Chapter 6

Transportation Investments

IDENTIFYING NEEDS

The Action Element of the RTP is a list of programs, projects and actions needed to operate, maintain, and improve the transportation system in Santa Cruz County (Appendix E - Project List). The cost to implement all these projects is $17.3 billion through 2050. The RTP project list strives to assess the full cost to operate, maintain, and improve all modes of the transportation system in Santa Cruz County. The complete project list encompasses about 630 projects aimed at meeting the transportation needs of the community through 2050.

The Action Element includes:

- Highway, local road, bicycle, pedestrian, transit, airport, goods movement, transportation demand management (e.g. carpool and traveler information), and transportation system management (e.g. signal synchronization, transit signal priority) projects.
- Operation and maintenance costs of existing transportation facilities – such as bridges, pavement, sidewalks, and public buses.
- Regional projects prioritized by the Santa Cruz County Regional Transportation Commission and/or included in the Measure D Expenditure Plan.
- Projects local agencies identified through their own planning processes, including transportation studies, General Plans, and capital improvement programs.
- Projects identified by RTC advisory committees, members of the public, and public interest groups and later accepted by an implementing entity.

The transportation needs identified in the Action Element far exceed revenues available from fiscal year 2026 through 2050. As discussed in the financial section of this plan (Chapter 5), only $6.18 billion in local, state, and federal funds is reasonably expected to be available through 2050, but $17.3 billion is needed to fully fund all the projects identified in the 2050 RTP. An additional $445 million per year in new taxes, fees, and other revenues beyond what was identified in the Financial Element (Chapter 5) would be required to deliver all of the transportation projects identified in Appendix E.

Given the significant gap between funding needs and projected revenues, the projects listed in the 2050 RTP were divided into two groups:

- Within Projected Funds ("Constrained") Projects —
    - Projects that could be funded over the next 25 years with reasonably foreseeable transportation revenues including already programmed funds.
    - Projects that align with funding sources specific to project based on a transportation mode and other criteria.
    - Projects identified in the Measure D Expenditure Plan or that have been previously awarded grant funding.
    - Projects that most significantly advance 2050 RTP Goals.
- Need New Funds ("Unconstrained") Projects—
    - Projects that may not be implemented over the next 25 years unless there are significant changes in the amount of local, state, and federal funding available for transportation.
    - Projects that are less likely to be competitive for grant funding.
    - Projects that advance fewer 2050 RTP Goals.

WITHIN PROJECTED FUNDS (CONSTRAINED) PROJECT LIST

The within projected funds or "constrained" project list consists of over 330 projects that could be implemented over the 25 years and the need new funds or "unconstrained" list includes nearly 310 projects that will need additional funds in order to be implemented. For some projects, only a portion of a project could be funded over the next 25 years based on current financial assumptions, and it will be necessary to secure and/or generate additional funding sources (beyond those identified in Appendix D) to fulfill all the needs. These projects are identified as both constrained and unconstrained on the Project List. For some capital projects, if new funds do not become available, a project may have to be scaled back, only a portion of the project built, or the project may be delayed.

SUMMARY OF CONSTRAINED PROJECTS

In order to meet the goals and advance the targets of the 2050 RTP, both short term and long term strategies focus on developing a multimodal transportation system that provides safe choices for how people travel.

A qualitative analysis of how well every constrained project helps the county reach its RTP goals has been performed. When submitting projects for inclusion in the 2050 RTP, project sponsors were required to demonstrate

which RTP goals their projects align with. This exercise determined how well the project aligned with RTP goals (high benefit = 3, medium benefit = 2, low benefit = 1, not applicable = 0). Many projects address more than one goal, while others may only address one goal.

The following sections provide a summary of how the transportation investments that have been prioritized for the RTP advance the goals and policies identified for this RTP.

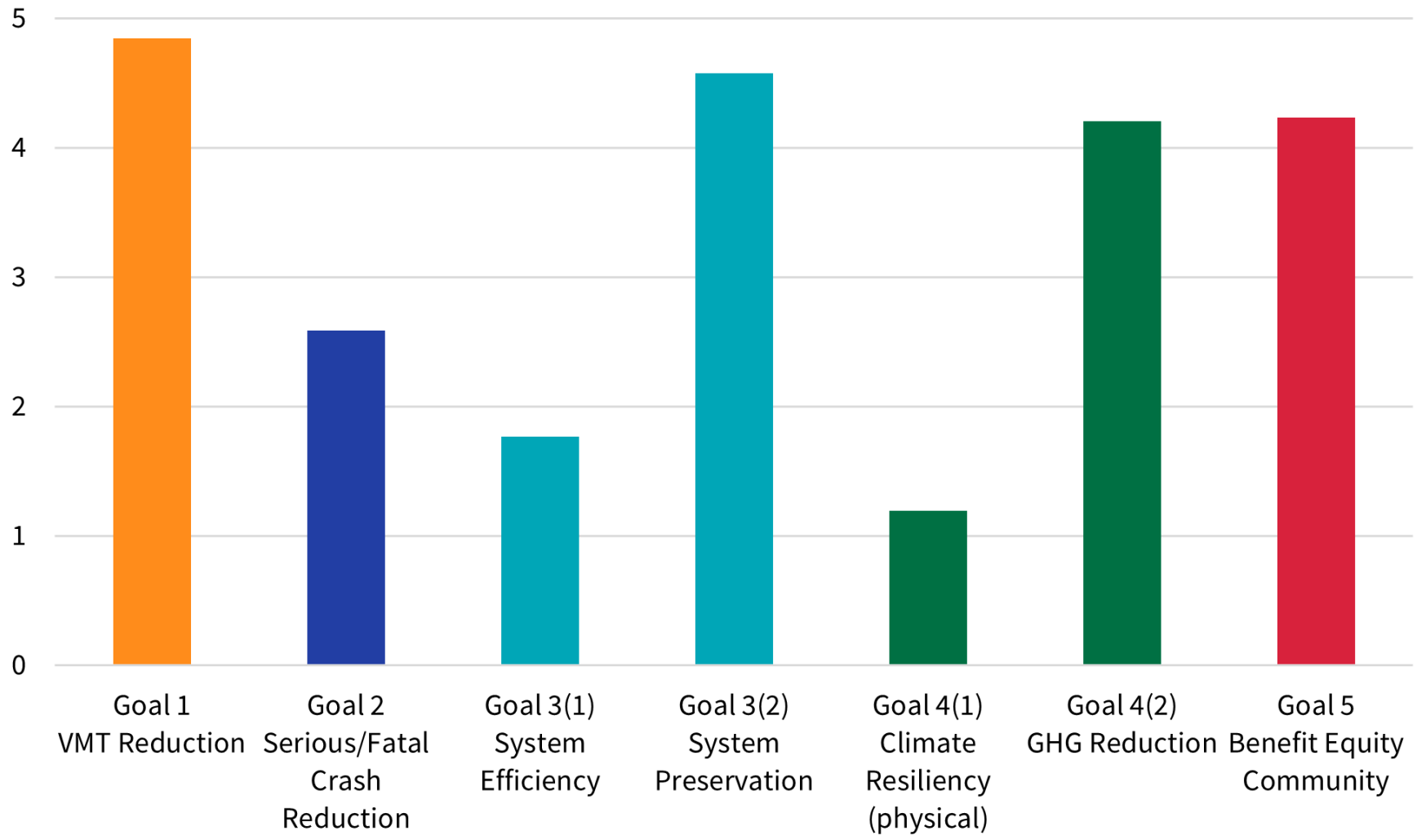


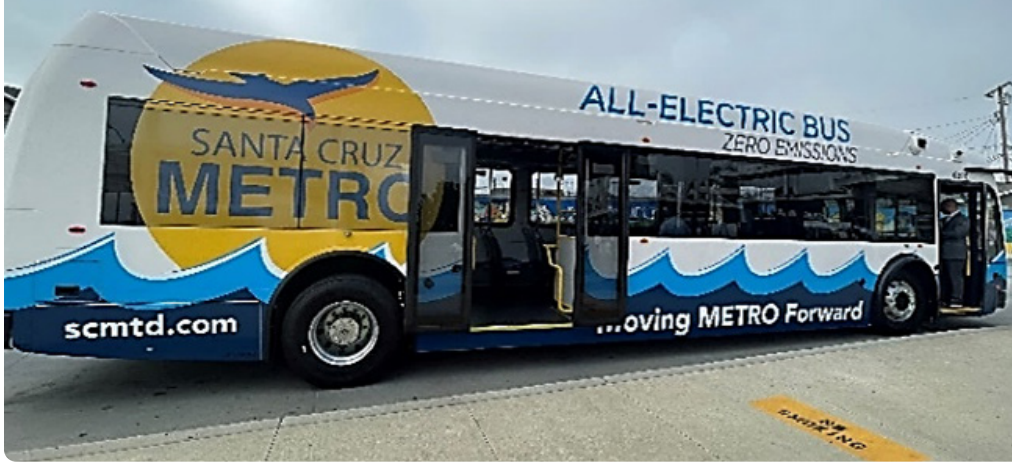
Figure 6.1 - Goal alignment of all constrained RTP projects, weighted by investment sum.
Hypothetically, if all the constrained projects scored "high" for a goal, that goal's score would be 10.

GOAL 1 – REDUCE VEHICLE MILES TRAVELED

One of the goals of the 2050 RTP is to reduce vehicle miles traveled in order to establish livable communities that improve people's access to their regular needs. The constrained project list addresses this goal through an investment in transit, active transportation improvements, transportation demand management, and education.

Transit Efficiencies and Improvements

Santa Cruz Metropolitan Transit District (METRO) runs an extensive public bus system as described in Chapter 2. A significant portion of the constrained project costs planned in the 2050 RTP (44%) are designated for transit (Figure 6.2) largely due to the availability of transit funding from a local half-cent sales tax approved by Santa Cruz County voters in 1978 as well as the passage of Measure D in 2016 which provides METRO with 16% of the half-cent sales tax funds over a 30-year period.



The 2050 RTP includes projects focusing on increasing transit ridership including:

- Operational Improvements:
  - Reduce headways and improve travel times via stop consolidation, in-lane boarding, transit signal priority, and transit queue jumps.
  - Increased frequency on high ridership and express service routes.
- Passenger Amenities such as shelters and lighting.
- Bus and Paratransit vehicle replacements.
- Improved Access to Transit: New sidewalks, curb ramps, and improved pedestrian crossings that provide safer and more appealing access to transit and park and ride lots to provide access to transit services.
- Traveler Information: Improvements and equipment to support real time transit schedule information online, via mobile applications, and at bus stops.

Active Transportation

Projects that fill gaps in the bicycle network and enhance bicycle and pedestrian facilities can increase trips made by bicycling and walking. Approximately 15% of the constrained RTP project list spending is planned for exclusively or primarily pedestrian and bicycling improvements and programs (Figure 6.2).

The 2050 RTP includes projects that encourage walking and bicycling as an alternative to driving including:

- Two new bicycle/pedestrian bridges over Highway 1 in Aptos that will provide improved new access to destinations that were previously divided
- Development of the Monterey Bay Sanctuary Scenic Trail (MBSST)/Coastal Rail Trail, the Pajaro River Levee Trail, the Lee Road Trail, the Upper Struve Slough Trail, the Swanton Boulevard Trail, and the San Lorenzo Valley Trail which provide new direct connections between key destinations
- New bicycle lanes, new sidewalks, upgrades to separate bike lanes from traffic, bicycle parking, level-boarding rail transit, and bicycle and walking education programs

In addition, traffic calming measures in business districts and neighborhoods can make walking and bicycling more attractive by reducing automobile speeds. Several projects in the 2050 RTP include landscaping, bulb-outs, speed bumps, and other traffic calming measures.

Transportation Demand Management

Transportation demand management (TDM) is a general term for strategies that increase transportation system efficiency through a reduction in demand, especially during peak periods. TDM strategies can reduce automobile use by making alternatives more desirable through incentives or make automobile use less desirable through disincentives such as increased travel costs. Approximately 2% of the constrained RTP project list spending is planned for TDM services (Figure 6.2).

The 2050 RTP includes several TDM strategies that increase the efficiency of existing transportation facilities by promoting carpooling, vanpooling, bikepooling, and use of transit, as well as increasing bicycling and

walking, which supports individuals in changing their transportation mode from driving to an alternative. Promotion can include not only resources but also financial incentives for using sustainable modes and disincentives for parking. TDM strategies also include providing information about roadway conditions that can allow transportation system users to change their route and avoid congested areas. Rideshare matching services and individualized assistance to employers, schools, and residents facilitate use of alternatives to driving alone. TDM services that promote employers to allow a flexible work schedule or allow employees to telecommute will reduce demand during the peak hours. Providing easy access to up-to-date information about transportation options is a key component of TDM.

Rail

The RTC owns the Santa Cruz Branch Rail Line Corridor, which is a continuous 32-mile rail line that extends from the northern to the southern portion of the Santa Cruz County and traverses the most densely populated areas in the region. The RTC has evaluated transit uses of the corridor through several studies and in 2019 identified high-capacity transit as the preferred use of the corridor, along with the main spine of the MBSST trail. Most recently The RTC undertook development of a Zero Emission Passenger Rail Project Concept Report, which identified the alignment and costs of passenger rail on 22 miles of this corridor.

GOAL 2 – ELIMINATE FATALITIES AND SERIOUS INJURIES

Ensuring the safety of people using the transportation system is a key goal of the 2050 RTP and identifies investment in programs that increase the safety of the transportation system in Santa Cruz County. Transportation safety can be improved using many strategies including motorist aid, enforcement of traffic laws, motorist education of rules, facility design, and emergency response.

Motorist Aid

The 2050 RTP includes programs that help remove stranded motorists from the highway to reduce the risk of collisions. The Freeway Service Patrol, which operates tow trucks that clear incidents and tow vehicles off segments of Highway 1 and Highway 17, reduce the potential for secondary collisions.

Enforcement

The number of injuries and fatalities can be reduced by enforcement of traffic laws on roadways to reduce unsafe driving practices. The 2050 RTP continues to fund the California Highway Patrol to provide extra enforcement on Highway 17 and adds bus-on-shoulder enforcement on Highway 1 for new facilities.

Education

The 2050 RTP continues to invest in bicycle and walking safety education programs that result in increased use of safety equipment (helmets and lighting), increase predictable and responsible behavior and raise awareness about risk factors to decrease the risk and severity of collisions. Several public agencies partner together to promote transportation safety to Santa Cruz County residents.

Transportation Facility Design

The 2050 RTP includes projects that incorporate collision reduction measures primarily by modifying the design of Santa Cruz County's transportation facilities including:

- Safe Routes to School: Construction and/or repair of crosswalks, sidewalks, trails and traffic calming measures that enable children to safely walk and bike to school.
- Traffic Calming: Design roadways to reduce the speed and volume of automobile traffic on local roads.
- Freeways: Construction of auxiliary lanes projects that reduce opportunities for conflicts by supplying longer distances for vehicles to merge in and out of the through lanes.
- Highways: Addition of elements such as guardrails and drainage
- Bicycle and Pedestrian Facilities: Expand the network of sidewalks, bike lanes, separated bike lanes, conflict zone enhancements, and bike/ped trails which separate active transportation modes from motor vehicles thereby reducing opportunities for collisions.
- Intersection improvements: Design vehicle turns, bicycle and pedestrian movements, and ADA accessibility to improve visibility and reduce potential for conflicts

Security/Emergency Services

Transportation systems can be greatly impacted by natural disasters or security incidents. Transportation systems are also a critical part of the response effort by connecting law enforcement and safety responders to the incident site and handling the public's transportation needs in response to the incident. Consistent with the California Strategic Highway Safety Plan and emergency relief and disaster preparedness plans, the 2050 RTP continues to invest in projects that provide security and emergency services.

Investments included in the 2050 RTP are:

- Safety focused monitoring at transit centers and improved communication systems, which are key components to facilitating effective response and recovery efforts.
- Changeable message signs, CCTV cameras, and adaptive signals, which provide real time incident and traffic operation information.
- Cameras and security lighting at transit centers, bus stops, and certain bike/ped trails.
- Cruz 511 Traveler Information System which provides a centralized location to communicate travel conditions during an emergency.
- Transit system efficiency and capacity, which can play an important role in assisting the public during times of emergency by helping to provide transport out of or around affected areas.
- Capacity improvements such as drivable shoulders which can be used for evacuations and response.

GOAL 3 – EFFICIENCY AND MAINTENANCE

A cost-effective transportation system addresses the maintenance and preservation of prior investments as well as invests in projects with multiple benefits. Considering how investments meet the needs of all users can increase effectiveness of projects as well.

System Maintenance

Preserving the existing infrastructure is a key focus of the 2050 RTP and can be a cost-effective strategy for maintaining the existing infrastructure. There is a backlog of roads and highway miles in disrepair primarily to funding shortfalls for maintenance over the last many years as well as higher costs associated with maintaining an aging system.

As shown in Figure 6.2, the cost to fix roadways increases exponentially as a roadway deteriorates. Note the cost difference per square yard for sealing versus overlays versus reconstruction. For that reason, it is oftentimes more cost effective to regularly repair some roadways that are in fair condition, rather than to rebuild roadways with severe deterioration. The longer there is a delay in maintenance of our streets and roads, the rate of deterioration accelerates, and the greater the cost to address deferred maintenance.

Local jurisdictions and Caltrans have developed Pavement Management Systems (PMS) to spread funding for maintenance as far as possible.

Local Roadway Preservation: Roadway maintenance as well as major rehabilitation or reconstruction to repair and restore existing roads serve to extend facilities' lifespan. This can include addressing issues like cracks, potholes, and surface wear and tear. Where feasible, these projects may also include roadway enhancements and other roadside improvements. Roadway maintenance and rehabilitation can reduce the need for reconstruction, which can be more costly. 15% of project list spending is planned in the 2050 RTP to focus on local (not state highway) roadway maintenance and rehabilitation.

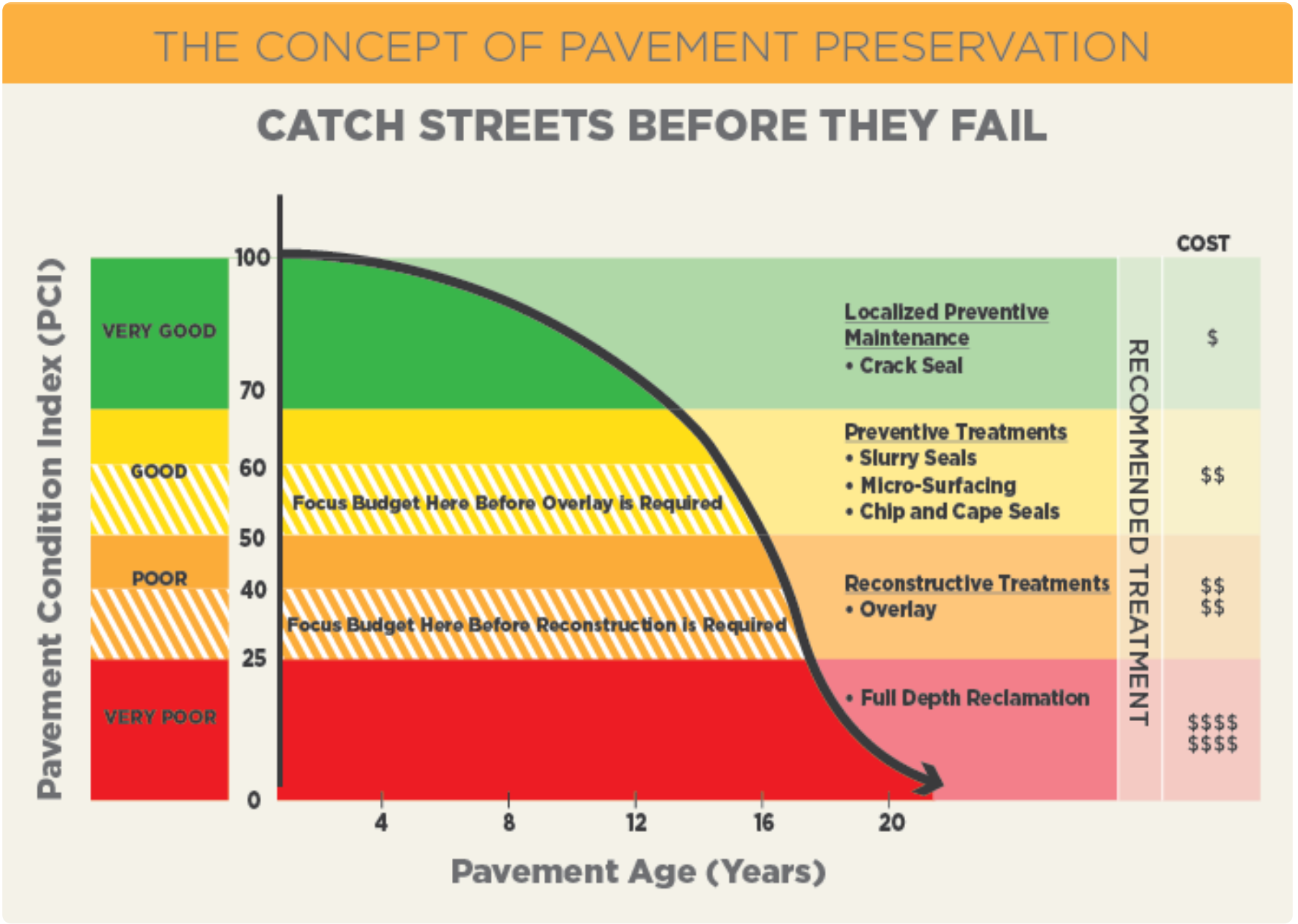


Figure 6.2 – Cost of Road Maintenance
Source: 2020 California Statewide Local Streets and Roads Needs Assessment[1]

Highway Maintenance: Operational improvements address collision reduction mandates and preserve the current state highway system. The 2050 RTP also includes Caltrans State Highway Operation and Protection Program (SHOPP) projects that are focused on repair and preservation, safety, and emergency repairs.

Transit Infrastructure Maintenance: The transit system needs consistent funding for maintaining the system. Buses need to be replaced; transit centers updated; bus shelters, service vehicles and operations facilities need to be maintained. Fleet maintenance, bus replacements, physical plant upgrade, and transit center renovations have all been partially funded in the 2050 RTP.

Highway Facilities

For a freeway like Highway 1, one strategy for improving the efficiency (number of vehicles served during peak periods), operations, and safety is the addition of auxiliary lanes. An auxiliary lane connects an on-ramp with the next off-ramp, thereby extending the weaving and merging distance between the ramps and improving traffic flow by allowing greater separation between vehicles entering and exiting the freeway from mainline traffic.

The 2050 RTP includes three new pairs of auxiliary lanes (Bay Avenue/Porter Street to Park Avenue, Park Avenue to State Park Drive, and State Park Drive to Freedom Boulevard). These projects are funded by Measure D and therefore are listed on the constrained Project List. The northbound auxiliary lane from San Andreas Rd to Freedom Blvd is also included in the Project List but is listed on the unconstrained project list.

The auxiliary lanes projects are standalone projects but along with interchange reconstruction are designed to provide the additional width necessary to allow for the construction of high occupancy vehicle (HOV) lanes in the future. Interchange reconstruction and HOV lanes on Highway 1 are identified as a need and included in the 2050 RTP Project List, however, the cost of completing all interchange improvements and the entire HOV lanes project on Highway 1 is beyond the amount of discretionary funding that can be used for highway projects through 2050.

The RTP also lists important operational improvements for Highway 17, such as adding turning or acceleration/deceleration lanes and consolidating driveways, which can make it perform more efficiently for less cost and environmental impact that adding an additional continuous travel lane. Projects to grade-separate intersections with Highway 17 are also included but are listed as unconstrained.

Six percent of the projected funds are designated for highway improvements and 15% for highway maintenance.

Transportation System Management

There is a broad array of strategies to better use capacity of the existing transportation infrastructure. These techniques improve the operation of the transportation system; reduce congestion, travel times, and fuel lost to traffic delays; and provide more consistent travel times day to day.

The 2050 RTP includes projects that improve efficiency including:

- Incident management - Collisions and other incidents can cause travel times to be unpredictable and significantly prolonged. A variety of technologies and programs included in the RTP help identify, respond to, and clear incidents, including Freeway Service Patrol, closed-circuit TV cameras, and traffic management centers.

- Arterial management - Coordinated signal timing, separate queues, and priority at signals for high occupant vehicles/buses, roundabouts and additional intersection improvements provide for increased traffic flow and have been prioritized in the RTP.

Active Transportation, Transit Facilities and Services

Addressing the needs of all users includes providing alternative options to driving including: providing comfortable and convenient options for bicycling and pedestrian and transit and paratransit facilities and services. By seeking ways to incorporate bicycle, pedestrian, and transit improvements into planned maintenance or capacity projects, agencies conserve resources by “digging once”, but they also maximize the use of travel space. The 2050 RTP identifies investments in these types of projects as described under Goal 1.

Goods Movement & Freight Mobility

Goods movement benefits from reduced congestion and predictable travel times. Projects to improve traffic flow and travel time reliability of our roadways identified in the 2050 RTP include Highway 1 auxiliary lane projects, Freeway Service Patrol, intersection improvements, signal synchronization and Cruz 511 Traveler Information.

GOAL 4 – CLIMATE RESILIENCE

The hazards brought on by climate change pose a serious threat to the county's transportation infrastructure and thus the safety and quality of life of its residents. Therefore, climate resiliency is essential for preserving the life and functionality of the transportation system and protecting investments. Developing projects that are resilient to extreme weather events, storm surge, sea level rise, wildfire and climate resilience requires planning, analysis, design and implementation. The 2050 RTP identifies Climate Action Plans and funding for making transportation infrastructure more resilient. The Climate Adaptation Vulnerability Assessment (2024) identifies priority areas subject to climate hazards and this information will be considered in development of projects at these locations and included in the 2050 RTP.

In addition, the cumulative impact of transportation investments that result in an increase in greenhouse gas emission can exacerbate climate hazards over time. The 2050 RTP includes projects that are aimed at reducing driving and emissions.

GOAL 5- TRANSPORTATION EQUITY

How transportation projects are funded and where resources are allocated are critical aspects of transportation equity. The 2050 RTP project list has been developed to address the transportation needs of the entire community and attempts to ensure that no one community bears more of the benefits or burdens of transportation investments than any other and address historical disparities in transportation investments. The RTC and local agencies have started applying more detailed equity factors and criteria when evaluating transportation projects, programs, and services. Some of the projects and types of projects located in Equity Priority communities that were identified as priorities to reduce disparities and create a vibrant transportation network that equitably supports the community, economic activity, and preservation of the environment are:

- Reduce emissions, fuel consumption, and congestion
- Reduce exposure to truck traffic through neighborhoods
- Increase transit service
- Reduce transit travel times

- Reduce “last mile” distances from transit, especially to key destinations
- Fill gaps in bike/ped network in low-income areas and to key destinations, including access to healthy recreational activities that improve quality of life, especially for “captive” pedestrians and bicyclists who walk or bike because no other options exist.
- Fill potholes and repair roadways
- Reduce fatal and injury collisions, especially for people walking and biking, youth, and seniors
- Reduce climate impacts, especially heat and flooding.

FUND DISTRIBUTION

A breakdown of project costs by transportation type for projects listed on the constrained list is shown in Figure 6.3. Many projects included in the constrained list are multimodal. After transit operations, local roadway maintenance and operations are expected to receive the greatest amount of funding in the 2050 RTP. Note that projects to add vehicle turning lanes and increase throughput at intersections are considered operations rather than improvements.

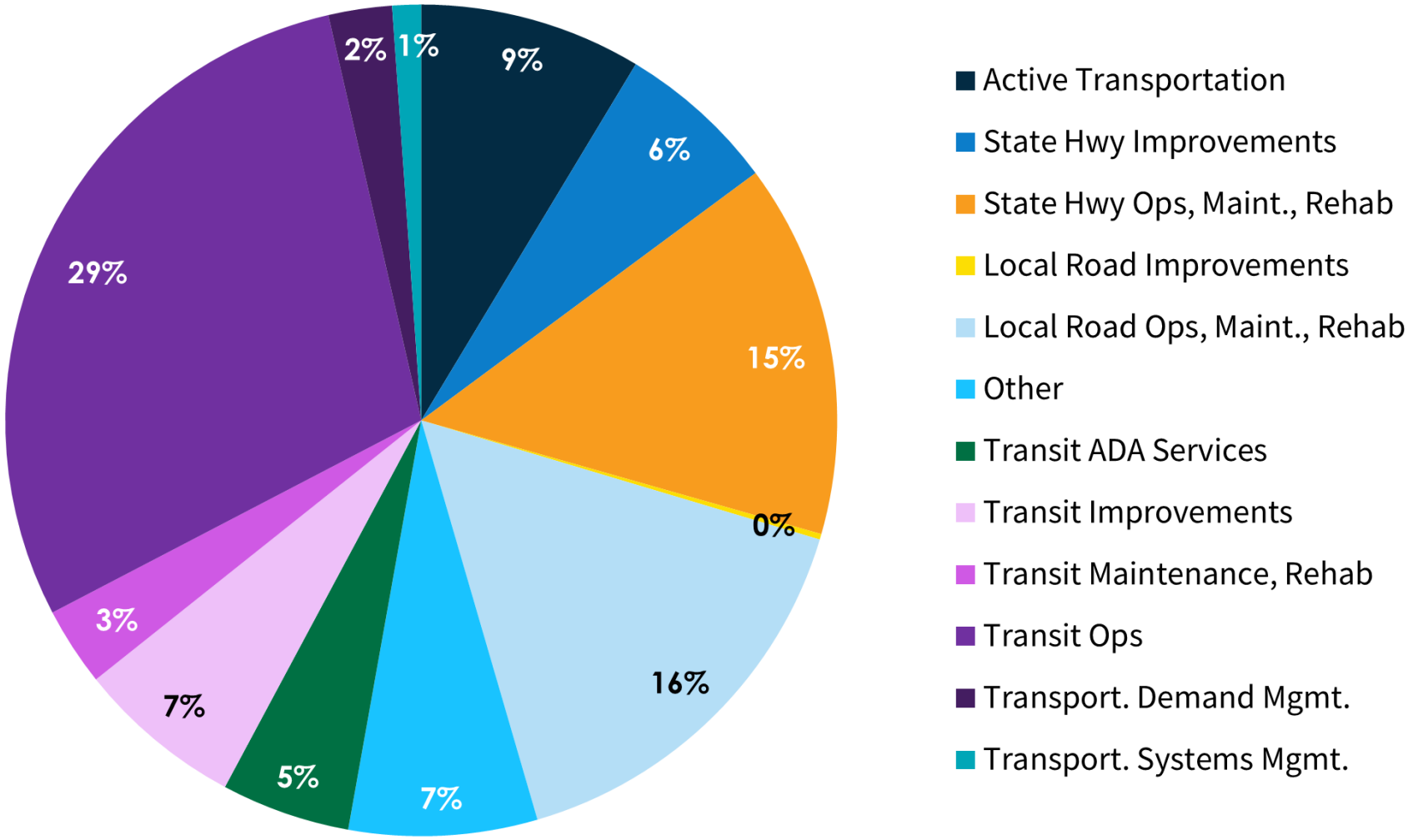


Figure 6.3 – $6.18 Billion Fund Distribution by Type
Source: Santa Cruz County Regional Transportation Commission

The constrained projects have also been each broken down by what percentage of their costs benefit which modes of travel or other transportation type, to account for the multimodal nature of many projects. Figure 6.4 shows this more detailed summary.

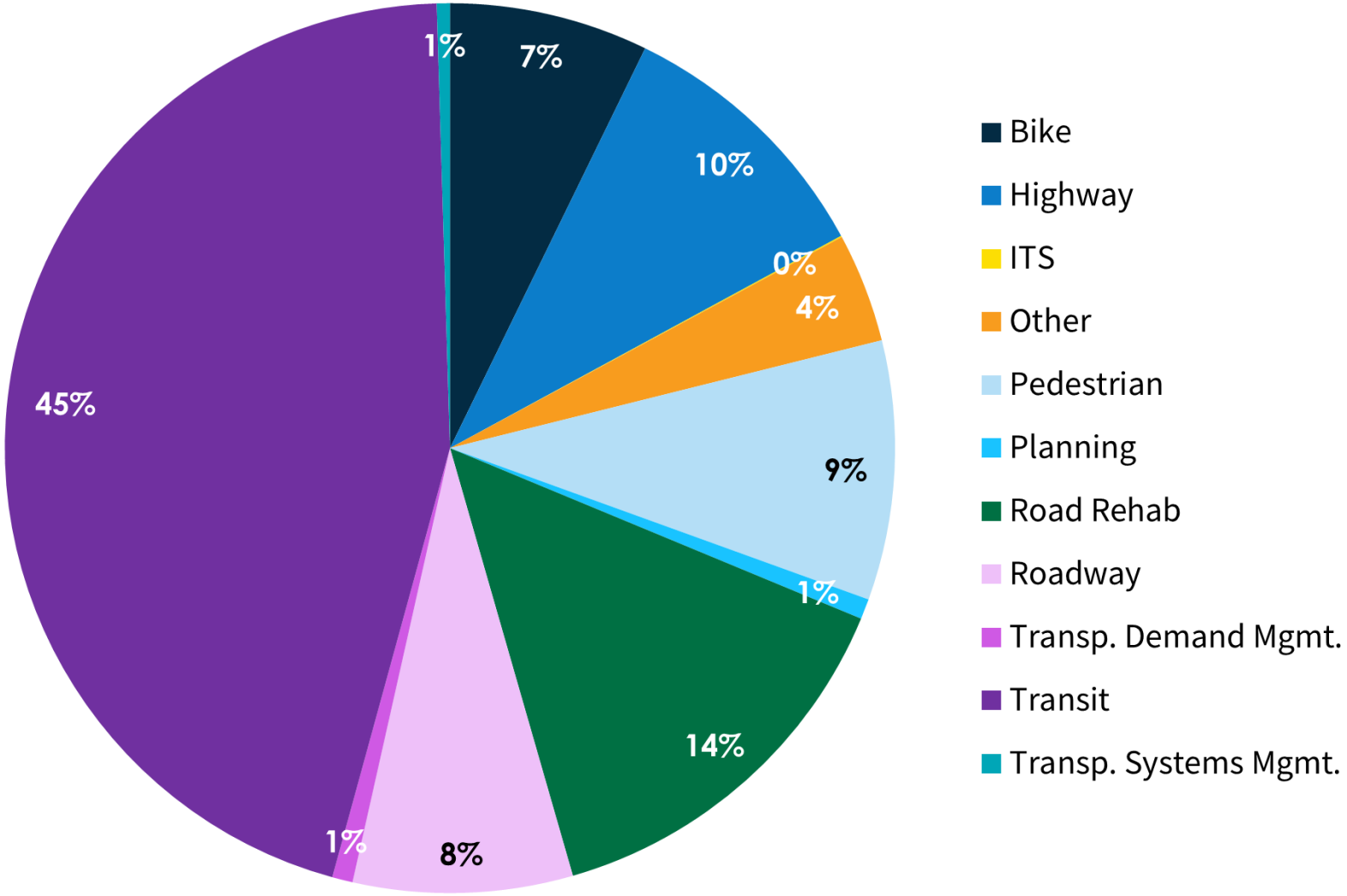


Figure 6.4 – $6.18 Billion Fund Distribution by Mode
Source: Santa Cruz County Regional Transportation Commission

THE NEED NEW FUNDS (UNCONSTRAINED) PROJECT LIST

While many projects can be funded within the revenues projected for the next 25 years, there are many proposed projects which still cannot be funded within projected revenues. Projects that "Need New Funds" (Appendix E – "Unconstrained" column) include projects that are not financially feasible through 2050, may be lower priority, have potentially significant environmental constraints, and/or do not advance regional targets to the same level as other projects. It represents the next tier of projects and programs that could be pursued if new revenue sources are generated or become available to the region.

These additional roadway projects, public transit services, pedestrian and bicycle facilities and other projects that are important to both the public and local agencies are feasible only if projected revenues are supplemented either through increased local taxes or other new local, state or federal funds.

IMPLEMENTING THE INVESTMENT PROGRAM

Together, the 2050 RTP's constrained and unconstrained projects reflect the wide range of transportation needs in Santa Cruz County and serve as the basis for investing future transportation funds. Development of the project list, however, is just the first step towards actual implementation of the projects, as the majority of the projects are not yet scheduled (i.e. programmed) to receive specific funding allocations. Figure 6.5 outlines the main steps that bring a transportation project through development, funding, and implementation. Project implementation can take from six months to 20 years, depending on the size and complexity of the project, the availability of funding, and whether or not the project is exempt from certain state and federal mandates. Often, a project is delayed during the environmental phase due to the need for several levels of federal and state agency approvals. In other cases, delays may be due to public concerns with a project.

Absence of reliable funding can create stops and starts during a project's development, which is particularly costly to transportation projects that require long lead times. A project may achieve a milestone only to find funding for the next phase has been postponed. Long lags between project phases can require project sponsors to redo costly studies to address updated conditions once funding for the subsequent phase becomes available. Reliable funding sources, as provided by Measure D, help to stabilize project costs.

Project Cost

Since most new projects must be shoe-horned into already built-up urban areas, it is not a simple or inexpensive proposition to add new highway lanes, widen city streets to add car or bicycle lanes and sidewalks, start new rail passenger service, or build

new bus facilities. Additionally, project costs identified in the RTP are estimates. Once a project undergoes environmental review and final design, the project cost estimate will be updated and may differ significantly from that shown in a large scale planning document such as the RTP. For instance, the cost of implementing transportation projects is subject to fluctuations in the prices of oil, steel and cement. Project delays, environmental constraints, neighborhood opposition, and right-of-way needs can also increase costs largely due to escalation costs and in some cases may even cause a funded project to be withdrawn. With limited funds available, project sponsors oftentimes are left with few options but to significantly scale back plans.

FUNDING DECISIONS

The policy and project lists within the 2050 RTP will help guide future funding decisions and reflect community's transportation priorities and potential feasibility. Projects will be considered for funding that come under the RTC's discretion based on their ability to meet criteria established by the RTC and their inclusion in the 2050 RTP.

This analysis of project benefits and ability to meet established grant criteria will occur during grant cycles for new federal, state and local funds, which generally occur every two years, depending on the program. Projects eligible for other state, federal and regional funding not under the RTC's discretion, also need to be included in the 2050 RTP project list and/or consistent with the adopted Regional Transportation Plan goals and policies. Construction of planned projects on this list is not assured until actual funds are allocated.

Building Transportation Projects

- **Need** - Need for project identified by a public agency, member of the public, a private business, or a community group.
- **Planning** - Project included in planning documents, such as the Regional Transportation Plan, State Highway Operation and Protection Program (SHOPP), General Plan, Climate Action Plan, and/or Capital Improvement Program. Public input is encouraged.
- **Scope Defined** - Project sponsor prioritizes project and develops preliminary cost estimates and defines scope of project. For highway projects, a Project Initiation Document (such as a Project Study Report) is prepared by Caltrans or a local agency with Caltrans oversight to provide this information.
- **Secure Funding** - Project sponsor seeks and secures funds for project. Project sponsors may approve local funds (e.g. general funds, gas taxes) in their annual budget, submit grant applications to other agencies for funds [e.g. RSTP (RTC), STIP (RTC and CTC), AB2766 (Air District), safety and bridge (Caltrans), etc], or seek voter approval for funds (e.g. sales tax measure, parcel fees). Projects approved for state or federal transportation funds are included in the Regional (RTIP), State (STIP), State Highway (SHOPP) and/or Federal Transportation Improvement Program. Public input is encouraged. Securing funding can take several years.
- **Environmental Review and Preliminary Design** - Analysis to ensure consistency with local, regional and coastal plans/ policies, identify environmental impacts and mitigation measures in accordance with state law (CEQA). Federally funded projects must also undergo NEPA review. Public input is encouraged. Depending on the size and potential impacts of projects, environmental review and preliminary design can take 1 month to several years.
- **Approvals** - Obtain approvals, agreements and/or permits from resource agencies. Approvals can take months to years.
- **Final Design** - Development of final design, includes development of project specifications and estimates used by contractors to bid on a construction project. Design can take 1 to 3 years.
- **Right of Way Acquisition** - Acquire rights of way and relocate utilities if needed. Acquisition can take months to 2 years.
- **Construction** - Prepare and advertise construction contract, hire construction contractor, and construct project. Construction can take months to 2 years.

Figure 6.5 – Typical Stages of Transportation Project Development
Source: Santa Cruz County Regional Transportation Commission

Notes for Chapter 6

1 "California Statewide Local Streets and Roads Needs Assessment," Save California Streets. (August, 2021). https://www.savecaliforniastreets.org/wp-content/uploads/2021/08/Statewide-2020-Local-Streets-and-Roads-Needs-Assessment-Final-8-4-21.pdf