

Appendix K
**Appendix B of the proposed Plan;
Implementation Actions**

Appendix B: Implementation Actions

This appendix provides detail on the commitments or key actions that implement the strategies described in San Diego Forward: The 2021 Regional Plan (2021 Regional Plan). While the San Diego Association of Governments (SANDAG) can directly implement many of the projects and policies included in the 2021 Regional Plan, there are several strategies that require partnership with local jurisdictions or other agencies. The three core strategies described in Chapter 2 are:

- **Invest in a reimagined transportation system:** Build a network and fund services that include multimodal roadways; an expanded network of fast, frequent, and low-cost transit; 21st-century technology that manages the entire transportation system and connects people to on-demand services; and zero-emission options for vehicles and micromobility.
- **Incentivize sustainable growth and development:** Collaborate with local jurisdictions and fund programs that accelerate housing production while also addressing the intertwined issues of equity, climate resilience, and mobility.
- **Implement innovative demand and system management:** Reduce solo driving and congestion through increased remote work, carsharing, vanpooling, pricing strategies, and parking-management programs that leverage partnerships and technology.

This appendix includes additional information on the near-term actions SANDAG will take to implement the 2021 Regional Plan in the next four years as well as the long-term/ongoing actions that SANDAG intends to take to continue implementation of the 2021 Regional Plan beyond 2025 through 2050.

Priority Implementation Actions for the 2021 Regional Plan

The following are ten priority actions for implementing the 2021 Regional Plan. Table B.1 describes the near-term and continuing actions associated with each priority implementation action. Many of these actions are cross-cutting and contribute to implementation of the three core strategies of the 2021 Regional Plan.

1. **Apply the Social Equity Planning Framework** and ensure that equity is considered throughout 2021 Regional Plan implementation.
2. **Develop Comprehensive Multimodal Corridor Plans (CMCPs)** to refine 2021 Regional Plan projects at the corridor level and qualify the region for future funding opportunities.

3. **Update SANDAG policies**, including the *TransNet* Ordinance, to reflect 2021 Regional Plan projects and priorities.
4. **Evaluate the transition to free public transit** and **develop a Value Pricing and User Fee Implementation Strategy**.
5. **Seek new local funding** in addition to pursuing state and federal funding opportunities.
6. **Advance the Next Operating System (Next OS)** by preparing technical and planning studies and initiating pilot opportunities.
7. **Implement the Regional Transportation Improvement Program (RTIP)** and near-term projects.
8. **Partner with local jurisdictions, tribal governments, agencies in Mexico, the military, and other agencies** on collaborative efforts to implement the 2021 Regional Plan.
9. **Expand regional programs and seek funding to fully support** low-carbon transportation options, roadway safety and maintenance, habitat conservation, and nature-based climate solutions.
10. **Advance a data science program** to better understand travel behavior in the region, update travel demand modeling tools, and improve transparency and reporting on program effectiveness and project delivery.

Table B.1: Implementation Actions

Implementation Actions	
Near-Term and Continuing Actions	
1. Apply the Social Equity Planning Framework and ensure that equity is considered throughout 2021 Regional Plan implementation	
<p>Near-Term Actions:</p> <ul style="list-style-type: none"> a) Develop criteria for project prioritization that advances equitable and safe transportation planning, spending, and implementation b) Partner with and provide funding for community-based organizations through the SANDAG Social Equity Working Group for the implementation of the 2021 Regional Plan c) Complete the following studies, plans, and strategies: <ul style="list-style-type: none"> o Regionwide Displacement Study o Digital Equity Strategy and Digital Equity Action Plan o Adaptation Equity Guidance Document o Regional Equity Baseline Conditions Study <p>Continuing Actions:</p> <ul style="list-style-type: none"> d) Apply the Social Equity Planning Framework through Regional Plan implementation e) Evaluate and monitor implementation of Social Equity Planning Framework 	
2. Develop CMCPs to refine 2021 Regional Plan projects at the corridor level and qualify the region for future funding opportunities¹	
<p>Near-Term Actions:</p> <ul style="list-style-type: none"> a) Partner with Caltrans, agency partners, and local governments to develop five initial CMCPs: <ul style="list-style-type: none"> o Central Mobility Hub and Connections o Coast, Canyons, and Trails – State Route 52 o North County – SPRINTER/Palomar Airport Road/State Route 78/State Route 76 o San Vicente – State Route 67 o South Bay to Sorrento – Purple Line/Interstate 805/Blue Line/Interstate 5 South b) Study additional six corridors to inform the next Regional Plan 	

¹ CMCPs could consider strategies identified in the 2021 Climate Action Plan for Transportation Infrastructure, such as exploring a Highways to Boulevards Conversion Pilot Program.

Implementation Actions

Near-Term and Continuing Actions

Continuing Action:

- c) Pursue funding opportunities for projects, programs, and services identified in completed CMCPs

3. Update SANDAG policies, including the *TransNet* Ordinance, to reflect 2021 Regional Plan projects and priorities

Near-Term Actions:

- a) Update *TransNet* Ordinance and associated SANDAG Board of Directors policies to reflect projects, policies, and priorities included in the 2021 Regional Plan
- b) Update evaluation and monitoring of projects using *TransNet* local streets and roads funds, including prioritization of safety for vulnerable road users in the development of complete streets
- c) Develop Regional Active Transportation Plan, including update of the San Diego Regional Bike Plan
- d) Develop Regional Vision Zero Action Plan, including Regional Safety Policy

4. Evaluate the transition to free public transit and develop a Value Pricing and User Fee Implementation Strategy

Near-Term Actions:

- a) Complete the following studies, plans, and strategies:
 - o Value Pricing and User Fee Implementation Strategy, guided by an advisory working group
 - o Regional Transit Fare Impact Study, including evaluation of the transition to free public transit
 - o I-15 Operational Study
- b) Partner with state agencies and other metropolitan planning organizations to design a comprehensive road usage charge pilot, assess equity impacts, and test mitigation strategies
- c) Pursue a ballot measure or another mechanism to assess a fee on the fares charged for rides provided by ridehailing service companies that encourages ridesharing

Continuing Action:

- d) Coordinate with the federal government, state agencies, and other metropolitan planning organizations to study and deploy pilot testing for a road usage charge, conduct public education and outreach, and test solutions to ensure the privacy and security of data collected

Implementation Actions

Near-Term and Continuing Actions

5. Seek new local funding in addition to pursuing state and federal funding opportunities

Near-Term Actions:

- a) Secure additional local funding for 2021 Regional Plan investments through a ballot initiative
- b) Assist in securing funding through California Senate Bill 1 (Beall, 2017), Federal Transit Administration Maintenance Programs, and additional future funding sources to help fund transportation rehabilitation projects

Continuing Action:

- c) Pursue funding opportunities that align with the goals of the 2021 Regional Plan

6. Advance Next OS by preparing technical and planning studies and initiating pilot opportunities

Near-Term Actions:

- a) Establish a Mobility Transportation System Management and Operations (TSMO) Advisory Working Group to guide the implementation of Next OS, identify enabling operational and technological policies for data sharing, develop cross-agency procedural guidelines for multimodal operations, and provide a forum for mutual technology innovation research
- b) Implement the Next OS Regional Border Management System to support the delivery of Otay Mesa East Port of Entry and pilot project implementation of Smart Intersection Systems, Curb Management, and Mobility Hub technology amenities
- c) Develop and implement a Digital Equity Strategy and Action Plan that will close gaps in high-quality broadband access essential to the future of transportation and advancing equity in the region
- d) Develop and begin implementation of the following studies, plans, and strategies:
 - o TSMO Plan
 - o Concept of Operations for Regional Smart Intersection and Curb Management Systems
 - o Chula Vista Mobility Hub Concept of Operations
 - o Concept of Operations for Mobility Data Clearinghouse
 - o Mobility Data Clearinghouse System Requirements
 - o Regional Intelligent Transportation Systems Architecture Update
 - o Harbor Drive 2.0 Concept of Operations
 - o 511 Traveler Information System Concept of Operations

Continuing Actions:

- e) Partner with local jurisdictions to develop and maintain the TSMO Plan to advance the development of Next OS future functionalities and coordinate with the private sector on joint opportunities for Next OS implementation
- f) Continue to work with local jurisdictions to maintain common standards for data sharing and data accessibility while protecting security and privacy and examine overall maintenance and operations of Next OS system applications

Implementation Actions

Near-Term and Continuing Actions

- g) Continue to work with regional and local stakeholders to ensure that TSMO initiatives are considered as a core component of local and regional transportation plans, programs, and investment strategies to help advance the planning, development, and implementation of Next OS

7. Implement the RTIP and near-term projects

Near-Term Actions:

- a) Implement the 2021 RTIP and build near-term projects: Bike Plan Early Action Program, Los Angeles – San Diego – San Luis Obispo Rail Corridor projects, and SR 11/Otay Mesa East Port of Entry
- b) Pursue applications with the California Transportation Commission and/or pursue legislation to implement Managed Lanes by repurposing existing shoulders and general-purpose lanes
- c) Complete the following studies, plans, and strategies:
 - o San Ysidro Mobility Hub Study
 - o Innovative Transit Priority Solutions Study
 - o Next-Generation *Rapid* Routes Advanced Planning
 - o Blue Line Trolley study to assess the ability to operate express and 24-hour service along the corridor
 - o Advanced planning for commuter rail and light rail improvements
 - o Transit Station Bathroom Access Plan
 - o Flexible Fleet Implementation Strategic Plan
 - o Fix It First Implementation Assessment
 - o San Diego and Imperial Counties Sustainable Freight Implementation Strategy
 - o Innovative Concepts for Connector Services

Continuing Actions:

- d) Build projects with an emphasis on safety for all road users to implement Vision Zero
- e) Continue to implement performance-based planning for federal performance measures related to safety; infrastructure condition; and system performance, freight, and Congestion Mitigation and Air Quality

8. Partner with local jurisdictions, tribal governments, agencies in Mexico, the military, and other agencies on collaborative efforts to implement the 2021 Regional Plan

Near-Term Actions:

- a) Jointly procure Flexible Fleet technology vendors and partner with member agencies, transit agencies, and community-based organizations to design, launch, and operate Flexible Fleet pilots

- b) Update evaluation criteria and provisions of SANDAG grant programs to:
 - o Encourage planning and capital projects that allow for higher-density and mixed-use development within Mobility Hub areas and/or transit priority areas
 - o Improve social equity
 - o Incentivize development of parking- and curb-management plans and pilots
 - o Advance roadway design with an emphasis on safety for vulnerable road users
 - o Implement Climate Action Plans (CAPs)
 - o Provide a process and structure for SANDAG design and review support for agencies regarding projects seeking grant funds to ensure new criteria and standards are met during the application process and project implementation
- c) Launch a regional housing incentive program to fund local plan updates in Mobility Hubs and/or transit priority areas that can lead to more housing in transit-rich areas with infrastructure, services, and jobs
- d) Provide design and review support for projects using local streets and roads funds to ensure new criteria are met
- e) Incentivize implementation of complete streets projects that complement regional investments within Mobility Hubs, along Complete Corridors, and supporting Flexible Fleets
 - o Formalize a Quick Build implementation program that includes guidance, resources, and partnerships with local jurisdictions to develop complete streets solutions
 - o Provide resources and funding to implement complete streets features and supporting technology, including secure micromobility parking, e-charging for micromobility and other Flexible Fleets, flexible curb-management solutions, support for e-commerce and urban delivery, and other Mobility Hub amenities
- f) Partner with local jurisdictions to update and refine regional Mobility Hub areas as mobility projects and land use changes are implemented, and periodically prepare an updated Mobility Hub map

Continuing Actions:

- g) Continue to coordinate with agencies in Imperial County, Riverside County, and Orange County on interregional planning efforts, and collaborate with partner agencies in Mexico to improve border infrastructure
- h) Continue to coordinate with the region's tribal nations on shared issues, including transportation infrastructure; energy; and conservation planning, forecasting, interoperability, and data collection
- i) Use the intergovernmental review process to evaluate consistency of development projects with the Sustainable Communities Strategy (SCS)
- j) Update and expand the housing incentive program to fund activities that accelerate construction of housing near transit
- k) Continue to provide technical resources and guidance to local jurisdictions to:
 - o Integrate 2021 Regional Plan projects, policies, and programs into local CAPs, and coordinate use of consistent data to align planning efforts
 - o Monitor greenhouse gas emissions and CAP implementation through Regional Climate Action Planning Framework (ReCAP) Snapshots, maintenance of the ReCAP Framework, and the Climate Action Data Portal
- l) Advance adoption of progressive curb and parking policies and strategies and Mobility Hub development

Implementation Actions

Near-Term and Continuing Actions

9. Expand regional programs and seek funding to fully support low-carbon transportation options, roadway safety and maintenance, habitat conservation, and nature-based climate solutions

Near-Term Actions:

- a) Complete the following studies, plans, and strategies:
 - o Electric Vehicle Charger Management Strategy
 - o Medium/Heavy-Duty Zero-Emissions Vehicle Blueprint
 - o Regional Carbon-Reduction Program Feasibility Study
 - o Regional Resilience Framework
 - o Regional Transportation Demand Management Ordinance Policy Analysis
 - o Regional Habitat Conservation Assessment of which the Environmental Mitigation Program is a component
- b) Regional electric vehicle incentive program
- c) A needs-based maintenance program that identifies and prioritizes infrastructure projects following best practices, cost-effectiveness, and those most essential to transit operations
- d) Resilient Capital Grants and Innovative Solutions program
- e) Nature-based climate solutions program that enhances habitat conservation, addresses regional stormwater needs, and offers carbon-sequestration benefits
- f) Launch an expanded habitat conservation program that complements the Environmental Mitigation Program, meets regional habitat conservation needs, and continues regional management and monitoring
- g) Transportation demand management grant and incentive programs, including e-bike, carpool, vanpool, and telework incentives

Continuing Actions:

- h) Partner across agencies, sectors, and organizations to pilot projects that reduce or eliminate vulnerabilities to climate impacts
- i) Partner with resource agencies, land managers, local jurisdictions, and the environmental science community to implement the regional habitat vision
- j) Continue to co-fund and promote the CALeVIP San Diego County Incentive Project to provide rebates for public, workplace, and multifamily electric vehicle charging stations
- k) Continue to administer and monitor the iCommute program by providing regional rideshare, employer outreach, and bike education and secure parking services to reduce commute-related traffic congestion and vehicle miles traveled

Implementation Actions

Near-Term and Continuing Actions

10. Advance a data science program to better understand travel behavior and issues in the region, update travel demand modeling tools, and improve transparency and reporting on program effectiveness and project delivery

Near-Term Actions:

- a) Use best available data and analytical tools to understand travel behavior and issues in the region
- b) Update travel demand modeling tools
- c) Develop and implement the Transportation Performance Management Framework to improve transparency and reporting on SANDAG program effectiveness and project delivery
- d) Prepare updated Regional Parking Inventory
- e) Develop Regional Crash Data Collection, Verification, and Analysis Program

Continuing Actions:

- f) Continue to monitor implementation of the Regional Plan on a four-year cycle and make data accessible through online tools
- g) Continue to monitor implementation of the SCS on a two-year cycle pursuant to California Assembly Bill 1730 (Gonzalez, 2019)

Policies, Planning, and Programs

Eleven policy and program areas were identified for the 2021 Regional Plan. An overview of each policy and program area and detailed information on the implementation actions, program costs, and social equity considerations for each are included in this appendix.

1. Land Use and Habitat
2. Housing
3. Climate Action Planning
4. Climate Adaptation and Resilience
5. Electric Vehicles
6. Parking and Curb Management
7. Transportation Demand Management
8. Vision Zero
9. Fix It First
10. Transportation System Management and Operations
11. Value Pricing and User Fees

2021 Regional Plan
Programs and Policies

LAND USE AND HABITAT

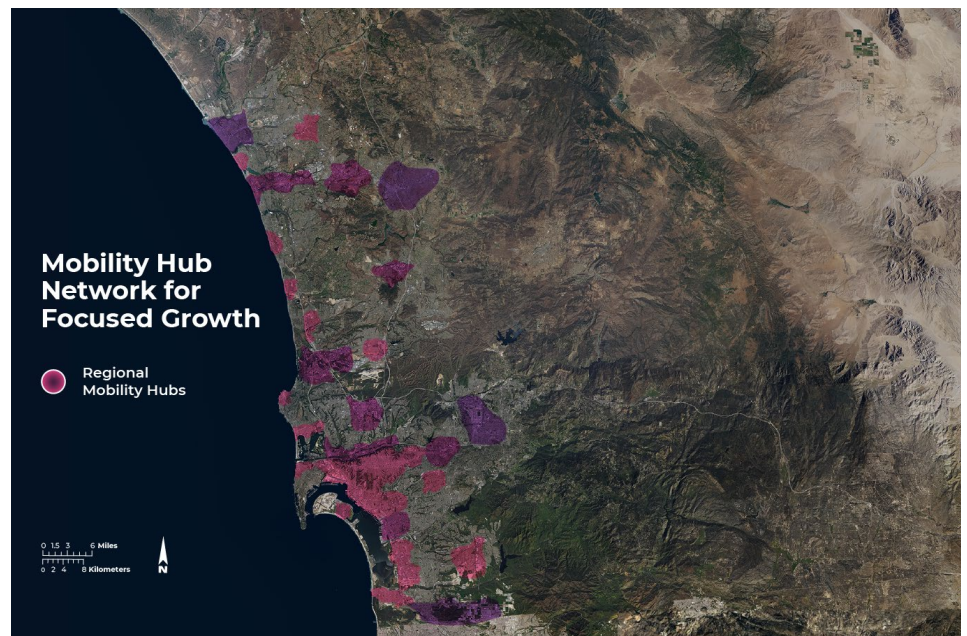


One of the San Diego region's greatest assets is its wealth of open space, which is used for preservation and recreation alike. However, our region's population is growing, and with it, development and traffic are increasing. To address these changes while preserving San Diego's open space, the 2021 Regional Plan will place a special emphasis on connecting our land use to our transportation system through transit-orientated development. Aimed at reducing the number of miles driven by single-occupant cars and creating mixed-use communities, transit-oriented development offers housing, commercial, and recreational options to an area while reducing greenhouse gas emissions and sprawl.

Land use and development patterns are at the foundation of many issues our region faces around affordable housing options, greenhouse gas emissions, equity, and mobility throughout our communities. The 2021 Regional Plan's Sustainable Communities Strategy brings land use development, transportation, policy, and programs together to achieve our region's goals of equitable, safe, and healthy communities for all.

The 5 Big Moves reimagine how we use land to accommodate population growth and address climate change and equity in the San Diego region. Mobility Hubs encourage a diversity of housing options, mixed-use development, and travel options within a centralized area. They connect people with their local communities and increase access to employment and educational opportunities throughout the region.

Mobility Hubs will be supported by Flexible Fleets and Complete Corridors to offer a well-connected network of transit and active transportation options, such as walking and biking. The map below demonstrates the proposed Mobility Hub network where future development will be focused, preserving the vast amount of open space and natural resources most valuable to the region.



What should I know about land use and regional growth?

Land use and regional growth policies outlined through the 2021 Regional Plan will build on the smart growth planning tools and projects that SANDAG and the region's cities and other local jurisdictions have put in place. These include the Smart Growth Concept Map and Smart Growth Toolbox, Designing for Smart Growth guidelines and scorecard, Smart Growth Incentive Program, and Transit-Oriented Development Strategy, among others.

What should I know about habitat conservation in the San Diego region?

The San Diego region is one of the richest biodiversity areas in the United States. Due to its diverse topography, geological conditions, and moderate climate, the region contains many rare and endangered species. Over the last three decades, the region has embraced the identification and conservation of lands to protect rare, threatened, and endangered species and their habitats while accommodating future population growth.

The San Diego region has about 1.3 million acres of conserved land and through SANDAG's Environmental Mitigation Program about 8,700 acres of that land has been preserved. These conservation efforts not only protect San Diego's wealth of open space and natural resources, but also help sequester greenhouse gas emissions and improve water quality.

Resources

TransNet Smart Growth Incentive Program and Active Transportation Grant Program
sandag.org/grants

Regional Transit Oriented Development Strategy
sandag.org/TOD

SANDAG Smart Growth Concept Map
sandag.org/smartgrowth

California Strategic Growth Council — Affordable Housing and Sustainable Communities Program
sgc.ca.gov/programs/ahsc

Land Use and Habitat

Implementation Actions

The 2021 Regional Plan vision for land use focuses on development and growth in Mobility Hub areas to preserve the region’s habitat and open space while supporting transportation investments and reducing vehicle miles traveled (VMT). Mobility Hubs are the opportunity areas to provide housing to address the Regional Housing Needs Assessment. Land use authority is reserved to local jurisdictions because they are best positioned to effectively implement the objectives outlined in the 2021 Regional Plan through understanding of the unique needs of their communities and geographies. Because land use authority is reserved to local jurisdictions, SANDAG will leverage partnerships with cities and the county through the Smart Growth Incentive Program and other grant programs to provide funds for transportation-related improvements and planning efforts that support smart growth in Mobility Hubs to realize this vision. Similarly, the regional habitat conservation efforts have envisioned “hubs” of protected natural lands connected by wildlife movement corridors that will allow the system to adapt to changing ecological conditions associated with climate change and be resilient to wildfire and emerging invasive species.

SANDAG will continue its existing grant programs, partner with member agencies on state funding opportunities, and provide data and technical support to assist local jurisdictions with land use planning efforts in line with the 2021 Regional Plan. To meet the region’s habitat conservation goals, the 2021 Regional Plan identifies approximately \$3 billion for habitat-related efforts. This includes \$2,087 million for an enhanced habitat conservation, management, and monitoring program; a \$565 million Nature-Based Climate Solutions Program that will promote both habitat conservation and restoration and carbon sequestration (See Climate Adaptation and Resilience programs); and \$300–\$500 million of land acquisition and restoration for habitat mitigation of transportation projects (incorporated in project costs presented in Appendix A: Transportation Projects, Programs, and Phasing).

Near-Term Implementation Actions

As a first step to realizing the 2021 Regional Plan land use vision, SANDAG will update the requirements of existing *TransNet* grant programs to align with the 2021 Regional Plan and encourage planning and capital projects that allow for higher density, mixed-use development within Mobility Hub areas and/or transit priority areas. SANDAG will utilize the intergovernmental review process to evaluate consistency of development projects with the Sustainable Communities Strategy.

SANDAG will complete a Regional Habitat Conservation Assessment, of which the Environmental Mitigation Program (EMP) is a component, to better understand the expected mitigation needs of the transportation projects proposed in the 2021 Regional Plan. SANDAG will also launch an expanded habitat conservation program that complements the EMP, meets regional habitat conservation needs, and continues regional management and monitoring.

Long-Term and Ongoing Implementation Actions

SANDAG will continuously support local land use planning efforts by providing data and technical resources as needed (reference Appendix F: Regional Growth Forecast and Sustainable Communities Strategy Land Use Pattern for data and information regarding the land use forecast). SANDAG will also support plans and land use decisions that are consistent with the Sustainable Communities Strategy through funding, letters of support, and assistance in taking advantage of available streamlining of the environmental review process (reference Appendix D: Sustainable Communities Strategy Documentation and Related Information for more information regarding the Sustainable Communities Strategy).

SANDAG will coordinate with relevant partners to implement the regional habitat vision described in Appendix AA: Regional Habitat Conservation Vision.

Partners

SANDAG has strengthened relationships with local jurisdictions, community-based organizations, land managers, natural resource agencies, and tribal nations throughout the region. SANDAG will seek to significantly expand partnership to include nonprofit organizations, developers, and other stakeholders. SANDAG will continue to work with its partners to provide data, information, and recommendations that lead to informed land-use planning decisions in line with the 2021 Regional Plan SCS land use pattern and regional habitat vision.

Program Costs

Land Use and Habitat Program Costs (in millions)				
Program	2025	2035	2050	Total
Planning and capital Mobility Hub/smart growth/VMT-reduction grants	\$50	\$150	\$200	\$400
Member agency resources to enhance development review/ processes/policies	\$10	\$50	\$75	\$135
Habitat conservation, management, and monitoring	\$169	\$555	\$1,363	\$2,087
			Grand Total	\$2,622

Total funding for habitat conservation is approximately \$3 billion based on the following investments:

- \$2,087 million for Habitat conservation, management, and monitoring program (included in Land Use and Habitat programs)
- \$565 million for a Nature-Based Climate Solutions Program (included in Climate Adaptation and Resilience programs)
- \$300-\$500 million for future habitat mitigation of transportation projects (included in project costs detailed in Appendix A)

Social Equity Considerations

Land use is the foundation in determining what is built where and how transportation systems connect work, home, and recreation. Ensuring equitable development starts with considering equity in land use decisions and patterns. By coordinating equity, land use, and transportation, we can better understand where historically marginalized communities are located and how to better connect them with opportunities throughout the region. SANDAG will consider how land use programs, projects, and policies it supports address social equity in relation to regional access to affordable housing, proximity to jobs and transit, opportunities for residents to live where they work and play, convenient access to multimodal transportation options, and other opportunities for work, commerce, and recreation. Implementing the regional habitat vision will allow the region to conserve natural habitats in addition to offering open space for residents and visitors to enjoy and explore.

2021 Regional Plan
Programs and Policies

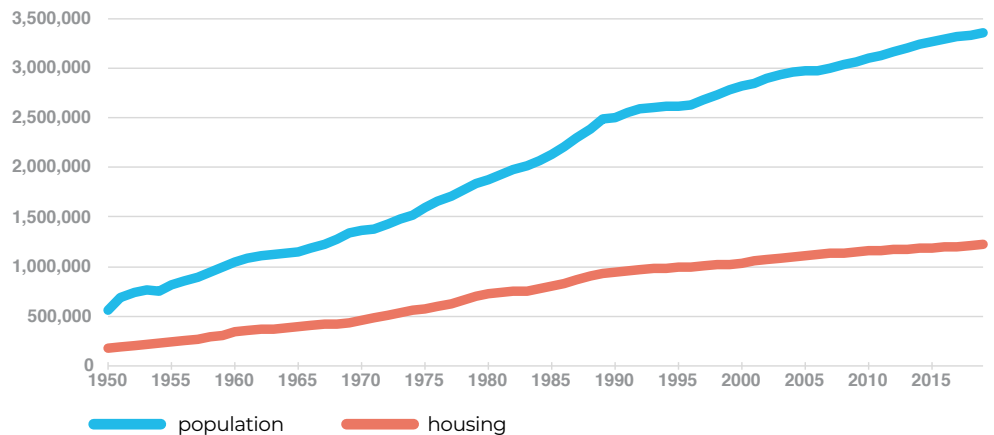
HOUSING

The State of California faces a persistent housing crisis, and San Diego County is no exception. More than 70% of San Diegans say housing affordability is a big problem across the region, especially for low-income families and younger residents.

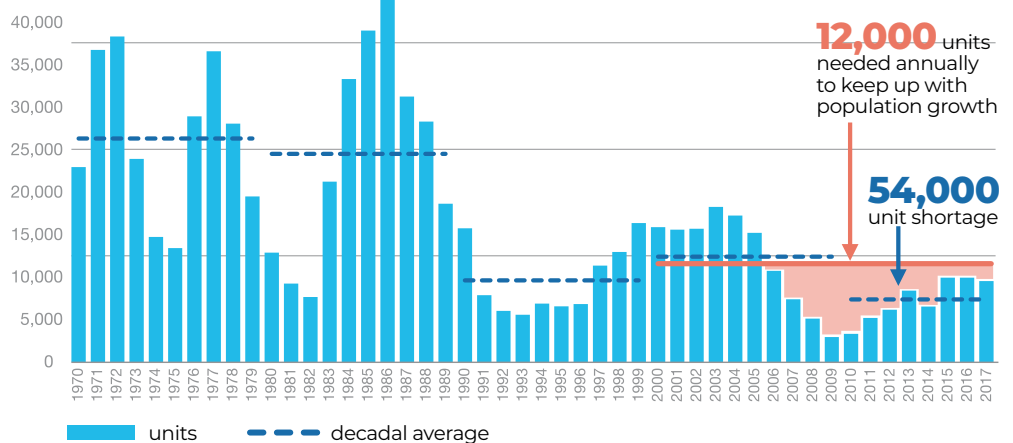
Addressing housing availability and affordability requires action at the local, regional, and state levels. For example, cities in the San Diego region have taken steps to increase affordable housing by making the development process faster and easier. The State of California offers grants to accelerate the production of housing and approves legislation that allows for more types of homes, like accessory dwelling units (see below), to be built statewide. Regionally, government agencies are considering how to better align housing policies with transportation initiatives because both contribute substantially to the region's cost of living.

Through implementation of the 5 Big Moves, the transportation system envisioned for the 2021 Regional Plan will bring more mobility options to where people live. The 2021 Regional Plan will also include policies to encourage new housing in Mobility Hubs, which are places of connectivity where a variety of transit and Flexible Fleet options come together.

San Diego region's growth in population and homes, 1950–2019



Number of new building permits issued in the San Diego region, 1970–2017



What are some strategies to increase housing availability and affordability?

Minimum zoning near transit: Zoning requirements dictate the types of structures that can be built on a parcel of land and establish development standards such as height limit, unit size, and density. Cities and counties can establish minimum zoning requirements near high-quality transit services that result in an increase in housing near transit. This locates residents near non-car transportation options, which can help reduce the number of miles that San Diegans drive. To encourage more transit use, cities and counties can also waive or lower parking requirements for housing near transit.

Permit process streamlining: Clear guidelines and permit processes for housing developers can reduce the cost and time it takes to build housing. Cities and counties can streamline the process by providing faster review for affordable housing, development that is consistent with the zoning code, and development that meets the design standards for the area.

Fee-waiver program: Cities and counties charge developers fees to cover the cost of providing water, sewer, street maintenance, and other services associated with new housing. Cities and counties can establish a program to waive some or all of these fees if developers build additional affordable units in their housing projects.

Accessory Dwelling Units (ADUs): ADUs—also known as granny flats, in-law units, or backyard cottages—are housing units on the property of a primary house. California Assembly Bill 881 (Bloom) and California Assembly Bill 671 (Friedman), both passed in 2019, require cities and counties to adopt an ADU policy that makes it easier for families to build these units.

Leveraging public land for affordable housing: Surplus and underused land owned by the federal, state, and local governments (as well as other public agencies, such as transit operators) can be leveraged to support affordable housing development. Government agencies can allow residential units to be built on surplus land or use the revenue from selling surplus land to fund affordable housing elsewhere. California Assembly Bill 1255 (Rivas) and California Senate Bill 6 (Beall), both passed in 2019, require state and local government entities to publish an inventory of surplus land in local and statewide databases. Local governments can adopt policies that make it a priority to use these lands for affordable housing.

What should I know about regional housing needs?

The Regional Housing Needs Assessment (RHNA) is mandated by state law. The RHNA process identifies how much housing the region needs—currently and in the future—to meet projected increases in population and the size of individual households. SANDAG is overseeing the sixth RHNA cycle. On November 22, 2019, the SANDAG Board of Directors approved the final methodology for allocating housing units to each city and county in the region based on the transit and jobs in each jurisdiction. Jurisdictions have until April 2021 to update their general plans to show how and where their city can accommodate the housing units allocated through the RHNA process.

Resources

Affordable Housing Regulations and Expedite Program
hcd.ca.gov/development-services/news-programs/ahrep

Accessory Dwelling Units
hcd.ca.gov/policy-research/AccessoryDwellingUnits.shtml

Regional Housing Needs Assessment
6th Cycle
sandag.org/RHNA

Local Early Action Planning (LEAP) Grants
hcd.ca.gov/grants-funding/active-funding/leap.shtml

Senate Bill 2 Planning Grants
hcd.ca.gov/grants-funding/active-funding/planning-grants.shtml

San Diego Housing Commission
sdhc.org

San Diego Housing Federation
housingsandiego.org

Housing

Implementation Actions

California is experiencing a housing crisis, with housing demand far outstripping supply. The 2021 Regional Plan addresses the housing crisis through Mobility Hubs, bringing locations where people live and work closer together and providing more housing options for more San Diegans through increased density. SANDAG will rely on building stronger partnerships with local jurisdictions to increase housing in the region, especially housing available to low-income residents. Through grant programs and technical support, SANDAG will serve as a resource and funding partner to assist local jurisdictions in reaching the region's housing production goals.

Near-Term Implementation Actions

As a first step to increase housing production, SANDAG is developing a regional housing incentive grant program to fund local plan updates that can lead to more housing in transit-rich areas, such as Mobility Hubs, with infrastructure, services, and jobs. The regional housing incentive program will include the development of a regional anti-displacement strategy, consider climate change and resiliency, and complement other SANDAG grant programs. Development of the regional housing incentive grant program is in progress and anticipated to be available to local jurisdictions in early 2022. SANDAG is anticipating additional state funds for transformative planning and implementation activities in 2022.

Long-Term and Ongoing Implementation Actions

SANDAG will continuously work with local jurisdictions and stakeholders to update and expand the housing incentive program to fund other activities that can accelerate the production of housing. SANDAG will coordinate with member agencies to implement strategies to support housing availability and affordability throughout the region.

Partners

SANDAG has strengthened relationships with local jurisdictions and community-based organizations throughout the region. SANDAG will seek to significantly expand partnership to include housing advocacy groups and affordable and market-rate housing developers. Together, we can work to ensure the development of housing—especially affordable housing—in the San Diego region.

Program Costs

Housing Program Costs (in millions)				
Program	2025	2035	2050	Total
Affordable Housing Grant Program	\$730	\$1,400	\$500	\$2,630
			Grand Total	\$2,630

Social Equity Considerations

SANDAG will increase equity in the region by furthering fair housing in resource-rich areas to provide low-income residents with greater access to jobs, educational opportunities, and other resources. SANDAG will also ensure its housing efforts do not lead to the displacement of current low-income residents in communities where housing growth occurs.

2021 Regional Plan
Programs and Policies

CLIMATE ACTION PLANNING

A climate action plan (CAP) is a comprehensive policy document that outlines the actions a local jurisdiction is taking or will take to reduce community-wide greenhouse gas (GHG) emissions. By offering technical assistance to local cities, SANDAG has been instrumental in advancing climate action planning in San Diego County. Nearly all of the region's 19 local governments have adopted or are currently developing a CAP.

Transportation is the largest source of GHG emissions in the state of California, accounting for 41% of emissions statewide in 2017. Reducing transportation emissions requires state, regional, and local actions. The 5 Big Moves are the initiatives that SANDAG is pursuing to create a more efficient and low-emission transportation system. This bold new vision for the region's transportation system will help cities and other public agencies achieve their CAP goals.

How can we reduce GHG emissions and achieve carbon neutrality?

The California legislature has set aggressive targets to reduce GHG emissions, and Executive Order B-55-18 set an overall goal of achieving "carbon neutrality" by 2045. Carbon neutrality occurs when the GHG emissions emitted into the atmosphere statewide are completely offset by an equivalent amount of carbon dioxide (CO₂) that is removed from the atmosphere. Removal can occur when forests, other natural landscapes, and agricultural crops take up carbon dioxide as they grow. California, SANDAG, individual cities, and other local jurisdictions all have roles to play in implementing the strategies needed to achieve these goals.

What should I know about climate action planning?

Climate action planning includes efforts to both reduce GHG emissions and prepare communities for the impacts of climate change. CAPs typically focus on reducing GHG emissions. Climate adaptation planning is equally important and includes strategies to prepare for sea level rise, extreme heat, prolonged drought, and more destructive wildfires. Since 2010, SANDAG has provided resources to advance climate action planning in the region.

2010

SANDAG launches Roadmap Program with no-cost energy-management assistance for member agencies

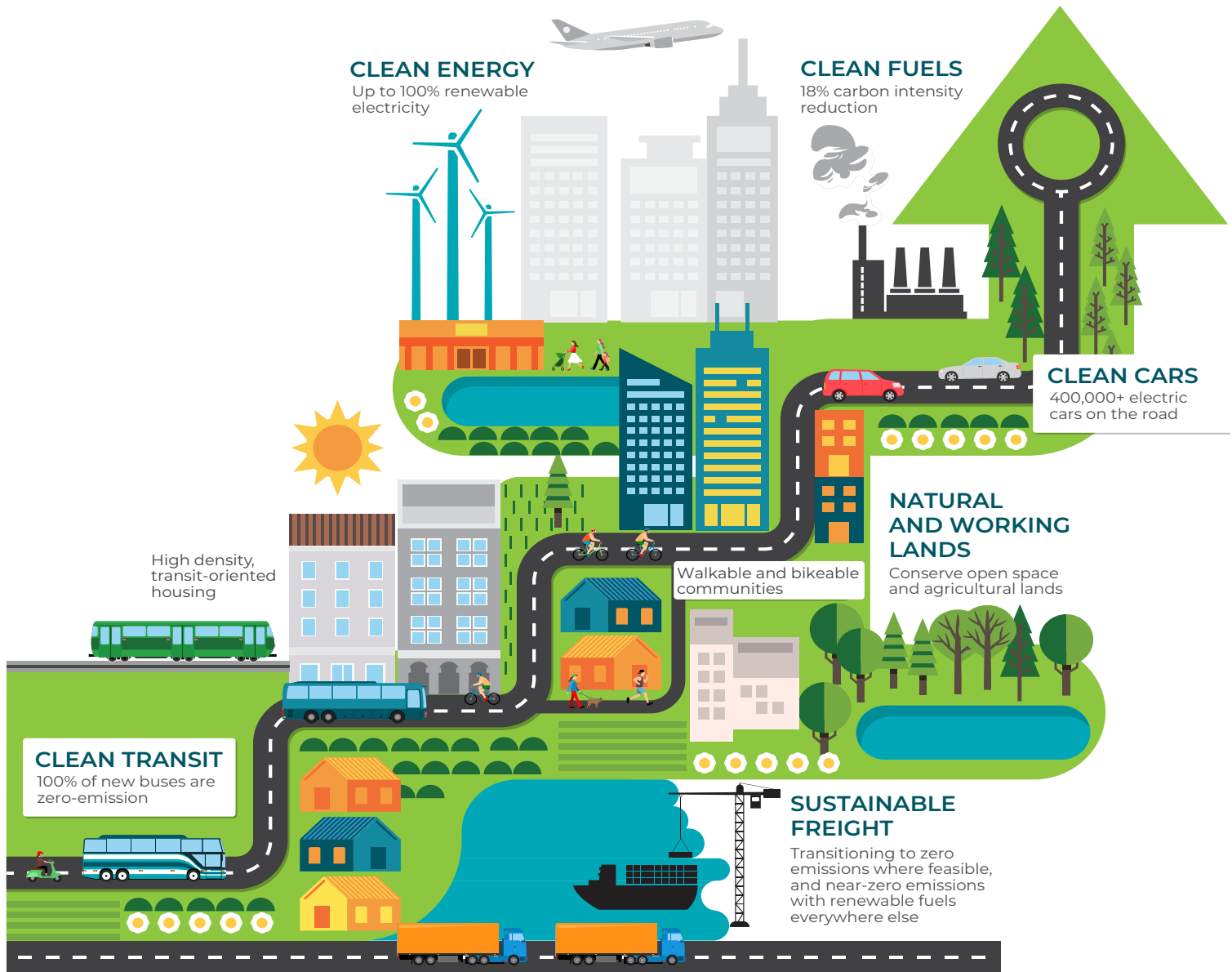
2016

Roadmap Program expands with support for CAP development, monitoring, and implementation

2020+

SANDAG will refine the program to support CAP monitoring and implementation of regional GHG-reduction and climate adaptation programs

2035 State Goals for the San Diego Region



Resources

Regional Climate Action Planning (ReCAP) Framework
sandag.org/climate

California Air Resources Board Scoping Plan
arb.ca.gov/cc/scopingplan/scopingplan.htm

Climate Action Planning

Implementation Actions

To help reach regional and state greenhouse gas (GHG) emissions–reduction targets, the 2021 Regional Plan focuses heavily on the conversion to clean transportation and a shift from personal vehicle dependency through the 5 Big Moves. To help local jurisdictions make this transition and achieve broader reductions in GHG emissions, SANDAG will provide technical assistance, guidance resources, templates, and grant funding to incorporate the 5 Big Moves and Sustainable Communities Strategy actions into their climate action plans (CAP) and plan for more well-connected, sustainable, healthy communities that are accessible to all.

Near-Term Implementation Actions

SANDAG will support local and regional efforts to implement and monitor CAPs by providing grant funding, guidance resources, and templates for CAP implementation. To enhance CAP monitoring, SANDAG will prepare Regional Climate Action Planning Framework (ReCAP) Snapshots to monitor GHG emissions and CAP implementation.

SANDAG will study potential program design options for the development, management, and maintenance of a Regional Carbon Reduction Program.

Long-Term and Ongoing Implementation Actions

SANDAG will continue to maintain the ReCAP Framework and Climate Action Data Portal providing consistent and reliable data and offer technical assistance to local jurisdictions as needed to assist with CAP implementation.

SANDAG will, if the Regional Carbon Reduction Program design study identifies a feasible option, continue to work with partners to manage and implement a regionally relevant Program.

Partners

SANDAG has strengthened relationships with our member agencies and advisory representatives, other public agencies, and utility providers throughout the region. Together, we can work to prepare, update, implement, and monitor climate action planning efforts. SANDAG will further expand and enhance its partnerships to include environmental stewards and land managers.

Program Costs

Climate Action Planning Program Costs (in millions)				
Program	2025	2035	2050	Total
CAP Monitoring Program	\$4	\$20	\$12	\$37
CAP Implementation Grants	\$20	\$100	\$150	\$270
Regional Carbon Reduction Program Management	\$6	\$50	\$75	\$131
			Grand Total	\$438

Social Equity Considerations

SANDAG recognizes that all residents, regardless of age, race, or income, deserve to live in safe and healthy communities and that climate impacts disproportionately affect low-income populations and populations of color. SANDAG will consider climate impacts and the equitable distribution of funding and program assistance for all communities across the region.

2021 Regional Plan
Programs and Policies

CLIMATE ADAPTATION AND RESILIENCE



Despite efforts to reduce greenhouse gas emissions, the consequences of global climate change continue to affect people around the world, public health, national and local economies, and the planet’s natural environment. Communities and people across our region will have to adjust how they respond to the impacts of climate change today and become more resilient as they face future impacts.

Adaptation is the way communities and people change how they respond to the impacts of climate change. Becoming more resilient means that the communities, local and regional

economies, and natural resources and recreational spaces that make our region special can endure, recover, and thrive in response to impacts of ongoing climate change. Anticipated impacts for the San Diego region include hotter and more frequent heat waves, prolonged droughts, more destructive wildfires and degraded air quality, more extreme precipitation and flooding, and rising sea levels and destructive storm surges. To advance the region’s climate adaptation and resilience efforts, SANDAG works with partners to advance regional projects, offers resources to member agencies, and analyzes vulnerabilities of the

transportation system, including which areas are prone to flooding and what we need to keep critical infrastructure available during an emergency.

The transportation system envisioned through the 5 Big Moves will incorporate strategies (summarized below) to improve regional resilience and better adapt to climate change impacts. For example, the transportation system must consider travel patterns and rapid mobility for evacuations and emergency response. Also, coastal infrastructure must be designed to withstand rising seas and storm surge.

How will ongoing climate change impact the San Diego region?

TEMPERATURE	WATER	SEA-LEVEL RISE	WILDFIRES	HABITAT
Increase of 5–10 ° F in annual average temperature by 2100; increased frequency, intensity, and duration of heat waves	Supplies of water will be highly variable, with wetter winters, drier springs, and more frequent and severe droughts that end with periods of intense rainfall	2.5 feet by 2050 and 6.6 feet by 2100	Longer and less predictable fire seasons, larger and more catastrophic fires, and a higher number of poor air quality days as a result	All of these will threaten the health of coastlines and beaches, wetlands, and plants and animals

How can the region become more resilient to the impacts of climate change?

- Consider climate change in all functions of government and across public and private sectors.
- Partner with vulnerable populations to increase equity and resilience through investments, planning, research, and education.
- Support continued climate research and data tools.
- Identify significant and sustainable funding sources to reduce climate risks, minimize harm to people, and increase spending for disaster relief.
- Maximize the use of natural lands, such as wetlands at the coast and agricultural and conservation lands, to help absorb the impacts of climate change. Wetlands can be natural buffers against rising seas and destructive storm surges. Agricultural and conservation lands, often in more rural communities, can serve as natural fire breaks against increased wildfires. Protected natural lands can also help absorb greenhouse gas emissions while providing many other societal benefits.
- Promote collaboration among federal, local, tribal, and regional government partners and across sectors to help communities better adapt to the impacts of climate change.
- Assess the vulnerability of critical infrastructure to the impacts of climate change.

What should I know about environmental planning work in San Diego?

Past and current environmental planning work at SANDAG has contributed to the region's climate resilience. Since the 1990s, SANDAG has helped coordinate adaptation efforts to preserve shorelines in the region, including two regional beach sand replenishment projects in 2001 and 2012. The San Diego region has about 1.3 million acres of conserved land, and about 8,700 acres of that land has been preserved, with a co-benefit of absorbing greenhouse gas emissions, through the SANDAG Environmental Mitigation Program.

Climate impacts facing California



Resources

Fourth Climate Change Assessment, San Diego Region Report
climateassessment.ca.gov/regions/

Safeguarding California Plan: 2018 Update
resources.ca.gov/CNRALegacyFiles/docs/climate/safeguarding/update2018/safeguarding-california-plan-2018-update.pdf

SANDAG Climate Resilience Program
sandag.org/climate/resilience

SANDAG Shoreline Management Program
sandag.org/shoreline

Climate Adaptation and Resilience

Implementation Actions

The San Diego region is anticipated to feel the effects of climate change through hotter and more frequent heat waves, prolonged droughts, increased wildfires, rising sea levels, and destructive storm surges. The 2021 Regional Plan aims to better prepare San Diego communities and habitats for these climate change impacts by considering evacuation and rapid mobility needs in our transit corridors, evaluating and considering climate vulnerabilities to the region's transportation infrastructure, and using natural lands and conservation to absorb and protect against climate change impacts. SANDAG will establish a coordinated effort across agencies and local jurisdictions for a more holistic, comprehensive, equitable, sustainable, and resilient region.

Near-Term Implementation Actions

SANDAG will establish a regional vision and coordination to enhance and sustain our existing planning and implementation obligations across agencies, sectors, and organizations through the development of a Regional Resilience Framework (a component of the Climate Adaptation and Resilience Program) and seek Board of Directors action elevating the SANDAG commitment to regional resilience.

A recently completed project, the Regional Transportation Infrastructure Sea Level Rise Assessment and Adaptation Guidance, is being leveraged to help inform the Office of Local Defense Community Cooperation Military Resilience Grant currently underway. The Regional Adaptation Needs Assessment, completed in 2020, is being used as the foundation for holistic implementation of adaptation and transportation resilience strategies, studies identifying measures that both mitigate and adapt to climate change, and a decision-making toolkit to help inform local government action, integrating economic and equity considerations.

In addition, SANDAG will establish a Nature-Based Climate Solutions Program that will promote natural infrastructure that uses or mimics natural processes to benefit people and wildlife. This will be achieved by: (1) conserving and restoring native habitats, which promotes regional biodiversity, provides carbon sequestration, and improves water quality; (2) use of "soft solutions" for new infrastructure to reduce vulnerability to the impacts of climate change for regional habitats and nature-based engineered systems; and (3) projects that promote the reduction of greenhouse gases through the sequestration of carbon and provide ecosystem functions and values.

Long-Term and Ongoing Implementation Actions

SANDAG will prioritize resilience and innovative solutions in transportation infrastructure, Comprehensive Multimodal Corridor Plans, and consistent regional planning and implementation of the Sustainable Communities Strategy actions, emphasizing nature-based and technological climate solutions. SANDAG will promote climate resilience projects through the Resilient Capital Grants and Innovative Solutions program, prioritizing communities most vulnerable to climate change.

SANDAG will pilot projects that reduce or eliminate vulnerabilities to climate impacts at the intersection of equity, technology, planning, design, construction, education, and collaboration for innovative solutions to regional resilience.

Partners

SANDAG has strengthened relationships with local, state, and federal agencies; tribal nations; community-based organizations; and utility providers to identify regional climate vulnerabilities, impacts, and opportunities to collaboratively plan for, respond and adapt to, and recover from now and into the future. SANDAG will seek to significantly expand partnerships to include land managers, emergency services, and clean technology and innovations partners to more comprehensively, efficiently, and effectively increase the region's capacity to grow from climate-related disruptions. Together, we can work to make the transportation system, critical assets, resources, and communities in our region safe and resilient to the impacts of climate change.

Program Costs

Climate Adaptation and Resilience Program Costs (in millions)				
Program	2025	2035	2050	Total
Climate Adaptation and Resilience Program	\$8	\$50	\$50	\$108
Nature-Based Climate Solutions Program	\$40	\$325	\$200	\$565
Resilient Capital Grants and Innovative Solutions	\$20	\$75	\$100	\$195
		Grand Total		\$868

Social Equity Considerations

SANDAG recognizes that climate change affects everyone, with low-income and communities of color disproportionately feeling those effects. Regional resilience is only possible if all communities and populations are prepared. The 2021 Regional Plan seeks to equitably prioritize climate resilience projects and increase public awareness of climate change across San Diego County.

2021 Regional Plan
Programs and Policies

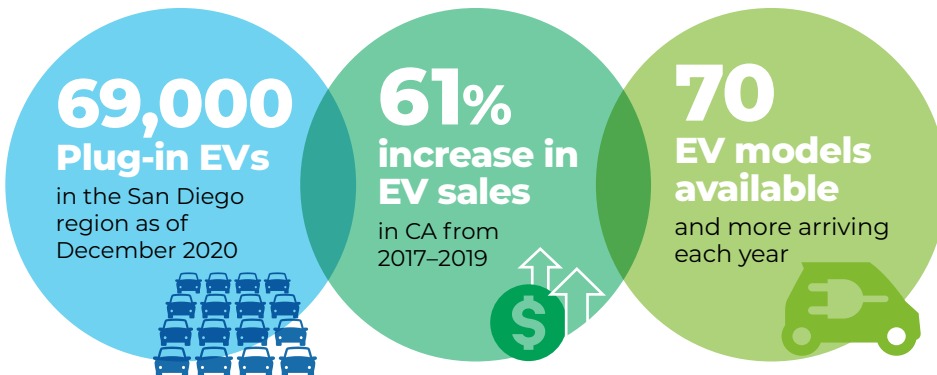
ELECTRIC VEHICLES



Electric Vehicles (EVs) use clean sources of power such as electricity and hydrogen. Unlike vehicles that use internal combustion engines to burn fossil fuels EVs do not produce harmful exhaust gases such as CO₂ and ozone. EV technologies are becoming more popular and affordable, and new EVs are appearing on the roads all the time. EVs include battery electric vehicles and hydrogen fuel cell vehicles, and they come in the form of passenger vehicles, light- and medium-duty vehicles (e.g., pickup trucks and delivery vehicles), and heavy-duty vehicles (e.g., semi-trucks and buses).

This wide range of EVs allows them to play a role in each of the 5 Big Moves. For example, Mobility Hubs and Complete Corridors will integrate EV charging and hydrogen stations into community activity centers and along key corridors. Transit Leap and Flexible Fleets services can adopt EVs for transit, passenger, and goods movement vehicles. The Next OS can help manage charging infrastructure, providing people with different payment options and monitoring activity.

Market forces



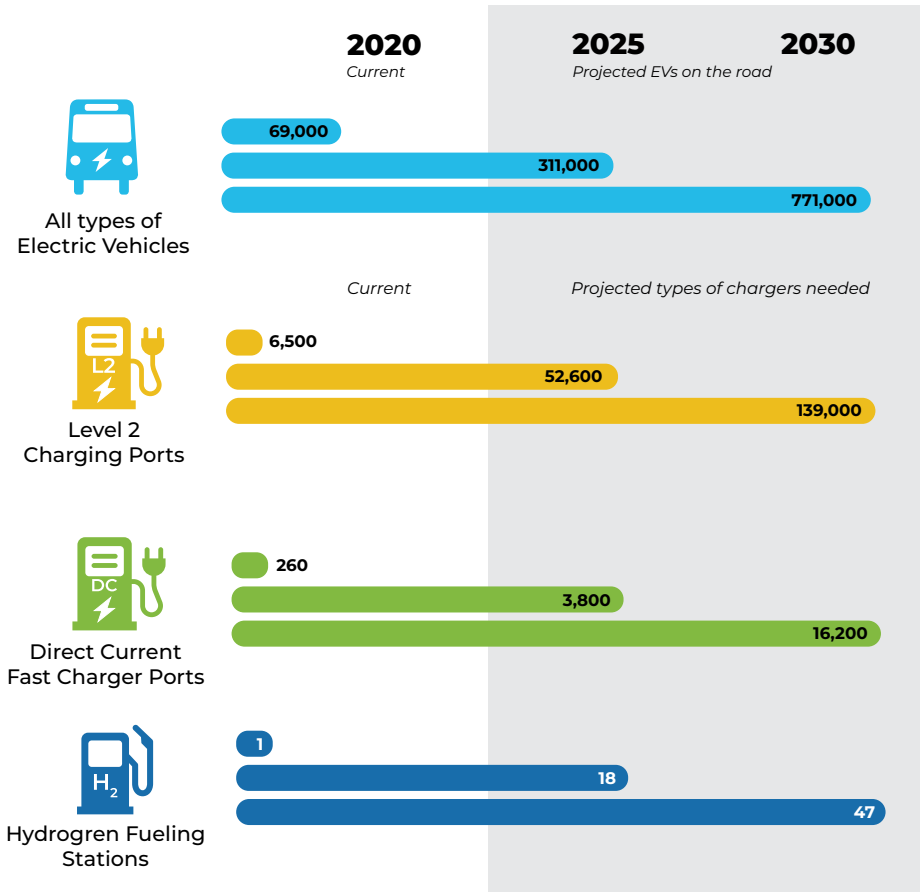
What EV goals have the state and the region made?

With 1.5 million EVs projected to be on California roads by 2025 and 7.9 million by 2030, SANDAG is planning for about 771,000 EVs in our region by 2030. Meeting vehicle and charger goals requires a quick adoption of EVs and a rapid installation of charging infrastructure.

What should I know about EVs?

SANDAG, the County of San Diego, SDG&E, and other regional entities are working together via the Accelerate to Zero Emissions Collaboration to make the San Diego region the national leader in electric vehicle adoption and clean transportation. As a sign of progress, transit operators are now piloting electric and hydrogen zero-emission buses.

San Diego Region Zero-Emission Vehicles Forecast



Source: Accelerate to Zero Emissions Collaboration, prepared by Black & Veatch

Resources

EV Infobit
sandag.org/uploads/publicationid/publicationid_2027_20605.pdf

SANDAG Plug-in SD Program
sandag.org/pluginsd

CALeVIP
calevip.org

SDG&E Electrification Projects
sdge.com/electrification-projects

A2Z Regional EV Gap Analysis
a2zsandiego.com/regional-gap-analysis.html

MTS Zero-Emissions Bus Pilot Program
sdmts.com/inside-mts-current-projects/zero-emissions-bus-pilot-program

MTS Zero-Emission Bus Rollout Plan
ww2.arb.ca.gov/sites/default/files/2020-12/SDMTS%20ROP_ADA113020.pdf

NCTD Zero-Emission Bus Rollout Plan
ww2.arb.ca.gov/sites/default/files/2020-09/NCTD-%20ROP%20Reso_ADA08122020.pdf

San Diego County EV Consumer Guide
sandiegocounty.gov/content/sdc/sustainability/ev-consumerguide.html

Electric Vehicles

Implementation Actions

The electrification of cars, trucks, and buses is a key initiative in the 5 Big Moves and the 2021 Regional Plan. Electrification is included in the 2021 Regional Plan as a way to reach regional greenhouse gas (GHG) emission–reduction targets. Electric vehicles (EVs) are zero-emission vehicles that include plug-in battery EVs and hydrogen fuel cell EVs. SANDAG aims to incentivize and encourage the incorporation of all types of EVs into Flexible Fleets, Transit Leap, and goods movement and to support funding programs that increase the number of EVs and charging stations throughout the region and within Mobility Hubs and as part of the Complete Corridor strategy.

Near-Term Implementation Actions

SANDAG will continue to co-fund and promote the California Electric Vehicle Infrastructure Project (CALeVIP) San Diego County incentive project to provide rebates for public, workplace, and multifamily EV charging stations. SANDAG will design and fund an EV incentive program for local residents.

SANDAG will also support the inclusion of EV policies in local climate action plans (CAPs) and develop an EV charger management strategy to streamline and increase charging at public agency parking lots. SANDAG, through the Accelerate to Zero Emissions Collaboration with regional partners, will establish a vision and strategy for transportation electrification of passenger vehicles, transit, and goods movement. SANDAG will develop strategies to identify key steps and regional actions needed to accelerate the transition to zero-emission goods movement and transit fleets.

Long-Term and Ongoing Implementation Actions

SANDAG will integrate transportation electrification into Comprehensive Multimodal Corridor Plans, Mobility Hubs, and Flexible Fleets (including micromobility). SANDAG will continue to coordinate with state and regional stakeholders to identify policies and funding opportunities for hydrogen fueling stations, charging infrastructure, and EV incentive programs. SANDAG will explore feasibility studies and pilots to showcase proof of concept for next-generation EV technologies such as wireless in-road charging. SANDAG will also continuously offer expert technical support to local jurisdictions and workforce development needs to accelerate the adoption of EV infrastructure.

Partners

SANDAG has a long history of working with our local and state partners, including the San Diego County Air Pollution Control District, San Diego Gas & Electric, Caltrans, and the Center for Sustainable Energy to develop regional EV plans and projects. SANDAG will also work with community-based organizations (CBOs), local governments, and other stakeholders to conduct outreach and education efforts. We plan to continue these partnerships to make the transportation system in our region equitable, accessible, and better for the environment.

Program Costs

The program costs summarized below would incentivize an estimated 110,000 zero-emission vehicles by 2035, approximately 33,000 Level 2 chargers by 2035, and an additional 29,000 Level 2 chargers by 2050. Incentives for zero-emission vehicles do not extend beyond 2035 since the state is planning for all new vehicles sold in California to be zero emission beginning in 2035. Additional details on how these programs contribute to the region’s California Senate Bill 375 (Steinberg, 2008) GHG-reduction target are included in Appendix S: Travel Demand Modeling Tools. In addition to the program costs below, EV considerations are integrated into other costs of the 2021 Regional Plan, including investments in EV charging at Mobility Hubs, incentives for e-bikes, and implementation of zero-emission Flexible Fleets.

Electric Vehicle Program Costs (in millions)				
Program	2025	2035	2050	Total
Incentives for Zero-Emission Vehicles	\$52	\$552	—	\$604
EV Charging Stations	\$45	\$134	\$91	\$270
Hydrogen Fueling Stations	—	\$100	\$150	\$250
Zero-Emission Buses and Infrastructure	\$75	\$250	\$332	\$657
Goods Movement Vehicles/Infrastructure	\$25	\$100	\$104	\$229
			Grand Total	\$2,010

Social Equity Considerations

Regionwide adoption of EVs requires affordable and convenient access to zero-emission options for all residents and businesses. The charger incentive program currently offers higher incentives for projects in disadvantaged communities and reserves a minimum of 25% of rebate funds for these installations. Future program updates will explore increases to this budget allocation. Greater technical assistance services are offered for applicants in communities of concern. The proposed vehicle incentive program seeks to prioritize rebate funds for low- and moderate-income households and explore incentivizing used vehicles. SANDAG will engage with CBOs in the design of its incentive programs and consider equitable distribution of funds and resources to communities across the region when considering EV infrastructure projects.

The new regional EV strategy that will be developed through the Accelerate to Zero Emissions Collaboration with regional partners will include engagement with CBOs and address social equity considerations in its purpose, policies, and recommendations. The Collaboration's steering committee also includes representatives from two equity-focused organizations. SANDAG is also committed to coordinating with regional stakeholders to accelerate the transition to zero-emission buses and trucks to meet state climate and environmental goals. As SANDAG develops clean transportation pilot projects, benefits accrued to disadvantaged communities will be a factor in determining pilot locations.

2021 Regional Plan
Programs and Policies

PARKING MANAGEMENT

Parking management aims to make the right amount of parking available when it is needed and price it so that alternative commutes are encouraged; construction costs are lowered; affordable housing is developed; and accessibility, equity, and economic development are promoted.

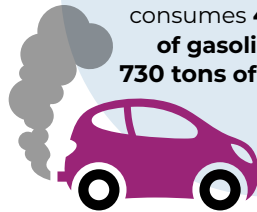
Abundant free parking encourages people to drive alone, and high-traffic areas can become more congested as drivers search for parking.

Existing parking policies often result in parking spaces that are underused and expensive to build.

The expense of building parking in many neighborhoods is absorbed by the people who live or do business there—even if they do not have a car, the cost is passed on to them through rent and the price of goods they purchase. The result is that free parking increases the overall cost of living.

As the region implements the 5 Big Moves, parking policies should evolve so we can use land more efficiently and encourage people to consider switching from driving alone to walking, biking, taking transit, carpooling, and using shared mobility. Parking policies should also adapt to the anticipated decline in parking demand as initiatives such as Transit Leap and Flexible Fleets make alternatives to driving alone more attractive.

A study in Los Angeles revealed that within one 15-block area, cars travel about **950,000 miles** annually looking for parking, which consumes **47,000 gallons of gasoline** and emits **730 tons of carbon dioxide**.



Building one parking space per housing unit increases total project costs by about **12.5%**. Building two parking spaces per housing unit can increase total project costs up to **25%**.



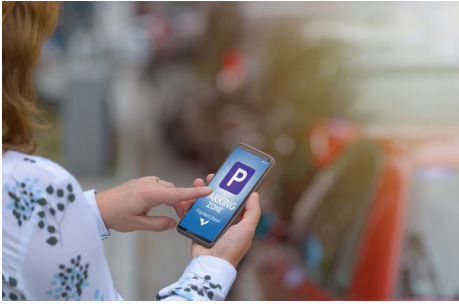
How would it work?

Reduced parking requirements:

Many cities require new developments to include a minimum number of parking spaces per housing unit or per square footage of commercial space built. However, if parking requirements were reduced or eliminated, developers would have greater flexibility to consider transit availability, walkability, cost, and other factors in their parking design. Additionally, having fewer parking spaces near transit may reduce demand for driving or owning a personal vehicle.

Unbundled parking and parking cash-out:

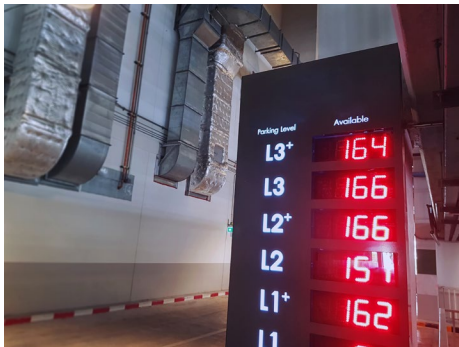
The expense of building parking is usually passed on to renters or included in the purchase price of a home whether or not residents own a car. "Unbundled parking" refers to renting or selling parking spaces separately, a practice that promotes choice and equity. Parking spaces can also be leased temporarily at workplaces, allowing employees to either pay for parking or receive a cash reimbursement if they commute to work in another way.



Parking pricing: Charging for parking spaces encourages turnover, which may help boost economic activity. Parking revenues can help recover the cost of building parking infrastructure, fund other local improvements, and provide enhanced mobility options.

What should I know about parking management policies in the San Diego region?

In the San Diego region, each jurisdiction is responsible for implementing its own parking policies. Several cities have implemented parking pricing, including the cities of Oceanside, Del Mar, La Mesa, Coronado, and San Diego. The City of San Diego was one of the first in the region to set limits on the number of parking spaces that developers can build for new residential developments. It also eliminated parking requirements in Transit Priority Areas (areas near high-quality transit). To further reduce the need to own or drive a car, the City uses parking revenues to help fund more travel choices like Neighborhood Electric Vehicle shuttles.



Real-time parking information: The Next OS will make it possible for signs and apps to display parking information in real time, making it easier to find a space.

Resources

SANDAG Regional Parking Management Toolbox
SDForward.com/parkingtoolbox

City of San Diego Transit Priority Areas Parking Reform
sandiego.gov/planning/programs/transportation/mobility/tpa

Victoria Transport Policy Institute–Parking Management Comprehensive Implementation Guide
vtpi.org/park_man_comp.pdf

2021 Regional Plan
Programs and Policies

CURB MANAGEMENT



A lot happens near the curb: people walk, dine outdoors, pick up and drop off passengers, park vehicles, deliver packages, and more. How we use curbs throughout the day can be managed through well-considered policies that integrate a variety of strategies and emerging technologies. The goal is to create flexible curb space that balances competing and changing needs. Demand for curb access continues to increase in urban areas, in part because of new mobility services and the continued rise of e-commerce.

- Ridehailing services increased 39% between 2009 and 2018
- Online retail sales now account for 10% of U.S. retail sales; just in 2019, e-commerce sales grew by approximately 15%
- Food delivery services represent between 5 and 10% of restaurant business

The 5 Big Moves will offer people more alternatives to driving alone, particularly within Mobility Hubs, where a variety of Flexible Fleets and Transit Leap services will come together. These services will make it easier for people to access transit and other community destinations. However, they may also result in curbside conflicts if curbs are not well-managed, causing frustration, unsafe roads, and more traffic congestion. Strategically managing curbs will bring harmony to this space and promote safety and efficiency.

Who uses curbs?

- Drivers
- People walking
- Sidewalk infrastructure
- Food trucks and mobile retailers
- Police, fire, and emergency medical services
- Parked vehicles and electric vehicle charging
- Couriers and delivery vehicles
- Transit, microtransit, and supporting infrastructure
- Rideshare and carshare
- Bikes, e-bikes, scooters, and supporting infrastructure
- Local businesses
- Accommodations for mobility-impaired people
- Parklets, trees, and other streetscape elements

How would it work?



Flexible use based on time of day

Flexible curbs can accommodate different uses throughout the day using the same infrastructure, thereby optimizing space and balancing competing demands. For example, in the mornings, curb space near a local restaurant might be best suited for delivery loading zones, but during the evening, the same curb space could convert to passenger loading zones.



Curb pricing

Charging for the amount of time you use the curb, whether it is for on-street parking or short-term passenger loading, can free up space and promote passenger loading, which also reduces congestion and boosts economic activity.



Real-time curb information

Next OS technologies will enable real-time curb management and allow people to locate, reserve, and pay for curb space, which can reduce traffic and double-parking.

What would it look like?

Curbside uses benefit more than just nearby businesses.

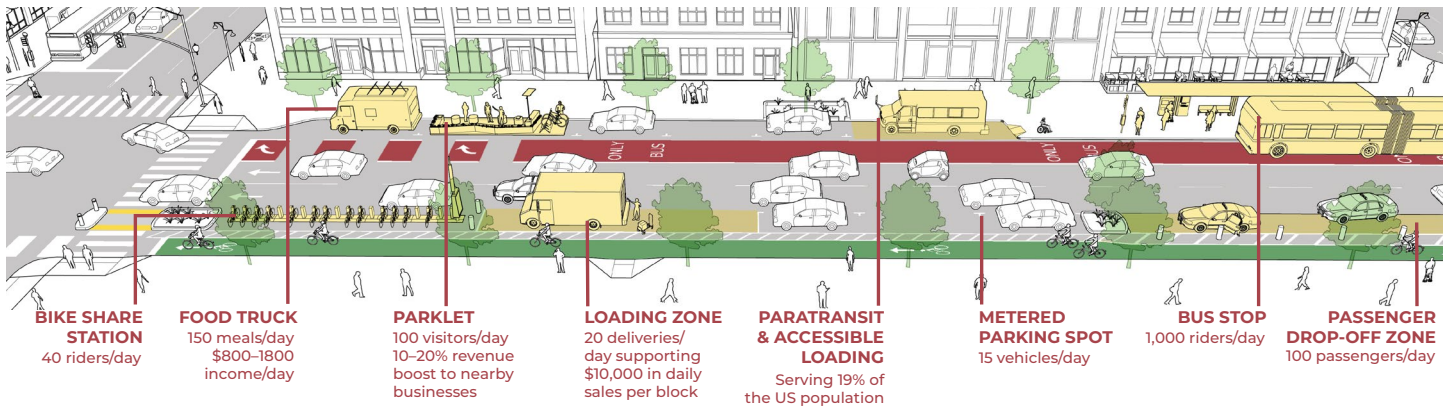


Image Source: National Association of Transportation Officials (NACTO)

What should I know about curbside management?

In the San Diego region, cities are responsible for adopting policies to manage curbs. Urban communities, such as the City of San Diego, are using innovative strategies to manage curbside space and reduce traffic congestion. For example, on weekend evenings, parking spaces on Fifth Avenue are converted to passenger loading zones. SANDAG can support the region's cities as they begin to plan and implement similar innovative curbside policies and pilots.

Resources

Curb Management Practitioners Guide
[ite.org/technical-resources/topics/complete-streets/curbside-management-resources/](https://www.ite.org/technical-resources/topics/complete-streets/curbside-management-resources/)

Curb Appeal
[nacto.org/tsdg/curb-appeal-whitepaper/](https://www.nacto.org/tsdg/curb-appeal-whitepaper/)

Shared-Use City: Managing the Curb
[itf-oecd.org/shared-use-city-managing-curb-0](https://www.itf-oecd.org/shared-use-city-managing-curb-0)

Parking and Curb Management

Implementation Actions

Proactively managing parking and curb space enables more people to access places within our communities using alternatives to driving. Effective parking-management policies contribute to the region's ability to meet the California Senate Bill 375 (Steinberg, 2008) greenhouse gas emissions-reduction target by applying parking pricing and reduced parking supply assumptions, which are included in the travel demand model (reference Appendix D: Sustainable Communities Strategy Documentation and Related Information). In addition, the 2021 Regional Plan addresses curb management by proposing strategies to help balance competing and changing travel needs at the curb while remaining flexible to resident, employee, business, and visitor needs. While the authority to implement parking and curb policies remains with local jurisdictions, SANDAG plays a unique role of informing these policies by sharing resources and best practices and serving as the regional Mobility Data Clearinghouse.

Near-Term Implementation Actions

SANDAG has recently completed a concept of operations (ConOps) for curbside management implementation in the San Diego region. The ConOps provides a high-level description of the digital system and how it will function and outlines roles and responsibilities in operating and maintaining the system. A ConOps is a critical step in the Systems Engineering process that informs the steps that follow, which eventually lead to project implementation.

Currently, SANDAG is also developing a regional parking inventory that will collect data needed to inform parking and curb management pilots envisioned in the 2021 Regional Plan. SANDAG is partnering with the City of San Diego to plan and pilot a priced parking district in the Pacific Beach Mobility Hub in conjunction with an on-demand neighborhood electric vehicle shuttle service. The pilot intends to improve parking availability, provide more connections to the Mid-Coast Trolley, and reduce drive-alone trips while serving as a model that SANDAG and potential partners can replicate to expand parking and curb management in the region. SANDAG will also offer new and updated technical resources that local jurisdictions can leverage for implementation, such as an updated Regional Parking Management Toolbox. SANDAG will integrate flexible curb management strategies into Mobility Hubs and Complete Corridor planning while pursuing pilots to test smart parking and flexible curb space technology throughout the region.

Long-Term and Ongoing Implementation Actions

SANDAG will continuously work with local jurisdictions to develop technical resources needed to implement progressive parking and curb management policies, such as a Regional Curb Management Strategy, while supporting the development of local parking and curb management plans and pilot deployment.

Partners

SANDAG has worked with several local jurisdictions in the region to implement effective parking management solutions. SANDAG will seek to expand partnerships with parking districts, local developers, employers, mobility service providers, and the California Coastal Commission to implement more progressive parking policies while integrating more curb management strategies that complement projects in the 2021 Regional Plan.

Program Costs

Parking and curb management elements are vital to the success of the 5 Big Moves, and, in addition to program costs displayed below, investments in technologies and infrastructure that support these policies are embedded into the cost of the network (detailed in Appendix A: Transportation Projects, Programs, and Phasing), including passenger loading zones and carshare parking at Mobility Hubs and curb access and parking technologies for Next OS.

Parking Management Program Costs (in millions)				
Program	2025	2035	2050	Total
Member agency resource/coordination	\$8	\$100	\$40	\$148
			Grand Total	\$148

Social Equity Considerations

SANDAG considers how parking and curb management can address social equity and how all residents in the San Diego region can benefit from its potential impacts. Such policies can enable affordable housing development and create equitable curb space for all travelers, including those who depend on modes like transit, biking, or other Flexible Fleets. SANDAG will ensure that pricing strategies are implemented in coordination with more convenient and accessible travel choices and mobility incentive programs as they become available.

2021 Regional Plan
Programs and Policies

TRANSPORTATION DEMAND MANAGEMENT



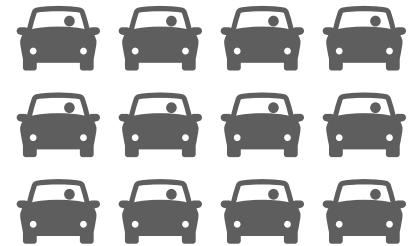
Transportation Demand Management (TDM) refers to policies and programs that help reduce commute-related traffic congestion. Typical TDM programs promote carpooling, vanpooling, taking transit, biking, and walking to work. When used widely, these alternatives—along with telework and compressed work schedules—can significantly reduce congestion on our region’s roadways.

As recently as 2019, 80% of commuters in the San Diego region drive alone to work, while only 12% carpool and 4% take transit. iCommute, SANDAG’s TDM program, offers several programs that promote alternatives to driving alone. In 2019, their programs made significant impacts on changing travel behavior:

- More than 4,800 vanpool participants saved more than 5 million gallons of gas
- 183 employees from 15 different employers signed up to try transit for the first time
- During Rideshare Week, employees who usually drive alone took 1,636 rideshare carpooling trips

Major highway and transit investments cannot eliminate traffic congestion alone; commuter behavior also will have to change. TDM strategies will succeed when people have a range of attractive travel choices. Existing commute patterns provided a starting point for SANDAG to reimagine the transportation system and develop the 5 Big Moves – Transit Leap, Complete Corridors, Mobility Hubs, Flexible Fleets, and Next OS. Implementing enhanced TDM strategies is vital to shaping travel behavior that supports the vision.

How would it work?



TDM Alternatives



Transit



Bike



Telework/
Flex Schedules



Rideshare/
Carpool



Walk



Vanpool



Who implements TDM and how?

SANDAG, cities and other local jurisdictions, and employers can implement TDM strategies.



Commuter Benefits

Programs and amenities such as secured bike lockers and free emergency rides home can make it easier for commuters to use transit and other alternatives to driving alone. **(SANDAG, jurisdictions, employers)**



Financial Subsidies

TDM programs can include financial incentives and pre-tax benefits that lower out-of-pocket costs for those who do not own a car or choose alternatives to driving alone. **(SANDAG, employers)**



Marketing, Education, and Outreach

Outreach events, educational campaigns, and marketing strategies help raise awareness of commute choices. **(SANDAG, jurisdictions, employers)**



Parking Management

Employers can offer cash incentives or transit passes instead of a parking space to encourage employees to choose alternatives to commuting alone in a car. **(Employers)**



TDM Policy

A TDM ordinance requires employers or developers to provide transportation benefits and amenities that encourage sustainable transportation choices. **(SANDAG, Air Pollution Control District, jurisdictions)**



Flexible Work Schedules

Employers can develop workplace policies that promote telework, flexible schedules, and/or compressed work schedules with the aim of reducing traffic congestion. **(Employers)**

What should I know about TDM in San Diego?

SANDAG operates a TDM program called iCommute for the San Diego region. iCommute manages the regional vanpool program, Guaranteed Ride Home services, bike encouragement programs, and various incentive and marketing programs, mostly through its work with more than 200 employers. On average, employers that work with iCommute have reduced the number of employees who drive alone to work by 10%.

Resources

SANDAG iCommute program
iCommuteSD.org

Victoria Transport Policy Institute TDM Encyclopedia
vtpi.org/tdm/

Transportation Demand Management

Implementation Actions

Transportation Demand Management (TDM) innovations have the potential to transform the way people travel within and between communities. Managing demands on the existing transportation system is a vital strategy for making the overall system more effective in reducing drive-alone commute trips. SANDAG will continue to administer and monitor the iCommute program by providing regional rideshare, employer outreach, and bike education and secure parking services to help reduce commute-related traffic congestion and vehicle miles traveled. Beyond commute trips, TDM programs are expanded to include grants and incentives that make it easier and safer to use active modes for short trips.

Near-Term Implementation Actions

SANDAG will continue to provide various programs, services, and financial subsidies that support sustainable transportation options. Given the impacts of COVID-19, SANDAG will update and expand the Regional Telework Assistance Program and will continue to monitor and study the transportation-related effects. SANDAG will also begin conducting outreach and policy analysis to inform development of a regional TDM ordinance. SANDAG will also develop a framework for new TDM grant and incentive programs that shift travel behavior to more sustainable modes. Local pilot projects and incentives that encourage use of new options like e-bikes would be included.

Long-Term Implementation Actions

SANDAG will refine a framework for a regional TDM ordinance by 2035 that could apply to businesses with more than 250 employees, incentivizing the preparation and implementation of TDM plans that address how employees will reduce drive-alone trips. The framework will include policy development and simultaneously conducting outreach to local jurisdictions, employers, and employees, in addition to seeking potential partners such as the San Diego County Air Pollution Control District.

Partners

SANDAG has forged strong relationships with local jurisdictions and large employers throughout the region to implement effective TDM solutions. SANDAG will seek to significantly expand partnerships to include the San Diego County Air Pollution Control District and additional jurisdictions, employers, professional business associations, mobility service providers, transportation advocacy groups, schools, and universities.

Program Costs

Transportation Demand Management Program Costs (in millions)				
Program	2025	2035	2050	Total
GO by BIKE	\$0.2	\$0.5	\$1	\$1
TDM Innovation and Shared Streets Grants	\$1	\$50	\$4	\$55
E-Bike Incentive	\$5	\$15	\$15	\$35
Program Administration	\$19	\$59	\$89	\$167
Commuter Services (Vanpool, Bike Parking, Guaranteed Ride Home)	\$18	\$35	\$56	\$109
Rideshare Incentive Program	\$1	\$1	\$2	\$4
Marketing, Outreach, and Education	\$11	\$23	\$35	\$69
TDM Ordinance (NEW)	\$8	\$40	\$60	\$108
Grand Total				\$548

Social Equity Considerations

SANDAG recognizes that all residents throughout the region deserve convenient, safe, and affordable commute options and will ensure equitable distribution of funding and incentive program assistance. SANDAG will ensure that all marketing, outreach, and education efforts reach underrepresented populations in the region. Additionally, SANDAG will continue to offer commuter programs and promote local mobility services that provide options for low-income or unbanked residents, such as providing access to secure bike parking with cash payment or other options not requiring a bank account or promoting shared mobility services that offer discounts to low-income individuals.

2021 Regional Plan
Programs and Policies

VISION ZERO



California is among the U.S. states with the highest number of fatalities involving people walking and biking, and traffic collisions are one of the top causes of injury and death in Southern California. The aim of a regional Vision Zero policy is to protect everyone who uses the roads, especially the most vulnerable—children, individuals with disabilities, and all people who walk, bike, and ride micromobility.

Vision Zero is a national campaign that uses a variety of strategies to work toward eliminating deaths and severe injuries on our streets. Human error is a reason for these crashes, but poorly designed roads also contribute to crashes being fatal. Speed can also have a significant impact on the severity of crashes and is another important factor in transportation-related deaths. Statistics show that low-income communities and communities of color are disproportionately affected by traffic-related injuries and fatalities, which indicates that establishing an equitable and inclusive transportation system is a critical component of achieving Vision Zero.

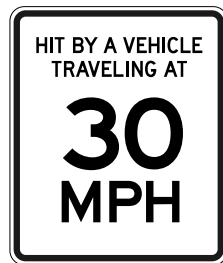
The 5 Big Moves will result in people having more travel options. By implementing safe street designs, slow speeds, and policies that promote safe movement, more people will feel comfortable choosing to walk, bike, and ride micromobility to get around their communities.

How would it work?

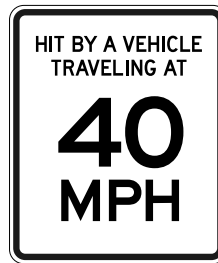
- Protect vulnerable users of our roads through road design and engineering
- Prioritize safety in local project funding decisions
- Educate drivers and other road users on traffic safety
- Engage communities to uplift local voices and proactively identify local issues
- Use data to understand inequities, including disproportionate impacts on communities of color and low-income populations, and actively work to address them



9 out of 10
pedestrians survive



5 out of 10
pedestrians survive



1 out of 10
pedestrians survive

What would it look like?

Streets that work for everyone



Street design that prioritizes the creation of safe and comfortable space for people who walk, bike, ride micromobility, and take transit prevents conflicts between people and vehicles traveling at different speeds. Lowering speed limits and designing streets in ways that reduce the speed of moving vehicles can help make crashes, when they do occur, less likely to be fatal. Using data and actively engaging communities helps to identify issues and supports the development of policies, programs, and infrastructure that reflect the unique needs of each community.

What should I know about Vision Zero?

Vision Zero strategies have been implemented in cities throughout the country, including a handful of cities in the San Diego region. Vision Zero aims to move beyond traditionally siloed approaches to traffic safety by implementing an integrated Safe Systems approach. Vision Zero is primarily focused on policies and roadway designs that affect people's choices, rather than individual educational and enforcement activities as in the past. By implementing street designs proven to encourage safe behavior, the need to correct for individual issues through strategies like traffic stops, ticketing, and fines can be reduced.

Many safety-related projects on our roads will be the responsibility of local jurisdictions, but a regional Vision Zero campaign can be a source of technical resources and funding to help keep people safe as they travel through the San Diego region.

Resources

City of San Diego Vision Zero
sandiego.gov/vision-zero

Vision Zero Network
visionzeronetwerk.org

9 Components of a Strong Vision Zero Commitment
slideshare.net/CarolynSzczeplanski/9-components-of-a-strong-vision-zero-commitment

CalSTA Zero Traffic Fatalities Task Force
calsta.ca.gov/-/media/calsta-media/documents/calsta-report-of-findings-ab-2363-zero-traffic-fatalities-task-force-a1ly.pdf

Vision Zero Equity Strategies For Practitioners
visionzeronetwerk.org/centering-equity-in-vision-zero/

Vision Zero

Implementation Actions

Traffic-related fatalities and serious injuries are a critical and preventable public health and equity issue in the region. Vision Zero is a national campaign to eliminate all traffic-related deaths and serious injuries by focusing on policies and the redesign of streets to create a transportation system that is safe for everyone. In adopting Vision Zero, SANDAG will work toward Zero by collecting and analyzing crash data to identify safety issues and recommend solutions; developing a regional safety policy; continuing to construct the Regional Bike Network; working with local jurisdictions to conduct outreach for and build out their complete streets networks; and funding educational programs, including opportunities to collaborate with tribal nations.

Near-Term Implementation Actions

SANDAG will develop and implement a regional safety policy. To develop this, SANDAG will study regional traffic safety data and engage communities in needs identification and policy development. SANDAG will also consider recommendations from the Zero Traffic Fatalities Task Force (California Assembly Bill 2363 [Friedman, 2018]) to implement the goals outlined in Vision Zero.

Long-Term Implementation Actions

SANDAG will continuously work with local jurisdictions to provide technical resources and assistance on roadway design and continue to build our projects from the Regional Bike Network with an emphasis on safety for all road users to implement Vision Zero. In the past, SANDAG has worked directly with local jurisdictions to provide training in bikeway design and planning practices, and we intend to expand these efforts in a comprehensive manner. This may include training, design review, project coordination, planning and project management support, and other identified needs as we work with our members.

Partners

SANDAG has a long history of working with our local jurisdictions, state agencies, and tribal nations to develop active transportation projects, including providing training, funding, and resources for planning and construction. SANDAG also constructs active transportation projects on behalf of our partners, as laid out in their planning efforts. We also work with community-based organizations, schools, and elected officials to conduct outreach and education efforts. We plan to continue to partner with these agencies and groups to make the transportation system in our region safe and comfortable for every person who uses it.

Program Costs

Vision Zero Program Costs (in millions)				
Program	2025	2035	2050	Total
Member agency project resource/coordination	\$6	\$25	\$15	\$46
Community-Based Education	\$4	\$25	\$25	\$54
Capital and Planning Grant	\$25	\$150	\$150	\$325
			Grand Total	\$425

Social Equity Considerations

Statistics show that low-income communities and communities of color are disproportionately affected by traffic-related injuries and fatalities, which indicates that establishing an equitable and inclusive transportation system is a critical component of achieving Vision Zero. As described in the SANDAG Equity Framework for the 2021 Regional Plan, SANDAG will prioritize consideration of and outreach with marginalized communities to make transportation safe and convenient for every person in the region.

2021 Regional Plan
Programs and Policies

FIX IT FIRST



The safety and maintenance of roads and infrastructure are major concerns for San Diegans. Wear and tear on the region's roads, transit vehicles, and other infrastructure can cause safety concerns and economic losses. Enhancing the existing transportation system with new projects and investing in maintenance of existing infrastructure can make it possible for the San Diego region to have a world-class transportation system.

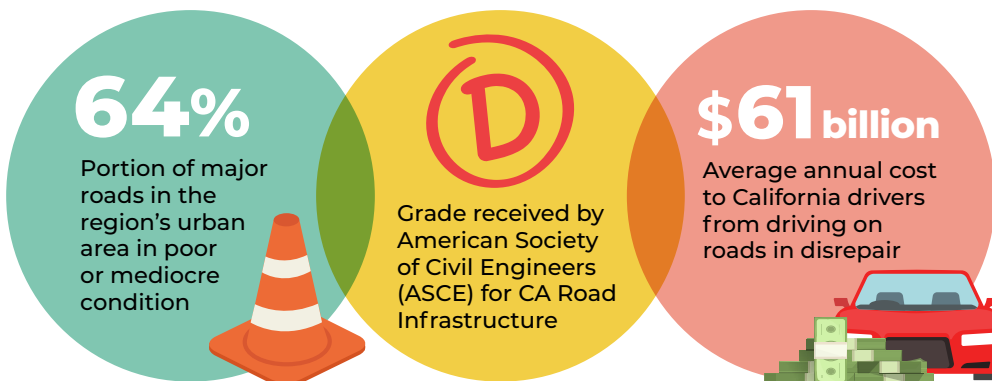
The 5 Big Moves will build on our existing transportation network and add new connections around the region. By making improvements to maximize use of existing infrastructure, we can make sure our investments are optimized.

How would it work?

- Using technology to monitor infrastructure and assess maintenance needs
- Bringing transit and road infrastructure back to optimal performance
- Prioritizing high impact projects and strategically managing infrastructure life-cycles

What would it look like?

- Up-to-date regional infrastructure that is resilient to natural disasters and other stressors
- A transportation system that is cared for, safe for all users, and efficient
- Infrastructure that will support the 5 Big Moves investments in services and technology



What should I know about the condition of local infrastructure?

California received a “D” in Roads and a “C-“ in Transit from ASCE 2019 Infrastructure Report Card. Cities monitor and address their own infrastructure needs. Providing technology and funding support at the regional level allows cities and other local jurisdictions to prioritize the improvement of aging infrastructure. SANDAG currently allocates a portion of its revenue to projects that maintain our transportation network. Dedicated funding for the operation, maintenance, and rehabilitation of transit, highways, local streets, and roads makes up slightly more than a third of SANDAG’s total expenditures.

SANDAG also supports high-priority maintenance and repair projects, such as stabilization of the Del Mar Bluffs. This project is working to stabilize portions of the 1.6 miles of coastal bluffs between Coast Boulevard and Torrey Pines State Beach in the City of Del Mar, which is an integral segment of the rail corridor that facilitates passenger and freight movements between San Diego County, Los Angeles, and points beyond.

Resources

ACSE report card on California’s infrastructure (Region 9)
ascecareportcard.org

San Diego Transportation by the Numbers
tripnet.org/wp-content/uploads/2018/08/CA_San_Diego_Transportation_by_the_Numbers_TRIP_Report_Aug_2018.pdf

Del Mar Bluffs stabilization



Fix It First

Implementation Actions

The 2021 Regional Plan envisions many improvements to the San Diego transportation system and network to set the region up for success as a world-class transportation system. To optimize investments in the region's transportation infrastructure, the Regional Plan and the 5 Big Moves focus on improving upon existing roads, rails, and sidewalks. The Fix It First strategy aims to repair existing roads and create a system for sustained maintenance in the future, creating a safe and efficient transportation network for all users.

Near-Term Implementation Actions

SANDAG will create a framework to identify and address preservation needs for the region's transportation system. Framework development will begin with evaluating current maintenance and preservation practices, data availability, and data needs. Life-cycle cost strategies and other best practices from national leaders in asset management and preservation will inform the framework. Treatment selection guidance, project prioritization, and phasing processes will be evaluated for inclusion. The framework will balance the needs of current and future preservation and responsible public spending.

Long-Term and Ongoing Implementation Actions

Asset preservation is a long-term and ongoing commitment. SANDAG will continue to manage and implement the transportation system preservation framework through the horizon year of the 2021 Regional Plan. Framework priorities and structures will be managed and updated to match changes in real-world conditions. Quantitative facility condition data will feed back into the framework to provide information needed to update framework components.

Partners

SANDAG has developed strong relationships with local jurisdictions, Caltrans, and federal agencies to provide funding and resources for planning, construction improvements, and maintenance needs. SANDAG will continue to partner with these agencies to make the transportation system in our region safe and efficient for all users.

Program Costs

The 2021 Regional Plan does not include specific program investments for Fix It First strategies. Costs associated with maintenance and rehabilitation of the transportation system are incorporated into the capital investments defined in Appendix A: Transportation Projects, Programs, and Phasing and will be updated for future Regional Plans using the framework identified as a near-term action.

Social Equity Considerations

Special attention will be paid to the location of transportation maintenance investments relative to the location of social equity focus populations to ensure these groups are not disadvantaged by investments or disproportionately burdened by transportation system maintenance. Along with maintenance project location, the frequency, treatment type, and quality will be monitored.

2021 Regional Plan
Programs and Policies

TRANSPORTATION SYSTEM MANAGEMENT AND OPERATIONS



A variety of tools and strategies are necessary to effectively operate and manage transportation infrastructure as a coordinated regional system, including the roadway network, transit system, and active transportation facilities.

In this coordinated multimodal approach, the entire system will be connected by technology that will help people decide which routes to take and what forms of transportation to use. This technology will also help operators

manage demands on different parts of the transportation system, including bus and train lines, major transit centers, and roads and highways. This management system is a part of the Next Operating System (Next OS), the electronic nervous system of the region's transportation network. Policies governing Next OS and data and institutional governance structures will ensure that the transportation system can support the technology the region needs.

The policies governing the use of technology within the transportation system can be designed to work in tandem with infrastructure improvements for Complete Corridors and Next OS. The ultimate goal is to make sure that people have the information they need to travel seamlessly through the region's entire transportation system.

What system management and operations efforts are already underway?

Five local, regional, and state agencies collaborated on system performance for freeway, local roads, and transit for the Interstate 15 Integrated Corridor Management project. One result of this collaboration is that local roadway signal timing is coordinated with freeway ramp meters to better manage traffic entering and exiting the freeway during major incidents. The focus remains on the users of the freeway and major roadway networks regardless of who owns or operates the individual systems. This is an example of an operational governance process change agreed upon by local and state agencies in an effort to improve management and operations across networks and across agencies.



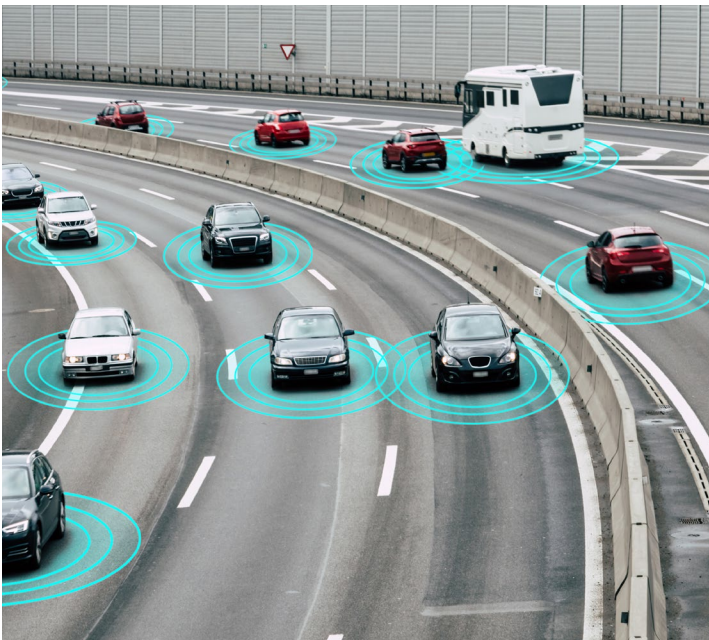
What does it look like?

Transportation systems management and operations encourages agencies to combine tools, resources, and solutions to achieve greater performance of the entire system. Integration can happen with:

- Systemwide investments to integrate corridors into one managed network
- Support for information sharing between technology providers and fleet operators
- Coordination of operational strategies so that corridor, regional, or system objectives are achieved
- Embedding transportation systems management and operations policies, governance, and processes into an agency's normal way of doing business, including planning, program management, and infrastructure improvements:

Who will be responsible for integrated management?

SANDAG, Caltrans, local agencies and jurisdictions, and transit providers will be responsible for developing the policies that will allow the region to integrate systems for coordinated management of transportation.



Resources

U.S. Department of Transportation, Transportation Systems Management and Operations (TSMO) Plans
ops.fhwa.dot.gov/plan4ops/tsmo_plans.htm

Transportation Systems Management and Operations (TSMO) Resource Connect
transportationops.org

U.S. Department of Transportation, Integrated Corridor Management
youtube.com/watch?v=xWPyzgFif7w

Transportation System Management and Operations

Implementation Actions

Transportation System Management and Operations (TSMO) employs a series of intelligent transportation system strategies designed to maximize the capacity and efficiency of the existing and future transportation system. Historically, existing transportation systems are operated and managed as independent systems, resulting in inefficiencies and/or ad hoc planning and implementation of projects that only address project-specific needs and not the particular needs of transportation customers.

TSMO includes the establishment of institutional and governance actions to help advance and facilitate cross-agency collaboration to ensure existing and proposed transportation systems are not operated or managed as independent systems but as a multimodal transportation system. TSMO activities focus on determining how people, processes, and tools can facilitate increased cross-agency collaboration during the planning, development, and operations of intelligent transportation system strategies like the Next Operating System (Next OS), Active Transportation and Demand Management (ATDM), and Smart Intersection Systems (SIS). These strategies will help SANDAG coordinate the management of the complete corridor system across jurisdictions and operators that include capital and technology investments.

Near-Term Implementation Actions

SANDAG will partner with local jurisdictions to develop and maintain the TSMO Plan and will coordinate with the private sector on joint opportunities to improve transportation infrastructure.

SANDAG will establish a Mobility TSMO Advisory Group. This body can include multiple-discipline mobility representatives, technology industry experts, and local and regional transportation system operators. This body will help guide the implementation of the TSMO Plan and can serve as a regional advisory body to help advance the implementation of Next OS, help identify and establish enabling operational and technological policies for data sharing, establish cross-agency procedural guidelines for multimodal operations, help provide a forum for mutual technology innovation research, and deploy pilot projects.

Additionally, SANDAG will develop and implement a Digital Equity Strategy and Action Plan that will close gaps in high-quality broadband access essential to the future of transportation and advancing equity in the region.

Long-Term Implementation Actions

SANDAG will continuously work with local jurisdictions to maintain common standards for data sharing while protecting security and privacy.

SANDAG will ensure that TSMO initiatives are considered as a core component of local and regional transportation plans, programs, and investment strategies.

Additionally, SANDAG aims to promote and advance the TSMO Plan in daily operations, long-term regional and local transportation-planning initiatives, and project development and implementation processes. Embedding TSMO Plan initiatives into these processes can ensure compliance with regional, state, and federal regulations and maintain consistency with local agency initiatives. This effort will support the implementation of Next OS and technology components of the Complete Corridors, Transit Leap, Mobility Hubs, and Flexible Fleets.

Partners

SANDAG has developed strong relationships with local jurisdictions, as well as Caltrans, transit operators, and regional stakeholders to provide cross-agency collaboration for planning and infrastructure improvements. SANDAG will continue to partner with these agencies to make the transportation system in our region safe and efficient for all users.

Program Costs

System Management and Operation Program Costs (in millions)				
Program	2025	2035	2050	Total
ATDM and SIS	\$681	\$2,855	\$1,223	\$4,759
Next OS	\$66	\$62	\$100	\$228
			Grand Total	\$4,988

Social Equity Considerations

SANDAG recognizes the importance of designing and identifying technological tools used in TSMO that respond to the needs of the entire community (e.g., voice-activated multilingual applications, traveler information kiosks, and mobile apps) to ensure the transportation system works for everyone throughout the region.

SANDAG recognizes that communications infrastructure plays a pivotal role in the implementation of Next OS. Developing a regional communications digital strategy to address the digital divide will set forth a regional roadmap to focus on identifying communications infrastructure improvements to bring affordable, reliable, and high-speed broadband internet access to underserved and rural populations.

The advancement and consideration of TSMO will also be consistent with the SANDAG Equity Framework for the 2021 Regional Plan to ensure that regional project priorities serve all communities across the region.

2021 Regional Plan
Programs and Policies

VALUE PRICING AND USER FEES

Currently, funding to preserve and improve transportation infrastructure in the San Diego region comes from a variety of federal, state, and local sources that primarily rely on fuel taxes. However, in recent years as vehicles fuel efficiencies have increased, state and federal transportation funding has declined. The practice of charging fees for using transportation infrastructure is becoming more commonplace nationwide. This is one way to optimize performance of the transportation system, manage congestion, and minimize the effect of somewhat unpredictable state and federal funding.

User fees apply a “market-based” approach to achieving environmental, equity, and economic goals and can put a hand on the scale to redress decades of unbalanced investment in roads by making funds available for other types of transportation, including transit. Funds raised from user fees can help the region build a complete transportation system that provides people with more alternatives to driving alone, wherever and whenever they need them. Additionally, providing more transportation alternatives will free up roadway space for people who still need to drive.

Once it is built, the convenience of the new system could, in effect, sustain changes in travel behavior for decades. The result for everyone would be improved mobility and transportation equity, and reductions in congestion, air pollution, and greenhouse gas emissions. These fees can also generate sustainable funding in the long-term to preserve and improve the network and promote a balanced transportation system moving forward.

What should I know about value pricing and user fees?

Transportation user fee structures must be carefully developed to ensure there is no disproportionate burden on people with limited incomes, people of color, and seniors. Revenue from value pricing can be reinvested to fund safe, convenient, and affordable multimodal transportation options. In addition, SANDAG can provide incentives and subsidies to ensure there are viable alternatives to driving alone. Creating more transportation choices while ensuring affordability and accessibility is critical for accomplishing climate and equity goals.



The I-15 Express Lanes in San Diego are an example of Managed Lanes (Source: Union Tribune)

What would it look like?

User fee systems can feature distance-based (per mile) or segment-based (per toll zone) pricing with rates that are either flat, adjusted in response to congestion levels, or vary according to a known schedule. The 2021 Regional Plan considers a suite of user fees aimed at encouraging travelers to consider more sustainable travel choices and manage congestion. Further analysis and extensive community outreach will be needed to prioritize the objectives and design the operating strategies of each user fee system.

The pricing strategies under consideration in the 2021 Regional Plan are:

- Managed Lanes:** Lanes or roadways that charge variable tolls, providing a faster trip to solo drivers if they choose to pay a fee, while providing free access to emergency vehicles, transit vehicles, carpoolers, and others. Rates could adjust based on congestion levels or other factors to encourage sustainable travel choices and help keep traffic flowing. The first two managed lanes in the U.S. were deployed in Southern California: The SR 91 Express Lanes in Orange County and I-15 Express Lanes in San Diego County.
- Road Usage Charge:** A direct user fee where drivers pay to use the roadway network, whether the vehicle is powered by gas or electricity or hydrogen, based on distance traveled or other factors. As personal electric vehicles become more affordable and revenues from fuel taxes continue to decline, road usage charging can be an equitable way to generate revenue. Road usage charging is an emerging strategy for rapidly growing metropolitan areas, including those in California where Caltrans has a Road User Charge pilot program underway.
- Ridehailing company service fees:** Per-trip fee for Transportation Network Companies, including on-demand passenger and ridehailing services such as Uber and Lyft. Rates could vary by distance traveled, number of riders, or other factors. Ridehailing company service fees have become common in many metropolitan areas, including San Francisco, Chicago, Seattle, Portland, New York, and The District of Columbia.
- Incentives:** Transit fare subsidies can encourage more transit ridership and travel shifts during both peak and non-peak periods to manage congestion. Other incentives, such as priority parking for shared rides, can be tailored to encourage more sustainable transportation choices.

Resources

SANDAG I-15 FasTrak Study
sandag.org/services/fastrak/pubsarchive.asp?classid=29&fuseaction=home.classhome

Congestion Pricing in the U.S.
virginiadot.org/info/resources/congestion_pricing/cp_in_us.pdf

U.S. Department of Transportation
 Congestion Pricing
ops.fhwa.dot.gov/congestionpricing/

Value Pricing and User Fees

Implementation Actions

The 2021 Regional Plan incorporates a variety of value pricing and user fee strategies as tools to improve mobility by encouraging changes in travel behaviors while generating revenue to address our aging infrastructure and expand travel options. Specifically, the 2021 Regional Plan explores a network of Managed Lanes, a mileage-based road usage charge, a fee on the fares charged for rides provided by transportation network companies, and further subsidization of transit fares. Strategies such as these are in different phases of planning, design, pilot, and deployment in different regions and are also being explored at the state and federal levels. SANDAG will rely on coordination with the other Metropolitan Planning Organizations (MPOs) in California along with the State Department of Transportation to integrate the selection of technology, collection methods, and account management to ensure a consistent experience for travelers. Meanwhile, the design of these strategies, such as the fee structure and distribution of revenue, should be specifically designed for the San Diego region's unique environment and priorities.

Near-Term Implementation Actions

SANDAG will launch a study in FY 2022 to evaluate different transportation funding sources, including usage-based fees, to understand their relative capabilities in addressing equity and other goals, such as greenhouse gas (GHG) emissions reductions. As part of this study, a working group would oversee the development of a comprehensive value pricing and user fee implementation strategy that supports the goals of the 2021 Regional Plan.

SANDAG is partnering with Sacramento Area Council of Governments and Southern California Association of Governments on a Caltrans Planning Grant to develop a research design framework for pilot projects to test the effectiveness of road pricing strategies combined with demand management approaches (incentives) to advance equity, reduce vehicle miles traveled and GHG emissions, manage roadway congestion, and provide sustainable revenues for system maintenance and operation. This study will put California MPOs in a position to complement the efforts of Caltrans through its Road Charge Pilot Program. Caltrans was recently awarded \$2.15 million from the Federal Highway Administration to continue pilot testing user acceptance and the technological feasibility of implementing road usage charges.

Both studies will include a robust public-engagement process and lay the foundation for prioritizing different goals and understanding the potential of these tools in advancing these goals. SANDAG will leverage existing coordination efforts with the other major MPOs in California to ensure an integrated approach when possible.

SANDAG is currently analyzing the existing I-15 Managed Lane corridor to understand the potential of operational strategies to improve identified deficiencies and help achieve the vision, goals, and objectives for the I-15 corridor. These strategies will aim to manage demand, incentivize carpooling, and ensure reliable travel times. They are expected to be further considered in FY 2022 as traffic and corridor congestion returns to pre-pandemic levels.

SANDAG will pursue planning work toward implementing the other tools included in the implementation strategy, including a ridehailing service fee, reduced or free public transit fares, and priced parking. SANDAG has an existing partnership with researchers at UC Berkeley to analyze data collected by SANDAG to better understand the time and price tradeoffs of ridehailing service users, exploring opportunities, challenges, and social equity considerations for policies to promote pooled ridehailing trips. This analysis will be completed by FY 2023 and will help inform the development of a potential fee on ridehailing trips. SANDAG will develop updated technical resources and provide targeted support for local jurisdictions to leverage for implementing parking pricing through the updated Regional Parking Management Toolbox and will support local parking-management plans and pilots.

SANDAG will also complete a Regional Fare Impact Study by FY 2024, including evaluation of the transition to free public transit.

SANDAG will develop an Outreach and Engagement Plan by FY 2023 to guide all aspects of the implementation of new pricing strategies.

Long-Term Implementation Actions

Once these initial studies are complete, SANDAG will begin deploying pilot testing by FY 2026 to inform the detailed design of new pricing mechanisms and understand how they influence travel behaviors, how they impact different populations, and how well they support regional and state goals. Ultimately, SANDAG will rely on legislative action, ballot measures, or other mechanisms that would grant authority to administer any new value pricing and user fee strategy. Therefore, it is critical to develop broad community and political support through the initial study and pilot testing phases.

Recent technological advancements have improved fee collection. SANDAG will coordinate with the state and other MPOs to develop a consistent approach to fee collection.

Partners

SANDAG will work with local jurisdictions to align priorities for the pricing strategies and incorporate supporting technology into the Regional Intelligent Transportation System Architecture. SANDAG will partner with the other MPOs in California along with the State Department of Transportation and California State Transportation Agency to integrate the selection of technology, collection methods, and account management to ensure a consistent experience for travelers. SANDAG will also continue to work with community-based organizations to conduct education and outreach and solicit feedback from underserved community members to inform the design of the fee structures and collection methods.

Program Costs

The 2021 Regional Plan does not include specific program investments for these strategies. Costs associated with implementing the various pricing strategies are incorporated into the capital investments for Complete Corridors (Managed Lane pricing), Transit Leap (transit fares), Mobility Hubs (parking pricing), and Next OS (systems to support pricing programs).

Social Equity Considerations

For all different pricing mechanisms included in the 2021 Regional Plan, SANDAG will develop the fee structure and distribution of revenue strategy to ensure equitable outcomes. Next OS has the capability to provide discounts to low-income, youth, and other vulnerable populations. Meanwhile, revenues can be prioritized to fund improved transportation options for low-income and historically underserved neighborhoods. Additionally, shifting away from regressive taxes and fees traditionally used to fund transportation can improve equity outcomes.