Data

We collected financially constrained transportation project lists from the most recently adopted RTP/SCS for each MPO. These lists are often included as an appendix to the plan and published as a project-level summary table that includes for each project:

- A unique project ID
- Title
- Description
- County
- Lead agency
- Anticipated completion year
- Total project cost, in current year dollars and year of expenditure (YOE) dollars
- Project cost in current RTP/SCS, in current year dollars and year of expenditure (YOE) dollars

Many MPOs include information additional to the above fields in their project lists. Fresno COG, for example, includes a project type field (Bike & Pedestrian, Streets & Roads – Capacity Increasing, Streets & Roads – Maintenance, Streets & Roads – Operations, or Transit). MTC includes fields for system (Bike/Pedestrian Facility, Goods Movement Facility, Public Transit Facility, Street/Highway Facility, Other) and mode (Auto, Bike/Pedestrian, Port of Oakland, Program, or Transit). SACOG includes fields for project status (Planned, Programmed, or Project Development Only) and budget category (for example, Bike & Ped, Road & Highway Capacity, Maintenance & Rehabilitation, Programs & Planning). SRTA includes fields for project type/project intent (for example, intelligent transportation system, ramp meter, auxiliary lane) and expected funding sources (for example, State Highway Operation and Protection Program [SHOPP], Local). In the RTP project lists, none of the five MPOs in our sample include a field for the system on which the project is located (for example, federal, state, transit).

Table 3 shows an illustrative sample of transportation projects in the five MPOs' fiscally constrained RTPs.

Lead Agency	Project Title	Project Description	Completion Timing
Fresno COG			
Clovis	Dog Creek-Ashlan to Gettysburg: Trail	Construct Class I Trail	2025
Fresno	Olive – Fresno to Cedar: AC Overlay	AC Overlay	2023
Fresno Area Express (FAX)	Cedar Avenue BRT	Add BRT service to Cedar Avenue transit corridor	2030
MTC			
Novato	Widen Novato Boulevard between Diablo Avenue and Grant Avenue	Widen Novato Blvd. between Diablo Ave. and Grant Ave. to accommodate future growth and enable roadway system to operate safely and efficiently, per City's General Plan	2020
Fremont	Irvington BART Station	Construct a new BART station in Irvington PDA in Fremont on Osgood Road near Washington Boulevard as called for in the 2014 Alameda County Transportation Expenditure Plan	2022
Santa Clara Valley Transportation Authority (VTA)	US 101 Express Lanes: Whipple Ave. in San Mateo County to Cochrane Road in Morgan Hill	Convert HOV Lanes to express lane and add a second express lane in some segments	2025
SACOG			
Caltrans D3	WB Cambridge Rd. Loop Ramp Meter	WB Cambridge Rd. Loop Ramp Meter	2031–2035
City of Roseville	Roseville Parkway Widening	In Roseville, on Roseville Parkway, widen from 6 to 8 lanes from just east of Creekside Ridge Drive to Gibson Drive (E)	2020–2025
Sacramento Regional Transit District (RT)	Folsom Gold Line Service Enhancements	Construct side tracking needed to increase Gold Line frequencies from 30 minutes to 15 minutes on the segment between Sunrise Station in Rancho Cordova and Historic Folsom station in Folsom; toll Credits for ROW.	2020–2025
SRTA			
Shasta County	Bridge Replacement	Jackrabbit Flat Rd at Burney Creek – Replace Bridge	2026–2040
City of Redding	Shared Use Path	Park Marina Dr (east side) from Sundial Bridge Dr to E Cypress Ave	2018–2025
Caltrans	Ramp Meter	I-5, Start/End PM 12.26, S. Bonnyview, Ramp Meter - Northbound	2026–2040
TCAG			
Visalia	Ferguson Ave.	Construct new roadway: New 2-lane; collector	2020
Porterville	Hillcrest St.	Widen existing roadway: Widen to 4-lane Arterial	2035
Tulare	Tulare Ave./Oakmore St.	Tulare Ave. at Oakmore St.: Traffic Signal	2022

We used these additional fields for analysis but did not use these additional categories when coding projects. Rather, we based project coding on the project title, project description, lead agency, and, when necessary, project information from lead agencies' websites. We discuss the coding process in more detail below.

Nominal Dollars versus Year of Expenditure Dollars

Project costs are usually listed in both nominal and year-of-expenditure dollar values. To the extent possible we use nominal dollars in this analysis—funds programmed in TIPs use nominal dollars and this ensures a more accurate comparison. However, MTC does not include nominal dollar estimates for projects in Plan Bay Area 2040, SRTA lists near-term projects in nominal dollars and long-term projects in year-of-expenditure dollars, and Fresno COG does not specify dollar year in its RTP/SCS.

What are the “financially unconstrained” projects?

- Fresno COG includes about 100 transportation projects in its separate financially unconstrained project list, the plurality of which are roadway rehabilitation projects.
- MTC’s Investment Strategy Report, a supplement to Plan Bay Area 2040, includes a list of 23 “projects on the horizon.” Projects include rail extensions and stations, highway interchange and express lane expansions, sea level rise mitigation, and a multi-use path on the western span of the Bay Bridge.
- SACOG includes in its MTP/SCS about 250 projects in the “project development only” phase that sum to about \$5.6 billion. The overwhelming majority are auto capacity projects on the local and highway networks throughout the region, but they also contain two major extensions to the light rail network.
- SRTA includes several hundred unconstrained projects that span every type of project: active transportation projects, bridge rehabilitation projects, highway
- TCAG includes a separate list of about 150 projects in its “unconstrained project requests.” All projects in this list are operational or capacity increasing projects.

Fiscal Constraint

We include only “financially constrained” projects in this analysis. Federal regulation requires that transportation investments in RTPs and TIPs be within budget of “reasonably expected” funding resources.⁵⁵ However, plans “can include, for illustrative purposes, additional projects that would be included in the adopted transportation plan if reasonable additional resources beyond those identified in the financial plan were available.”⁵⁶ Accordingly, some MPOs include financially unconstrained projects in their RTP/SCS transportation project lists.

For example, Fresno COG includes a separate list of unconstrained projects in its RTP/SCS. SACOG includes in its 2020 MTP/SCS project list “projects [that] are financially unconstrained and expected to be constructed after 2040” with the status “Project Development Only.” Although construction will occur after the 20-year horizon of the plan, SACOG specifies that “projects listed as ‘Project Development Only’ are anticipated to begin early stages of development including project planning, design, preliminary engineering, environmental clearance, and ROW [right of way] acquisition by 2040. These projects remain eligible to seek federal and state funding, but under the financial constraint requirements for forecasting revenues, the construction phase is not included in the 2020 MTP/SCS.”⁵⁷ We exclude financially unconstrained projects from this analysis.

Regional Transportation Plan Amendments

We analyze the transportation project lists as adopted in the initial four-year plan, not capturing later amendments. MPOs must update regional transportation plans at least every four years, but they can amend or revise their transportation plans and associated transportation project lists “at any time ... without a requirement to extend the horizon year.”⁵⁸ Amendments are major revisions to RTPs such as adding or deleting a project or changing the project cost or scope.

⁵⁵ 23 U.S. Code § 134

⁵⁶ 23 U.S. Code § 134

⁵⁷ SACOG 2020 MTP/SCS

⁵⁸ 23 CFR § 450.324

While RTP amendments may constitute “major” revisions to individual projects, they are generally marginal changes to overall plans. For example, MTC adopted an amendment to Plan Bay Area 2040 in 2018 to modify the scope and project cost of the US Highway 101 Managed Lanes Project in San Mateo County. The amendment “clarifies the project description and changes specific lane configuration assumptions” and changes the total project cost from \$365 million to \$534 million—an increase of \$178 million, or a 0.06 percent change in the \$303.3 billion cost of all projects in Plan Bay Area 2040.⁵⁹ A 2020 amendment to Plan Bay Area 2040 added a specific express lane project to the plan, using funds from the “express lanes reserve” that was an adopted project in the initial financially constrained plan.⁶⁰ Capturing amendments in this analysis would give the most accurate detail of MPOs’ transportation investments, but amendments are published in separate documents and would require line-item revisions to individual project listings. We omit them from this analysis.

Transportation Improvement Program Data

We collected from each MPO’s project listings for the two most recent Transportation Improvement Programs (TIP). In these five cases, the most recent TIPs were adopted in 2019 and 2021 per California law requires that TIPs be updated and adopted every two years (“each odd numbered year”).⁶¹ Each TIP covers four federal fiscal years, so two consecutive rounds of TIPs cover six federal fiscal years, or roughly one-third of the 20-year horizon of the long-range RTP/SCS.

We include two rounds of TIPs to capture variation between TIP cycles. Projects included in a given TIP are influenced by the available funding, competitive grant awards, project phasing, and the readiness of certain projects or phases to seek funding at a given time. As such, the magnitude of funds programmed in total and for various modes fluctuates from TIP to TIP and a single TIP can be skewed by a large but rare project reaching the programming phase in that TIP cycle. We include two cycles to capture a wider timeframe and more representative sample of programmed projects.

We ensured that each project had sufficient information for analysis. We used the following information, which is required for each project or project phase:

- “Sufficient descriptive material (for example, type of work, termini, and length) to identify the project or phase”
- Estimated total project cost
- Amount and category of federal funds to be obligated during each year for the project or phase
- Lead agency
- In areas of non-attainment or maintenance under the Clean Air Act:
 - Projects identified as transportation control measures (TCM) in a State Improvement Plan
 - All included projects specified with sufficient detail for air quality analysis in accordance with the EPA transportation conformity regulations

Most of the case study MPOs publish a summary table of TIP projects with the above fields, similar to the transportation project list in the RTP. When a summary table was not publicly available, we obtained them with help from MPO staff or—in the cases of Shasta RTC and Tulare CAG with relatively short project lists—transcribed them manually. One MPO (SANDAG) could not provide such a table and was thus omitted from the study.

⁵⁹ MTC 2018, Plan Bay Area 2040 Amendment

⁶⁰ MTC 2020, Plan Bay Area 2040 Amendment

⁶¹ 7 California Government Code § 65082

Lump Sums

Projects that are exempt from air quality conformity analysis are very often included in TIPs as grouped projects, rolled up with similar projects and listed together with a “lump sum” of programmed dollars. We include grouped projects and lump sums in this analysis.

Transportation Improvement Program Amendments

Like RTPs, TIPs can be and are regularly amended.⁶² In two of the five case MPOs—Fresno COG and SACOG—the TIP project listings reflect amendments. TIP data from MTC, SRTA, and Tulare CAG do not include amendments.

SACOG, for example, adopted two formal amendments and 33 administrative modifications to its 2019 TIP. One of the amendments included 55 in-line revisions to project or phase cost, funding sources, completion year, name, or description. New projects were added and existing projects were deleted or combined with other existing projects.⁶³ Data that include amendments certainly give the most accurate snapshot of funding, but we include amended TIP data only in cases where the MPO maintains and makes publicly available a TIP project database with amendments. In this sample, those MPOs were Fresno COG and SACOG.

Why TIPs?

We analyzed TIPs because they reflect policy decisions. That is, MPOs adopt TIPs by a board vote. TIPs “obligate” transportation funds, guaranteeing that lead agencies can be reimbursed for implementation of those transportation projects regardless of future changes in policy direction or priorities. Cash flow documents would reflect current flows of monies but policy decisions from past years or decades. To better understand current decision-making, we analyze TIPs in this study.

What Is a “Project”?

These two data sources, RTPs and TIPs, both provide a project-level inventory of transportation investments. However, a “project” in a long-range RTP is often conceptually different from a “project” in a TIP. This is particularly true for large, complex projects and projects further in the future.

For example, MTC discusses in Plan Bay Area 2040 a high-priority regional express lanes project. In the project list of Plan Bay Area 2040, express lane projects are listed for several Bay Area highways (for example, “US 101 Express Lanes: Whipple Ave. in San Mateo County to Cochrane Road in Morgan Hill”; “I-880 Express Lanes”; “SR 85 Express Lanes: US 101 (South San Jose) to Mountain View”) and conceptually describes them (for example, “Convert HOV Lanes to express lane and add a second express lane in some segments”; “Convert existing HOV lane to an express lane in both directions between I-880 and SR 85”). These conceptual projects are broken into smaller, more specific projects by phase or component. Projects in TIPs direct funds to individual components of express lane implementations, programming funds for specific elements like “implement roadway pricing on US 101 carpool lane,” “install ETS [electronic tolling system],” and “I-880 in the northbound direction from Hacienda Avenue to Hegenberger Road: widen to provide one HOV/express lane.”

Both RTPs and TIPs offer a portfolio of project-level transportation investments, and a TIP must be consistent with an RTP. But in many cases, the fundamental concept of a “project” differs between the RTP and TIP and thus should be

⁶² 23 U.S. Code § 134

⁶³ SACOG 2019, Amendment #11 to the 2019-22 MTIP

compared carefully. As one regional planner analogized:⁶⁴ “In an RTP, a project tells you that we are building a house, its general size and style, and where it is located. Projects in a TIP detail the framing, electrical, kitchen installation, et cetera.”

Disparity in Project Descriptions

We analyzed and coded each project in the five RTPs and ten TIPs—almost 9,000 projects—based on their project title and project description. Lead agencies differ greatly in the specificity and clarity of project descriptions. Such ambiguity makes understanding and analysis of transportation investments challenging and onerous. For example, many project descriptions in the five case study regions describe “congestion relief,” “operational improvements,” and “safety enhancements” without specifying the investments that will be taken to reach such outcomes. One such project is “SR 17 Corridor Congestion Relief in Los Gatos,” in the jurisdiction of MTC:

“Operational improvements for the SR 17 Corridor, including upgrading Highway 17/Highway 9 interchange to improve pedestrian and bicycle safety, mobility, and roadway operations; deploying advanced transportation technology to reduce freeway cut thru traffic in Los Gatos, including traffic signal control system upgrades in Los Gatos, traveler information system, advanced ramp metering systems and multi-modal congestion relief solutions.”

The lead agency’s project website gives more clarity about the “operational improvements” and “congestion relief solutions.” Among other things, the project will “[m]odify SR 17 mainline lanes and shoulder to eliminate lane-drops and bottlenecks from Lark Avenue to SR 17/SR 9 interchange.”⁶⁵ That is, it likely adds to this stretch of highway in southern Silicon Valley an additional travel lane between an on- and off-ramp 2.2 miles apart.

We found similar cases throughout the five case study MPOs, particularly with projects that add automobile capacity: road rehabilitation projects that widen local streets, safety projects that realign roads and add lanes, and operations and system management projects that add auxiliary lanes or add lanes to interchanges and highway on- and off-ramps. MPOs and lead agencies should be specific and uniform in their descriptions and reporting of transportation projects and project components, especially when projects pose ongoing maintenance needs and VMT impacts, such as with projects that expand auto capacity.

Project Coding

Every MPO in our sample uses different categories to describe transportation investments in their RTPs and TIPs. TCAG categorizes projects by fund source (for example, SHOPP, local funds). SRTA uses broad project categories by facility type (for example, ITS, interchanges, ramp meter, capacity, active transportation). SACOG uses 15 “budget categories” (for example, Road & Highway Capacity, Maintenance & Rehabilitation, Transit Capital (Major), Transit Capital (Minor), System Management/Operations/ITS). To compare investment patterns between MPOs and across time, we developed a project coding scheme to apply uniformly across all project listings.

The lead author evaluated a sample of projects from several MPOs and drafted the coding scheme to consistently categorize projects by primary mode, secondary mode, and type of investment. The lead author tested the coding

⁶⁴ Personal correspondence, Summer 2021

⁶⁵ Valley Transportation Authority 2019, State Route 17 Corridor Congestion Relief Project

scheme on an outside sample of projects (for example, projects not evaluated in the development of the coding scheme) and revised it with input from the three-person research team. The lead author and a research assistant then independently coded projects with this coding scheme, working in batches of 50 projects, until the two researchers reached 95 percent agreement in their assigned codes. Afterward the two researchers together coded all projects, and then the lead author reviewed all projects for errors or inconsistencies.

We coded individual projects based on their title, description and, when necessary, lead agency and project information from lead agencies' websites. Each project was coded with the mode for which the project was primarily intended, a specific mode, and the type of project. The codes and their decision rules are summarized in Table 4 and Table 5.

Table 4. Primary mode

For what mode is this project primarily intended? If it allocates physical space, for what mode is that space "zoned"?	
Auto	Parking, Highway, Local
Transit	Bus, Rail, Ferry, Bus & Rail, Other Transit
Active Transport	Bike, Walk, Bike & Walk, Micromobility
Heavy Rail/Maritime	Heavy Rail, Maritime

Table 5. Investment type

Does the project change the transportation network or built environment?	If yes: Continue to (a) If no: Skip to (e)
(a) Does the project add new links or transit frequency to the transportation network?	If yes: New Capacity Else: (b)
(b) Is the project major reconstruction of an existing asset? (E.g., redesign and/or realign geometry)	If yes: Reconstruction Else: (c)
(c) Does the project rehabilitate or replace an existing component of the transportation network?	If yes: Rehabilitation, Maintenance, Preservation Else: (d)
(d) Does the project change the way a person interacts with or use the existing transportation network?	If yes: Operations
(e) Is this project a stage/phase of a project that ultimately changes the transportation network or built environment?	If yes: Back to (a) for the overall project Else: (f)
(f) Is the end product a plan, study, or program?	If yes: Planning, Study, Program Else: Indirect Investment

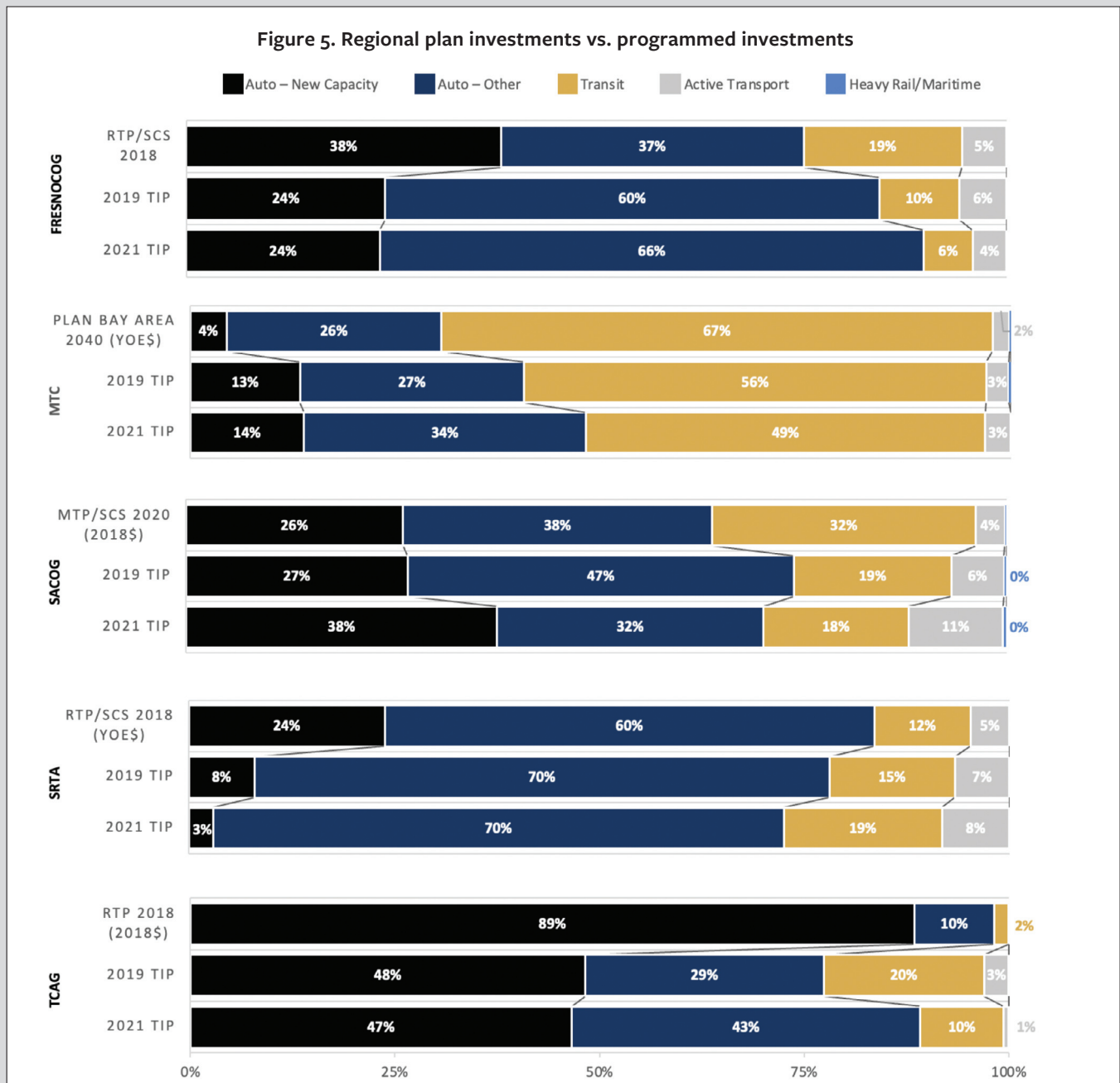
Many projects contain investments for multiple modes. To capture multi-modal investments, we coded projects that satisfied the question "Does this project include investment for any other modes that would not have been made but for the primary mode?". If this was the case, we coded the project for the "secondary mode" accommodated by the project. The project elements for this secondary mode were coded using that same decision criteria summarized in Table 4 and Table 5.

The project team used several "rules of thumb" to clarify the coding scheme. Highway interchanges and on- and off-ramps, for example, were coded as being on the highway network. Highway overcrossings and undercrossings with no ramps to the highway were coded as being on the local network, though they may require state action. Streetscape projects were generally considered to be auto reconstruction projects unless they added specific complete streets or traffic calming features, in which case they were considered active transport projects. Road diets that reallocated

roadway space to bikeways or sidewalks were considered active transportation projects. Indirect investments were projects such as bus wash facilities, retrofitted agency buildings, streetsweepers, and maintenance stations.

4. Findings

Our findings show that among the five case study regions, expenditures programmed in TIPs are generally less multimodal than expenditures planned in RTP/SCSs. The three largest MPOs—MTC, SACOG, and Fresno COG—tend to program a larger share of funds for auto infrastructure and a smaller share of funds for transit than the planned



investments in their respective RTP/SCSs. The two smaller MPOs—SRTA and TCAG—show a different pattern: expenditures in the RTP/SCSs invest almost exclusively in auto infrastructure but the TIPs program a smaller share of funding for auto infrastructure than was planned in the RTPs. Figure 5 illustrates the planned versus programmed investments by mode for all five case study MPOs.

Auto infrastructure (new capacity, reconstruction, rehabilitation, operations, plans/studies) receives the majority of planned and programmed funds in all regions except MTC in the San Francisco Bay Area. New auto capacity (for example, new or wider roads, new auxiliary or toll lanes, new or wider interchanges and ramps) makes up a significant share of planned and programmed funding in all regions, particularly in the Central Valley and suburban areas of the Bay Area. Indeed, new auto capacity receives the plurality of programmed funds in both TIPs for TCAG and the 2021 TIP for SACOG.

Fresno Council of Governments (Fresno COG)

Fresno COG’s 2018 RTP/SCS dedicates nearly a quarter of total expenditures for transit and active transport and the remaining three-quarters to auto infrastructure. But programmed projects fail to realize the multimodal aspirations of the long-range plan. Funding for transit accounts for 19 percent of planned funds in the RTP/SCS, but accounts for only 10 and 6 percent of programmed funds in the 2019 and 2021 TIPs, respectively. Active transportation investments hover between 4 and 6 percent in both the RTP/SCS and the two TIPs. See Figure 6 and Table 6.

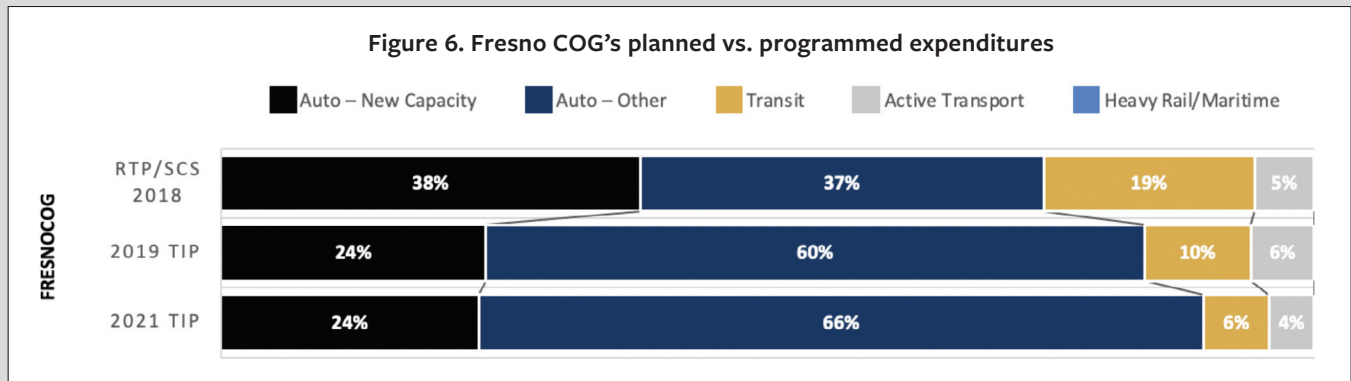
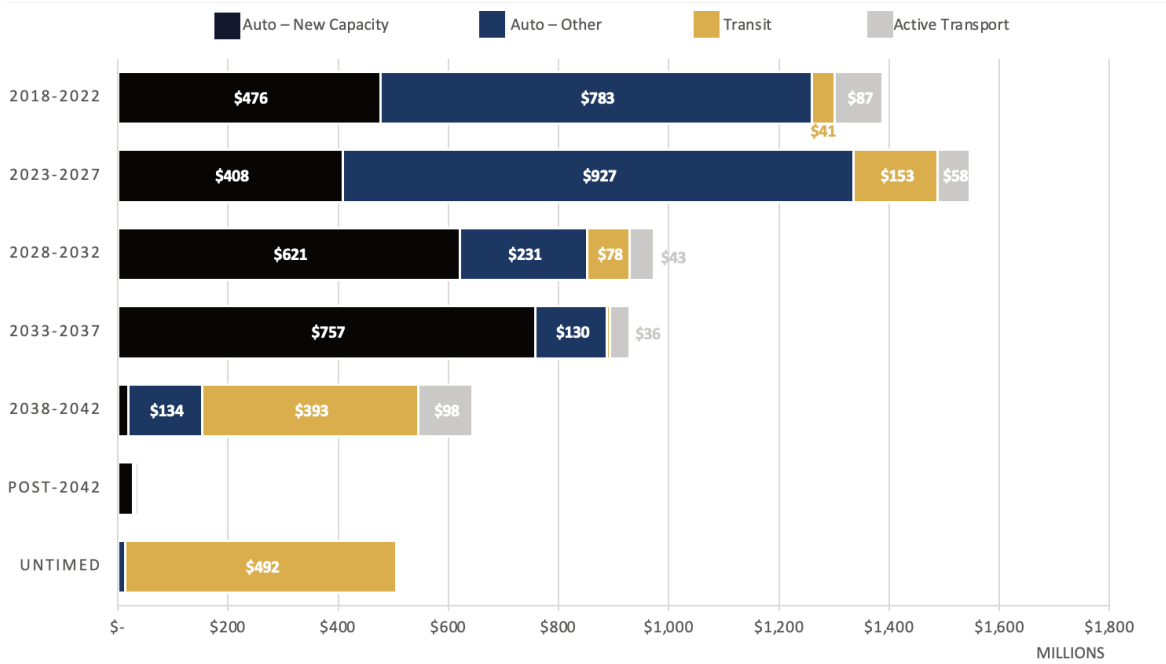


Table 6. Fresno COG's planned vs. programmed expenditures by mode and project type

Expenditures	RTP/SCS 2018 (\$Year Unspecified)	2019 TIP	2021 TIP
Active Transport	5.5%	5.8%	4.1%
New Capacity	5.2%	4.9%	3.2%
Reconstruction	0.2%	0.6%	0.5%
Rehabilitation & Maintenance	0.1%	0.1%	-
Operations	-	0.6%	-
Plan/Study/Program	-	-	-
Indirect	-	-	-
Auto	75.3%	84.5%	89.9%
New Capacity	38.3%	24.3%	25.6%
Reconstruction	2.2%	8.3%	6.1%
Rehabilitation & Maintenance	26.6%	48.0%	59.0%
Operations	5.6%	2.0%	1.0%
Plan/Study/Program	-	0.2%	0.1%
Indirect	2.6%	1.7%	< 0.1%
Heavy Rail / Maritime	-	-	-
New Capacity	-	-	-
Reconstruction	-	-	-
Rehabilitation & Maintenance	-	-	-
Operations	-	-	-
Plan/Study/Program	-	-	-
Indirect	-	-	-
Transit	19.3%	9.8%	6.0%
New Capacity	10.6%	1.2%	0.4%
Reconstruction	0.2%	-	-
Rehabilitation & Maintenance	4.9%	3.6%	2.5%
Operations	2.5%	3.6%	1.6%
Plan/Study/Program	0.5%	0.1%	0.1%
Indirect	0.6%	1.3%	1.4%
Total	\$ 6,022,424,000	\$ 1,128,459,000	\$ 1,475,327,000

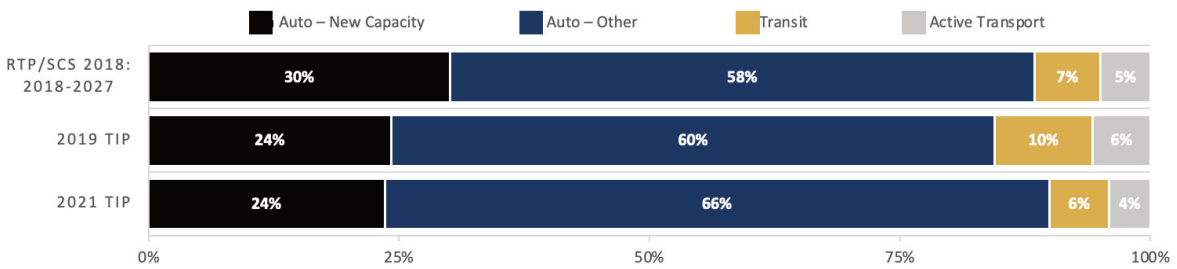
The skew of programmed funds away from transit makes more sense in the context of phasing of investments in the RTP/SCS, shown in Figure 7. There are about \$1.1 billion of transit investments over the life of Fresno COG's RTP/SCS. About 40 percent of those are untimed and ongoing expenditures—critical investments such as operating expenses, preventative maintenance, tire leases, replacing buses, and system studies. And a full one-third of transit expenditures in the RTP/SCS—\$392 million for new bus rapid transit running down the median of the Ventura, Kings Canyon, and Blackstone corridors—is planned for the plan's final four years. Only 17 percent of the transit expenditures in the RTP/SCS are planned for the first decade of the plan (2018 through 2027). Conversely, nearly 40 percent of the \$2.3 billion of auto capacity expenditures planned over the course of the RTP/SCS are slated for the first decade of the plan.

Figure 7. Fresno COG RTP/SCS investments by completion timing, \$ in millions



When we compare programmed funds in the TIPs to the first decade of the RTP/SCS, the investment patterns indeed look more similar. See Figure 8.

Figure 8. First decade of RTP/SCS expenditures vs. 2019 and 2021 TIPs



What are the auto capacity projects getting priority in planning and programming? In the RTP/SCS, the three largest auto capacity projects to open in the first decade of the plan are:

- \$60 million for Caltrans to build the Excelsior Expressway, widening a two-lane road to a four-lane expressway, to be complete by 2024.

- Just over \$50 million is for the City of Fresno to build Phase 3 of a new interchange on State Route 99 at Veterans Boulevard, including sidewalks and a multi-use trail, estimated to be open to traffic in 2020.
- Nearly \$25 million is for the City of Fresno to grade separate Veterans Boulevard over the Union Pacific and high-speed rail tracks, and construct a new six-lane divided bridge and “super arterial,” signal timing, and other roadway construction.

These projects all show up in both the 2019 and 2021 TIPs. The 2019 and 2021 TIPs program \$10 million and \$100,000, respectively, for a segment of the Excelsior Expressway near the City of Fresno. Both the 2019 and 2021 TIPs program \$61.1 million for the State Route 99 and Veterans Boulevard interchange, ostensibly up from its initial \$50 million cost estimate. And both TIPs program \$41.2 million for the grade separation of Veterans Boulevard over the rail tracks.

But other projects that add auto capacity show up in these two TIPs. The 2019 TIP programs \$31.8 million for an interchange project at SR 99 and East North and Cedar Avenues, and the 2021 TIP combines that new interchange project with two others to create the “South Fresno SR99 Corridor Project” that gets \$130.1 million of programmed funds and opens to traffic around 2026. The TIP project listings show that the majority of funding for these new and expanded SR 99 interchanges comes from Measure M, Fresno County’s local sales tax, local funds from a regional transportation mitigation fee, and the Regional Improvement Program of the State Transportation Improvement Program (STIP).

Metropolitan Transportation Commission (MTC)

The Metropolitan Transportation Commission in the San Francisco Bay Area dedicates the largest share of planned and programmed transportation funds to transit and the smallest share to auto infrastructure of the five MPOs in this study. An unparalleled 67 percent of investments in Plan Bay Area 2040 is dedicated for transit and a mere 4 percent for new auto capacity.

But programmed funds in the 2019 and 2021 TIPs follow a different pattern, albeit not nearly as auto centric as the funds programmed by Fresno COG, SACOG, or TCAG. Funds programmed for transit made up 56 and 49 percent of funds in the 2019 and 2021 TIPs, respectively—by far the greatest share of funding for transit in this sample. Auto investments accounted for 30 percent of planned expenditures in the RTP/SCS, and only 4 percent is for new auto capacity; however, 13 to 14 percent of actual programmed funds were for new auto capacity in the 2019 and 2021 TIPs, respectively. Active transportation investments hovered between 2 and 3 percent in both Plan Bay Area 2040 and in the two TIPs. See Figure 9 and Table 7.

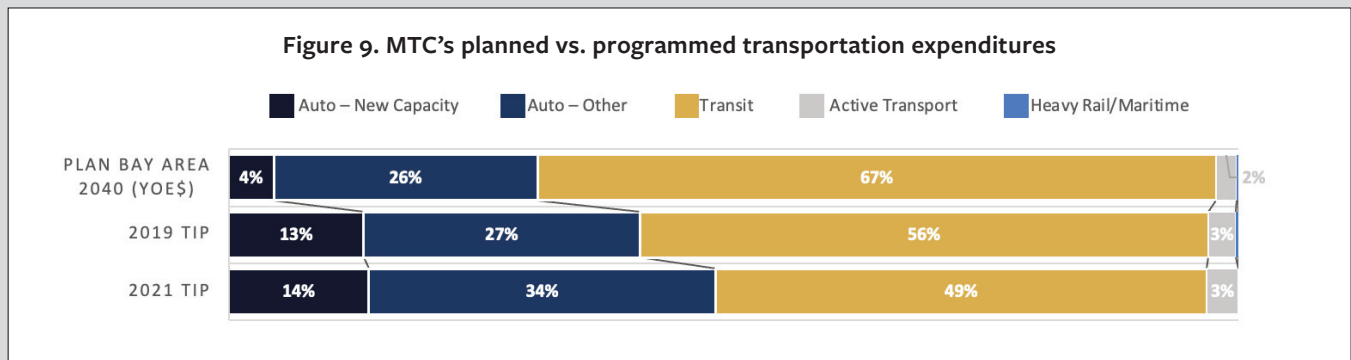


Table 7: MTC’s planned vs. programmed transportation expenditures by mode and project type

Expenditures	Plan Bay Area 2040 (YOES)	2019 TIP	2021 TIP
Active Transport	2.0%	2.7%	3.1%
New Capacity	1.1%	1.7%	2.4%
Reconstruction	0.7%	0.8%	0.6%
Rehabilitation & Maintenance	-	0.2%	0.1%
Operations	-	-	< 0.1%
Plan/Study/Program	0.2%	0.1%	-
Indirect	-	-	-
Auto	30.6%	40.7%	48.2%
New Capacity	4.4%	13.4%	13.9%
Reconstruction	1.39%	8.2%	11.5%
Rehabilitation & Maintenance	21.6%	16.2%	21.9%
Operations	2.1%	1.4%	0.6%
Plan/Study/Program	0.2%	0.7%	0.3%
Indirect	0.8%	0.8%	0.1%
Heavy Rail / Maritime	0.2%	0.3%	-
New Capacity	0.1%	-	-
Reconstruction	-	0.3%	-
Rehabilitation & Maintenance	-	-	-
Operations	< 0.1%	-	-
Plan/Study/Program	< 0.1%	-	-
Indirect	-	-	-
Transit	67.2%	56.3%	48.6%
New Capacity	11.9%	43.6%	38.8%
Reconstruction	1.6%	5.0%	0.3%
Rehabilitation & Maintenance	11.1%	6.3%	4.2%
Operations	40.8%	0.7%	4.9%
Plan/Study/Program	0.1%	0.1%	0.3%
Indirect	1.7%	0.6%	0.1%
Total	\$ 303,316,400,000	\$ 13,578,702,516	\$ 10,288,736,434

The phasing of investments in Plan Bay Area 2040 gives important details (Figure 10). Particularly important are the ongoing expenditures that include most of the plan’s investments. Ongoing expenditures account for \$246 billion of the \$303 billion of the plan’s total budget. Included in those ongoing costs are all annual transit operating costs (\$120 billion), annual transit capital maintenance (\$32 billion), and annual operating costs for Clipper (\$1.7 billion). General bicycle and pedestrian facilities, multimodal streetscape projects, and transportation demand management activities are also included as ongoing investments, as are rehabilitation projects for streets, highways, and bridges.

Figure 10 also shows that Plan Bay Area 2040 puts a significant share of its early investments—in the first decade of the plan—into transit. In the first four years of the plan (2017–2021), \$8.3 billion of the total \$12.9 billion is planned for transit⁵, \$3.8 billion is planned for auto infrastructure, and \$601 million for active transportation. In the second four years of the plan (2022–2026), \$17.5 billion of the total \$25.4 billion is planned for transit and \$7.6 billion for auto infrastructure. Figure 11 zooms in on these phases and compares investment patterns to the 2019 and 2021 TIPs. And Figure 11 shows that a sizable share—about 20 percent—of Plan Bay Area 2040’s early investments are slated for auto capacity.

Figure 10. Plan Bay Area 2040, investments by completion timing, \$ in billions

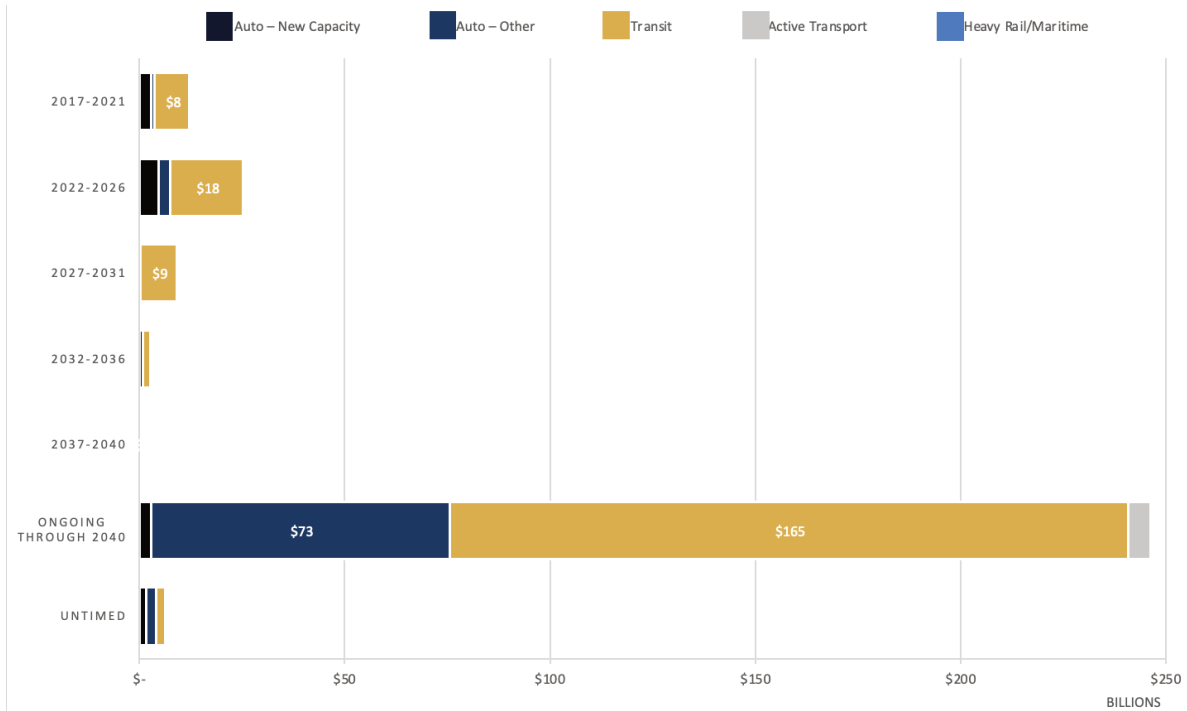
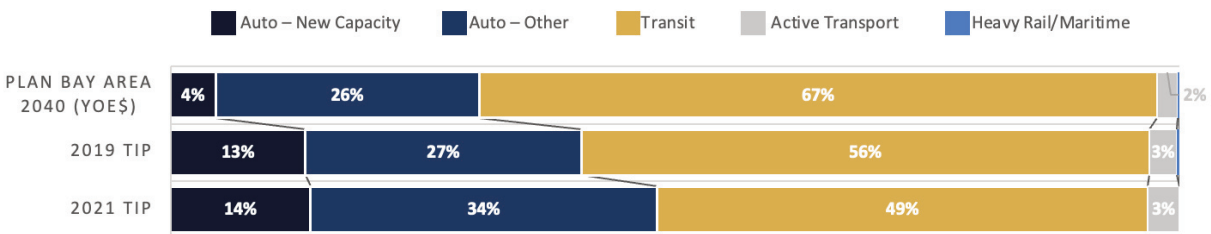


Figure 11. Early phases of Plan Bay Area 2040 (2017–21, 2022–26) vs. TIPs



What are the transit projects prioritized for the first half of Plan Bay Area 2040? And which show up in the TIPs? The largest transit expenditures in the first decade of the plan are:

- A \$5.5 billion project to extend Bay Area Rapid Transit (BART) to Silicon Valley, from the Berryessa Station to downtown San Jose and then to Santa Clara. The project includes four new stations and operating expenses. \$2.6 billion and \$3.2 billion are programmed to this project in the 2019 and 2021 TIPs, respectively. The biggest funding source is local sales tax, but it also gets funding from state programs: RIP, Traffic Congestion Relief Program (TCRP), and the Transit and Intercity Rail Capital Program (TIRCP). The lead agency is the Santa Clara Valley Transportation Authority.

- A \$4.1 billion project for the Caltrain/High Speed Rail Downtown San Francisco Extension, which will extend existing Caltrain service and future high-speed rail service into the Transit Center in downtown San Francisco. The project includes a new station, pedestrian facilities, and operating expenses. \$598 million and \$103 million are programmed to this project in the 2019 and 2021 TIPs, respectively. Programmed funding sources are property tax, sales tax, federal transit funds (5339), and private sources. The lead agency is the Transbay Joint Powers Authority.
- \$3.5 billion for the BART Transbay Core Capacity Project, which includes multiple elements to increase transit capacity in the Transbay corridor. \$1.1 billion and \$424.8 million are programmed to this project in the 2019 and 2021 TIPs, respectively. Funding sources are federal transit funds (5309), sales tax, and California's SB 1 funds. The Bay Area Rapid Transit District is the lead agency.

Other large transit capital projects programmed in the 2019 and 2021 TIPs include procurement of nearly 800 BART railcars, electrification of the Caltrain corridor, the Clipper 2.0 fare payment system, expansion and maintenance of rail and bus fleets, and SF Muni track maintenance.

While a small share of its overall budget, Plan Bay Area 2040 plans to spend \$7.6 billion for new auto capacity in the first decade of the plan. What, where, and by whom are the auto capacity projects planned and programmed in the Bay Area? Of the new auto capacity spending in the plan, about 73 percent is on the highway system, 27 percent on local streets and roads. There are 72 lead agencies listed in Plan Bay Area 2040—10 lead agencies sponsor more than 60 percent of the planned expenditures for new auto capacity.

- Contra Costa Transportation Authority (CCTA): \$947 million
- Alameda County Transportation Authority (ACTC): \$943 million
- San Francisco County Transportation Authority (SFCTA): \$800 million
- San Mateo City/County Association of Governments (CCAG): \$567 million
- Santa Clara Valley Transportation Authority (VTA): \$381 million
- Sonoma County Transportation Authority (SCTA): \$243 million
- City of Dublin: \$219 million
- City of Fremont: \$208 million
- City of Livermore: \$192 million
- Transportation Authority of Marin (TAM): \$175 million

Funds programmed in the TIP have a somewhat different breakdown. Of the funds programmed for new auto capacity, more than 80 percent was on the highway system in both the 2019 and 2021 TIPs, with the remaining 17 percent expanding local streets and roads.

When it comes to programmed auto capacity projects, the field of lead agencies narrows significantly. In the 2019 TIP, only five lead agencies sponsor more than 80 percent of the funds programmed for new auto capacity:

- Valley Transit Authority: \$518.6 million
- San Mateo City/County Association of Governments: \$472.9 million
- Alameda County Transportation Authority: \$206 million
- Contra Costa Transportation Authority: \$201.3 million
- Sonoma County Transportation Authority: \$88.8 million

This lineup is nearly the same for the 2021 TIP but with a few exceptions. MTC is a project sponsor for the \$242.7 million managed lane project on I-80 in Solano County. Solano Transportation Authority is the project sponsor for \$80 million of highway capacity expansion and \$15 million of local roadway expansion. And the City of Hayward is the project sponsor for \$31.8 million of interchange capacity projects on I-880.

Sacramento Area Council of Governments (SACOG)

SACOG’s long-range plan is ambitious in its multimodal funding with 32 percent of investments allotted for transit, 4 percent for active transport, and the remaining 64 percent for auto infrastructure. New auto capacity accounts for 26 percent of total investments in the MTP/SCS. After MTC, SACOG’s long-range plan invests the largest share in transit of the five case study MPOs.

But programming patterns in the TIPs are somewhat different. Between 70 and 75 percent of programmed funds go toward auto infrastructure (new capacity, rehabilitation, operations, and so on), and 27 and nearly 40 percent of funds are programmed for new auto capacity in the 2019 and 2021 TIPs, respectively. New auto capacity receives the plurality of funding in the 2021 TIP.

Funds programmed for transit make up less than 20 percent of both the 2019 and 2021 TIPs. But programming for active transportation is somewhat more optimistic—active transport projects make up 6 to 11 percent of programmed funds, distinctly more than the 4 percent of expenditures planned in the MTP/SCS. In the 2019 and 2021 TIPs, nearly 5 percent and over 9 percent of programmed funds were for new active transportation facilities. See Figure 12 and Table 8.

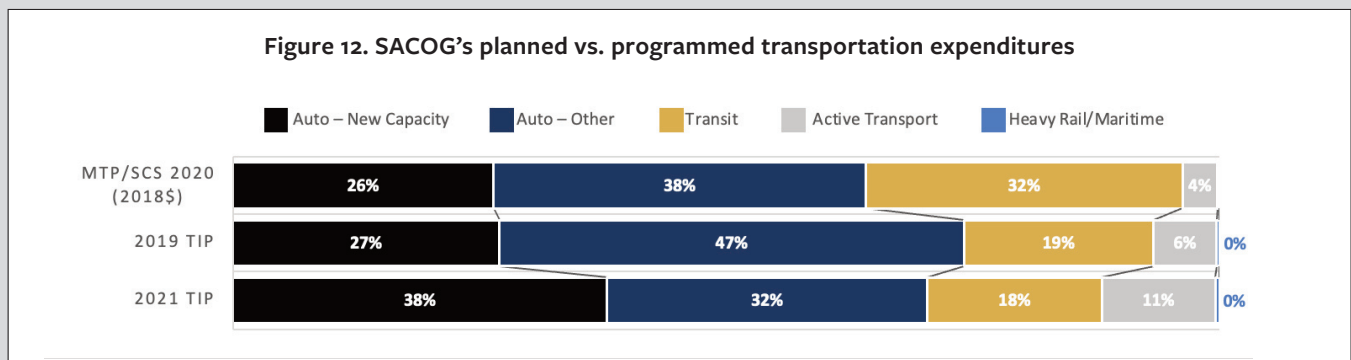


Table 8: SACOG’s planned vs. programmed transportation expenditures by mode and project typ

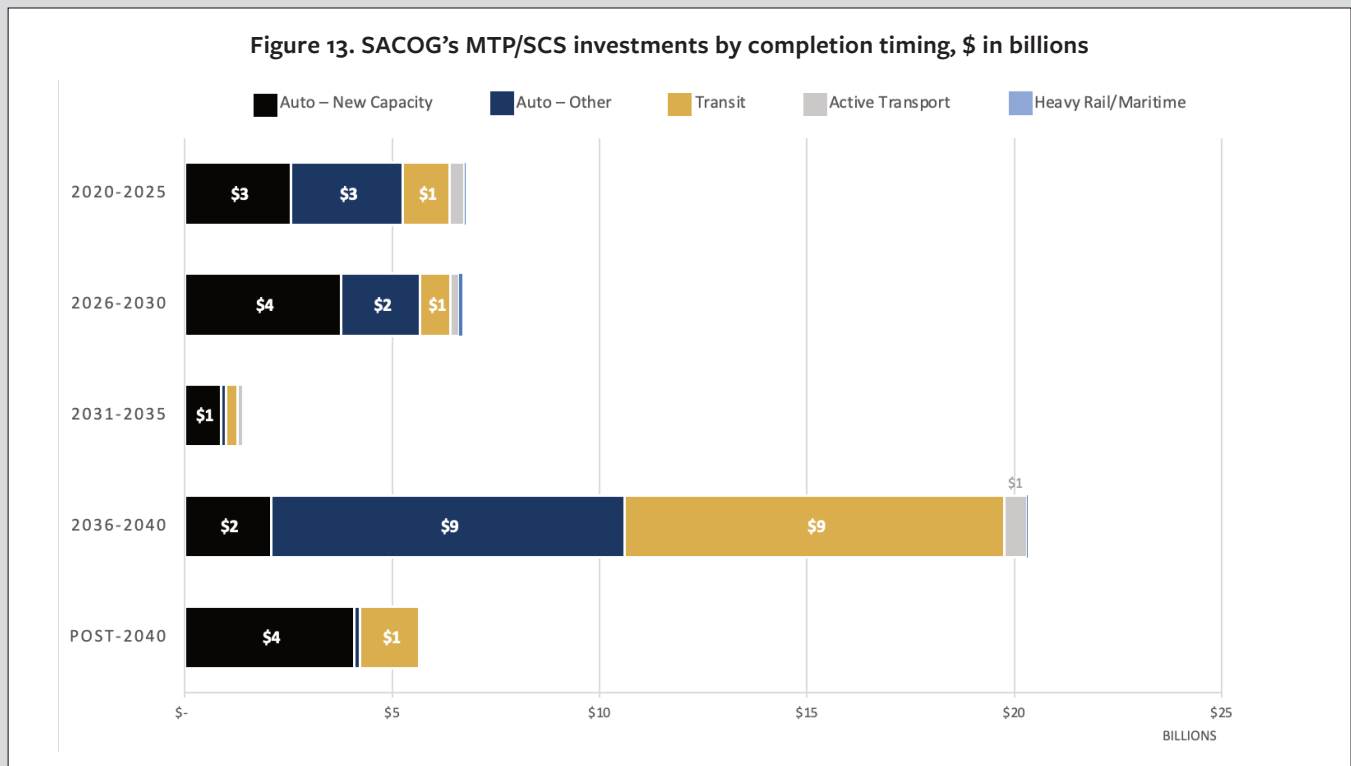
Expenditures	MTP/SCS 2020 (2018\$)	2019 TIP	2021 TIP
Active Transport	3.5%	6.4%	11.5%
New Capacity	2.1%	4.9%	9.1%
Reconstruction	1.3%	1.3%	2.4%
Rehabilitation & Maintenance	< 0.1%	< 0.1%	< 0.1%
Operations	0.1%	< 0.1%	< 0.1%
Plan/Study/Program	0.1%	0.1%	< 0.1%
Indirect	-	-	-
Auto	64.1%	74.1%	70.4%
New Capacity	26.4%	27.0%	37.9%
Reconstruction	7.3%	12.8%	13.7%
Rehabilitation & Maintenance	25.7%	29.9%	15.0%
Operations	2.9%	4.0%	3.2%
Plan/Study/Program	1.2%	0.2%	0.4%
Indirect	0.5%	0.2%	0.2%
Heavy Rail / Maritime	0.2%	0.3%	0.4%
New Capacity	-	-	-
Reconstruction	0.2%	0.3%	0.4%
Rehabilitation & Maintenance	-	-	-
Operations	-	-	-
Plan/Study/Program	< 0.1%	-	< 0.1%
Indirect	-	-	-
Transit	32.1%	19.2%	17.7%
New Capacity	10.4%	11.2%	8.6%
Reconstruction	0.6%	0.5%	0.8%
Rehabilitation & Maintenance	4.0%	4.5%	5.4%
Operations	16.5%	2.7%	2.1%
Plan/Study/Program	< 0.1%	< 0.1%	< 0.1%
Indirect	0.5%	0.2%	0.9%
Total	\$ 35,157,128,449	\$ 4,262,544,031	\$ 2,806,095,846

Looking at the phasing of investments in the MTP/SCS explains some of the skew of programming patterns (Figure 13). The majority of investments in the MTP/SCS—\$20 billion of the total \$35 billion—are slated for the final four years of the plan, from 2036 through 2040. But looking at the project list shows that over \$6 billion of the funds planned for the sunset of the plan—nearly 17 percent of the plan’s total budget—are lump sums for annual transit operations and maintenance for fiscal years 2023 through 2040. Similarly, about \$250 million of the active transport funds planned in the final four years of the MTP/SCS are lump sums for ongoing bicycle and pedestrian improvements. Categorizing these expenditures for the final phase of the MTP/SCS is misleading as these occur throughout the lifetime of the plan.

However, there are large transit capital outlays planned for the final years of the MTP/SCS. Among these projects are:

- Nearly \$540 million in bus rapid transit infrastructure and vehicles for the Sacramento Regional Transit District
- The \$426 million Valley Rail Program, which will include track improvements, additional track, and new stations to increase regional rail service (Altamont Corridor Express and the San Joaquins)

- \$225 million for the Sacramento Intermodal Transit Facility, a multimodal transportation center to accommodate high-speed rail, commuter rail, light rail, streetcar, intercity buses, and local buses
- \$195 million for light rail infrastructure and rolling stock to increase frequency on Sacramento Regional Transit’s Gold Line



What are the auto capacity projects planned for the first half of the MTP/SCS? The largest expenditures for auto capacity in the first decade of the MPT/SCS are implemented by Caltrans District 3 and include:

- \$438 million for State Route 51 (Capital City) Corridor Improvements. This project extends carpool/bus lanes, widens the American River bridge to 10 lanes, adds an auxiliary lane and transition lane, widens a local street, and adds a Class IV bike path on the northbound side of the highway.
- \$442 million for managed lanes on I-80 and US 50, running from Kidwell Road in Solano County to the US 50/I-5 interchange and I-80/West El Camino interchange in Sacramento, for a total centerline distance of about 25 miles. The type of managed lane will be based on the Managed Lane Study (a different project listing)—expressed toll lanes, high-occupancy toll (HOT) lanes, HOV lanes, and reversible lanes are all “being evaluated.”
- \$312 million for construction of about 15 centerline miles of managed lanes, auxiliary lanes, and ITS elements on I-5 from Sutterville Road (south of downtown Sacramento) to the Yolo County Line, north of the Sacramento International Airport. The type of lane management (for example, HOV, HOT) is unspecified in the MTP/SCS.
- \$254.5 million for the Broadway Bridge, a new local street connection over the Sacramento River between downtown Sacramento and the neighboring City of West Sacramento. The project includes transit, bicycle, and pedestrian facilities.

Early phases of these projects show up in the 2019 and 2021 TIPs:

- The 2019 and 2021 TIPs program \$1.3 million and \$6 million, respectively for engineering and right-of-way acquisition the SR 51 (Capital City) Corridor Improvements using STIP, Congestion Mitigation and Air Quality (CMAQ), and Regional Surface Transportation (RSTP) funds.
- \$1.1 million and \$4.1 million is programmed in the 2019 and 2021 TIPs, respectively, for the I-80 and US 50 managed lanes through Yolo County and into the City of Sacramento. Engineering and right-of-way acquisition are programmed with federal CMAQ funds and state cash.
- The 2019 TIP programs \$3.8 million for managed lanes on I-5 from Sutterville to the Yolo County Line. The 2021 TIP splits the project into phases and programs \$7.5 million of state cash for the engineering, right-of-way, and construction of the segment between the I-5/US 50 interchange and the Sacramento River/Yolo County Line. The new phase that was split off is categorized as a freight project and adds auxiliary, acceleration, and deceleration lanes to I-5 near the Sacramento International Airport. The 2021 TIP programs \$35.8 million of CMAQ and state Trade Corridor Program funds for engineering and right-of-way acquisition.
- \$500,000 of local, RSTP, and TIGER grant funds is programmed for engineering of the Broadway Bridge in the 2019 TIP. The City of West Sacramento is the lead agency, though local match will be split between the Cities of Sacramento and West Sacramento.

Several safety and operations projects appear among the largest auto capacity expenditures in the TIPs. Just over \$100 million of SHOPP Collision Reduction funds are programmed for Segments 4 and 5 of the SR 70 Safety Improvements project, which adds a continuous two-way left turn lane and two slow-moving vehicle lanes in addition to shoulder widenings, overlays, drainage maintenance and ITS elements. And just over \$48 million of local transportation funds, federal Highway Safety Improvement Program (HSIP) funds, and SHOPP Collision Reduction funds are programmed for engineering, right-of-way, and construction of the US 50 Camino Operational / Safety Improvements project. This project adds acceleration and deceleration lanes and an undercrossing for local roads.

Who are the lead agencies for the majority of auto capacity expenditures in the Sacramento region? Of the 53 lead agencies in the SACOG region, five local agencies account for 80 percent of the programmed funding for auto capacity in both the 2019 and 2021 TIPs. In 2019 they are Caltrans District 3, Sacramento County, City of Roseville, Placer County, City of Elk Grove; in 2021 they are Placer County, Sacramento County, City of Rancho Cordova, City of Roseville, and Caltrans District 3.

In total, the 2019 and 2021 TIPs each program just over \$1 billion for about 120 highway and local capacity projects. Highway capacity projects get about 45 percent of programmed funds in the 2019 TIP and 34 percent of programmed funds in the 2021 TIP. These projects include a new expressway (Capital Southeast Connector), general purpose lanes, auxiliary lanes, HOV lanes, interchange expansions, and new interchanges. Local capacity projects get the majority of funds programmed for new auto capacity—55 percent and 66 percent in the 2019 and 2021 TIPs, respectively. These projects include new local roads, roadway extensions, and road widenings. Only about 20 of these auto capacity projects, nearly all of them on local roads, also include facilities for active transportation.

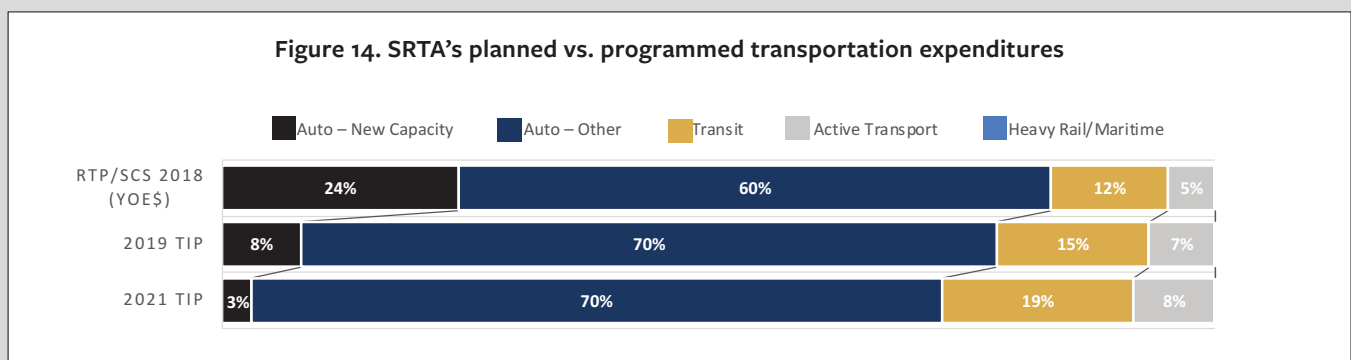
And what are the auto capacity projects that are waiting in the “post-2040” wings of the MTP/SCS? These “project development only” projects can seek state and federal funding for their non-construction phases and get a toehold in a TIP. And in some cases, spending federal funds starts a clock for project delivery—if a lead agency does not construct the project within a certain timeframe, they must repay the federal funds. The largest auto capacity expenditures planned for post-2040 include:

- \$295 million for the Placer Parkway, a new four-lane connector between SR 99 in rural Sutter County and Watt Avenue just outside of Roseville in Placer County. Only one phase is scoped in the MTP/SCS—Placer County, the lead agency, states that “[i]n its full build out condition, Placer Parkway will be a limited access roadway that connects SR 65 in Placer County to SR 99 in Sutter County.”⁶⁶
- \$265 million for managed lanes on SR 51 from Arden Way to the I-80 interchange, about 4.5 miles. Similar to the other managed lanes in the MTP/SCS, the type of managed lane (for example, carpool lanes, HOT lanes, expressed toll lanes) will depend on results from the Managed Lane Study. Caltrans District 3 is the lead agency.
- \$209.3 million for Phase 2 of the Capital Southeast Connector, a new expressway in rural southeastern Sacramento County that will connect the cities of Elk Grove and Rancho Cordova. Phase 1 (construction) of the Capital Southeast Connector receives \$114.8 million in the financially constrained project list of the MTP/SCS. Two final segments of Phase 1, summing to \$82 million, are included as “project development only.” Phase 2 “adds HOV lanes as needed and constructing interchanges at various locations.” In total, the Capital Southeast Connector is slated for \$406.1 million in the constrained and unconstrained lifetime of the MTP/SCS.

Shasta Regional Transportation Agency (SRTA)

Shasta Regional Transportation Authority is one of the six smaller MPOs in California and was assigned a GHG target of 0 percent in the first round of regional target setting (that is, no increase nor decrease of GHG emissions per capita). In March 2018, CARB adopted more stringent targets, and SRTA was assigned a target reduction of 4 percent GHG emissions per capita.⁶⁷ These more stringent targets “were not adopted in time for consideration in the 2018 RTP update process,” thus the 2018 RTP/SCS is “based on the original 0 percent targets.”⁶⁸

SRTA is one of only two MPOs in our sample that funds a smaller share of auto expenditures that are planned in the RTP/SCS. (TCAG is the other.) Nearly 85 percent of expenditures planned in the RTP/SCS are allotted for auto infrastructure; 24 percent is allotted specifically for new auto capacity. In the 2019 and 2021 TIPs, SRTA programs 8 and 0 percent for new auto capacity, respectively. A larger share of funding is programmed for transit—15 percent in 2019 and 19 percent in 2021—compared to the 12 percent of funds that are planned for transit in the long-range plan. See Figure 14 and Table 9.



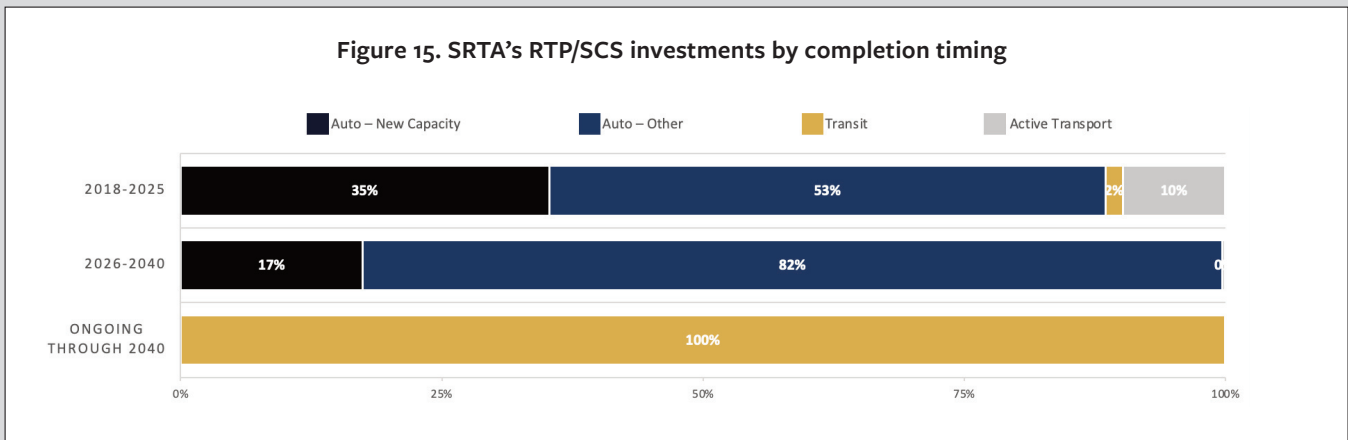
⁶⁶ Placer County Public Works 2021, <https://www.placer.ca.gov/1655/Placer-Parkway>

⁶⁷ CARB 2021, SRTA 2018

⁶⁸ SRTA 2018 RTP/SCS, p. 102

Part of the relatively large variation in shares of funding is that the magnitudes of SRTA’s budgets are relatively small. The entire project list of the RTP/SCS sums to \$1.4 billion, compared to SACOG’s \$35 billion or Fresno COG’s \$6 billion. The 2019 and 2021 TIPs program \$191 million and \$163 million, respectively. A single project can thus have leverage to change the relative distribution of expenditures.

There is a notable difference in transit funding between the RTP/SCS and the TIPs. A look at the phasing of investments in the plan and the project-level details helps explain the difference (Figure 15). Transit investments planned in the RTP/SCS are primarily ongoing operating assistance. The programming of that operating assistance accounts for nearly all of the transit investments programmed in the TIPs, supplemented by funds for preventative maintenance and rehabilitation, vehicle replacement, and transit capital maintenance. Most of the funds programmed for transit—about \$30 million in the 2019 and 2021 TIPs from FTA, farebox revenues, and Transportation Development Act funds—are distributed by formula to SRTA or its constituent local agencies.



SRTA is ambitious with regards to its plans for new auto capacity. It includes about 40 auto capacity projects in the 2018 RTP/SCS, summing to \$336 million and accounting for nearly a quarter of the plan’s expenditures. And the majority of auto capacity expenditures are frontloaded into the first seven years of the plan. (See Figure 15.) The largest of these auto capacity projects expands I-5 from the City of Redding to Anderson to make it a continuous six-lane highway, with estimated costs of \$144 million. This Redding to Anderson Six Lane (RASL) project is the one auto capacity project that shows up in the 2019 TIP, programmed with Regional Improvement Program (RIP) funds and locally generated funds. The Fix 5 Cascade Gateway project is also in the RTP/SCS and is the one auto capacity project that appears in the 2021 TIP. The phase included in the plan constructs a five-mile auxiliary lane on I-5 through the City of Redding. It is programmed in the 2021 TIP with RIP funds and state SB 1 funds.

Table 9: SRTA’s planned vs. programmed transportation expenditures by mode and project type

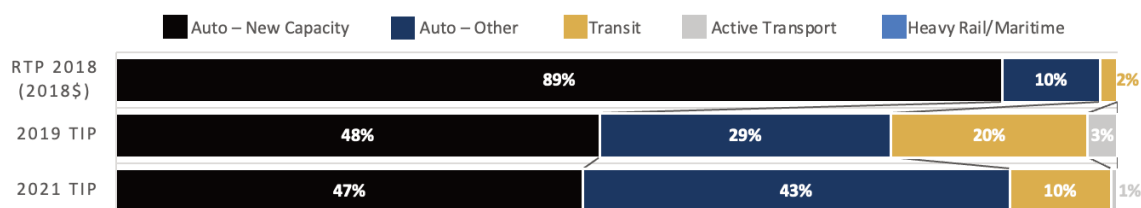
Expenditures	RTP/SCS 2018 (YOE\$)	2019 TIP	2021 TIP
Active Transport	4.7%	6.6%	8.2%
New Capacity	4.3%	6.6%	8.2%
Reconstruction	0.5%	-	-
Rehabilitation & Maintenance	-	-	-
Operations	-	-	-
Plan/Study/Program	-	-	-
Indirect	-	-	-
Auto	83.5%	78.1%	72.5%
New Capacity	23.9%	8.0%	2.9%
Reconstruction	23.7%	28.5%	16.4%
Rehabilitation & Maintenance	28.0%	41.5%	53.2%
Operations	8.0%	-	-
Plan/Study/Program	-	-	-
Indirect	-	-	-
Heavy Rail / Maritime	--	-	-
New Capacity	-	-	-
Reconstruction	-	-	-
Rehabilitation & Maintenance	-	-	-
Operations	-	-	-
Plan/Study/Program	-	-	-
Indirect	-	-	-
Transit	11.8%	15.3%	19.3%
New Capacity	< 0.1%	-	-
Reconstruction	-	-	-
Rehabilitation & Maintenance	0.6%	1.9%	2.6%
Operations	11.1%	13.3%	15.3%
Plan/Study/Program	-	-	-
Indirect	< 0.1%	0.2%	1.4%
Total	\$ 1,591,200,956	\$ 191,345,000	\$ 163,152,000

Tulare County Association of Governments (TCAG)

The transportation project list in TCAG’s RTP/SCS is unlike those from the other four MPOs in this sample—its project list contains only automobile projects. The plan includes both a financial element, per federal code, and a transportation project list of financially constrained and unconstrained investments.

The financial element (that is, not the transportation project list) includes project-level transit investments for the first 5 years of the 20-year plan horizon, as well as revenue projections for dedicated transit and active transportation funds. But aside from five years of capital transit needs, and despite state and federal revenues being available transit and active modes, the RTP/SCS does not spell out specific project-level investments for transit nor active transportation. As such, auto investments make up nearly all—99 percent—of the investments in the RTP/SCS and new auto capacity accounts for 90 percent of planned investments.

Figure 16. TCAG's planned vs. programmed transportation expenditures



But despite being virtually absent from the RTP, transit and active transportation projects account for 23 and 11 percent of expenditures in the 2019 and 2021 TIPs, respectively. If these projects are not in the RTP, then where did they come from? Most of the programmed transit projects are lump sums funded primarily with formula funds. FTA 5307, FTA 5311, and local transportation funds from the Transportation Development Act are programmed for transit operating assistance. FTA 5339 and the required local match are programmed for replacement of the transit fleet, with a mix of federal CMAQ funds. FTA 5307 funds are used for transit preventative maintenance projects. In essence, the region is using local funds and the federal formula funds available for transit to support its transit systems. The federal sources of funding ensure that transit is programmed in the TIPs.

Active transportation projects also appear in the TIPs despite being absent from the RTP. They show up as grouped projects for bicycle and pedestrian facilities and are programmed exclusively with state Active Transportation Program funds and federal CMAQ funds.

Non-capacity auto infrastructure also appears in the TIPs in a much greater share than it was planned. The majority of these “other” auto infrastructure funds are grouped projects for pavement resurfacing, bridge rehabilitation and preservation, and safety improvements. These are programmed with local county funds, state funds (SHOPP Roadway Preservation, SHOPP Bridge Preservation Program, Highway Bridge Program), and federal funds (Surface Transportation Block Grant Program).

There is clearly a much larger array of auto capacity projects in TCAG's RTP. Nearly 23 percent of the plan's expenditures are to widen 20 miles of SR 99 from four to six lanes. Ten percent of the planned expenditures are to widen 19.5 miles of SR 65 from two to four lanes. Over 9 percent of the plan adds or widens the on- and off-ramps at three interchanges on SR 99. Over 6 percent is to widen seven miles of SR 190 from two to four lanes and widen one of its interchanges. And dozens of other projects widen county and city roads through Tulare County and its cities. These projects are programmed in the TIPs with a mixture of STIP Regional Choice funds, SB 1 funds, federal Highway Infrastructure Funds, federal Surface Transportation Program funds, regional sales taxes, and local funds.

Table 10: TCAG’s planned vs. programmed transportation expenditures by mode and project type

Expenditures	RTP 2018 (YOES)	2019 TIP	2021 TIP
Active Transport	-	3.0%	0.6%
New Capacity	-	3.0%	0.6%
Reconstruction	-	-	-
Rehabilitation & Maintenance	-	-	-
Operations	-	-	-
Plan/Study/Program	-	-	-
Indirect	-	-	-
Auto	98.8%	77.4%	89.2%
New Capacity	90.0%	48.3%	46.6%
Reconstruction	5.9%	10.4%	9.4%
Rehabilitation & Maintenance	-	18.4%	33.2%
Operations	2.9%	0.3%	-
Plan/Study/Program	-	-	-
Indirect	-	-	-
Heavy Rail / Maritime	-	-	-
New Capacity	-	-	-
Reconstruction	-	-	-
Rehabilitation & Maintenance	-	-	-
Operations	-	-	-
Plan/Study/Program	-	-	-
Indirect	-	-	-
Transit	1.3%	19.6%	10.1%
New Capacity	0.5%	-	-
Reconstruction	-	-	-
Rehabilitation & Maintenance	0.4%	7.2%	3.0%
Operations	-	12.4%	7.1%
Plan/Study/Program	-	-	-
Indirect	0.3%	-	-
Total	\$ 2,535,809,700	\$ 414,435,000	\$ 640,984,000

Findings and Policy Recommendations

Responding to federal regulations and California law, regional TIPs include regionally significant projects consistent with the regional plan and are updated under California law every two years. By reviewing two cycles of TIPS, we are able to examine where expenditures on projects are being directed for a six-year period. This is in comparison to the 20- to 30-year period covered in RTPs.

In the largest regions—MTC, SACOG, and Fresno COG—funding for auto infrastructure and new auto capacity is programmed at shares that do not reflect the overall funding priorities nor GHG reduction goals established in the long-range transportation plans. In total dollars, SACOG alone programmed \$1.1 billion and \$1 billion for new auto capacity in its 2019 and 2021 TIPs, respectively. MTC programmed \$1.8 billion and \$1.4 billion for new auto capacity in the same timeframe. Fresno COG programmed \$274 million and \$348 million.

In all five case study regions, auto infrastructure (for example, new capacity, road rehabilitation, operations) receives the majority of planned and programmed funds in all regions except the San Francisco Bay Area. New auto capacity (for example, new or wider roads, new auxiliary or toll lanes, new or wider interchanges and ramps) makes up a significant share of planned and programmed funding in all regions, particularly in the Central Valley and suburban areas of the Bay Area. Indeed, new auto capacity receives the plurality of programmed funds in two of the five case regions (SACOG and TCAG).

How do these programming patterns square with RTP/SCSs that meet their GHG emissions reductions targets? When investments in the RTP/SCSs are broken out by timeframe, many plans tend to frontload auto capacity investments and, in some cases, backload transit projects. So, expenditures in the TIPs follow fairly similar patterns to the near-term investments (in the first ten years) in the long-range RTP/SCS. In these cases, auto-heavy TIPs are technically implementing the RTP/SCSs as planned.

The investments and phasing in RTP/SCSs and TIPs are impacted by their fiscal constraint. Investments must match the revenue sources that can be reasonably expected to be available in the timeframe that the project is programmed. Transportation funding sources and the strings attached by revenue sources thus play a key role in the nature and timing of transportation investments. The state has enacted various funding programs that aim to fund transportation that would reduce VMT and GHG emissions but these make up only a fraction of the portfolio of the state, federal, and local transportation funds. A regional planner commented: “The state’s special programs like ATP [Active Transportation Program] are great as carrots but they are marginal in the overall picture of transportation funds. Trying to change the course of an ocean liner like the STIP and SHOPP by poking it with a carrot is a fool’s errand. That shows up in the TIP when you see all the programmed auto capacity.”

These spending patterns have ramifications for real-world travel behavior, GHG emissions, and their impacts on climate change. RTP/SCSs must show that when modeled, the travel patterns on a weekday in 2040 (or the horizon year of the plan) meet a per-capita GHG emissions target. But the timing of transportation investments is key to their impact on travel behavior, as well as on GHG emissions and their aggregation in the atmosphere. Modeling a transportation network that frontloads auto capacity projects and “turns on” a robust transit system in the final year of a 20-year plan may meet the necessary model target, but real-world people will take time to adjust travel patterns to a new transit network. And 19 years of GHG emissions from an auto-dependent transportation network will have accumulated in the interim.

Policy Recommendations

Frontloading projects that add auto capacity has implications for induced VMT, GHG emissions, and global warming potential, as well as ongoing maintenance costs. This pattern contravenes California’s VMT and GHG reduction goals and hinders the decreased auto dependence planned in the RTP/SCSs. Recommendations for action from local and regional planning staff and decision-makers, state agencies, and state policymakers include:

- Revise the allocation formulae of core transportation funds to align with and implement the GHG reductions envisioned in California’s RTP/SCSs.
- Address the phasing of transportation investments in RTP/SCSs to prevent delay of projects that reduce VMT and GHG emissions. The overall package of projects in the RTP/SCS can meet the regional GHG target, but this analysis of investment phasing shows that auto capacity projects are planned for earlier phases and reliably programmed in TIPs. This pattern entrenches automobile dependence and its resultant GHG emissions.

- Create and reward meeting a near-term VMT and GHG reduction target. The GHG target attached to the horizon year of the long-range plan offers decades for projects to creep forward or backward and for local and regional agencies to put off bold action. And no such GHG target exists for the near-term projects in the TIP. Revised funding allocation formulae could reward regions for their performance on a near-term GHG target.
- Create prioritization and de-prioritization processes for transportation investments currently in the project pipeline. Many projects currently being programmed were proposed by lead agencies decades ago, when needs and paradigms were different. Several MPOs have frameworks for screening the projects in their long-range plans. This process could be adapted to local government plans, TIPs, and state plans.
- Create a SCS monitoring system that tracks federal, state, and locally funded transportation projects. TIPs provide the most comprehensive source of data for state and federally funded transportation projects and for locally funded projects that increase capacity. But there is a gap in information about exempt projects funded solely with local funds—tracking these projects is key for SCS implementation.
- Require consistent and standardized project descriptions and classification. Projects in the RTP/SCS and TIP that add roadway capacity should explicitly state that they add roadway capacity, including the type of lane(s) (e.g., HOT, HOV, auxiliary) and the total lane miles. Safety, operations, and freight projects often add roadway capacity without noting it.

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