SANDAG

SAN DIEGO FORWARD

THE 2019 FEDERAL REGIONAL TRANSPORTATION PLAN

San Diego FORWARD
The Regional Transportation Plan

SAN DIEGO FORWARD

THE 2019 FEDERAL REGIONAL TRANSPORTATION PLAN

October 2019

SANDAG

San Diego FORWARD
The Regional Transportation Plan

401 B Street, Suite 800, San Diego, CA 92101 | (619) 699-1900 | SDForward.com

SANDAGregion @SANDAG #SDForward

SANDAG Board of Directors

The 18 cities and county government are SANDAG serving as the forum for regional decision-making. SANDAG builds consensus; plans, engineers, and builds public transit; makes strategic plans; obtains and allocates resources; and provides information on a broad range of topics pertinent to the region's quality of life.

Chair
Hon. Steve Vaus

Vice Chair
Hon. Catherine Blakespear

Executive Director
Hasan Ikhrata

City of Carlsbad
Hon. Cori Schumacher, Councilmember
(A) Hon. Barbara Hamilton, Councilmember
(A) Hon. Priya Bhat-Patel, Mayor Pro Tem

City of Chula Vista
Hon. Mary Salas, Mayor
(A) Hon. Steve Padilla, Councilmember
(A) Hon. John McCann, Councilmember

City of Coronado
Hon. Richard Bailey, Mayor
(A) Hon. Bill Sandke, Councilmember
(A) Hon. Mike Donovan, Councilmember

City of Del Mar
Hon. Ellie Haviland, Deputy Mayor
(A) Hon. Dwight Worden, Councilmember
(A) Hon. Dave Druker, Mayor

City of El Cajon
Hon. Bill Wells, Mayor
(A) Hon. Steve Goble, Deputy Mayor

City of Encinitas
Hon. Catherine Blakespear, Mayor
(A) Hon. Tony Kranz, Councilmember
(A) Hon. Joe Mosca, Councilmember

City of Escondido
Hon. Paul McNamara, Mayor
(A) Hon. Olga Diaz, Councilmember
(A) Hon. Mike Morasco, Councilmember

City of Imperial Beach
Hon. Serge Dedina, Mayor
(A) Hon. Mark West, Councilmember
(A) Hon. Paloma Aguirre, Councilmember

City of La Mesa
Hon. Kristine Alessio, Councilmember
(A) Hon. Bill Baber, Councilmember
(A) Hon. Colin Parent, Vice Mayor

City of Lemon Grove
Hon. Racquel Vasquez, Mayor
(A) Hon. Jennifer Mendoza, Councilmember
(A) Hon. Jerry Jones, Councilmember

City of National City
Hon. Alejandra Sotelo-Solis, Mayor
(A) Hon. Mona Rios, Councilmember
(A) Hon. Ron Morrison, Vice Mayor

City of Oceanside
Hon. Jack Feller, Deputy Mayor
(A) Hon. Christopher Rodriguez, Councilmember
(A) Hon. Esther Sanchez, Councilmember

City of Poway
Hon. Steve Vaus, Mayor
(A) Hon. John Mullin, Councilmember
(A) Hon. Caylin Frank, Councilmember

City of San Diego
Hon. Kevin Faulconer, Mayor
(A) Hon. Mark Kersey, Councilmember
(A) Hon. Chris Cate, Councilmember
Hon. Georgette Gomez, Council President
(A) Hon. Barbara Bry, Council President Pro Tem
(A) Hon. Monica Montgomery, Councilmember

City of San Marcos
Hon. Rebecca Jones, Mayor
(A) Hon. Sharon Jenkins, Mayor Pro Tem
(A) Hon. Maria Nunez, Councilmember

City of Santee
Hon. John Minto, Mayor
(A) Hon. Ronn Hall, Councilmember
(A) Hon. Rob McNelis, Councilmember

City of Solana Beach
Hon. David A. Zito, Mayor
(A) Hon. Jewel Edson, Deputy Mayor
(A) Hon. Kristi Becker, Councilmember

City of Vista
Hon. Judy Ritter, Mayor
(A) Hon. Amanda Rigby, Councilmember
(A) Hon. John Franklin, Deputy Mayor

County of San Diego
Hon. Jim Desmond, Supervisor
(A) Hon. Dianne Jacob, Chair
Hon. Kristin Gaspar, Supervisor
(A) Hon. Greg Cox, Vice Chair
(A) Hon. Nathan Fletcher, Supervisor

Advisory Members

Imperial County
Hon. Jesus Eduardo Escobar, Supervisor
(A) Mark Baza, Imperial County Transportation Commission

California Department of Transportation
Bob Franzoia, Acting Director
(A) Cory Binns, District 11 Director
(A) Ann Fox, Deputy Director

Metropolitan Transit System
Hon. Mona Rios
(A) Hon. Nathan Fletcher

North County Transit District
Hon. Tony Kranz
(A) Hon. Priya Bhat-Patel
(A) Hon. Jewel Edson

U.S. Department of Defense
Joe Stuyvesant, Navy Region Southwest Executive Director
(A) Steve Chung, Navy Region Southwest

Port of San Diego
Hon. Garry Bonelli, Chairman
(A) Hon. Michael Zucchet, Commissioner

San Diego County Water Authority
Ron Morrison, Director
(A) Gary Croucher, Vice Chair
(A) Mel Katz, Director

San Diego County Regional Airport Authority
April Boling, Chair
(A) Vacant

Southern California Tribal Chairmen's Association
Hon. Cody Martinez, Chairman, Sycuan Band of the Kumeyaay Nation
Hon. Robert Smith, Chairman, Pala Band of Mission Indians

Mexico
Hon. Carlos González Gutiérrez
Cónsul General of Mexico
(A) Mario Figueroa
Deputy Cónsul General of Mexico
(A) Hon. Natalia Figueroa, Vice Consul

Acknowledgments

Many individuals aided in the preparation of material contained in San Diego Forward: The 2019 Federal Regional Transportation Plan (2019 Federal RTP). SANDAG committees and working groups are acknowledged.

SANDAG Committees and Working Groups

Audit Committee
Borders Committee
Public Safety Committee
Regional Planning Committee
TransNet Independent Taxpayer Oversight Committee
Transportation Committee
Active Transportation Working Group
Cities/County Transportation Advisory Committee
Committee on Binational Regional Opportunities
Community-Based Organizations Working Group
Environmental Mitigation Program Working Group
Freight Stakeholders Working Group
Interagency Technical Working Group on Tribal Transportation Issues
Regional Energy Working Group
Regional Planning Technical Working Group
San Diego Region Conformity Working Group
San Diego Regional Military Working Group
San Diego Regional Traffic Engineers Council
Social Services Transportation Advisory Council

SANDAG Staff

Hasan Ikhrata, Executive Director
Coleen Clementson, Acting Director of Land Use and Transportation Planning
Laura Coté, Chief Administrative Officer
Andre Douzdjian, Director of Finance
John Kirk, General Counsel
Jim Linthicum, Chief of Capital Programs and Regional Services
Ray Major, Chief Data Analytics Officer
Irene McCormack, Acting Communications Director
José Nuncio, Director of *TransNet*
Ray Traynor, Chief Strategy and Innovation Officer
Rachel Kennedy, Senior Regional Planner, Project Manager
Elisa Arias, Principal Regional Planner
Sue Alpert, Senior Financial Programming Analyst
Aremy Barrera, Document Processing Specialist III

Acknowledgments (continued)

SANDAG Staff (continued)

Shane Babineaux, Office Services Specialist III
Mike Calandra, Senior Researcher and Modeler
Grace Chung, Senior GIS Analyst
Ryan Chung, Associate Graphic Designer
Josh Clark, Associate Regional Planner
Jane Clough, Senior Regional Planner
Rachel Cortes, Senior Researcher and Modeler
Elizabeth Cox, Communications Manager
Linda Culp, Principal Regional Planner
Rick Curry, Manager of Transportation Analysis and Applications
Stephanie Ellsworth, Regional Planning Intern
Alex Estrella, Senior Regional Planner
James Dreisbach-Towle, Division Director Operations, Transportation & Information Technology
Samantha Foulke, Associate Legal Counsel
Susan Freedman, Senior Regional Planner
Laurie Gartrell, Associate Government Relations Analyst
Tom Goggin, Business Services Supervisor
Andy Gordon, Senior GIS Analyst
Rachel Graffeo, Creative Services Intern
Keith Greer, Principal Regional Planner
Stephanie Guichard, Senior Economic Research Analyst
Andrea Hammann, Associate Marketing Analyst
Jeffery Harns, Senior Programmer Analyst
Joey Hendrix, Document Processing Supervisor
Katie Hentrich, Associate Regional Planner
Zachary Hernandez, Regional Planner II
Susan Huntington, Manager of Financial Programming and Project Control
Alicia Isla, Document Processing Specialist III
Deborah Jones, Associate Account Executive
Tom King, Associate Researcher and Modeler
Chris Kluth, Senior Regional Planner
Pat Landrum, Manager of Data Solutions
Brian Lane, Senior Regional Planner
Seth Litchney, Senior Regional Planner
Cherry Liu, Senior Researcher and Modeler
Anna Lowe, Senior Regional Planner
Yun Ma, Associate Researcher and Modeler
Lisa Madsen, Associate Regional Planner
Marisa Mangan, Associate Regional Planner
Antoinette Meier, Principal Regional Planner

Acknowledgments (continued)

SANDAG Staff (continued)

Jim Miller, Senior Economic Research Analyst
Marjani Moore, Document Processing Specialist III
Sanchita Mukherjee, Associate Economic Research Analyst
Tommy Neel, Associate Graphic Designer
Joaquin Ortega, Associate Regional Modeler
Ziying Ouyang, Senior Researcher and Modeler
Jane Park, Associate Programmer Analyst
Sarah Pierce, Associate Regional Planner
Richard Radcliffe, Financial Analyst II
Keri Robinson, Associate Regional Planner
Kendall Reynolds, Office Services Specialist III
Samual Sanford, Associate Regional Planner
Sarah Seal, Document Processing Specialist II
Kim Smith, Senior Regional Planner
Michelle Smith, Senior Financial Programming Analyst
Lisa Starace, Acting Creative Services Manager
Wu Sun, Principal Researcher and Modeler
Tim Sutherland, Manager of Software Development Solutions
David Tedrow, Manager of Economic and Demographic Analysis and Modeling
Karyn Thompson, Associate Graphic Designer
Peter Thompson, Senior Technology Project Manager
Phil Trom, Senior Regional Planner
Kirsten Uchitel, Associate Environmental Planner
Hector Vanegas, Borders Program Manager
Danny Veeh, Associate Regional Planner
Dawn Vettese, Financial Programming Manager
Lindsey Volz, Regional Planning Intern
Kimberly Walters, Document Processing Specialist I
Robyn Wapner, Senior Government Relations Analyst
Francesca Webb, Document Processing Specialist III
Eric Wendt, Associate GIS Analyst
Julie Wiley, Special Counsel
Jennifer Williamson, Principal Regional Planner
Allison Wood, Senior Regional Planner
Susan Xu, Researcher and Modeler II
Nicole Yerkes, Document Processing Specialist I
Yang Zhao, Associate Programmer Analyst
Ariana zur Nieden, Senior Financial Programming Analyst

SANDAG also recognizes the various staff from the California Department of Transportation (Caltrans), Metropolitan Transit System (MTS), North County Transit District (NCTD), Port of San Diego, San Diego County Water Authority, and San Diego County Regional Airport Authority for their participation and assistance with the 2019 Federal RTP.

Bruce Lieberman, Editor

Table of Contents

Chapter 1: Our Region, Our Future

Chapter 2: A Strategy for Mobility

Chapter 3: Financing Our Future

Table of Contents (continued)

Chapter 4: Benefits of the Plan

Chapter 5: Ensuring Performance

List of Appendices

Appendices C through U can be found in electronic format at www.sdforward.com

List of Appendices (continued)

List of Tables

Chapter 1: Our Region, Our Future

Chapter 3: Financing Our Future

Appendix A: Transportation Projects, Costs, and Phasing

Appendix B: Air Quality Planning and Transportation Conformity

List of Tables (continued)

Appendices C through U can be found in electronic format at www.sdforward.com

Appendix D: Federal System Performance Report

Appendix E: Transportation System and Demand Management Programs, and Emerging Technologies

Appendix G: Tribal Consultation Process for San Diego Forward: The 2019 Federal Regional Transportation Plan: Communication, Cooperation, and Coordination

List of Tables (continued)

Appendix H: Social Equity: Engagement and Analysis

Appendix J: Regional Growth Forecast

List of Tables (continued)

Appendix M: Transportation Project Evaluation Criteria and Rankings

Appendix N: Evaluating the Performance of the Transportation Network

Appendix O: Transportation Financial Background

Appendix P: Benefit-Cost Analysis

Appendix S: Monitoring Performance

List of Tables (continued)

Appendix T: SANDAG Travel Demand Model and Forecasting Documentation

List of Figures

Chapter 1: Our Region, Our Future

Chapter 2: A Strategy for Sustainability

Chapter 3: Financing Our Future

Chapter 5: Ensuring Performance

List of Figures (continued)

Appendix A: Transportation Projects, Costs, and Phasing

Appendix B: Air Quality Planning and Transportation Conformity

List of Figures (continued)

Appendices C through U can be found in electronic format at www.sdforward.com

Appendix C: SANDAG Federal Congestion Management Process

Appendix D: Federal System Performance Report

Appendix G: Tribal Consultation Process for San Diego Forward: The 2019 Federal Regional Transportation Plan: Communication, Cooperation, and Coordination

List of Figures (continued)

Appendix H: Social Equity: Engagement and Analysis

Appendix J: Regional Growth Forecast

Appendix M: Transportation Project Evaluation Criteria and Rankings

List of Figures (continued)

Appendix T: SANDAG Travel Demand Model and Forecasting Documentation

Appendix U13: Housing: Providing Homes for all Residents

Appendix U14: Borders

Appendix U16: Active Transportation Implementation Strategy

Chapter 1
Our Region, Our Future

1 Our Region, Our Future

A vision of healthy and thriving communities

The San Diego Region: A Special Place at A Crossroads

Here's a thought to get us started: we live in a place where people come to vacation, a place where they dream of living and find almost impossible to leave once they make it their home.

What draws people here? Certainly it's the gorgeous weather year-round, a spectacular coastline, big open spaces, first-class family entertainment, a fantastic metropolitan area, a booming biotech industry, and an enticing international border. Those things make us proud to show off our region to out-of-town family and friends. But it's bedrock qualities like our strong economy, healthy neighborhoods, great schools, and top universities that make us grateful to live here.

Still, our region is at a crossroads. The same things that draw people here, to visit or stay, place pressures on our daily lives. Traffic can be challenging. Neighborhoods can be expensive and out of reach. Pick a summer day, any summer day, and it seems everyone is at the coast. The fact is, our region is growing.

While our population will continue to increase in the coming decades, we will have important choices to make – choices about how to grow, where to grow, and how to get around. We have big decisions to make to sustain the qualities we love most about the San Diego region.

The San Diego Association of Governments (SANDAG) is developing a bold new vision for transportation in the region – one that will lead to a more sustainable future. New investments in the regional transportation network will provide people with more travel choices, while protecting the environment, creating healthy communities, and stimulating economic growth for the benefit all San Diegans. In February 2019, the SANDAG Board of Directors approved an action plan that extends the development of a new Regional Plan into late 2021.

San Diego Forward: The 2021 Regional Plan (2021 Regional Plan) will embody 5 Big Moves, transformative initiatives that reimagine how people will travel throughout the region. These 5 Big Moves are:

- Complete Corridors: The backbone of a complete transportation system that leverages technology, pricing, and connectivity to repurpose how both highways and local roads are used.
- Transit Leap: A complete network of high-capacity, high-speed, and high-frequency transit services that incorporates new transit modes and improves existing services.
- Mobility Hubs: Places of connectivity where a variety of travel options converge to deliver a seamless travel experience.
- Flexible Fleets: On-demand, shared, electric vehicles that connect to transit and travel between Mobility Hubs along the network of Complete Corridors.
- Next OS: An integrated platform that will make all of the strategies work together by connecting users, transportation service providers, and infrastructure to orchestrate more efficient movement of people and goods.

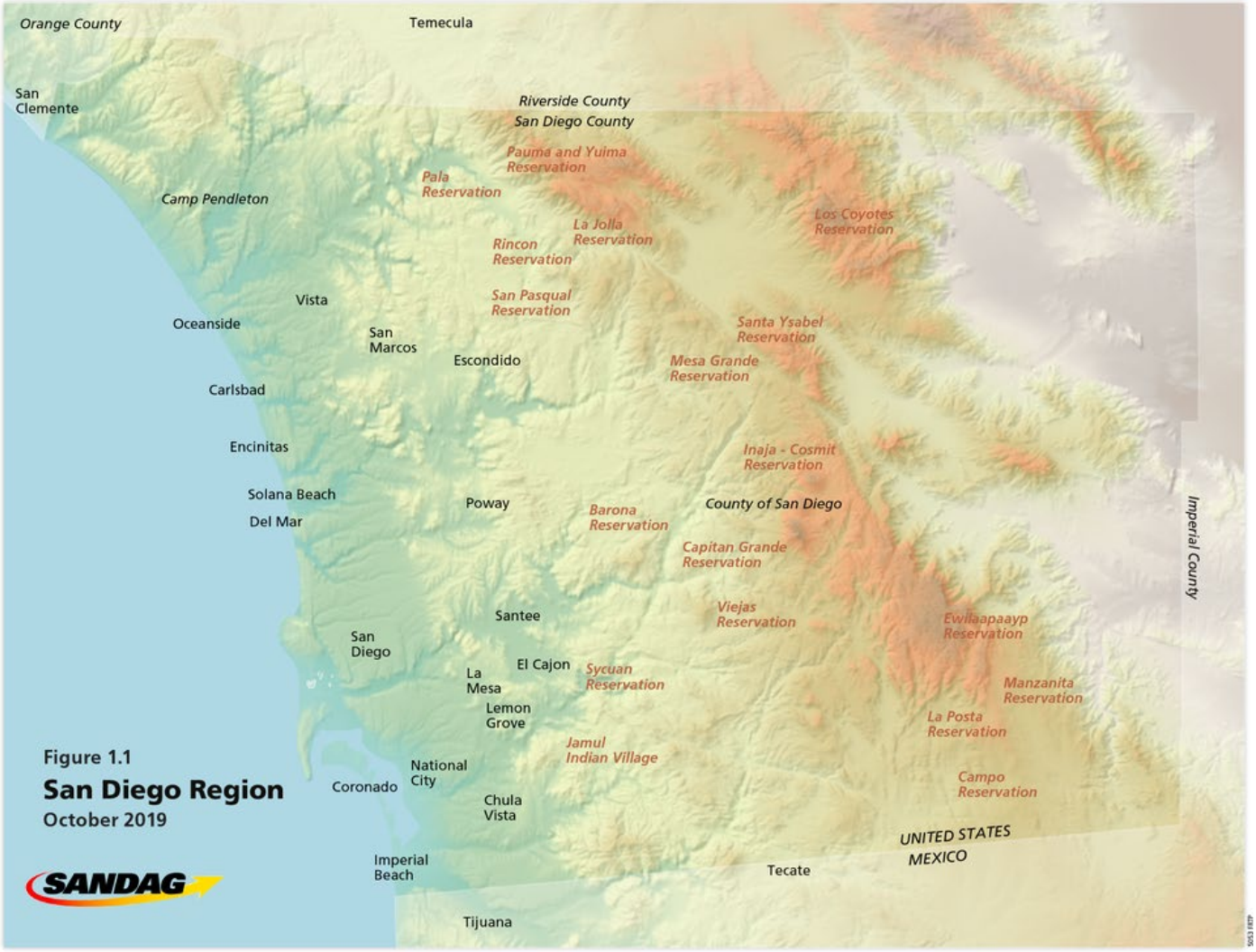
Together, these initiatives will create a fully integrated, world-class transportation system.

SANDAG is working with stakeholders and the larger public to create the 2021 Regional Plan. In the meantime, this document, called San Diego Forward: The 2019 Federal Regional Transportation Plan (2019 Federal RTP) complies with federal requirements for the development of regional transportation plans, achieves an air quality conformity finding from the U.S. Department of Transportation, and preserves funding for the region's transportation investments. The 2019 Federal RTP builds on San Diego Forward: The 2015 Regional Plan (2015 Regional Plan), with updated project costs and revenues and a new regional growth forecast.

An Opportunity to Shape Our Region

Sustainability. Our 2019 Federal RTP will talk a lot about what that word means, not just the dictionary version, but what it means for *us*.

This 2019 Federal RTP is built on input from people throughout our region, young and old and from neighborhoods big and small. The success of the 2019 Federal RTP will depend on the degree to which our region feels invested in its success – a sense of buy-in and ownership. It is our region, after all. And our future. As we plan for the years ahead, it's important to recognize that we live in a unique place that is interconnected with our neighbors. We are surrounded by tangible boundaries: The Pacific Ocean to the west, the mountains, Anza-Borrego Desert, and Imperial County's agricultural fields to the east, the international border with Mexico to the south, and Camp Pendleton as well as Orange and Riverside counties to the north. San Diego is also unique in that we have neighbors within our boundaries, as 18 tribal nations call the region home (see Figure 1.1). But we don't live in a vacuum, and we must coordinate with our regional and international neighbors.



The 2019 Federal RTP provides a roadmap to grow and evolve, and it prioritizes 30 years of regional transportation projects to create a framework for much of the region's transportation infrastructure.

Before us lie challenges and opportunities to help guide the future growth of our region and build a transportation system that works for everyone, all in ways that protect our environment, support our economy, and maintain our quality of life.

Over the next three decades, nearly $208 billion will be invested in our region to create, maintain, and improve a balanced transportation network. Our 2019 Federal RTP does two main things to ensure that these tax dollars will be spent for the greatest public good: It provides a roadmap to grow and evolve, and it prioritizes 30 years of regional transportation projects to create a framework for much of the region's transportation infrastructure. The transportation decisions detailed in the 2019 Federal RTP serve an overarching goal: create more transportation choices, which ultimately will lead to healthier communities, healthier people, and a healthier environment.

In addition, the 2019 Federal RTP has been organized to include several important elements, starting out with the Policy Element included in this chapter. The elements and locations where they can be found in the 2019 Federal RTP are described in Table 1.1.

Table 1.1
2019 Federal Regional Transportation Plan Elements

Element Name	Description	Location
Policy Element	• Describes the transportation issues in the region and federal planning factors; identifies and quantifies regional needs expressed within both short and long-range planning horizons; and maintains internal consistency with the Financial Element and fund estimates.	Chapters 1, 4 and 5, Appendices C, D, I, Q, and R
Financial Element	• Summarizes costs to operate and maintain the current transportation system. Estimates costs and revenues to implement the projects identified in the Action Plan. • Provides an inventory of existing and potential transportation funding sources. Lists candidate projects if funding becomes available. Identifies potential funding shortfalls. • Identifies alternative policy directions that affect the funding of projects.	Chapter 3, Appendices A and E
Action Element	• Describes short- and long-term activities and strategies that address an integrated multimodal transportation system. • Provides performance-based decision making to support national goals and regional priorities.	Chapters 2 and 5, Appendices A, D, and E
Other	• Complies with the federal Clean Air Act and air quality conformity regulations.	Appendix B

The Importance of Planning

We all know that planning for the future is a good idea. Over the years, SANDAG has coordinated regional efforts to address many important issues. These include using land more wisely; building an efficient and more accessible transportation system; protecting the environment; improving public health; promoting a strong regional economy; better managing our access to energy; incorporating equity into the planning process; addressing pressing needs on tribal lands; and supporting a vibrant international border.

More recently, planning has focused sharply on how the region can offer people *more transportation choices* – including more options for biking, walking, and public transit. We've also focused on what we can do collectively to better reduce greenhouse gas emissions and better adapt to the effects of climate change. We've drawn stronger links between how we use land, how we get around, and achieved a better understanding for how our choices for both can improve or harm our health. We're also working to make sure the region can benefit from emerging technologies that will make transportation more efficient. Finally, we're ensuring that all groups, including low-income, minority, and senior populations, have the opportunity to be meaningfully involved in developing plans for the future.

As San Diegans, we all share the responsibility for shaping our region's future. In a region as culturally and economically diverse as ours, crafting a plan for how best to grow and the smartest ways to get around isn't easy. But it's vital at a time when the challenges we face are being confronted by Americans across the nation. Among these are an increasing rate of obesity, which drives chronic illnesses such as heart disease, diabetes, cancer, and asthma. Other challenges in our region include a "silver tsunami" of aging citizens who will have significant needs, and a growing and dynamic young population of "millennials" with their own priorities and desires. These two generations have many overlapping interests, including an increasing desire for urban lifestyles and more options for getting around. These are just a few reasons why it's important to plan for our future – locally, regionally, and across all of our borders.

SANDAG is required by law to update its regional transportation plan every four years, and this document is the latest update. Many aspects of this 2019 Federal RTP build upon the 2015 Regional Plan and address new federal planning requirements. As we've worked on this latest update, we've also continued to make progress on implementing actions included in the 2015 Regional Plan. Planning for the region's future is an ongoing enterprise, with work progressing on several fronts continuously as plans are developed, implemented, evaluated, and updated to reflect new realities.

Our RTPs reflect a broad range of public discourse and community engagement. The 2019 Federal RTP incorporates contributions from numerous people, organizations, and groups. Individuals from communities across the San Diego region, community-based organizations, elected officials, environmental groups, developers, business and healthcare professionals, and other stakeholders all helped to shape the 2019 Federal RTP.

Implementing the 2019 Federal RTP will substantially increase the percentage of people and jobs regionwide that are situated near high-frequency transit. In 2016, 32 percent of the region's population lived near high-frequency transit stops. That figure is projected to increase to 55 percent by 2050 with the transit investments and land use changes outlined in the 2019 Federal RTP. Similarly, the percentage of jobs located within half a mile of high-frequency transit will increase to 69 percent in 2050, up from 43 percent in 2016.

Meanwhile, investments in infrastructure for biking and walking, combined with smart growth practices that encourage these types of active transportation, are projected to increase the percentage of people and workplaces near bike routes. These transportation options will result in more people exercising and fewer people choosing to drive alone.

The transportation investments detailed in the RTP, coupled with expected improvements in fuel and vehicle technologies, are expected to help clean the air. On-road pollutants that form smog as well as greenhouse gas emissions, are projected to fall below 2016 levels.

The RTP offers people more transportation options regionwide. But the benefits of having more choices are especially pronounced along the transportation corridors where investments are made. Significant investments, for example, are being made in public transit to and from work.

Implementing the new RTP is projected to double the number of times people board public transit everyday to 722,000 by 2035, compared with 353,000 in 2016. By 2050, that number is projected to increase to 850,000.

- 113 million annual boardings in 2016 (based on actual counts)
- 231 million projected annual boardings in 2035
- 272 million projected annual boardings in 2050

The investments made in our 2019 Federal RTP will provide residents, workers, and visitors with more transportation choices. It will also help to preserve the environment and support regional economic growth.

This plan is guided by regionally selected performance measures and also federal performance measures. A System Performance Report is included in Appendix D which details the measures, the data behind them, the regional targets and efforts underway to meet these targets.

Our Roadmap for San Diego Forward: The 2019 Federal Regional Transportation Plan

The goals of the 2019 Federal RTP are simple but ambitious: to provide innovative mobility choices and planning to support a sustainable and healthy region, a vibrant economy, and an outstanding quality of life for all.

All good plans begin with an overall vision and specific goals. What do we want to accomplish? Where do we want to be when our 2019 Federal RTP is fully realized? The goals of the 2019 Federal RTP are simple but ambitious: to provide innovative mobility choices and planning to support a sustainable and healthy region, a vibrant economy, and an outstanding quality of life for all.

To provide innovative mobility choices and planning to support a sustainable and healthy region, a vibrant economy, and an outstanding quality of life for all.

Easily enough said. But how do we get there? For the 2019 Federal RTP, policy objectives point the way. The policy objectives serve as a roadmap to guide our journey toward achieving our goals and vision.[1] We identified six general categories of policy objectives, and within each one there are two to three specific policy objectives. These key actions are listed in Chapter 5: Ensuring Performance.

Policy Objective Categories

Here are the six general categories of policy objectives, each with its own set of specific objectives:

Habitat and Open Space Preservation

- Focus growth in areas that are already urbanized, allowing the region to set aside and restore more open space in our less developed areas.
- Protect and restore our region's urban canyons, coastlines, beaches, and water resources.[2]

Regional Economic Prosperity

- Invest in transportation projects that provide access for all communities to a variety of jobs with competitive wages.
- Build infrastructure that makes the movement of freight in our community more efficient and environmentally friendly.

Environmental Stewardship

- Make transportation investments that result in cleaner air, environmental protection, conservation, efficiency, and sustainable living.
- Support energy programs that promote sustainability.

Mobility Choices

- Provide safe, secure, healthy, affordable, and convenient travel choices between the places where people live, work, and play.
- Take advantage of new technologies to make the transportation system more efficient and accessible.

Partnerships/Collaboration

- Collaborate with Native American tribes, Mexico, military bases, neighboring counties, infrastructure providers, the private sector, and local communities to design a transportation system that connects to the mega-region and national network, works for everyone, and fosters a high quality of life for all.
- As we plan for our region, recognize the vital economic, environmental, cultural, and community linkages between the San Diego region and Baja California.

Healthy and Complete Communities

- Create great places for everyone to live, work, and play.
- Connect communities through a variety of transportation choices that promote healthy lifestyles, including walking and biking.
- Increase the supply and variety of housing types – affordable for people of all ages and income levels in areas with frequent transit service and with access to a variety of services.

Recognizing the Connections in Our Regional Transportation Plan

The topics addressed in the 2019 Federal RTP – and in other big picture visions for our community's future – are interrelated. We must make a concerted effort to craft policies and actions that support livable communities and healthy places with a variety of transportation choices. And we must avoid decisions that lead us toward "silos" that fail to recognize the interconnectedness of the many issues that influence this region. To accomplish this, we must understand our region as it is today and how it will change in the future.

We're in this Together

As the region's planning agency, SANDAG is uniquely positioned to bring together decision-makers from all areas of the region. The agency serves as the Metropolitan Planning Organization for our region, joining elected officials from all 18 cities and the County of San Diego as a regional council of governments. One of our primary responsibilities is regional transportation planning. We invest in public transit, highways, bicycle and pedestrian infrastructure, freight corridors, and technologies to better manage our regional transportation system and the everyday demands on it. We also provide financial incentives and offer grant programs to various jurisdictions and organizations. Through these activities, SANDAG influences policies for how local governments use land, protect the environment, and grow their economies.

SANDAG collaborates with a variety of partners. They include regional economic development corporations; chambers of commerce; environmental groups; water and energy providers; health providers; community-based organizations; labor; law enforcement; partners in Baja California; tribal nations; the military; universities and community colleges; neighboring counties; Caltrans; transit operators; Port of San Diego; San Diego County Airport Authority; the private sector; and other organizations and stakeholders.

Working together, we have developed a shared vision for mid-century. This vision brings together local plans for sustainable growth, and it provides a regional framework that promotes a strong economy, an efficient transportation system, a healthy environment, and thriving communities.

Partners at Our Borders

As we've mentioned, it's critical that we coordinate planning with our neighbors outside and within our geographic boundaries. We live in a binational region that includes San Diego and Imperial counties, and the northern cities of Baja California. About 6.9 million people live today in this binational region, and that number is projected to grow to 8.6 million by 2040.[3] It's a place with diverse landscapes, politics, economies, languages, and cultures. Even so, we are linked socially and economically. People and goods flow across our borders in huge numbers every day.

The San Ysidro Port of Entry is one of the busiest land ports of entry in the world. It's the region's primary gateway for people who drive and walk across the border. Otay Mesa, our region's main commercial port of entry, is the second busiest land port of entry along the nation's southern border for commercial truck crossings and is the busiest commercial crossing on the California-Baja California border.

We also have neighbors within our region who have control over federal land: federally recognized tribes and the military. In the San Diego region, there are 18 independent sovereign tribal nations with jurisdiction over 19 reservations – the most in any county in the United States. Our region also has the largest military presence in the country, with Camp Pendleton, Miramar Marine Corps Air Station, North Island Naval Base, and Naval Base San Diego.

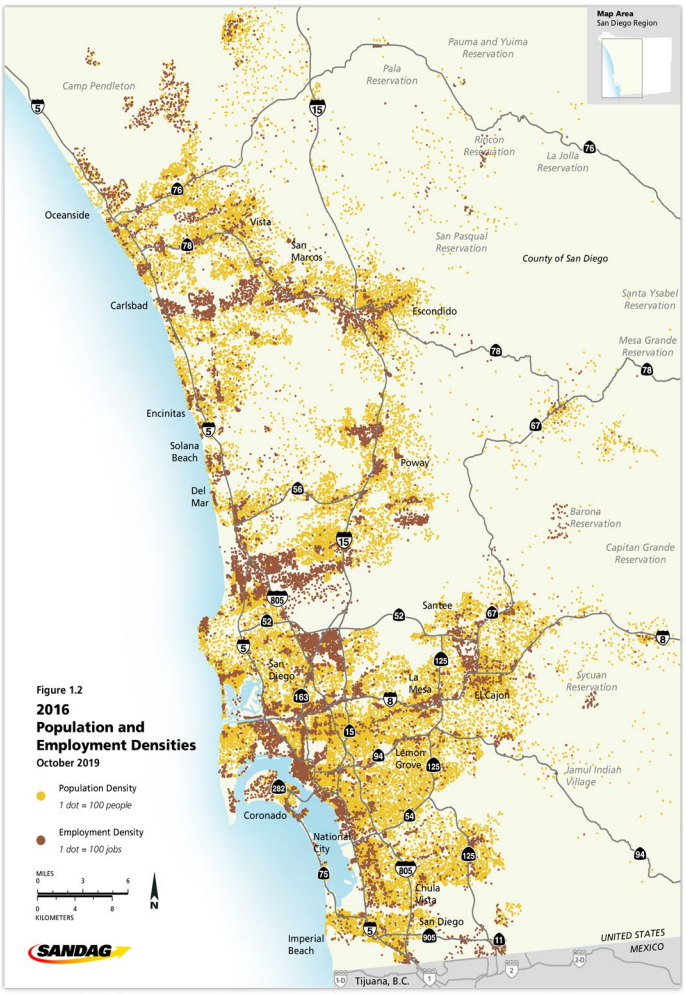
How we grow impacts our neighbors just as our neighbors' growth impacts us. Our collective growth – not only with Baja California but also within our tribal lands, military bases, and areas north and east of us – increases the demand for water, energy, housing, and roadways, and it places pressure on open space. Coordinated intergovernmental planning with our crossborder partners, neighboring counties, military partners, and tribal governments within the San Diego region helps promote collaborative solutions to protect our quality of life.

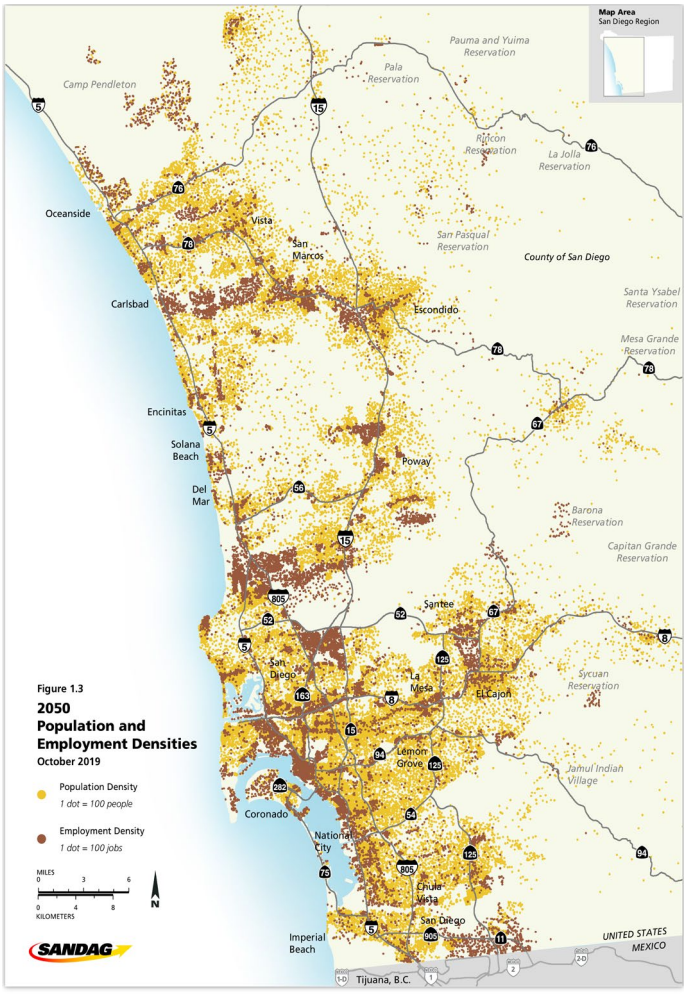
Where and How We'll Grow

Rather than expanding "out" as we have in the past, the SANDAG Regional Growth Forecast is projecting that we will grow "up," creating more compact communities.

Our region is large and diverse, with 18 individual cities, unincorporated land governed by the County of San Diego, the 18 sovereign tribal governments and 19 reservations we've mentioned, three major military bases, an international border with Mexico, and four land ports of entry between San Diego and Baja California. Today, about 3.3 million people live here. Every year that number – and the number of jobs and homes – go up. These increases reflect a growing economy and new opportunities.

Our region isn't just growing; it's growing in new ways. Figures 1.2 and 1.3 show that rather than expanding "out" as we have in the past, the SANDAG Regional Growth Forecast is projecting that we will grow "up," creating more compact communities.





The Regional Growth Forecast[4] uses the most recent land use planning assumptions from all 18 cities of the region and San Diego County. These planning assumptions are what SANDAG uses to develop the supporting transportation network, water agencies use for water planning purposes, and utility providers use for long range planning.

Denser neighborhoods, particularly in the western third of the San Diego region, will offer housing, jobs, and services closer to one another – and importantly, closer to the regional transportation network. While the western areas will grow over time through more compact communities, more land in the eastern two-thirds of the region will be preserved as open space.[5]

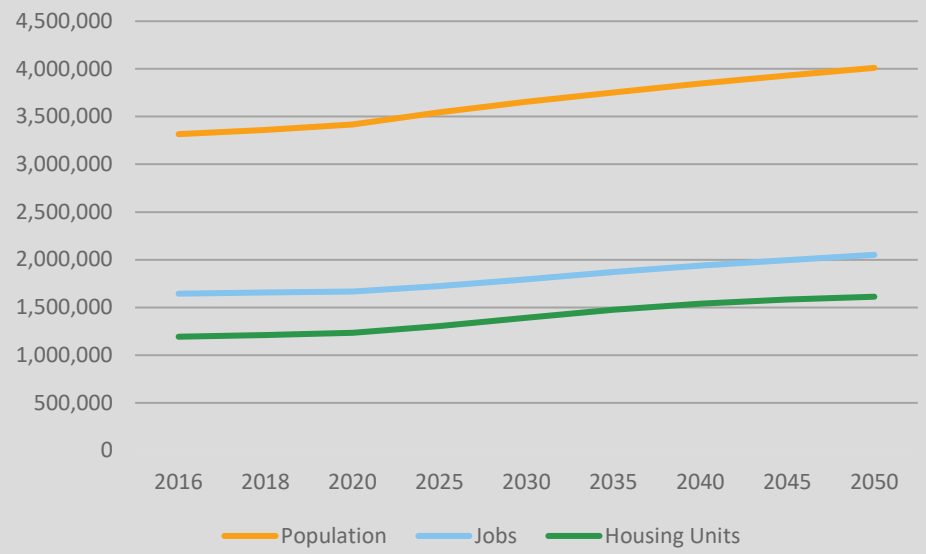
Our Population

Now for some hard numbers: By 2050, our region's population is projected to grow by nearly 700,000 people. This growth will lead to about 408,000 more jobs and nearly 420,000 more apartments, condos, houses, and other types of dwellings. Figure 1.4 provides a summary of population, housing units, and job statistics as well as future trends through 2050.

Figure 1.4

San Diego Region Population, Jobs, and Housing Forecast

August 2019



Source: 2050 Regional Growth Forecast, Series 14, version 17, 2019

San Diego has long been thought of as a region of "transplants" where more than half of residents were born outside of California. But, future growth is expected to be largely homegrown. Although migration rates and fertility rates have been declining, the region's population is projected to continue increasing due to the momentum of births from the current population and improvements in life expectancy. The percentage of people in the region aged 65 or older is projected to grow significantly in coming decades. By 2050, this demographic is projected to account for 25 percent of the region's population – up from about 15 percent today. More than ever, our plans for the future must consider all ages and life stages when considering improved services. The accessibility and efficiency of mobility options will continue to be critical for an effective transportation system.

Below are key projections for 2050, some of which we've discussed, that are influencing how we plan for the future:

- Most of the region's population growth will come from growing families that already live here today.
- Our population is aging. More than 25 percent of the population will be at least 65 by 2050. That's compared with 15 percent today.
- We'll grow more diverse. Nearly 40 percent of the region's population will be Hispanic, nearly 12 percent will be Asian, and about 4 percent will be African American.
- More than 77 percent of the growth in housing will be in apartment buildings, condo complexes, and other multifamily dwellings. That's a dramatic change from the way the future looked back in 2000, when 48 percent of the land planned for housing in our region was earmarked for single-family homes.

- By 2050, nearly half of the region will be preserved as open space and parks, habitat, or farmland[6,7] – an accomplishment driven significantly by the projected shift to multifamily housing and compact development patterns across the region.

We've discussed already how development is projected to shift toward urban areas and along key transportation corridors. To help you visualize what we mean, here are a few concrete examples from around our region:

- National City's general plan provides opportunities for more than 10,000 additional multifamily homes near the Blue Line Trolley and the planned Trolley line connecting San Ysidro and Carmel Valley via the Interstate 805 corridor.
- San Marcos adopted specific plans for the San Marcos Creek and University districts to create a comprehensive downtown core by adding mixed-use developments near California State University San Marcos and the SPRINTER rail corridor.
- More than half of the regional growth in new housing will occur within the City of San Diego. Downtown San Diego will continue to see growth over the next few decades, and the City has updated community plans in North Park, San Ysidro, Encanto, Old Town, Midway/Pacific Highway, and Grantville that add thousands of housing units around transit stations in these communities. Additionally, the City of San Diego is updating community plans in Mission Valley and Kearny Mesa that will add housing units near transit and jobs.

On the jobs front, the 2019 Federal RTP projects that today's centers of employment will continue to expand:

- The Sorrento Valley employment center, which includes University Towne Centre, around the University of California at San Diego, will remain the largest job center in the region, with nearly 175,000 jobs expected in this area by 2050.
- The Downtown San Diego employment center will add about 35,000 jobs by 2050.
- The Otay Mesa East and Otay Mesa Brown Field employment centers will become much larger, and together support a total of 32,000 jobs by 2050 – up from about 15,000 jobs today.
- The Kearny Mesa employment center will add about 20,000 jobs by 2050, making it almost as large as the Downtown San Diego area.

The Regional Growth Forecast projects that the San Diego region will continue to grow more sustainably. More compact and efficient communities, paired with a greater variety of transportation options and less sprawl, will result in preserved open space and habitat, and a more efficient use of water and energy.

It's All About Choices

When we think about the future, most of us would prefer *more* choices than fewer choices. And, we'd like our range of choices to vary according to the stages of our lives and our personal circumstances.

If we are young adults heading off to college, we may want a dorm room or an affordable apartment with lots of travel options to get to class – including safe routes for walking and biking. If we have young children, we may want a home that's close to their local school, and in a neighborhood that can support walking, riding a scooter, skateboarding, or biking. If we are empty nesters, we may prefer a condo in an urban area so we can get around easily and enjoy an art show, play, or other cultural event. If we're embarking on a blended family experience, we may need a larger home and more alternative ways of getting around. If we're older, we may need assisted living choices with options for traveling to our medical appointments. If we're facing health issues, we may need to build more physical activity into our daily schedules while also having ready access to medical care.

The ways in which our communities are built can make a difference in the kinds of choices available to us. By designing communities that better integrate the connections between how we use land and how we get around (i.e. transportation), we can create more opportunities for developing a wider variety of travel choices beyond the car, including options like the Trolley, SPRINTER, COASTER, buses, biking, and walking. Emerging technologies can help us optimize these choices, by ultimately making it easier and more efficient to choose transportation options beyond driving alone.

The societal benefits of having access to a wider range of travel choices are numerous. We can spend less time in our cars and save gas money. We can reduce air pollution and maximize public health. And we can lower the amount of greenhouse gases that we emit into the atmosphere.

In coming chapters we'll review how our region grew in previous decades, and how new thinking about development, transportation, technology, and sustainability will improve the region's future. We'll outline how more compact development and a greater mix of land uses will create more vibrant communities, while also supporting existing and new transportation projects. We'll also review what it will take to pay for transportation improvements. Then we'll discuss the benefits of charting this course for the future. Finally, we'll review key actions that will propel us forward, and how we'll keep track of our progress to ensure the success of the 2019 Federal RTP.

Endnotes

[1] The Public Involvement Plan, which includes a detailed description of the consultation and participation of interested parties, and strategies identified for use in preparing the 2019 Federal RTP, is included in Appendix F: Public Involvement Program.

[2] These objectives are consistent with the Coastal Commission policies articulated in Chapter 3 of the Coast Act https://www.coastal.ca.gov/fedcd/cach3.pdf

[3] 2040 projected population is based on the most recent estimates from SANDAG, California Department of Finance, and Mexico's National Population Council (CONAPO).

[4] Appendix J: Regional Growth Forecast

[5] Appendix U.10: Management Strategic Plan for Conserved Lands in Western San Diego County

[6] Based on the best practically available scientific information regarding resource areas and farmland in the region.

[7] "Open Space and Parks" include beach-passive (other sandy areas along the coastline with limited parking and access), open space park or preserve, and undevelopable natural area. "Farmland" includes Williamson Act Lands. "Habitat" includes SANDAG conserved lands.

Chapter 2
A Strategy for Mobility

San Diego FORWARD
The Regional Transportation Plan

2 A Strategy for Mobility

Sustainability through transportation choices

Heading Toward 2050 – About Transportation

In this chapter, we cover a wide range of topics. In the middle of the chapter, we lay out plans for the region's future transportation network in quite a bit of detail, followed by a discussion on coordinated regional efforts. But first, as a prelude, here is a set of principles that has guided the development of our future transportation network:

- The transportation network included in San Diego Forward: The 2019 Federal Regional Transportation Plan (2019 Federal RTP) must be based on financial constraints. The SANDAG investment plan, which we also refer to as the "Revenue Constrained Transportation Network," will be built with financial resources that we reasonably expect to be available between now and 2050.
- A more efficient transportation network will be achieved through two key strategies: effectively managing the overall system (transportation system management, or TSM), and effectively managing demands on the system (transportation demand management, or TDM). Innovative technologies will be integrated into both TSM and TDM. The result will be maximized efficiency in the transportation network.[1]

- Managing parts of the network, such as adding Managed Lanes and transit-only lanes on our freeways, can encourage people to carpool and use public transit to bypass bottlenecks.
- The road toward a more sustainable San Diego region should include vehicles that use cleaner, alternative sources of energy. SANDAG can play an important role in promoting this transition.

Where We've Been and How We Got Here

To understand where we are today and effectively plan for our future, we need to know where we've been. Our region has continually grown, and the reasons are easy to understand. Our beautiful coastline, unique neighborhoods, strong economy, and big open spaces make our region an attractive place to live. In past decades, these and other attributes drew people to our region, and neighborhoods steadily expanded – mostly toward the east. But more recently, we've placed a greater value on protecting open space. Collectively, the long-term plans for our local cities and the County of San Diego now call for focusing new growth in the urbanized areas of the western portion of our region where more people already live. This will allow us to preserve more open space and make more efficient use of resources such as water, energy, and transportation facilities.[2]

New Thinking on Transportation and Sustainability

The focus on growth in urbanized areas required our region to reflect on how to invest in public transit, roads and highways, and other transportation infrastructure. It became clear that people needed more options for getting around than just cars. This is now the basis of the transportation network described later in this chapter.

Defining Active Transportation: Active transportation includes any method of travel that is human-powered, but most commonly refers to walking and bicycling.

In 2004, our region's voters called for more transportation choices when they approved an extension of the *TransNet* half-cent sales tax measure. This regional measure identified specific transportation projects that would give us more travel options. As described in this chapter, the *TransNet* sales tax measure also provided various incentives. Significantly, it earmarked $850 million to preserve natural habitats, and it set aside nearly $600 million to support smart growth and active transportation.

Defining Mixed-Use: The combining of commercial, office, and residential land uses to provide easy pedestrian access and reduce the public's dependence on driving. It is often implemented in multi-story buildings containing businesses and retail stores on the lower floors, and homes on the upper floors.

For example, the measure identified $280 million in grants to local jurisdictions to promote new mixed-use developments in smart growth areas that combine affordable housing with stores and other commercial buildings – all near existing and planned public transit. It set aside an additional $280 million in grants for local jurisdictions to plan and build infrastructure for walking and biking in urbanized communities.

As new kinds of development patterns have emerged, we've adjusted our region's long-range transportation plans. For example, we've added miles of new light rail lines to our transportation plans. This includes the Mid-Coast Trolley, which will connect the U.S.-Mexico border and Downtown San Diego with UC San Diego and University City, the region's largest job center. We've also made investments in regional bikeways and other infrastructure for biking to connect neighborhoods to job centers, schools, and public transit. This includes the $200 million Regional Bike Plan Early Action Program, established in 2013, to build out the backbone of the system in ten years. These new investments, along with our existing transportation infrastructure, will use new and emerging technologies to make the regional transportation system more accessible and more efficient.

Additionally, SANDAG and other regional partners continue to enhance the resilience and reliability of the transportation system as it faces the consequences of climate change and other hazards. This includes work to mitigate stormwater impacts of surface transportation (see Appendix I).

SANDAG also offers local agencies resources and incentives for smart growth, and it supports efforts to save energy. Through our Energy Roadmap Program, SANDAG has developed energy management plans, or "Roadmaps," for local governments that identify opportunities to save energy in their own operations and in their larger communities. All 18 cities and the County of San Diego have completed their own Roadmaps, and SANDAG supports them as these jurisdictions implement recommendations within their Roadmaps.[3]

Strategies Toward Sustainability in the Regional Transportation Plan

Now let's take a look at each of the five strategies of the 2019 Federal RTP that will move us toward sustainability:

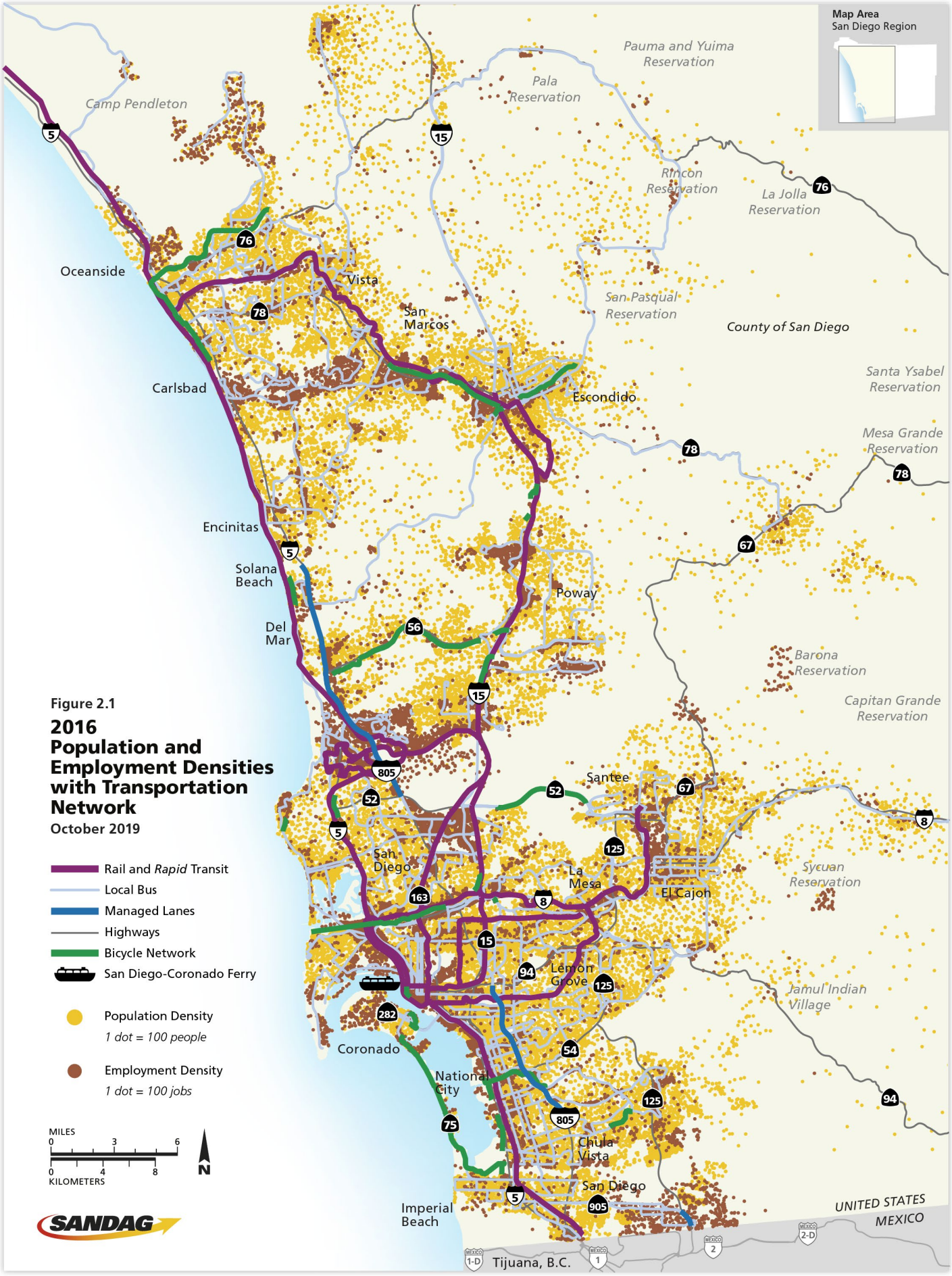
Focus housing and job growth in urbanized areas where there is existing and planned transportation infrastructure, including transit

San Diego County and cities across the region have updated their land use plans, in order to change patterns of future development to provide people with more housing and jobs in cities, along existing transit corridors, and where projected job growth is expected to be situated.[4] The highest density housing and employment is planned within the most urbanized areas of the region.

In 2016, the San Diego region included about 3.3 million people, 1.1 million homes, and more than 1.3 million jobs. Most of the homes and jobs today are located within the western third of the region, and in areas served by public transit (see Figure 2.1). The Regional Growth Forecast (also known as the Series 14 Forecast),[5] projects that the region will grow by nearly 700,000 people by 2050 (see Appendix J). More than 420,000 new homes and 408,000 new jobs will be added during this timeframe.

Our region has made great strides in planning for more compact communities with a higher density of people, jobs, and walkable developments that are situated near transit. This effort also has applied to incorporated areas of the region that are already served by water, sewer, and other public facilities. Evidence of the region's success can be found in the Regional Growth Forecast.

The land use pattern forecasted by SANDAG accommodates 78 percent of all housing and 85 percent of all jobs within the portion of the region covered by the Urban Area Transit Strategy (UATS, described later in this chapter). This is where the greatest investments in public transit are focused (see Figure 2.2). More than 75 percent of new housing in the region will be attached multifamily. Existing employment centers are expected to see the greatest increase in the density of jobs and new buildings. The land use pattern also preserves about 1.3 million acres of land, almost half the region's land area, as undeveloped. These open space lands include habitat conservation areas, parks, steep slopes, farmland, floodplains, and wetlands.[6]


Map Area
San Diego Region
Pauma and Yuima Reservation
Pala Reservation
Camp Pendleton
Rincon Reservation
La Jolla Reservation
Oceanside
Vista
San Marcos
San Pasqual Reservation
County of San Diego
Carlsbad
Escondido
Santa Ysabel Reservation
Mesa Grande Reservation
Encinitas
Solana Beach
Poway
Del Mar
Barona Reservation
Capitan Grande Reservation
Figure 2.1
2016
Population and Employment Densities with Transportation Network
October 2019
Rail and Rapid Transit
Local Bus
Managed Lanes
Highways
Bicycle Network
San Diego-Coronado Ferry
Population Density
1 dot = 100 people
Employment Density
1 dot = 100 jobs
Santee
Sycuan Reservation
San Diego
La Mesa
El Cajon
Lemon Grove
Jamul Indian Village
Coronado
National City
Chula Vista
San Diego
Imperial Beach
UNITED STATES
MEXICO
Tijuana, B.C.
MILES
0 3 6
0 4 8
KILOMETERS
N
SANDAG

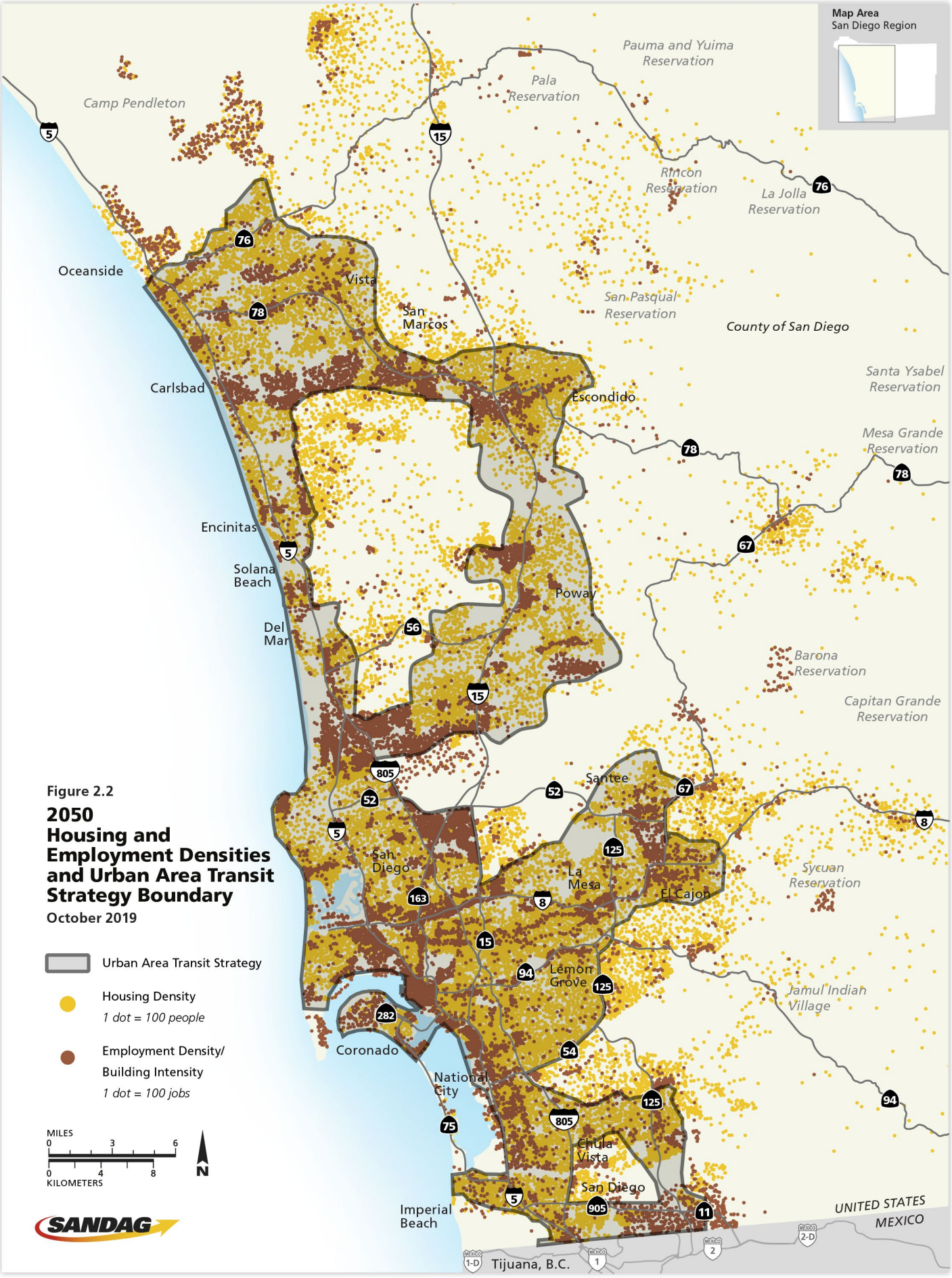


Figure 2.2

2050 Housing and Employment Densities and Urban Area Transit Strategy Boundary

October 2019

Protect the environment by preserving sensitive habitat, open space, and farmland

Complementing plans for how our urbanized areas will develop are plans for protecting parklands, open space, natural resource areas, and farmland. A little less than half of our region's 2.7 million acres have been preserved. This preserved land will be maintained through 2050,[7] according to our forecast, which is based on local land use plans.

Complementing plans for how our urbanized areas will develop are plans for protecting parklands, open space, natural resource areas, and farmland.

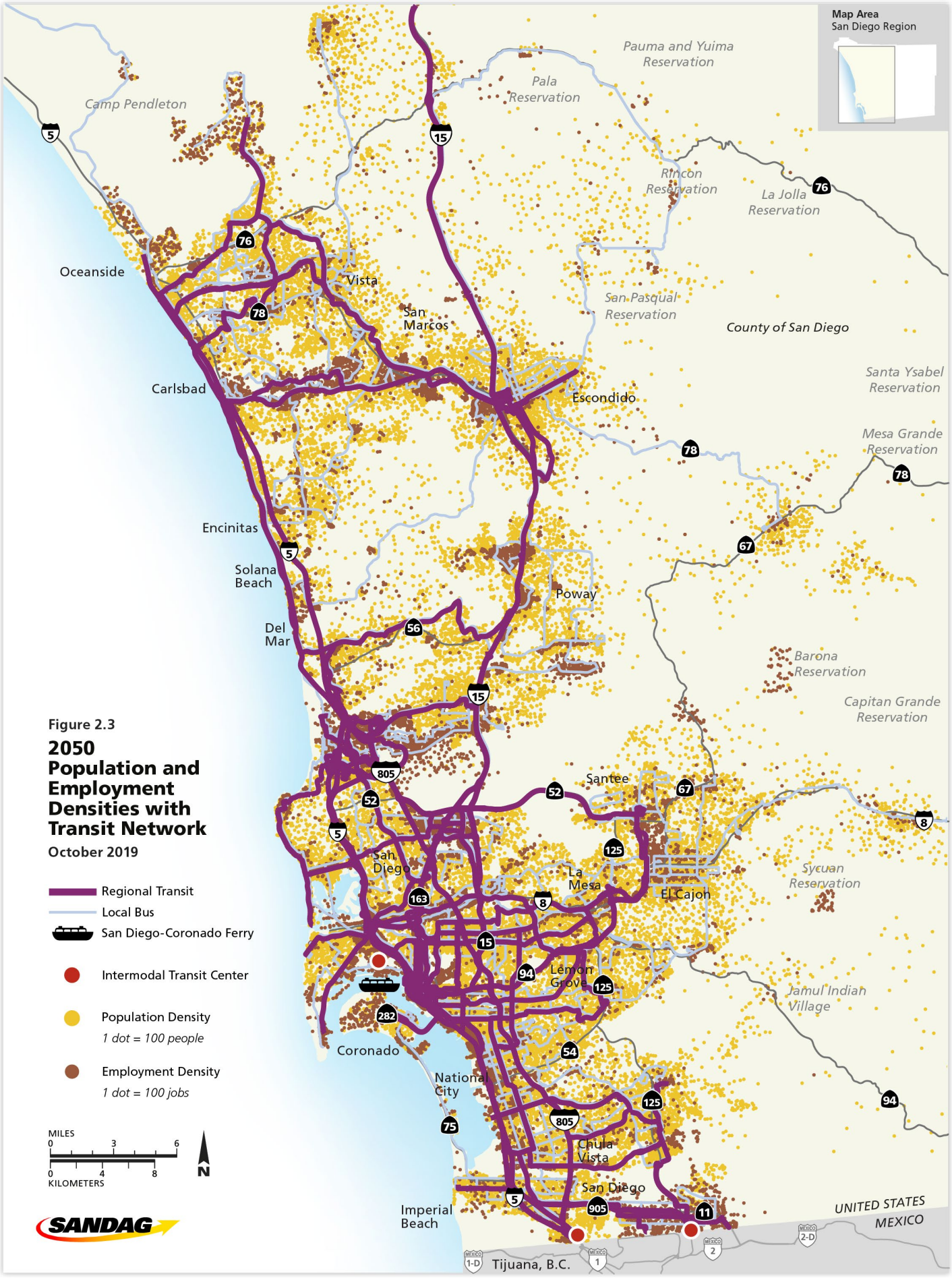
When the region's voters approved the extension of the *TransNet* half-cent sales tax back in 2004, their vote included a provision to fund the $850 million Environmental Mitigation Program (EMP). The primary purpose of the EMP is to purchase habitat as mitigation for future transportation projects. In addition, the EMP provides funding, through a competitive incentive program, to acquire, manage, and monitor sensitive lands in habitat preservation planning areas. This is done to help mitigate the environmental impacts of transportation projects.

Invest in a transportation network that gives people transportation options and reduces greenhouse gas emissions

Our goal for a more sustainable future in San Diego is one in which fewer people choose to drive alone, and more people have increased travel choices available to them. Those choices will include an ever-expanding, more accessible, and more convenient public transit system; carpooling; ridesharing; and more networks of interconnected biking and walking paths. These are just a few of many investments we'll discuss later in this chapter. To see a visual overview of these investments, check out the following series of maps (Figures 2.3, 2.4, and 2.5), which are overlaid with data on projected population and employment.

New transportation investments will help us improve existing infrastructure with technology designed to help cut congestion and travel times. Meanwhile, strengthening our public transit system and other transportation choices where most of us live and work will give us more options for getting around. Today, about a third of our region's residents lives within a half mile of high-frequency public transit. By 2050, that number is projected to jump to nearly55 percent. This increase will be driven by local jurisdictions planning for more housing near transit stations and to investments in more high frequency transit routes closer to existing and future housing and jobs. These changes will help reduce per capita greenhouse gases emitted in the region.

To maximize our transportation investments, particularly those in transit, we recognize that we need to pay close attention to the mix of land uses and urban design near existing and planned transit stations. To focus more sharply on implementing land uses that support our transit investments – such as existing transit stops and future transit stations – SANDAG worked with a wide variety of stakeholders to develop Regional Transit Oriented Districts: A Strategy for the San Diego Region.[8]This Regional Transit Oriented Development (TOD) Strategy focuses on identifying tools, techniques, and actions for implementing and prioritizing TOD. Implementing the Regional TOD Strategy will be an important step toward carrying out the 2019 Federal RTP.


Map Area
San Diego Region
Pauma and Yuima Reservation
Pala Reservation
Camp Pendleton
Rincon Reservation
La Jolla Reservation
Oceanside
Vista
San Marcos
San Pasqual Reservation
County of San Diego
Carlsbad
Escondido
Santa Ysabel Reservation
Mesa Grande Reservation
Encinitas
Solana Beach
Poway
Del Mar
Barona Reservation
Capitan Grande Reservation
Santee
El Cajon
La Mesa
Sycuan Reservation
San Diego
Lemon Grove
Jamul Indian Village
Coronado
National City
Chula Vista
Imperial Beach
San Diego
Tijuana, B.C.
UNITED STATES
MEXICO
Figure 2.3
2050 Population and Employment Densities with Transit Network
October 2019
Regional Transit
Local Bus
San Diego-Coronado Ferry
Intermodal Transit Center
Population Density
1 dot = 100 people
Employment Density
1 dot = 100 jobs
MILES
0 3 6
0 4 8
KILOMETERS
N
SANDAG

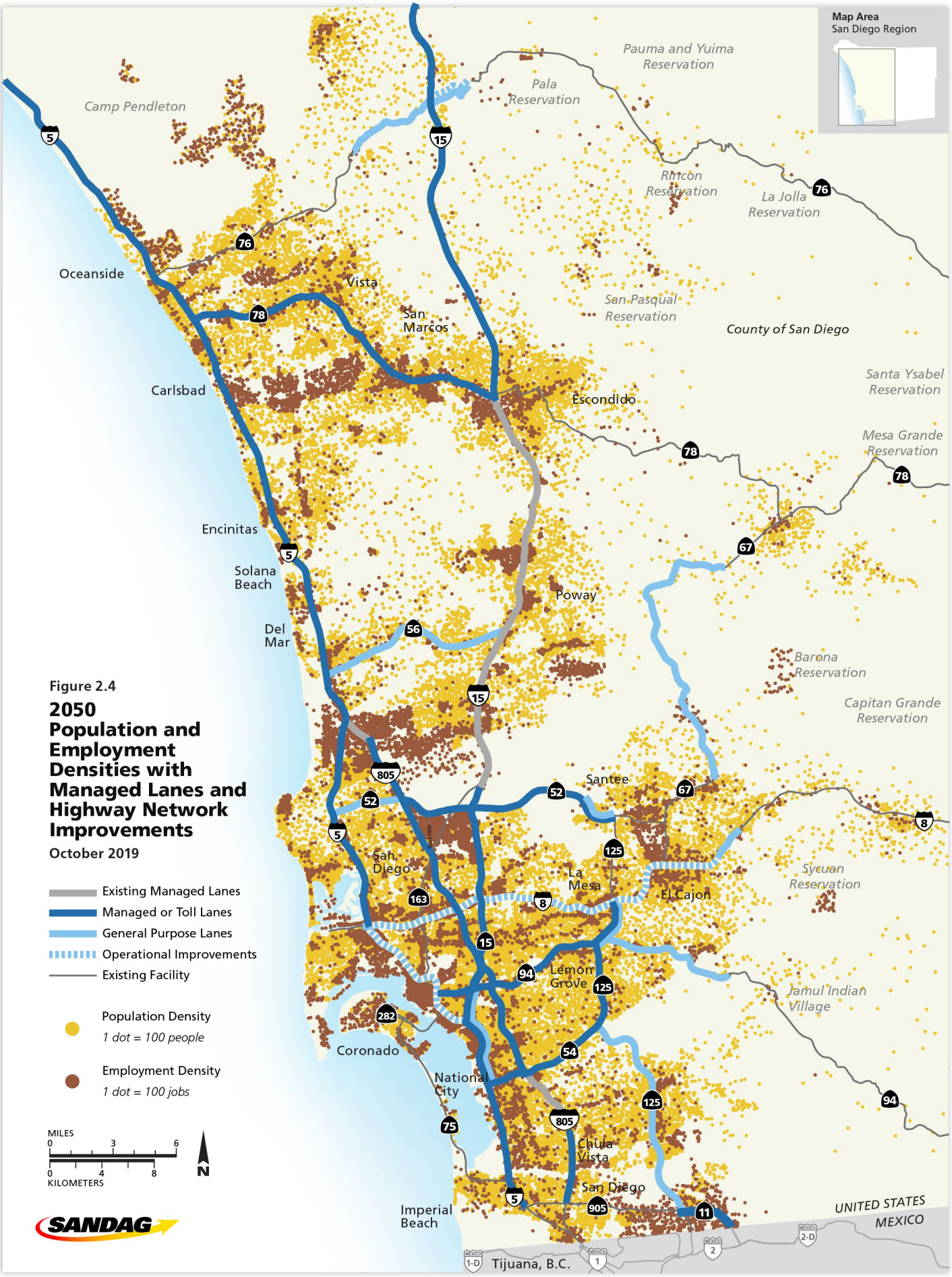
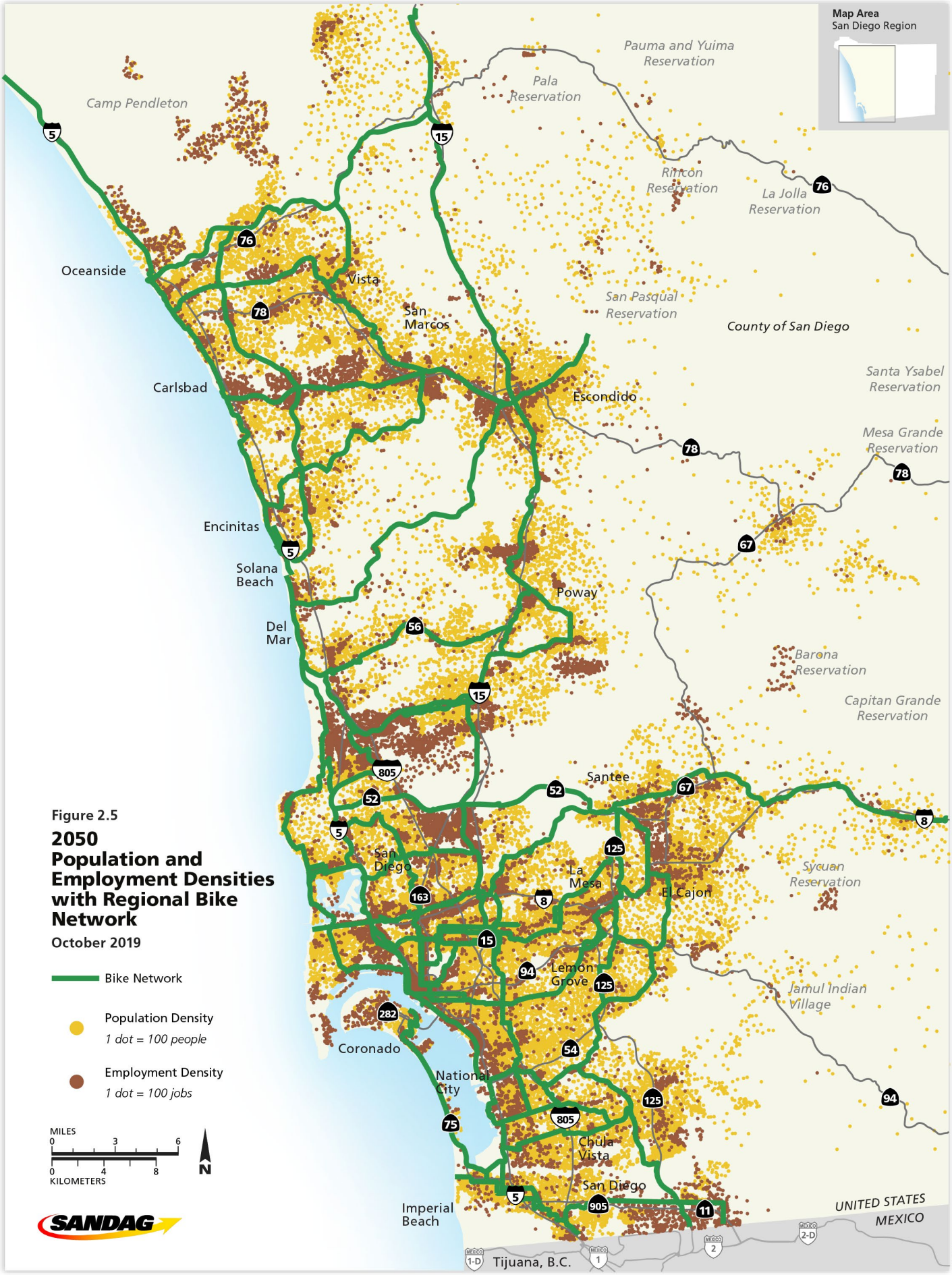


Figure 2.4

2050 Population and Employment Densities with Managed Lanes and Highway Network Improvements

October 2019

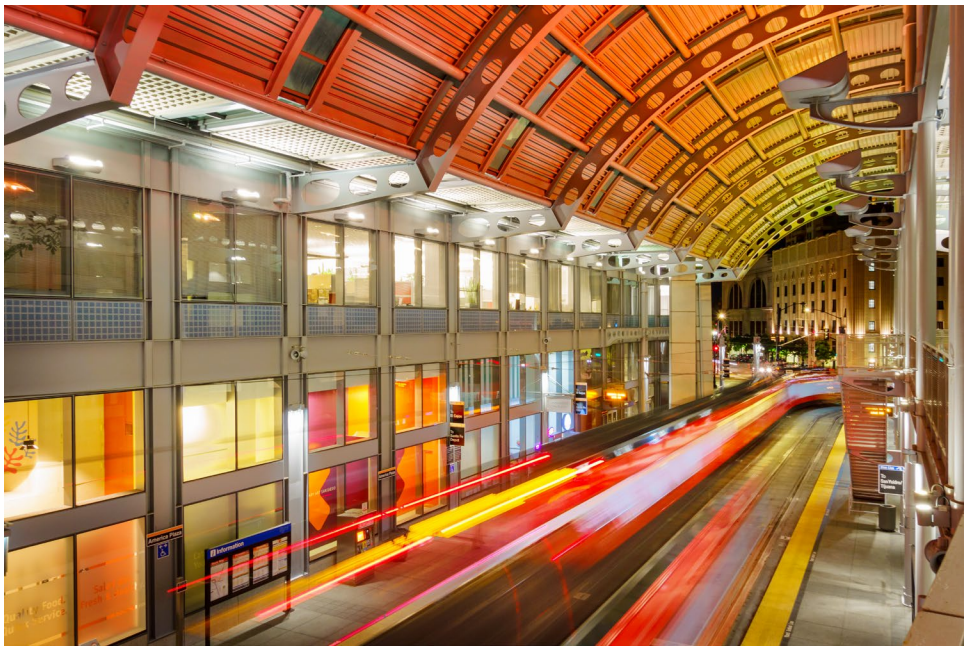

Map Area
San Diego Region
Pauma and Yuima Reservation
Pala Reservation
Camp Pendleton
Rincon Reservation
La Jolla Reservation
Oceanside
Vista
San Marcos
San Pasqual Reservation
County of San Diego
Carlsbad
Escondido
Santa Ysabel Reservation
Mesa Grande Reservation
Encinitas
Solana Beach
Poway
Del Mar
Barona Reservation
Capitan Grande Reservation
Santee
Figure 2.5
2050 Population and Employment Densities with Regional Bike Network
October 2019
Bike Network
Population Density
1 dot = 100 people
Employment Density
1 dot = 100 jobs
San Diego
La Mesa
El Cajon
Sycuan Reservation
Lemon Grove
Jamul Indian Village
Coronado
National City
Chula Vista
San Diego
Imperial Beach
UNITED STATES
MEXICO
Tijuana, B.C.
MILES
0 3 6
0 4 8
KILOMETERS
N
SANDAG

Our transportation investments are not just about the transportation projects themselves. They're also about the surrounding land uses that make our communities livable and vibrant.

It is also important to improve the quality of our streets. For years, a growing movement has been underway to convert our streets, over time, to roads that serve the needs of a range of users that is broader than those who drive cars. This effort to create "complete streets" involves rethinking roadway design to better accommodate people who are walking and riding bikes. The good news is that many of our local jurisdictions have adopted, or developing, local complete streets policies that are consistent with Assembly Bill 1358 (Leno, 2008) – The Complete Streets Act. In 2014, SANDAG adopted a Regional Complete Streets Policy[9] for future improvements on SANDAG transportation infrastructure projects, a policy that is integrated into the 2019 Federal RTP.

Address the housing needs of all economic segments of the population

As we discussed in Chapter 1, providing adequate housing for a growing number of people, from all income levels and at all stages of their lives, continues to be one of the major goals for our region.[10] The land use pattern of the 2019 Federal RTP is based on the Regional Growth Forecast, which in turn draws its information from the general plans of the region's local jurisdictions. The Regional Growth Forecast serves as the basis of the 2019 Federal RTP.



Implement the 2019 Federal RTP through Incentives and Collaboration

The course charted by the 2019 Federal RTP won't be implemented by SANDAG alone. Achieving the 2019 Federal RTP's vision and goals requires collaboration among local jurisdictions, Caltrans, transit operators, developers, water agencies, energy providers, other infrastructure providers, and a wide range of interest groups, stakeholders, and organizations.

The Transportation Network – A System that Offers More Ways to Get Around

A transportation system that offers more choices to get around empowers people to choose more sustainable ways to travel. The result is improved air quality and a better natural environment. It also means improved connections between businesses and their workers, customers, and partners – and that fuels economic growth. This ultimately makes the system itself more functional, because more choices allow people and businesses to choose the best options for them – for the kinds of trips they're making and the time of day they're making them.

The 2019 Federal RTP outlines the investment of nearly $208 billion (in year-of-expenditure dollars) from local, state, and federal sources to build a comprehensive, interconnected transportation system that provides choices.

The 2019 Federal RTP will help guide investments in our transportation system over the next 30 years. It outlines the investment of nearly $208 billion in year-of-expenditure dollars in local, state, and federal resources to build a comprehensive, interconnected transportation system that offers people real choices.

All this investment will improve mobility for everyone and gives people more freedom by creating more travel choices. Doing so, while also taking steps to protect the environment – isn't just a goal for our everyday trips. It's vital for shipping the goods that help fuel our regional economy, and for keeping our region healthy. How we all get from point A to point B is important, and it impacts the quality of our lives. Commuting to work, getting to school, shopping, running errands, and saving time for some fun away from home – it all requires mobility. We all want the freedom to choose how and when we get around, whether it's driving a car on the highway, taking the local bus or one of the regional *Rapid* services, catching the COASTER, SPRINTER, or Trolley, jumping on a bike, or just taking a walk.

Building a System That Meets the Needs of a Growing Region

Our region's current transportation network, shown in Figure 2.1, includes 390 miles of regional public transit service and 1,236 miles of local public transit service. The existing network also includes more than 30 miles of Managed Lanes (high occupancy vehicle (HOV) and Express Lanes) on sections of Interstate 5 (I-5), Interstate 15 (I-15), and Interstate 805 (I-805). In addition, the network consists of 1,340 miles of bike routes and amenities, and about 9,400 miles of sidewalks.[11] Rounding out the network and supporting connectivity for all transportation are thousands of miles of local streets and roads maintained and managed by the region's individual cities and the County of San Diego.

Between now and 2050, we will steadily add more high-quality public transit and expand our regional network of interconnected bike routes and walking paths. Also planned is a connected and free-flowing system of Managed Lanes on our highways.[12]

Selecting the Transportation Network

The development of the 2019 Federal RTP has mirrored the development of San Diego Forward: The 2015 Regional Plan (2015 Regional Plan). Updated revenue projections were developed for the likely amount of funding that would be available for transportation purposes, and in what time periods the funds would be available between now and 2050. Project costs were also updated to include the latest information on construction and material prices. This 2019 Federal RTP carries forward the projects, programs, and policies included in the 2015 Regional Plan, while the region continues to work on developing San Diego Forward: The 2021 Regional Plan.

Constructing and managing a transportation network that will work best for our region into the future – and that we can afford – is no small challenge. But the 2019 Federal RTP has been guided by the three SANDAG Board-adopted goals of Innovative Mobility and Planning, a Vibrant Economy, and a Healthy Environment and Communities. To predict the success of the network included in the 2019 Federal RTP, we subjected it to ten key questions designed to gauge the performance of the chosen network (Figure 2.16). Appendix N: Evaluating the Performance of the Transportation Network, includes detailed performance results at the regional, subregional, and corridor level, and the methodology that SANDAG used for estimating the performance measures.[13] The SANDAG travel demand model used for this analysis is documented in Appendix T: SANDAG Travel Demand Model and Forecasting Documentation.

Elements of 21st Century Mobility

An Expanded and More Efficient Public Transit System

Where We've Been – San Diego Trolley Launched a New Era in the '80s

Back in 1981, the new San Diego Trolley marked a big leap forward for public transit. But a lot has changed since then – for the better. What was a limited collection of local bus routes in the 1970s has evolved into a system of modern local bus services and regional high-speed bus service (*Rapid*) paired up with efficient rail services, including the San Diego Trolley, SPRINTER, and COASTER lines. The result? Annual transit boarding on public transit has increased nearly 170 percent from 42 million riders in 1981 to 113 million riders in 2016.

Where We're Headed – A Transit Strategy Focused on the Most Urbanized Areas

Over time, plans change to reflect the progress we've made and to incorporate new and changing ideas. The transit plan envisioned 30 years ago has been largely realized. Now there's a new vision for the next generation of public transit. The UATS,[14] developed for the 2050 RTP in 2011 and used in this 2019 Federal RTP as a foundation of the transit network, aims to create a world-class public transit system similar to what many people have experienced in other major cities worldwide. The UATS studied the transit strategies that work best in other cities, and built upon local market research to help identify what San Diegans want from their transit system. These include:

- Making a strong link between how we design local development projects and how we design the regional transit systems that serve them.

- Focusing improvements to the transit system where the most people and jobs are concentrated, so riders can easily walk and bike to transit stations.
- Making transit more convenient. Market research shows that if trains and buses come by at least every ten minutes, people don't have to plan their day around transit. Instead, transit is planned around them.
- Offering a range of transit services that fits the needs of riders. Some people use transit for short trips, where local transit services fit their needs. Others use transit for longer trips and where express services with fewer stops are a better option.
- Making the transit trip fast and reliable. Transit-only lanes, traffic lights that give priority to public transit vehicles, and freeway Managed Lanes can all help transit vehicles bypass congested areas.
- Offering lots of ways to get to and from transit stations, including carsharing, bikesharing, and employer shuttles. Infrastructure and safety improvements for people who bike or walk to transit can also help.
- Making transit easy to use. Maximizing investments in current technology can make paying fares easier, transit information more readily available, and enhance choices for getting to and from transit stations.

The UATS used market research, along with local land use plans, to identify the most effective places to concentrate transit improvements. The 2019 Federal RTP focuses regional transit investments that serve major activity centers, residential areas, and places of employment. In addition, TOD and complete streets policies help complement the performance of our transit network, the friendliness of our streets, and the overall livability of our communities.

Looking Ahead: The Transit Investments Planned for 2050

So, what new transit services and improvements are we planning? In our growing region, public transit will play an increasing role in lightening the load on our roads and highways and getting people where they want to go quickly and safely. The following is a summary of the major transit projects included in the 2019 Federal RTP.

Los Angeles-San Diego-San Luis Obispo (LOSSAN) Rail Corridor: The COASTER, Amtrak, and Metrolink rail corridor is the nation's second busiest. Premier passenger rail services connect the San Diego region to Los Angeles and other points north and east. The 2019 Federal RTP builds on this corridor by adding more track capacity and improved stations. These enhancements will also benefit shipping, because the LOSSAN corridor serves as the region's main freight rail line. Figure 2.6 illustrates the Southern California intercity and commuter rail services.

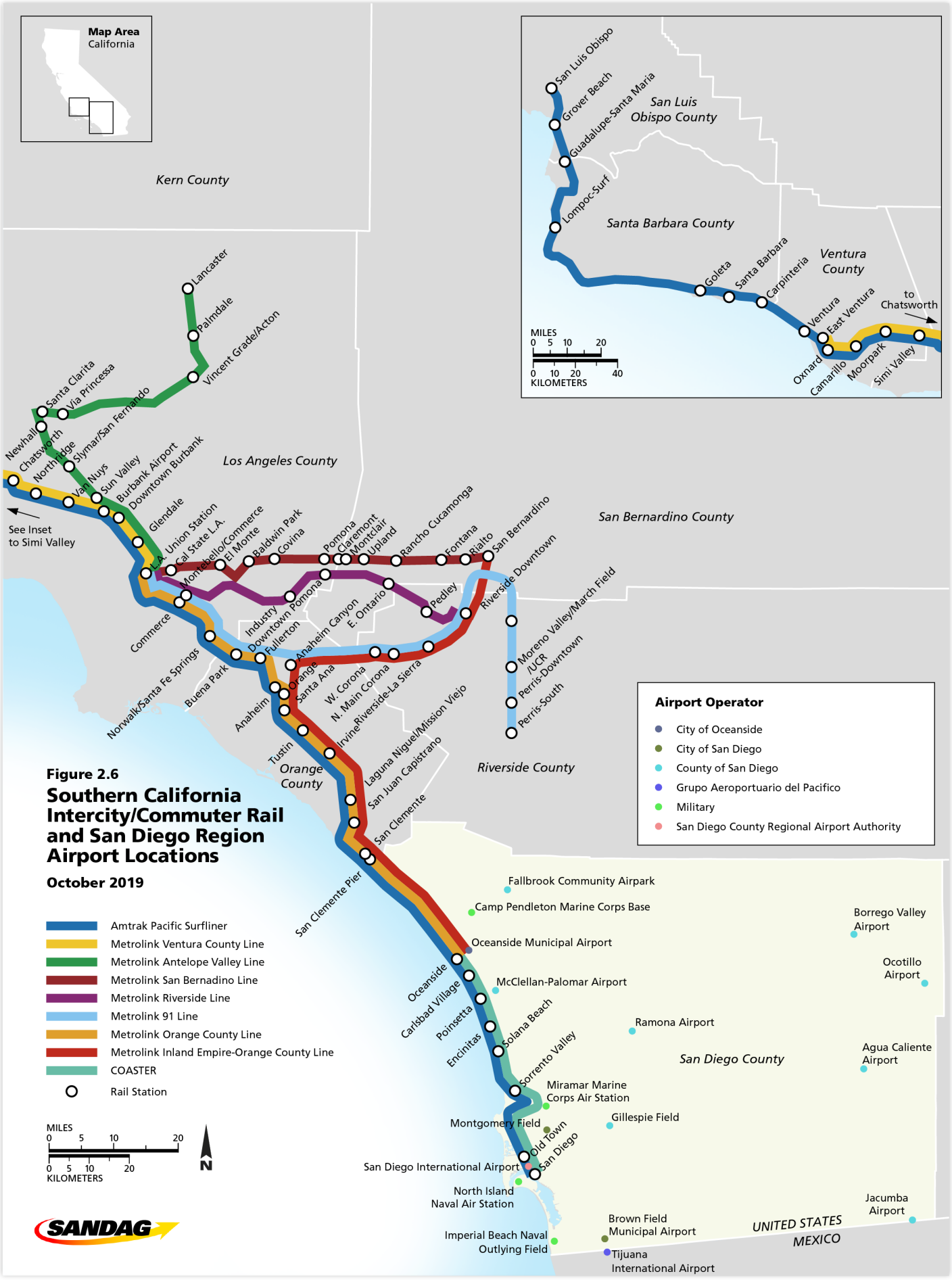


Figure 2.6

Southern California Intercity/Commuter Rail and San Diego Region Airport Locations

October 2019

Trolley/SPRINTER/Rapid service: These routes serve as the trunk lines of the regional transit system. Together, they offer fast and reliable rail and bus travel with limited stops in key travel corridors. The Trolley and SPRINTER operate on their own dedicated rail lines, while *Rapid* service operates on freeway Managed Lanes and on local streets. Planned improvements include:

- The Mid-Coast Trolley extending service from Santa Fe Depot in Downtown San Diego to the University City community, serving Old Town, UC San Diego, and Westfield University Towne Centre.
- SPRINTER double-tracking, which will enable higher frequency service and the extension of service from Escondido south to Westfield North County.
- A new Trolley line from San Ysidro to Carmel Valley along the I-805/ I-15 corridors via Chula Vista, National City, Southeastern San Diego, Mid-City, Mission Valley, Kearny Mesa, University City, and Sorrento Valley.
- A new Trolley line from Pacific Beach to the El Cajon Transit Center via Clairemont, Kearny Mesa, Mission Valley, and San Diego State University (SDSU).
- A new Trolley line from Downtown San Diego to SDSU along the Park Boulevard and El Cajon Boulevard corridors via Balboa Park, North Park, and City Heights.
- A new Trolley line from University City to Sorrento Valley, which will include a connection to the COASTER.

- New *Rapid* service from San Ysidro to Downtown San Diego along the I-5 corridor.
- New *Rapid* service for commuters. This will offer peak-period service to key regional job centers along the Managed Lanes of key freeway corridors, including South Bay to Kearny Mesa/University City/Sorrento Mesa via the I-805 corridor; East County to Kearny Mesa/University City/Sorrento Mesa via the State Route (SR) 52 and I-805 corridors; East County to Downtown San Diego via the SR 94 corridor; South County/Mid-City to Palomar Airport Road corridor via the I-805/I-5 corridors; and Downtown San Diego to Kearny Mesa along the SR 163 corridor.
- New *Rapid* service on arterials. This will operate on arterial roadways and provide limited-stop, high-speed service along several key corridors throughout the region, supplementing existing local bus services. This new arterial service will benefit from a variety of measures designed to give public transit priority along busy roadways (e.g., signal priority for buses and transit-only lanes). The frequency of service will be every ten minutes (at least) on most routes throughout the day.

Figure 2.7 shows the network of rail services by 2050, and Figure 2.8 shows the network of *Rapid* services.


Map Area
San Diego Region
Pauma and Yuima Reservation
Pala Reservation
Camp Pendleton
Rincon Reservation
La Jolla Reservation
Oceanside
Vista
San Marcos
San Pasqual Reservation
County of San Diego
Carlsbad
Escondido
Santa Ysabel Reservation
Mesa Grande Reservation
Encinitas
Solana Beach
Poway
Del Mar
Barona Reservation
Capitan Grande Reservation
Santee
San Diego
La Mesa
El Cajon
Sycuan Reservation
Lemon Grove
Jamul Indian Village
Coronado
National City
Chula Vista
San Diego
Imperial Beach
UNITED STATES
MEXICO
Tijuana, B.C.
Figure 2.7
2050
Revenue Constrained
Rail Services
October 2019
High Speed Rail
COASTER/AMTRAK/Metrolink
Trolley/SPRINTER
SPRINTER Express
Streetcar/Shuttle
Local Bus
Intermodal Transit Center
MILES
0 3 6
0 4 8
KILOMETERS
N
SANDAG


Map Area
San Diego Region
Pauma and Yuima Reservation
Pala Reservation
Camp Pendleton
Rincon Reservation
La Jolla Reservation
Oceanside
Vista
San Marcos
San Pasqual Reservation
County of San Diego
Carlsbad
Escondido
Santa Ysabel Reservation
Mesa Grande Reservation
Encinitas
Solana Beach
Poway
Del Mar
Barona Reservation
Capitan Grande Reservation
Santee
San Diego
La Mesa
El Cajon
Sycuan Reservation
Lemon Grove
Jamul Indian Village
Coronado
National City
Chula Vista
San Diego
Imperial Beach
UNITED STATES
MEXICO
Tijuana, B.C.
Figure 2.8
2050
Revenue Constrained
Rapid Services
October 2019
Rapid Transit
Local Bus
Intermodal Transit Center
MILES
0 3 6
0 4 8
KILOMETERS
N
SANDAG

Local Bus Services: Local bus services remain the backbone of the regional transit system. Most routes within the UATS boundary will see service frequencies increased to every ten minutes all day, creating a network of convenient local bus service for short-distance trips and access to rail and *Rapid* services.

Ferry: Another available transportation option is the San Diego-Coronado Ferry. This ferry service offers people more travel choices and vital connections to key job and activity centers. The San Diego-Coronado Ferry, owned and operated by Flagship Cruises & Events, offers two routes that serve Coronado from San Diego, with departures from Broadway Pier every hour and from the San Diego Convention Center every thirty minutes.[15] A 15-minute ride delivers passengers to the Coronado Ferry Landing, a waterfront marketplace just north of the bridge. Passengers can bring their bicycles for no extra charge. Meanwhile, people who take the ferry during weekday morning commute hours ride free and are given a return ticket to use in the afternoon. The ferry has an average of 73,000 boardings per year during commute hours, based on data from 2019, and it supplements an existing bus service (Route 901), which serves about 380,000 passengers annually during the hours the Commuter Ferry Service is in operation.

Streetcars/Shuttles: Streetcars and shuttles are great for short distance trips, and in many ways they can help strengthen community character and generate economic activity. Streetcars are rail vehicles that operate in auto travel lanes and offer short-distance rides within neighborhoods. They also offer connections to regional transit lines. The 2019 Federal RTP includes streetcars that would operate in several neighborhoods in and around Downtown San Diego, connect North Park with Downtown San Diego, and link La Jolla with Mission Beach via Pacific Beach. A shuttle in Downtown San Marcos is also included. Most funding for streetcars and shuttles is assumed to come from non-transit sources, such as local agencies and business improvement districts.

Seniors and People with Disabilities: The 2019 Federal RTP reserves 10 percent of transit operations funding for seniors and persons with disabilities. Half of these funds is reserved for Americans with Disabilities Act public-transit complementary paratransit services. The other half of the funds is reserved to support a coordinated system of services provided by social services agencies for "door-through-door" assistance for seniors and persons with disabilities.

High-Speed Train Service: In the coming years, our state will be home to a high-speed rail line connecting Northern and Southern California. The first legs of this exciting rail system are being built now in the Central Valley. When completed, high-speed trains will connect San Diego, Los Angeles, San Francisco, and Sacramento. In San Diego, high-speed trains will arrive at a future Intermodal Transportation Center in the vicinity of the San Diego International Airport. This is a project funded by the State of California.[16]The federal government also has provided funded for the high-speed rail project.

Figure 2.9 shows all of the transit investments included in the 2019 Federal RTP by 2050. The 2019 Federal RTP offers a robust and interconnected network of services that promote quick and convenient travel to the places we live, work, and play in our region's most urbanized areas. We have come a long way since the initial transit network from the 1970s. With nearly 50 percent of the 2019 Federal RTP's revenues going toward transit infrastructure and operations, we are moving ambitiously toward the world-class transit system envisioned in the UATS – a natural progression that builds on our success over the last 30 years.

With nearly 50 percent of the Regional Transportation Plan's revenues going toward transit infrastructure and operations, we are moving ambitiously toward the world-class transit system envisioned in the Urban Area Transit Strategy – a natural progression that builds on our success over the last 30 years.

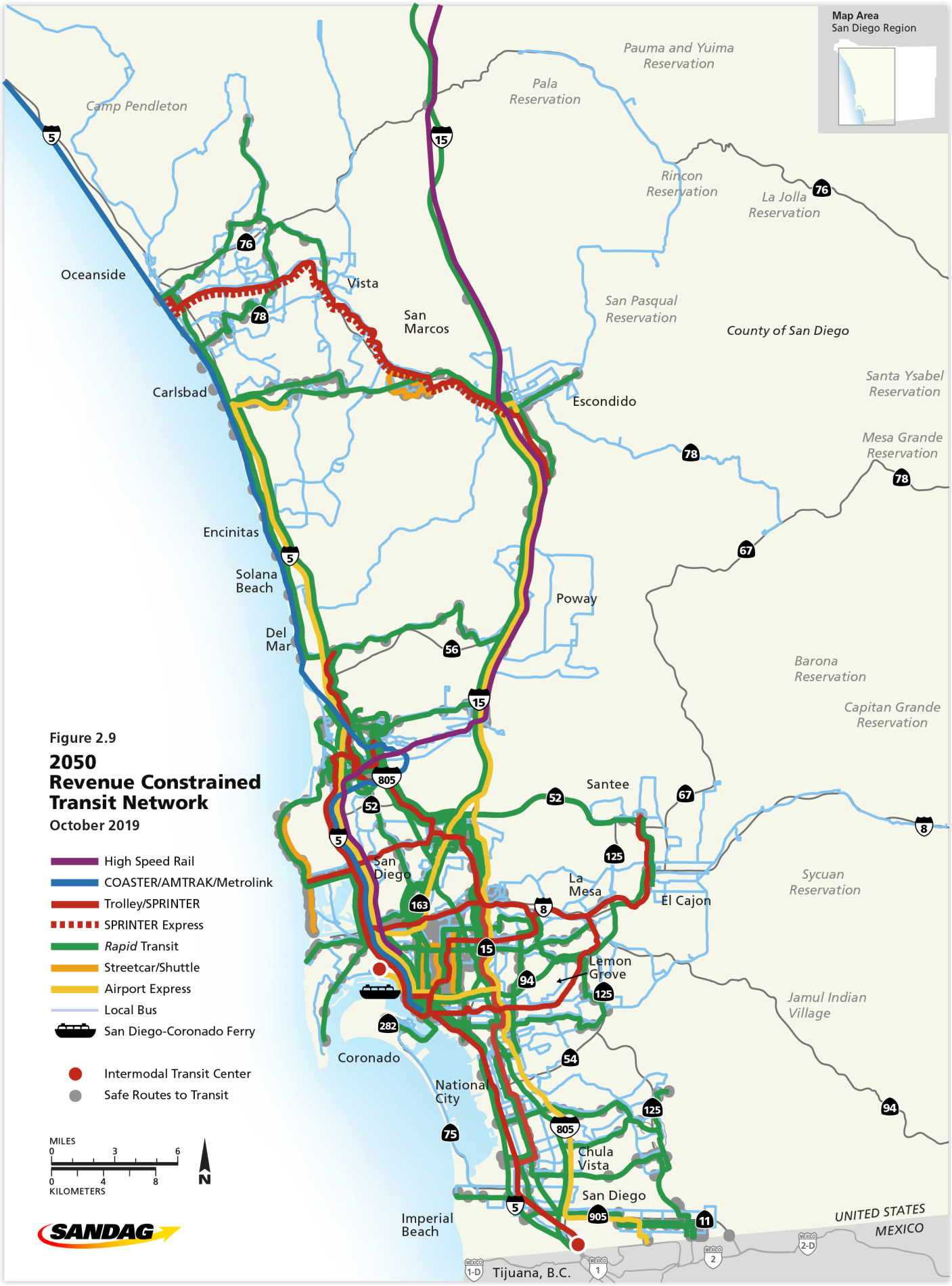


Figure 2.9

2050 Revenue Constrained Transit Network

October 2019

The Active Transportation Network: Healthy Alternatives to Driving

Over time, choosing to walk and bike has become known as active transportation, because these two forms of getting around provide opportunities for exercise (i.e., being active), rather than letting a car do the work. Biking and walking, while not for everybody all the time, are important choices for many people. At some point in the day, walking is a part of most every person's life. That's particularly true in mixed-use, smart growth neighborhoods, where people often walk and sometimes bike between their homes, stores, parks, schools, and jobs.

Our active transportation projects are intended to make walking and biking safer, particularly for students, seniors, and people with disabilities. Walking and biking will only be viable choices for people if they're safe. The 2019 Federal RTP recognizes this, and so it incorporates safe bike and pedestrian access into investments in other modes of travel, including public transit and highway improvements. The 2019 Federal RTP's Active Transportation Implementation Strategy[17] includes the projects and programs described below.

Our active transportation projects are intended to make walking and biking safer, particularly for students, seniors, and people with disabilities.

Regional Bike Plan: The regional bike network is a valuable resource for people who choose to bike. This network was identified in Riding to 2050: The San Diego Regional Bicycle Plan, which SANDAG adopted in 2010.[18] It is incorporated into the 2019 Federal RTP. As shown in Figures 2.10 and 2.11, the bike plan details 40 interconnected bike corridors throughout the region, which total more than 500 miles of bike routes.[19] The goal of the Regional Bicycle Plan is to make it more practical and desirable for people to choose biking for everyday trips. By 2050, the 2019 Federal RTP includes full build-out of the entire regional bike network. Most bike projects will have safety improvements not only for people on bikes, but also for pedestrians, including shortened crossing distances at intersections.

Figure 2.10

2050 Revenue Constrained Regional Bike Network

October 2019


Figure 2.11
2050 Regional Bike Network Corridor Alignments
October 2019
1 Bayshore Bikeway
2 Bay to Ranch Bikeway
3 Border Access Corridor
4 Camp Pendleton Trail
5 Carlsbad - San Marcos Corridor
6 Central Coast Corridor
7 Centre City - La Mesa Corridor
8 Chula Vista Greenbelt
9 City Heights - Old Town Corridor
10 Clairemont - Centre City Corridor
11 Coastal Rail Trail
12 East County Northern Loop
13 East County Southern Loop
14 El Camino Real
15 Encinitas - San Marcos Corridor
16 Escondido Creek Bikeway
17 Gilman Connector
18 Hillcrest - El Cajon Corridor
19 Imperial Beach Connector
20 Inland Rail Trail
21 Kearny Mesa - Beaches Corridor
22 Kensington - Balboa Park Corridor
23 North Park - Centre City Corridor
24 Mid-County Bikeway
25 Mira Mesa Corridor
26 Mission Valley - Chula Vista Corridor
27 Park Boulevard Connector
28 Poway Loop
29 San Diego River Bikeway
30 San Luis Rey River Trail
31 Santee - El Cajon Corridor
32 Sweetwater River Bikeway
33 Vista Way Connector
34 I-8 Corridor
35 I-15 Bikeway
36 SR 52 Bikeway
37 SR 56 Bikeway
38 SR 125 Corridor
39 I-805 Connector
40 SR 905 Corridor
Freeways and Highways
Regional Arterials
MILES
KILOMETERS
N
SANDAG
Map Area
San Diego Region
Camp Pendleton
Oceanside
Vista
San Marcos
Carlsbad
Encinitas
Solana Beach
Del Mar
Escondido
Pauma and Yuima Reservation
Pala Reservation
Rincon Reservation
La Jolla Reservation
San Pasqual Reservation
County of San Diego
Santa Ysabel Reservation
Mesa Grande Reservation
Poway
Barona Reservation
Capitan Grande Reservation
Santee
Sycuan Reservation
La Mesa
El Cajon
Lemon Grove
Jamul Indian Village
Coronado
National City
Chula Vista
San Diego
Imperial Beach
Tijuana, B.C.
UNITED STATES
MEXICO

Safe Routes to School: The San Diego Regional Safe Routes to School Strategic Plan, which SANDAG adopted in 2010, was designed to help local communities establish Safe Routes to School programs.[20]

Safe Routes to Transit: Safe Routes to Transit projects will make walking or riding a bike between transit stops or stations and a variety of destinations – including residential areas, commercial centers, and places of employment – safer and more comfortable.[21] Retrofit Safe Routes to Transit projects would also be considered as part of the Mobility Hub Implementation Strategy given the nexus between mobility hubs at transit centers and access to those centers by pedestrians and people on bikes.

Education and Data Collection Efforts: The 2019 Federal RTP includes investments in education on bike and pedestrian safety, outreach and encouragement programs such as GO by BIKE, and data collection and modeling.

Active Transportation Improvements Related to Highway and Freeway Interchanges: When walking or riding a bike, crossing highway on-ramps and off-ramps is often the most dangerous and difficult part of a person's trip. The 2019 Federal RTP includes the incorporation of safer crossings as part of future projects at freeway and highway interchanges. Retrofit active transportation improvement projects surrounding existing highway on- or off-ramps will be considered for implementation as part of future operations and maintenance projects using State Highway Operations and Preservation Program dollars.

California Coastal Trail: The California Coastal Trail (CCT) is made up of a series of trails stretching 1,300 miles up and down the California coastline.[22] The CCT is intended as a continuous public right-of-way that extends from the northern border of California to the southern border, all within sight, sound, or at least smell of the ocean. It is the CCT's proximity to the ocean that makes it distinctive among other trails.

SANDAG has developed technical memoranda entitled "Feasibility Study for the San Diego Portion of the California Coastal Trail" to inform the scoping of a comprehensive feasibility study for the region. The documents lay the groundwork and gather preliminary material to help identify existing and potential network segments, linkages, gaps, and coastal access routes. These technical memoranda are located in Technical Appendix U.19: California Coastal Trail Technical Memoranda. A map of the California Coastal Trail is included as Figure A.16 in Appendix A: Transportation Projects, Costs, and Phasing, per Government Code Section 65080.1. Trails identified in the San Diego County Community Trails Master Plan (CTMP) are included on this map as well. Additionally, Figure 2.11 identifies the Coastal Rail Trail as alignment No. 11.

Our investment plan dedicates a great deal of resources to help local jurisdictions improve, rehabilitate, and maintain the local roadways.

Offering People More Route Choices

Local Streets and Roads

Local streets and roads can get busy, especially on weekdays when children are getting dropped off at school and people are heading to work in the morning, and when people are heading home in the afternoon. On many weekends, it seems as though everyone is out – in cars, on bikes, riding scooters and skateboards, walking, and running. So it's vital to keep local streets and roads in good shape and safe.

Our region has thousands of miles of local streets and roads, and they demand a lot of care to make sure they're serving people well. Our investment plan dedicates a great deal of resources to help local jurisdictions improve, rehabilitate, and maintain these local roadways.

An important function of local streets and roads is to accommodate the various buses, Trolleys, and streetcars that connect our local neighborhoods and surrounding communities. So, our investment plan includes funding to ensure that these vehicles can flow smoothly. Among the planned projects, improvements include coordinating traffic signals, managing systems that detect traffic, implementing technology that gives public transit priority on roads and at intersections (such as queue jumpers), and deploying management systems that optimize the flow of arterials.

While local roads and streets are the responsibility of our cities and the County government, completing the Regional Arterial System (RAS) is nevertheless a continued priority in the 2019 Federal RTP.[23] For vanpools, carpools, and solo drivers, regional arterials offer critical links to highways. The RAS is the network of regional roadways and local streets that, along with the system of highways and transit services, allows for a significant amount of mobility throughout the region.

The region's 18 cities and the County have planned improvements to arterials within their jurisdictions, and these improvements are detailed in Appendix A: Transportation Projects, Costs, and Phasing.

Managed Lanes: Adapting the Highway System for Optimal Mobility

The 2019 Federal RTP also supports a flexible highway system. By "flexible" we mean that some highway lanes can be dedicated to certain users to create a wide range of time-competitive travel choices on our highway system. Within this plan, these lanes are referred to as "Managed Lanes." They generally fall into three categories:

The 2019 Federal RTP supports a flexible highway system that can be accessed by many types of users.

- *Express Lanes:* These are lanes in the middle of the highway that give priority access to transit, carpools, vanpools, motorcycles, and certain clean-air vehicles at no cost. Excess capacity on these Express Lanes is available for people driving alone to travel for a fee through the FasTrak® program. These "freeways within a freeway" also can be constructed with moveable barriers, allowing different lane configurations such as three lanes in one direction and one lane in another, instead of two lanes in each direction. Express Lanes are managed to ensure that the people who use them can bypass congestion. Access to Express Lanes is typically provided along the route, and electronic signs post the cost for solo drivers. On-ramps to Express Lanes – such as direct access ramps – allow vehicles to safely drive onto them.

- *Carpool Lanes:* These lanes, also known as HOV or high occupancy vehicle lanes, have a limited number of access points along the highway. They are similar to Express Lanes, but solo drivers are precluded from using them (motorcycles, emergency vehicles, and low-emission vehicles with Clean Air Vehicle decals are allowed single occupancy use of carpool or HOV lanes). Each vehicle that travels onto an HOV lane must carry the minimum number of people posted at the entrance sign. Currently in San Diego County, that number is two, but some areas of the state require three. Some HOV lanes in California are active only during peak commute times, but the HOV lanes in San Diego County operate all day.

- *Transit-Only Lanes:* These lanes are open only to transit vehicles. They accommodate both regional and local bus services.

One of the important features of the Express Lane system is that the fee that solo drivers pay to use Express Lanes (through the FasTrak system) supports transit service along the same corridor. This is now the case along the I-15 corridor and is planned as a feature for other corridors in the future. As shown in Figure 2.12, the 2019 Federal RTP includes a robust system of Managed Lanes that can be designated as Express Lanes, carpool lanes, or transit-only lanes.


Figure 2.12
2050
Revenue Constrained
Managed Lanes and
Highway Network
October 2019
Existing Managed Lanes
Managed Lanes
General Purpose Lanes
Toll Lanes
Operational Improvements
Existing Facility
Freeway Connectors
ML Connectors
Freeway & ML Connectors
Bicycle/Pedestrian Improvements at Freeway Interchanges
C = Conventional Highway
F = Freeway
ML = Managed Lanes
T = Toll Road
R = Reversible Lanes
OPS = Operational Improvements
TL = Transit Lanes
MILES
0 3 6
0 4 8
KILOMETERS
N
SANDAG
Map Area
San Diego Region
Camp Pendleton
Oceanside
Vista
San Marcos
Carlsbad
Encinitas
Solana Beach
Del Mar
Escondido
Pauma and Yuima Reservation
Pala Reservation
Rincon Reservation
La Jolla Reservation
San Pasqual Reservation
County of San Diego
Santa Ysabel Reservation
Mesa Grande Reservation
Barona Reservation
Capitan Grande Reservation
Poway
Santee
La Mesa
El Cajon
Sycuan Reservation
Jamul Indian Village
Lemon Grove
Coronado
National City
Chula Vista
San Diego
Imperial Beach
Tijuana, B.C.
UNITED STATES
MEXICO
8F+4T
4C
4C/6C+OPS
2C
8F+4ML
6F+2ML
10F+4ML
6F
8F/14F +4ML
8F+2ML
6F+2ML(R)
8F/10F +OPS
8F+2TL
10F+2ML
8F+OPS
8F/10F +2ML
8F/10F+2ML
8F+ 4ML
8F+ 2ML
6F+ 2ML
6F/8F +OPS
4F
6C
8F
5086 FRTP

The San Diego region is building its Managed Lanes system incrementally. In 2012, the region had about 30 miles of HOV lanes and Express Lanes on sections of I-5, I-15, and I-805. An important strategy of the 2019 Federal RTP is to continue to guide the development of the freeway system into a fully interconnected network of Managed Lanes that supports not only carpools, vanpools, and fee-paying solo drivers, but also the extensive network of *Rapid* transit services that is planned for full build-out with the 2019 Federal RTP.[24] The 2019 Federal RTP includes funding for four new Managed Lanes on segments of I-5, I-15, and I-805, and funding for two new Managed Lanes on portions of SR 52, SR 54, SR 78, SR 94, and SR 125. By 2050, the region's Managed Lane system will include about 160 miles. In addition to Managed Lane improvements, the 2019 Federal RTP includes direct Managed-Lane-to-Managed-Lane connectors where major facilities intersect.

The I-15 corridor is one of the region's best examples for how to integrate transit and roadways into a flexible transportation system for an entire corridor. The 20-mile segment between SR 163 and SR 78 includes four Express lanes that feature a movable barrier (similar to the movable barriers on the San Diego-Coronado Bridge); dynamic pricing; multiple access points to regular highway lanes; and direct access ramps for buses, high occupancy vehicles, and toll-paying customers. Revenues from toll-paying customers are used to help fund public transit in the corridor. High-frequency *Rapid* transit vehicles operate in these lanes, enhancing connectivity to regional job centers for residents throughout the region.

Rapid transit express service with limited stops, between San Ysidro and Downtown San Diego, will operate on the I-5 Managed Lanes. During peak periods, *Rapid* transit vehicles using the I-805, I-5, SR 52, and SR 94 Express Lanes will carry commuters from their neighborhoods to where they work. Routes include South County to Kearny Mesa/University City/Sorrento Mesa on the I-805 corridor; East County to Kearny Mesa/University City/Sorrento Mesa on the SR 52 and I-805 corridors; East County to Downtown San Diego via the SR 94 corridor; and South County/Mid-City to Palomar Airport Road via the I-805 /I-5 corridors. South County *Rapid* routes also provide services to individuals who live in Baja California.

Highway Improvements

Highway improvements (including highway lanes, freeway connectors, and operational improvements) complement and complete the existing highway network. Planned improvements will increase the efficiency of the regional transportation system. The vast majority of the investments are focused on Managed Lanes that also support transit and carpooling instead of traditional general purpose lanes.

Toll Roads

SR 11, a two-mile toll highway, will soon connect the future Otay Mesa East Port of Entry (POE) with the rest of the region's freeway system via SR 905 and the South Bay Expressway. The segment of SR 11 between SR 905 and Enrico Fermi Drive opened in 2016 along with northbound connectors from the new segment of SR 11 and SR 905 onto the northbound SR 125. The final segment of roadway connecting to the future site of the border crossing is now under construction. The new POE will offer an alternative to the highly congested ports of entry at Otay Mesa and San Ysidro, benefitting the regional economy and the environment by reducing border-crossing wait times. Separately, new toll lanes are envisioned on the I-5 corridor north of SR 76 and on I-15 north of SR 78, if demand builds over time and the improvements can be financed with toll revenues.

Applying the Latest Technologies to Maximize Mobility

To make our transportation system as efficient and user-friendly as possible, the 2019 Federal RTP envisions a network of high-tech tools to help transportation managers keep the system running smoothly, and to help travelers make their trips faster, more efficient, and trouble-free.

Intelligent Transportation Systems (ITS) is the term that describes a whole variety of technology applications to different modes of travel. We've all seen those electronic alerts on the freeway that give us a heads up on road construction or warn us of an accident up ahead. And many of us have used FasTrak transponders to zip onto Express Lanes, toll roads, and bridges. Those are basic examples of how technology can be used to keep us moving efficiently and safely. Technology also can be leveraged inside cars, on local roads, at intersections, with public transit, and throughout bike and pedestrian networks. Technology, applied intelligently, is most powerful when it gives each of us the ability to choose the best mode of travel for a given circumstance.[25]

Our region already uses, is developing, or plans to develop several emerging technologies to make the transportation system more efficient.[26] Here are several examples:

- **Vehicle Technologies:** It's the kind of stuff you see now in movies and sci-fi television shows – cars and other vehicles that drive themselves and are connected to one another and the larger environment through which they're traveling. But those kinds of technologies aren't fiction. They're coming. Autonomous or automated vehicles are evolving from today's driver-assist vehicles to vehicles that will be able to operate independently and use sensors to survey their surroundings and respond to changing conditions. Vehicles that communicate wirelessly with one another will work cooperatively to increase the capacity of highway lanes, use fuel more efficiently, and increase safety. In the next decade, driverless cars are expected to begin replacing conventional cars. Autonomous vehicle technologies will transform public transit as well, increasing efficiency and accessibility while reducing congestion.

Multimodal Management: Our region's network of freeways, arterials, roads, transit systems, bike paths, and sidewalks must be managed as a unified transportation system so that all modes of travel work together most efficiently. Doing this requires implementing Integrated Corridor Management. An important step toward making this happen is expanding the Regional Communications Network, a high-speed, inter-governmental data network that supports the San Diego region by defining, designing, and deploying specific projects that make the entire system work more effectively. The Regional Communications Network also improves mobility by allowing system managers to assess real-time travel conditions and then provide travelers with options. Expanding the Regional Communications Network would result in:

- The deployment of a Dedicated Short-Range Communications system to support future Vehicle Infrastructure Integration.
- Enhanced data collection for regional arterials, bikeways, and pedestrian facilities in order to better monitor how the transportation system is performing.
- An enhanced California Freeway Performance Measurement System, which collects data that can be used to improve both transit and road performance.
- An emerging technology within Multimodal System Management is real-time computer modeling and simulations of multiple modes of travel. These applications are designed to simulate and evaluate traffic patterns, and then develop strategies for making the transportation system more efficient across jurisdictional boundaries – all within minutes. Equipped with this technology, system managers can better forecast traffic patterns and pursue operational changes to minimize delays and congestion.

- **Smart Parking:** Smart parking combines management strategies and technology to deliver advanced parking solutions for communities. Smart parking systems can inform people where, when, and how much parking is available in the vicinity of their destination – even before they take their trip. Smart parking systems collect, analyze, and report data to help determine, for example, how public parking lots are being used, and to provide people the facts they need to use available parking more efficiently. Information like this can help people decide when to leave, whether to travel by car or by transit, what public transit service to take, or what route to choose.

- **Universal Transportation Account:** A unified or universal transportation account combines all forms of public transportation payments, including transit fares, municipal parking, and toll collection into a single user-friendly system. By offering rewards based on frequent use, toll discounts and other incentives, the system can lead to a shift from driving alone to using public transit. A universal transportation account can be at the heart of a well-connected city, where people constantly receive information from the transportation network and are provided with the best options for their trips – based on their priorities, including cost, convenience, speed, and environmental impact.

A universal transportation account can be at the heart of a well-connected city.

Other Emerging Technology Trends and Programs

Other emerging technologies and programs that could have an impact on transportation demand, systems management, travel choices, and system accessibility include:

- Traveler Information Program
- Arterial Management
- Freeway Management
- Transit Management System
- Advanced Transportation Technology Program
- Transit Infrastructure Electrification/Regional Charger Program
- Active Traffic and Demand Management

These technologies and programs are described in Appendix E: Transportation System and Demand Management Programs, and Emerging Technologies.

Transportation Demand Management

Managing demands on the existing transportation system is an important strategy for making the overall system more efficient.

The 2019 Federal RTP makes investments in emerging TDM innovations that are gaining traction across the globe. They are envisioned as key components of the 2019 Federal RTP. These TDM innovations have the potential to help transform the way that we travel within and between our communities. One of the new investment areas is "mobility hubs," or transportation centers focused around geographic locations and designed to give people more options for getting around (see Appendix U7).[27] The other is "shared mobility services," which give people alternatives to owning a car, such as shared, temporary, and convenient transportation options when they need them. These two innovations, mobility hubs and shared mobility services, can transform our transportation behaviors and patterns. Let's take a closer look at them:

- **Mobility Hubs:** Mobility hubs are places of connectivity, where different modes of transportation — walking, biking, ridesharing, and transit — come together seamlessly to connect people to their jobs, school, shopping, errands, recreation, and back home. Smart growth areas are excellent places to build mobility hubs, because of their mixture of land uses and transit amenities.

  Access to transit is a key ingredient of a mobility hub. We all recognize that getting to and from transit stations can sometimes be challenging, and those first and last steps often end up being deterrents to using public transit. Mobility hubs can solve that problem. They promote options like carsharing, bikesharing, and neighborhood electric vehicles – for short trips within the neighborhood or to connect to the transit station for longer trips outside the area. Figure 2.13 highlights some of the amenities and services that could potentially be implemented as part of a mobility hub.

  Mobility hubs will play a big role in the lives of many people. By 2050, 70 percent of the region's housing and 85 percent of jobs will be situated within a half-mile of public transit – making mobility hubs increasingly useful and accessible to all travelers including persons with disabilities and seniors.

Figure 2.13

Mobility Hub Concept

- **Shared Mobility Services:** The 2019 Federal RTP promotes shared mobility, which reduces the need to own and drive a private automobile by offering people on-demand access to convenient and affordable transportation options for any type of trip, whether or not these are in mobility hub areas. These options include carsharing, bike and scooter sharing, real-time ridesharing, Transportation Network Companies (e.g., Uber, and Lyft), neighborhood electric vehicles, and shuttle or jitney services. Shared mobility services give people convenient alternatives to driving alone, in addition to the more traditional options such as public transit, carpooling, vanpooling, biking, or walking to work. Shared mobility can even provide people with options for running an errand or going to an off-site meeting in the middle of the workday.

Promoting Sustainable Mobility: Building Infrastructure for More Environmentally Friendly Vehicles

Reducing the number of miles that people travel in their cars is an important goal for the 2019 Federal RTP. Transitioning to more fuel efficient vehicles and alternative, low-carbon fuels are key steps toward a more sustainable San Diego region. Fuel efficiency improvements and alternatives also comprise a major part of the state of California's plan for reducing greenhouse gas emissions from the transportation sector.

This transition will be implemented primarily through the state's Low Carbon Fuel Standard (LCFS) and Advanced Clean Cars Program. The LCFS calls for a reduction of at least 10 percent in the carbon intensity of California's transportation fuels by 2020. The Advanced Clean Cars Program is designed to boost vehicle efficiency by combining greenhouse gas emission standards and other air pollution requirements into a single package of standards. For the state to meet its clean vehicle goals, new fueling infrastructure is needed statewide to power ZEVs and alternative fuel vehicles. California also is working to reduce greenhouse gas emissions from transportation statewide by promoting the use of alternative fuels (including propane, natural gas, biodiesel, and ethanol). In our region, efforts are underway to promote the use of zero-emission vehicles and alternative fuels, and to ensure that we have the infrastructure to support them.

Since 2012, SANDAG has provided a forum for local governments and other regional stakeholders to discuss how to lower barriers to increasing the number of alternative fuel vehicles, and how to take steps toward building the needed fueling stations. In 2014, SANDAG completed a regional readiness plan for plug-in electric vehicles and charging stations, as shown in Appendix U12: San Diego Regional Plug-In-Electric Vehicle Readiness Plan. In 2016, an expanded plan that also addresses regional readiness for all alternative fuels, including electric, hydrogen and natural gas was completed, as shown in Appendix U11: San Diego Region Alternative Fuel Readiness Plan.

As of 2019, our region is home to more than 35,000 plug-in electric vehicles and more than 1,700 public charging stations, including more than 150 DC Fast Chargers, a type of electric vehicle charging station, along key corridors. Moving forward, the readiness plan for plug-in electric vehicles identified barriers that the region still needs to address. These include the need for a better installation process for chargers at multi-unit dwellings, at the workplace, and at other commercial sites. Also needed is a more streamlined permitting process, as well as the integration of plug-in electric vehicle infrastructure into building codes. The 2019 Federal RTP provides us with an opportunity to continue to be leaders in this area, and to address these barriers to progress toward wider use of zero-emission vehicles.

Separating Key Rail Crossings and Busy Streets from One Another

The transportation system is not just a collection of disconnected modes of travel. At its best, a transportation system integrates all modes of travel into a unified whole, so that people and goods can travel efficiently and safely. Rail-grade separations offer a good example of how our transportation system can work together. When tracks are separated from streets, cars, trucks, bicyclists, pedestrians, and the goods shipped by rail can get to where they're headed without coping with conflicts built into the system. Rail-grade separations are expensive, and their construction must be prioritized. However, over the years we've added them in key locations throughout the region. The 2019 Federal RTP identifies several additional places where rail-grade separations will help the transportation system function more smoothly and safely. By 2050, nine rail-grade separations are proposed along the LOSSAN and SPRINTER corridors. On the Orange and Blue Line Trolley lines, 11 rail-grade improvements are planned by 2050.

A Global Gateway: Connecting the Region and Crossing Borders

San Diego County has a population of 3.3 million, while the City of San Diego is the second largest City in California (1.4 million residents) and the eighth-largest city in the United States. The larger mega-region that includes San Diego County, Imperial County, and Baja California in Mexico has become one of the top emerging regions in the world. With a combined population of more than six and a half million people, the mega-region encompasses 27,000 square miles.

The San Diego region, with the greater Los Angeles area to the north, the international border region of Baja California to the south, and agricultural industries to the east, sits between major centers of production, trade, and population. We depend on an integrated transportation network to effectively move people and goods within our region, in and out of our region, and through our region to the rest of the nation and around the world. Here, I-5, I-15, I-805, and SR 125 are major north-south corridors, while Interstate 8 (I-8), SR 905, and SR 11 are the key east-west corridors for domestic cargo and international trade.

The San Ysidro port of entry is one of the busiest border crossings in the world and the Otay Mesa port of entry is the second busiest commercial crossing along the entire U.S. – Mexico border for trucks.

Four international land ports of entry operate between San Diego County and Baja California, while a fifth is planned at Otay Mesa East. In addition to the three traditional POEs at San Ysidro, Otay Mesa, and Tecate, our region now enjoys a fourth port of entry at the Cross Border Xpress (CBX).

The San Ysidro POE is one of the busiest border crossings in the world, with an estimated 69.4 million bidirectional crossings in 2018.[28] The port primarily processes pedestrians and passenger vehicles, but it also handles trade on a small-scale through its intermodal rail cargo facility.

CBX has been touted as a major success for investments in crossborder infrastructure. Since its opening in December 2015, this privately operated facility allows ticketed users of the Tijuana International Airport (TIJ) to cross between the U.S. and Mexico via an enclosed pedestrian bridge linking to the TIJ passenger terminals. Growth in the number of CBX users has been strong and is anticipated to grow beyond the nearly 2.3 million users in 2018.[29]

The Otay Mesa POE is the busiest commercial crossing in California, and it processes the third highest dollar-amount value of U.S.-Mexico trade and the second highest volume of commercial trucks on the entire border. In 2018, an estimated 1.9 million trucks carrying nearly $46.7 billion in trade crossed through the port.[30]
Planned improvements to the commercial processing infrastructure will help address circulation challenges within the POE facility currently contributing to delays in crossborder goods movement. Additionally, the future port at Otay Mesa East is expected to ease congestion at the existing Otay Mesa border crossing.

The smallest POE in San Diego County is Tecate. Tecate is a multimodal facility for freight rail, commercial vehicles, personal vehicles, buses, and pedestrians.
Projects to modernize the crossborder rail line are being planned. These projects would increase the market potential of this route for the international and interstate shipment of goods.

The nearly completed improvements at the San Ysidro POE and the future improvements planned for the Otay Mesa POE aim to consistently reduce wait times for people and goods in the near future. The future land port at Otay Mesa East is intended to cut delays and provide more options for both people crossings and trade. Reductions in wait times reduce the amount of time vehicles spend idling and associated greenhouse gas emissions.

Transporting Goods More Efficiently

The shipping of goods fuels the regional, state, and national economy. It's made possible by an extremely complex network of public and private assets and operations, and as a result it's often the least understood part of the regional transportation system. The flow of goods by truck, rail, air, and sea – throughout our region and across borders – generates a constant stream of raw materials, parts, and finished goods. They all keep us supplied with food, clothing, shelter, vital consumer goods, and discretionary items.

The flow of goods by truck, rail, air, and sea – throughout our region and across borders – generates a constant stream of raw materials, parts, and finished goods.

The region's transportation network for shipping goods is also referred to as the "goods movement" network. Vital infrastructure serving the goods movement network includes: roadways (local, state, and Interstate routes); Class I and short line track and yards (nearly all rail tracks are shared with public passenger trains); the maritime Port of San Diego (two terminals at Tenth Avenue and in National City); San Diego International Airport's Cargo terminal, as well as smaller air cargo operations; several privately held pipeline networks and associated energy terminals; and finally border crossings by rail at San Ysidro, and by trucks at Otay Mesa and Tecate.

In addition to this physical infrastructure underpinning efficient movement of goods, of equal importance is a system of evolving operational improvements, including ITS investments, which serve to optimize how goods and people move in the region. These operational improvements will include projects such as: a wait times system at all the border crossings and a complementary advanced traveler information tool displaying wait times to the traveling public, congestion pricing at the new Otay Mesa East Border Crossing, and freight signal prioritization along Harbor Drive.

Situated between major production, trade, and population centers, San Diego County depends on an integrated transportation network to effectively move people and goods within and through our region to the rest of the nation and around the world. Due to the interdependent nature of its binational economies, the mega-region's globally competitive business environment hosts a manufacturing sector that is one of the world's strongest cross-border supply chains, with a gross domestic product of approximately $232 billion dollars for San Diego County in 2017. Our region therefore connects some of the largest supply chains in the United States, including movement of automobiles, electronic parts, and perishable foods, by bridging the major goods movement hubs in Southern California – the California-Baja California border region, the Ports of San Diego, Los Angeles, and Long Beach, and the Inland Empire distribution centers. The SANDAG 2016 Freight Gateway Study Update, found in Appendix U15, reviews our goods movement system and freight flows in detail.

The 2019 Federal RTP focuses on a few key points found within the SANDAG 2016 Freight Gateway Study Update, including: goods movement contributes to the regional economy; goods movement planning is driven by sophisticated logistical practices that involve lean delivery approaches; there are both inherent conflicts and synergies between personal travel and the movement of goods (e.g., they often share the same assets at the same time, and operations have to be planned carefully); and finally, the movement of goods has to be planned and managed so operations are sustainable.[31] Whenever and wherever possible, the 2019 Federal RTP strives to balance the need for mobility and speed, the capacity for growth, economic competitiveness goals, and the importance of clean air and healthy communities.

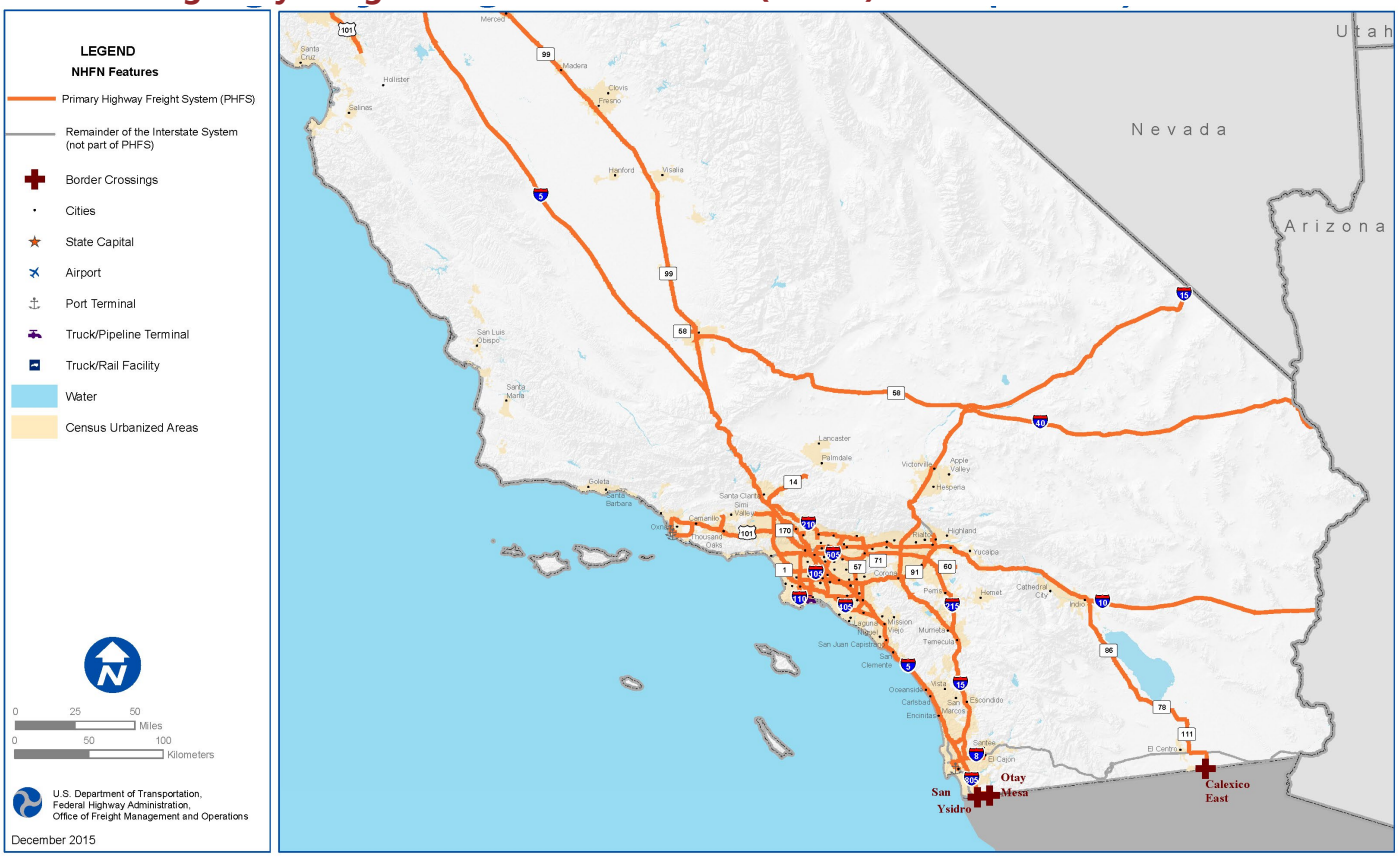
SANDAG works extensively with state and federal policy makers to help shape a publicly funded freight investment program. To date, SANDAG has financed all of the region's freight projects through grants, dedicated border funds, one-time bond bills, and other innovative financing strategies. A long list of unfunded projects to enhance the movement of goods regionally can be found in Appendix A: Transportation Projects, Costs, and Phasing. This list is a testament to a great unmet need. The Unconstrained Goods Movement Network Map is shown in Figure 2.14.

As part of the Fixing America's Surface Transportation Act requirements, SANDAG has added the region's important freight routes to the National Highway Freight Network (NHFN) to potentially secure federal goods movement resources, which are shown in Figure 2.15. SANDAG has also designated the following Critical Urban Freight Network/Critical Rural Freight Network routes to the NHFN and will continue to designate additional freight routes as necessary: SR 11, Brittania Boulevard, and La Media Road.


Figure 2.14
Unconstrained Goods Movement Strategy
October 2019
Map Area
San Diego Region
Key Project Locations
Air Cargo
1 San Diego International Airport Access Improvements
Border
2 Southbound Truck Route Improvements
3 SR 11/Future Otay Mesa East Border Truck Crossing
4 SR 125
Maritime
5 Port Terminal and Access Improvements Harbor Drive
Rail
6 LOSSAN/SPRINTER Burlington Northern Santa Fe Railroad (BNSF)
7 Baja California Railroad, Inc. (BJRR) in Mexico/Desert Line in USA
Freeway/Highway
8 I-5
9 I-15
10 I-805
11 SR 94/125, I-8
12 SR 52/54/56/94
13 SR 78
Commercial/Industrial Land Use
2012 San Diego Data and 2013 Baja California Data
Highway/Road/Managed Lanes
Freight Rail
Burlington Northern Santa Fe Railway (BNSF) shared with COASTER/SPRINTER
San Diego and Imperial Valley Railroad (SDIY) shared with MTS Trolley
Baja California Railroad, Inc. (BJRR) in Mexico/Desert Line in USA
Air Cargo
Port of San Diego
Land Port of Entry
San Ysidro Rail Port of Entry
Otay Mesa Truck Port of Entry
Tecate Truck Port of Entry
Otay Mesa East Future Truck Port of Entry
Logistics Center/Yard (Concept) not location-specific
Potential Truck Rest Stops
MILES
KILOMETERS
N
SANDAG
Pechanga Reservation
Camp Pendleton
County of San Diego
Pauma and Yuima Reservation
Pala Reservation
Rincon Reservation
San Pasqual Reservation
Oceanside
Vista
San Marcos
Carlsbad
Escondido
Encinitas
Solana Beach
Del Mar
Poway
Santee
Viejas Reservation
San Diego
La Mesa
El Cajon
Sycuan Reservation
Coronado
Jamul Indian Village
National City
Chula Vista
San Diego
Imperial Beach
Tijuana, B.C.
Tecate
UNITED STATES
MEXICO

Figure 2.15

National Highway Freight Network: California (South)



Quick and Easy Access to Regional Airports

Headache-free air travel is elusive for millions of Americans around the country. One of the goals of the 2019 Federal RTP is to make access to air travel as easy as possible. First, a few stats on how much we rely on air travel in our region:

- In 2018, more than 24 million air passengers used the San Diego International Airport (SDIA).[32] McClellan-Palomar Airport also serves commercial travel. There are 12 public use airports in the San Diego region, as well as four military airports/airfields. TIJ is located directly south of the U.S. border. The system accommodates commercial, general aviation, and corporate services. Airports that serve only general aviation and corporate operations are Brown Field Municipal, Gillespie Field, Montgomery Field, and Ramona. The remaining airports accommodate general aviation only.

- Prior to the opening of the CBX, San Diego County residents accessing flights out of TIJ would drive or walk across the international border into Mexico through another land port of entry, just as those landing at TIJ and crossing north into the United States would walk or drive across the border. In 2016, 1.4 million people used the CBX facility, which was its first full year of operation. In 2018, nearly 2.3 million people used the facility. The increase highlights the demand for convenient access to crossborder air travel options.

- In 2018, about 192,000 tons of air cargo were shipped from or to the San Diego region.

- Senate Bill 10 (Kehoe, 2007), enacted in 2007, required SANDAG and the San Diego County Regional Airport Authority (Airport Authority) to coordinate planning for the multiple modes of transportation that serve the airport. The legislation required the development of two plans: a Regional Aviation Strategic Plan (RASP) and an Airport Multimodal Accessibility Plan (AMAP). The Airport Authority was the lead agency for the RASP, which analyzes scenarios to improve the performance of the regional airport system. SANDAG was the lead agency for the AMAP, which details a multimodal strategy to improve airport access for cars, transit, shuttles, trucks, and other surface transportation. The overarching goal of both these plans is to maximize the efficiency and effectiveness of existing and planned aviation facilities.[33]
- In 2018, the Airport Authority and the Port of San Diego completed their Harbor Drive Multimodal and North Harbor Drive Multimodal Studies, which focused on off-airport multimodal solutions within each of their jurisdictions respectively. Through the creation of the Airport Connectivity Subcommittee, SANDAG built upon these study areas to include critical sections of northern Pacific Highway and capturing proposed mid- and long-term transit projects that could not be assessed in these previous studies.

San Diego International Airport

In 2009, SANDAG, the Airport Authority, and the City of San Diego completed *Destination Lindbergh*, which detailed a planning strategy for the ultimate build-out of San Diego International Airport at its present location. The document evaluated improved intermodal access to the airport and determined actions that could reduce traffic on surrounding arterial streets. Also envisioned was a consolidated rental car center on the north side of the airport which opened in 2016, and the development of an Airport Intermodal Transit Center (ITC) along the existing rail corridor to provide direct connections to Amtrak, COASTER, Trolley, bus services, and the southern terminus for the proposed high-speed train service. Also planned were direct connector ramps from I-5 to Pacific Highway that would improve access to and from the airport. The ITC is included in one of the concepts advanced to the SANDAG Board as part of the Airport Subcommittee's work in 2019.

The Airport Authority has completed its expansion of Terminal 2, known as The Green Build, which opened in August 2013. In 2018, the Airport Authority released the Draft Environmental Impact Report (DEIR) for the Airport Development Plan, which identified the next phase of improvements so SDIA can meet demand through 2035. The Airport Development Plan looked at the entire airport and included redevelopment plans for Terminal 1 and significant off-airport ground access improvements.

In partnership with SANDAG, Caltrans, the Metropolitan Transit System, Port of San Diego, City of San Diego, and other regional stakeholders, the Airport Authority is revising the Airport Development Plan Draft EIR to provide for transit connections that results from the SANDAG Airport Subcommittee. Four concepts were reviewed by the Airport Connectivity Subcommittee. Concepts 1 and 2 feature a Central Mobility Hub at Naval Information Warfare Systems Command (NAVWAR), which includes a multimodal transportation center with high-frequency Automated People Mover (APM) service.

- Concept 1 assumes a nonstop, high-speed service to SDIA via a one-mile tunnel route.
- Concept 2 assumes service to SDIA via a 3.6-mile surface/elevated APM route along Pacific Highway, Laurel Street, and Harbor Drive with intermediate stops at the airport Rental Car Center and the planned development at Harbor Island East Basin.
- Concept 3 includes a Central Mobility Hub, which includes a multimodal transportation center with numerous connections to regional transit lines, excluding Amtrak and COASTER services, and with high-frequency APM service to SDIA, and an airport-like curb experience for auto-based travelers. An APM station would provide service to SDIA via a 2.6-mile surface/elevated route along Pacific Highway, Laurel Street, and Harbor Drive, with intermediate stops at the airport Rental Car Center and planned development at Harbor Island East Basin. (It should be noted that the Central Mobility Hub is a separate concept from the Airport ITC described earlier in this chapter and identified in the 2015 Regional Plan/2019 Federal RTP. The Central Mobility Hubs is anticipated to include new regional transit services and connections to the SDIA.)
- Concepts 4a and 4b include an extension of the Trolley system to the planned SDIA transit station with an intermediate stop at the planned development at Harbor Island East Basin.

On September 27, 2019, the SANDAG Board of Directors took action to move all four concepts forward for additional alternatives analysis, modeling and planning work. The intent of the alternatives analysis is to have enough data on each of the projects so that the Board is ultimately able to select a Locally Preferred Alternative.

Beyond 2035, SDIA likely will not have enough capacity to meet growing demand. This may result in the inability of the region to accommodate the demand for air travel, leading to potential service disruptions and higher air-fares. Several options, including high-speed trains, could help alleviate problems caused by exhausted capacity at SDIA from 2035 through 2050.

Our International Border: Easier Travel Across and Back

Over the years, the international ports of entry in our region have experienced significant increases in the number of crossings, growth in global trade, while maintaining an increased focus on security. All this has led to longer wait times for pedestrians and vehicles crossing the border into the United States, with substantial impacts on the economies and health of our border communities. In recent years, the federal governments of the United States and Mexico have taken steps to improve this situation. They include expanding the hours of operation, improving and modernizing border infrastructure, and using innovative technology to implement programs that reduce security threats and increase operational efficiencies at the region's ports of entry. State and local-level agencies also have implemented measures to make crossborder travel easier, including testing and adoption of innovative technologies to measure and disseminate border wait time data.

As traditional resources for transportation and land ports of entry are diminishing, SANDAG and Caltrans, along with a number of local, state, and federal agencies in the United States and Mexico, are developing innovative financing methods to deliver a new border crossing at Otay Mesa East in the San Diego-Baja California region.[34]

Measuring the Performance of our Regional Transportation Network

Constructing and managing a transportation network that will work best for our region into the future – and that we can afford – is no small challenge. But our 2019 Federal RTP has been guided by the three Board-adopted goals of Innovative Mobility and Planning, a Vibrant Economy, and a Healthy Environment and Communities. To predict the success of the network included in the 2019 Federal RTP, we subjected it to ten key questions that were designed to gauge the performance of the chosen network (Figure 2.16). Appendix N: Evaluating the Performance of the Transportation Network includes detailed performance results at the regional, subregional, and corridor level, and the methodology SANDAG used for estimating the performance measures.[35] The SANDAG travel demand model used for this analysis is documented in Appendix T: SANDAG Travel Demand Model and Forecasting Documentation.

Figure 2.16

Performance Measures

Goal		Key Question
Vibrant Economy	1	Do the transportation system investments help to improve the regional economy?
	2	Are the relative costs of transportation changing similarly for all communities?
	3	Are connections to neighboring counties, Mexico, tribal lands and military facilities improved?
Innovative Mobility and Planning	4	Are travel times reduced?
	5	Are more people walking, biking, using transit, and sharing rides?
	6	Is the transportation system safer?
Healthy Environment and Communities	7	Does the transportation network support smart growth?
	8	Is access to jobs and key destinations improving for all communities?
	9	Is the region's air quality improving?
	10	Are greenhouse gas emissions reduced?

With implementation of our 2019 Federal RTP, the percentage regionwide of people and jobs near high-frequency transit will increase substantially. In 2016, 32 percent of the region's population lived near high-frequency transit stops. With the significant transit investments and the implementation of the land uses outlined in the 2019 Federal RTP, that figure will increase to 55 percent by 2050. Similarly, the percentage of jobs located within half a mile of high-frequency transit will increase from 43 percent in 2016 to 69 percent in 2050.

Meanwhile, investments in infrastructure for biking and walking, combined with implementing smart growth principles, will result in an increase in the percentage of people and workplaces near bike routes. These transportation options will result in more people exercising and fewer people choosing to drive alone.

The 2019 Federal RTP's transportation investments, coupled with expected improvements in fuel and vehicle technologies, will help to reduce on-road, smog-forming pollutants and greenhouse gas emissions below 2012 levels.

The transportation choices provided in the 2019 Federal RTP yield region-wide benefits, but these benefits are often more pronounced in the corridors where the transportation investments occur. Significant investments are being made in public transit, helping to improve transit access to several of the region's major job centers.

In terms of the use of the future transit system, daily regional transit boardings will double from 353,000 in 2016 to 722,000 in 2035, with a further increase to 850,000 in 2050. In terms of annual transit boardings, this translates to:

- 113 million annual boardings in 2016
- 231 million projected annual boardings in 2035
- 272 million projected annual boardings in 2050

The transportation investments made in the 2019 Federal RTP will provide residents, workers, and visitors with more transportation choices, while helping to preserve the environment and support regional economic growth. Appendix Q: Travel and Tourism describes investments and collaborative efforts to enhance travel and tourism in the regional transportation planning process.

Public Involvement Activities

The 2019 Federal RTP Public Involvement Plan established a process and outlined specific activities for communicating with the public and obtaining input from the public – throughout the 2019 Federal RTP's development. In addition, SANDAG and the Southern California Tribal Chairmen's Association developed and implemented the Tribal Consultation Plan (The consultation process is documented in Appendix G).

Up Next: Paying for the Regional Transportation Plan

Next, in Chapter 3: Financing Our Future, we'll review how the transportation network described in this chapter will be paid for over the next 30 years. This is the "Financial Element" of the 2019 Federal RTP. Among the sections in Chapter 3 are:

- A discussion of where our transportation funds come from, and how we can invest them to build the network we can afford. We'll also offer a brief analysis of our investment plan – that is, a general review of how much money will be invested on different aspects of the transportation network.
- A reference to detailed information on the risks associated with relying on sources of funding for the new regional transportation plan, and what SANDAG can do if anticipated revenues fall short.

Endnotes

[1] See Appendix E: Transportation System and Demand Management Programs, and Emerging Technologies for a discussion of TDM and TSM strategies.

[2] In the San Diego region, the Multiple Species Conservation Program and Multiple Habitat Conservation Program implement the Natural Communities Conservation Plan from the state and federal governments, which implements the California State Wildlife Action Plan. See Appendix U5: California State Wildlife Action Plan.

[3] Appendix U9: Regional Energy Strategy for the San Diego Region.

[4] Appendix J: Regional Growth Forecast includes the Series 14 Regional Growth Forecast and Appendix L: Regional Housing Needs Assessment Plan includes the Regional Housing Needs Assessment (RHNA) for the San Diego Region.

[5] The base year for the Regional Transportation Plan is 2016, the year the data collection effort began to prepare the Regional Growth Forecast. It projects changes expected to occur from 2016 to 2050.

[6] Appendix J: Regional Growth Forecast

[7] Open Space and Parks include Beach-Passive (other sandy areas along the coastline with limited parking and access), Open Space Park or Preserve, and Undevelopable Natural Area. Farmland includes Williamson Act Lands. Habitat includes SANDAG Conserved Lands.

[8] Appendix U4: SANDAG Regional Transit Oriented Development Strategy http://www.sandag.org/index.asp?classid=12&projectid=500&fuseaction=projects.detail

[9] Appendix U2: Regional Complete Streets Policy

[10] Appendix U13: Housing - Providing Homes for all Residents

[11] With the exception of regional arterials, data represents lane miles (Lane miles are calculated by multiplying the centerline mileage of a road by the number of lanes). For regional arterials, centerline mileage is reported.

Generating a Sidewalk Network for San Diego County: Project Documentation. Prepared for Urban Design for Health, Inc., and the San Diego Association of Governments. June 17, 2011. Submitted by Resource Systems Group

[12] Appendix R: Transportation Security and Safety

[13] Details on the project evaluation criteria which informed the transportation network development are included in Appendix M.

[14] Appendix U17: Urban Area Transit Strategy

[15] For more information on the San Diego – Coronado ferry, visit FlagshipSD.com/cruises/Coronado-ferry.

[16] Although High-speed Rail (HSR) is not a proposed Regional Transportation Plan project, since its funding and implementation will be determined by the State of California rather than by entities within this region, its revenues and expenditures are included in the Regional Transportation Plan because the HSR segment between Los Angeles and San Diego, via the Inland Empire, is expected to provide connectivity for the San Diego region with the rest of the state and the project. Therefore, it is an integral part of the planned transportation infrastructure for the region.

[17] Appendix U16: Active Transportation Implementation Strategy

[18] Included in Appendix U16: Active Transportation Implementation Strategy

[19] See Appendix A: Transportation Projects, Costs, and Phasing for an updated California Coastal Trail map.

[20] Included in Appendix U16: Active Transportation Implementation Strategy

[21] Safe Routes to Transit will be informed by recommendations from subregional studies such as the I-8 Corridor Study and the California-Baja California Port of Entry Bicycle and Pedestrian Study.

[22] The development of the California Coastal Trail a collaborative effort among the Coastal Conservancy, State Parks, the Coastal Commission, and the nonprofit agency Coastwalk. Designated in 1999 as California's Millennium Legacy Trail, it is defined as "a continuous public right-of-way along the California coastline; a trail designed to foster appreciation and stewardship of the scenic and natural resources of the coast through hiking and other complementary modes of non-motorized transportation."

[23] A description of the Regional Arterial System is included in Appendix M: Transportation Project Evaluation Criteria and Rankings and Appendix C: SANDAG Federal Congestion Management Process provides an overview of the Federal Congestion Management Process followed by SANDAG.

[24] A definition of *Rapid* bus is included in Appendix K: Glossary of Transportation Terms, Abbreviations, and Acronyms.

[25] Additional information on emerging technologies, transportation demand management (TDM), transportation system management (TSM), and investment levels is included in Appendix E.

[26] Appendix U6: San Diego Region Intelligent Transportation Systems Strategic Plan

[27] Appendix U7: Regional Mobility Hub Implementation Strategy

[28] U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, Border Crossing/Entry Data, based on the U.S. Department of Homeland Security, Customs and Border Protection data

[29] Ibid.

[30] Ibid.

[31] Appendix U15: 2016 Freight Gateway Study Update.

[32] https://www.bts.gov/airport-rankings-2018

[33] The RASP Technical Report and AMAP are included in Appendix U4: Regional Aviation Strategic Plan and Airport Multimodal Accessibility Plan.

[34] More information on crossborder transportation issues is included in Appendix U14: Borders.

[35] Details on the project evaluation criteria which informed the transportation network development are included in Appendix M.

Chapter 3
Financing Our Future

San Diego FORWARD
The Regional Transportation Plan

3 Financing Our Future

How we'll pay for the Regional Transportation Plan

Paying for the Regional Transportation Plan

Over the next 30 years, through 2050, San Diego Forward: The 2019 Regional Transportation Plan (2019 Federal RTP) projects that about $208 billion in local, state, and federal dollars will be available to build a comprehensive, interconnected transportation system that provides more choices. As with the Regional Plan adopted in 2015, the 2019 Federal RTP extends to 2050 to allow our region to incorporate all transportation projects and programs that voters approved in the *TransNet* Ordinance, which extends to 2048. SANDAG is working creatively to leverage available funds in order to maximize every dollar. Even so, there is a finite amount of anticipated funding available over the next three decades. This chapter (Financing Our Future), and the appendices it references, comprise the financial element of the 2019 Federal RTP, as required by law.

Where Our Transportation Funds Come From, and How We Can Invest Them

Building a transportation system we can afford

Federal law requires SANDAG to develop a regional transportation plan built on reasonable assumptions of the revenues that will be available during the time period covered by that plan.

Federal law requires SANDAG to develop a regional transportation plan built on reasonable assumptions of the revenues that will be available during the time period covered by that plan. While we're anticipating about $208 billion over 30 years, we don't have all the money right now. Also, a majority of the funding sources are tied to certain types of projects (for example, transit infrastructure or highway operations and maintenance) and we don't have the authority to interchange them. These constraints come with specific provisions from Congress or the state Legislature. The "revenue constrained scenario" for transportation investments detailed in the 2019 Federal RTP plays by those rules. It's what we can do given the budget that we currently project. From this point on, we'll refer to the "revenue constrained network" as our investment plan for transportation.

Our investment plan will be funded by a combination of local, state, and federal revenues. Local funds make up 48 percent of the total projected revenue, state funds make up 35 percent, and federal funds amount to 17 percent (Figure 3.1). Because funding will not be available all at once, projects will be constructed as the money becomes available. This is shown in Figure 3.2.

Figure 3.1
Major Revenue Sources
$208 billion in Year of Expenditure

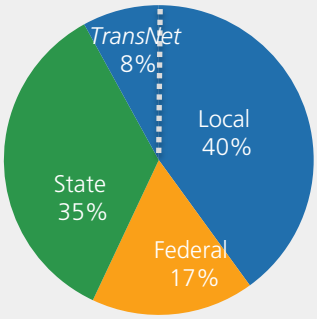


Figure 3.2
Phased Revenues
$208 billion in Year of Expenditure

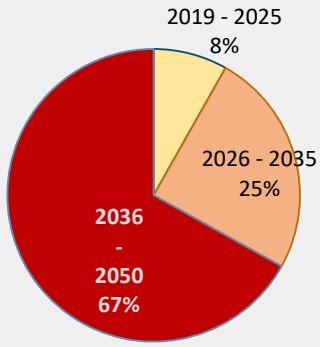


Table 3.1 outlines income sources within each revenue category. All revenues have been escalated to the year that the money will be spent, and they are based on the escalation factor appropriate for that specific revenue source.[1] It should be noted that the 2019 Federal RTP includes assumptions for new fund sources at the local, state, and federal levels. These include a potential new local regional funding source, a new local transit measure, private investment, fees charged for the number of miles driven by cars and trucks, and a new federal gas tax. The actual timing and amount of these new fund sources may vary from what is assumed, given how new fund sources have been approved at various times over the past several decades. However, it is reasonable to assume that new fund sources will continue to be established in the future. None of the new fund sources are assumed to begin prior to 2024, with the exception of the Future Metropolitan Transit System (MTS) Local Revenues for Transportation, which is estimated to begin in 2021. MTS is considering placing a tax measure on the ballot in 2020. The Future MTS Local Revenues for Transportation would be contingent on that ballot measure passing.

Table 3.1

Revenue Sources

	Estimated Revenues (in millions of YOE[a] dollars)			
	FY 2019-2025	FY 2026-2035	FY 2036-2050	Total
Local				
TransNet	$2,364	$4,472	$10,195	$17,031
TransNet (Bond Proceeds)	$727	$0	$0	$727
Transportation Development Act	$1,372	$2,579	$5,551	$9,502
Developer Impact Fees	$139	$250	$462	$851
City/County Local Gas Taxes	$596	$728	$1,044	$2,368
General Fund/Miscellaneous Local Road Funds	$1,633	$3,005	$6,551	$11,189
Future Local Revenues for Transportation	$449	$5,366	$12,234	$18,049
Future MTS Local Revenues for Transportation	$364	$3,829	$5,248	$9,441
Toll Road Funding (I-5/I-15/SR11/241)	$0	$0	$9,073	$9,073
Public Private Partnerships/Transit Oriented Development	$3	$1,427	$2,279	$3,709
FasTrak® Net Revenues	$107	$228	$593	$928
Passenger Fares	$1,301	$3,815	$6,812	$11,928
Motorist Aid Services - Call Box Program	$46	$61	$94	$201
SB 1 Local Streets and Roads	$585	$1,372	$3,120	$5,077
Subtotal	**$9,686**	**$27,132**	**$63,256**	**$100,074**
State				
Active Transportation Program	$99	$185	$519	$803
State Transportation Improvement Program/Traffic Congestion Relief Program	$252	$673	$1,395	$2,320
State Transit Assistance Program	$260	$432	$1,088	$1,780
State Highway Account for Operations/Maintenance	$1,793	$3,943	$10,751	$16,487
Future State Revenues for Transportation	$0	$3,586	$10,823	$14,409
Cap-and-Trade	$436	$959	$2,660	$4,055
State FASTLANE	$185	$411	$1,035	$1,631
State Managed Federal Programs	$298	$1,263	$3,274	$4,835
High-Speed Rail	$0	$0	$16,076	$16,076
Freeway Service Patrol	$31	$47	$80	$158
SB1 Programs (Solutions for Congested Corridor, Freight, Active, Local Partnership, State of Good Repair, TIRCP, SRA)	$817	$2,729	$5,893	$9,439
Subtotal	**$4,171**	**$14,228**	**$53,594**	**$71,993**
Federal				
Federal Transit Administration Discretionary	$671	$4,271	$7,676	$12,618
Federal Transit Administration Formula Programs	$759	$1,916	$3,550	$6,225
Congestion Mitigation and Air Quality/ Regional Surface Transportation Program	$413	$1,408	$4,044	$5,865
Federal Highway Administration Discretionary	$76	$120	$222	$418
Other Financing (Grant Anticipation Notes)	$310	$0	$0	$310
Future Federal Revenues for Transportation	$337	$2,295	$5,690	$8,322
Federal Railroad Administration	$11	$65	$149	$225
Corridors and Borders Infrastructure/Other Freight Funds	$44	$309	$961	$1,314
TIFIA Loan Proceeds	$537	$0	$0	$537
Subtotal	**$3,158**	**$10,384**	**$22,292**	**$35,834**
Grand Total Revenue Sources	**$17,015**	**$51,744**	**$139,142**	**$207,901**

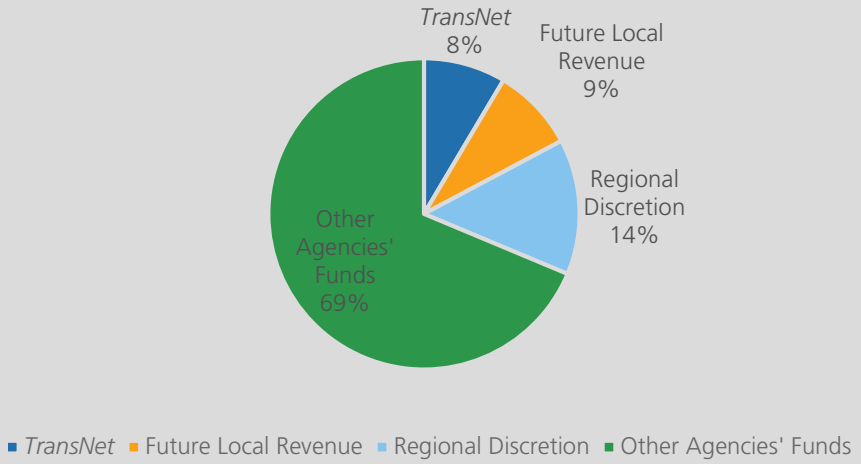
[a] Year of Expenditure (YOE)

Also, certain funds can only be used for certain projects. For example, *TransNet* sales tax revenue can only be used for specific projects and programs.[2] Some funds will become available on a yearly, ongoing basis; others will be delivered in a single payment. The timing also can depend on when the state Legislature and federal government pass their budgets. All of this means that scheduling projects can be tricky. And certainly, not all the projects in the 2019 Federal RTP can be built at once.

SANDAG, as an agency, has purview over a relatively small portion of the overall funds included in the 2019 Federal RTP, and therefore must continue to work creatively on how best to leverage the available dollars (Figure 3.3). We have further constraints on when money becomes available during the lifespan of the 2019 Federal RTP, and we also have constraints on which dollars stay with SANDAG and which dollars are distributed directly to other agencies to maintain, operate, and rehabilitate the transportation network. For example, the majority of the funds included in the 2019 Federal RTP are distributed directly to agencies such as Caltrans and the transit agencies for highway and transit operations and maintenance needs, as well as the cities and County for their local streets and roads.

Figure 3.3

2019 Federal RTP Funding Distribution



Our Investment Plan for Transportation: A Brief Analysis

Table 3.2 and Figure 3.4 summarize the nearly $208 billion in transportation expenditures included in the investment plan.[3] Regardless of which agencies expend the funds (as described above), here's an overall breakdown of how this money will be spent:

- 47 percent is for public transit (33% for capital projects and 14% for operations)
- 18 percent is for Managed Lanes and connectors capital projects, including those that support public transit
- 13 percent is for improvements to local streets and roads and rail grade separations
- 8 percent is for rehabilitating highways and making them work more efficiently
- 6 percent is for other highway lanes and connector improvements
- 3 percent is for servicing debt
- 3 percent is for projects that promote walking and biking,[4] as well as smart growth
- 2 percent is for managing the overall transportation network and the demands on it to make it more efficient[5]

More than a third of total expenditures is designated for the operation, maintenance, and rehabilitation of transit, highways, and local streets and roads.

Figure 3.4

Major Project Expenditures

Nearly $208 billion in year of expenditures (YOE) dollars

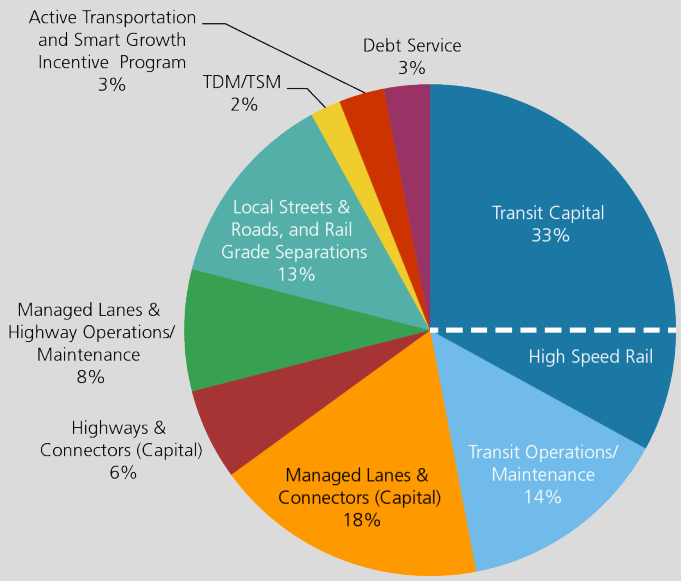


Table 3.2

Major Expenditures by Mode

Project Categories	Estimated Expenditures (in millions of YOE dollars)[a] FY 2019-2025	FY 2026-2035	FY 2036-2050	Total
Transit Facilities				
Major New Facilities	$3,654	$11,929	$25,824	$41,407
Miscellaneous Capital/Rehabilitation/Replacement	$798	$3,843	$6,839	$11,480
Transit Operations	$3,138	$8,011	$15,309	$26,458
ADA and Specialized Transportation Services[b]	$314	$801	$1,531	$2,646
High-Speed Rail	$0	$0	$16,076	$16,076
Subtotal	**$7,904**	**$24,584**	**$65,579**	**$98,067**
Managed Lanes and Highway Improvements				
Managed Lanes and Connectors	$2,013	$10,449	$25,338	$37,800
Highways, Connectors, and Operational Improvements	$213	$1,240	$11,279	$12,732
Operations / Maintenance / Rehabilitation	$1,750	$3,697	$10,180	$15,627
Subtotal	**$3,976**	**$15,386**	**$46,797**	**$66,159**
Local Streets and Roads (Capital, Rehabilitation, and Operations/Maintenance)				
Local Streets and Roads	$2,878	$7,140	$16,061	$26,079
Subtotal	**$2,878**	**$7,140**	**$16,061**	**$26,079**
Debt Service				
Debt Service	$963	$1,859	$4,313	$7,135
Subtotal	**$963**	**$1,859**	**$4,313**	**$7,135**
Active Transportation/Systems Management/Demand Management				
Smart Growth Incentive Program	$48	$93	$231	$372
Regional Rail Grade Separations	$0	$0	$720	$720
Active Transportation Program	$772	$1,826	$3,628	$6,226
Transportation Systems and Demand Management	$474	$856	$1,813	$3,143
Subtotal	**$1,294**	**$2,775**	**$6,392**	**$10,461**
Grand Total Cost	**$17,015**	**$51,744**	**$139,142**	**$207,901**

[a] Year of Expenditure (YOE)

[b] ADA and Specialized Transportation Services costs represents 5 percent each of the total transit operations cost (10 percent total)

The Regional Transportation Plan's major funding sources

Local Revenues

TransNet Half-Cent Local Sales Tax

The countywide transportation sales tax *TransNet,* which was first approved in 1987, funded major transit and highway projects. It also funded improvements to local streets and roads, as well as bike and pedestrian facilities. In November 2004, San Diego County voters approved an extension of *TransNet* from 2008 to 2048. The *TransNet* extension became effective in April 2008. The revenues included in the 2019 Federal RTP are based on actual receipts to FY 2018, and they assume an annual increase based on the growth in taxable retail sales based on a consensus of three independent national forecasts[6]. The amount estimated to be available through 2050 is two years beyond the current expiration of 2048; however, it is assumed that voters will approve the tax beyond 2048.

The goal is to complete these projects early and give people more travel choices as soon as possible.

To make the program's benefits available more quickly, the SANDAG Board of Directors approved jump-starting several regional transportation projects by implementing the *TransNet* Early Action Program (EAP). The agency has issued bonds under the *TransNet* extension that so far amount to about $2.2 billion. These bonds support the accelerated delivery of major transit and highway projects across the region. The EAP strategy was to borrow against future *TransNet* revenues, in order to leverage additional federal and state funds. The goal is to complete these projects early, and therefore give people more travel choices as soon as possible.

The *TransNet* extension includes some added features over the initial program. It supports an innovative $850 million environmental mitigation program to offset biological impacts of future transportation improvements, while at the same time reducing overall costs and accelerating the delivery of projects. The extension also provides for a $280 million smart growth incentive fund. In addition, another $280 million is slated for bike paths and facilities, pedestrian improvements, neighborhood safety projects, and the Regional Bike Plan EAP. These funds are leveraged to access other funding sources.

Developer Impact Fees

An element of the *TransNet* Ordinance requires the region's 18 cities and the County of San Diego to collect an exaction from the private sector for each new housing unit constructed in their jurisdiction. The Regional Transportation Congestion Improvement Program (RTCIP) has been in effect since July 1, 2008. SANDAG adjusts the minimum fee amount on July 1 of each year, based on analysis of construction cost indices by no less than 2 percent. The purpose of the adjustment is to ensure that the RTCIP retains its purchasing power to improve the regional arterial system. At its February 22, 2019, meeting, the SANDAG Board voted to increase the fee to $2,533 beginning July 1, 2019.

Transportation Development Act (TDA) Quarter-Cent Sales Tax

By state statute, TDA funds may be used for transit operating or capital purposes, but they are not eligible for use on non-transit-related improvements to highways or local streets and roads. Future year estimates are based on the same growth in taxable retail sales as projected for *TransNet*.

Local Gas Tax/General Fund

The local agencies receive direct subsidies from the state in the form of gas tax subventions. These subventions are based on a formula derived from the Assembly Bill 105 (2011) fuel tax swap, which considers future fuel consumption, the federal tax rate, and the swap rate. Due to the continued improvement in fuel efficiency in vehicles, gas tax revenues are projected to decrease by about 2 percent annually over the 2019 Federal RTP period. The category General Fund represents road expenditures the agencies spend from their general fund or other local revenues. The data are derived from the annual State Controller's report, and it's estimated to grow by about 3 percent annually.

Future Local Revenues

A provision in the *TransNet* Extension Ordinance specified that "SANDAG agrees to act on additional regional funding measures (a ballot measure and/or other secure funding commitments) to meet the long-term requirements for implementing habitat conservation plans in the San Diego region, within the timeframe necessary to allow a ballot measure to be considered by the voters no later than four years after passage of the *TransNet* Extension." A component of the future ballot measure is to fund transit operations. The SANDAG Board placed Measure A on the ballot in 2016 but it was narrowly defeated at the polls. The Board will continue to periodically reassess the timing of a new measure. Using the existing *TransNet* program as the basis for estimating revenues, the assumption is that about a quarter-cent of the sales tax would fund transit projects. These revenues are assumed to begin in 2025. The rate of growth assumed is the same as with *TransNet* and TDA.

Assembly Bill 805 (Gonzalez), enacted in 2017, authorized local transit agencies to impose a specified transaction and use tax for public transit purposes. MTS is currently considering placing such a tax measure on the ballot in 2020. It is assumed to be a half-cent sales tax beginning in 2021 with a growth rate assumed to be the same as with *TransNet* and TDA.

Public-Private Partnerships/Transit Oriented Development

Public-private partnerships are contractual agreements between a public agency and a private sector entity that allow for greater private sector participation in the delivery and financing of transportation projects. These partnerships are becoming more common and can potentially accelerate project delivery and enhance innovation, while reducing risk for the public and leveraging private funds and financing. In recent years, as public funds have become tighter and the need for infrastructure has expanded, governments have developed a growing interest in public-private partnerships. These revenues are related to transit-oriented development on publicly owned properties, and additional private investment opportunities in transportation and joint-use facilities. The 2019 Federal RTP assumes that SANDAG will enter into these types of agreements beginning in 2025.

Passenger Fares

These revenues are what passengers pay to ride on public transit, and they help support transit operations. The revenues through FY 2022 are based on the short-term budgets as estimated by the two transit agencies –MTS and the North County Transit District. The farebox recovery ratio, assumed at 35 percent, is continued through the life of the 2019 Federal RTP.

Other Local Revenues

Other locally generated revenues include toll road funding, FasTrak revenues, and motorist aid services. Toll road revenues are based on the planned Managed Lanes and would help off-set operational costs and transit services.

Contributions from Tribal Governments

Tribal Governments make contributions toward improvements on regional arterials and county roads, and investments in shuttles connecting regional transit to Tribal Lands, and facilities to support carpools and vanpools.

State Funding

State Transportation Improvement Program

State funding for transportation improvements comes from taxes on gas and diesel fuels, truck weight fees, and other sources. These funds are distributed by the state to the region through the State Transportation Improvement Program (STIP), which is administered by the California Transportation Commission (CTC).

Beginning with the 1998 STIP, a greater share of the STIP was made available to regional agencies such as SANDAG. This gave regional agencies the flexibility to better determine how funds should be used. Overall, transportation funding has fluctuated significantly as the economy has gone through ups and downs. For example, the 1998, 2000, and 2002 STIP cycles were built on optimistic funding scenarios, but these were followed by a severely constrained STIP cycle in 2004.

Traditional sources of funding that pay for transportation improvements have not kept pace with the demands of a growing population and an aging transportation system.

The landmark transportation infrastructure bond, Proposition 1B, injected much needed revenues in the middle of the 2006 STIP cycle. With these revenues came some relief to transportation funding at a time when improvements were badly needed. This infusion was short-lived, however, as the Great Recession beginning in 2007 led to flat and even declining gas tax revenues. Interestingly, gas tax revenues also have fallen with the increased number of vehicles on the road that are more fuel efficient or use alternative sources of energy such as electricity. All these changes have impacted STIP cycles from 2008 through 2016.

California's economy has improved in recent years and the state budget has stabilized, but transportation funding continues to be strained. Traditional sources of funding that pay for transportation improvements have not kept pace with the demands of a growing population and an aging transportation system. In its 2014 Annual Report, the CTC urged the Governor and the Legislature to address near-term funding needs to preserve the existing transportation system. The report notes: "For over a decade the Commission has implored the Legislature and the Administration to address this dire situation. No longer do we have the luxury of time; definitive and non-partisan action is required immediately to ensure the economic stability and public safety of the people we serve."

After years of advocating for a solution to the state's transportation funding crisis, the Legislature passed and the Governor signed SB 1 (Beall, 2017), also known as the Road Repair and Accountability Act of 2017, increasing transportation funding and instituting program reforms. SB 1 provided the first significant, stable, and on-going increase in state transportation funding in more than two decades. The revenue generated by all gasoline taxes and additional fees created by SB1 are constitutionally protected, which guarantees these funds can only be used for transportation purposes. The legislation also emphasized a commitment to accountability and transparency by holding Caltrans and local governments accountable for the investment of these public funds to maintain public highways, streets, and roads. Further details on the funding programs created by SB1 are discussed below.

State Highway Operation and Protection Program (SHOPP)

The CTC also is responsible for allocating funds to this program, which the state administers. State law requires that these expenditures be given priority over new construction, and they are funded "off the top" of the State Highway Account. Caltrans develops a SHOPP ten-year plan from which projects are prioritized and selected during SHOPP updates.

Road Repair and Accountability Act (Senate Bill 1)

On April 28, 2017, Senate Bill 1 (SB 1) (Beall) was signed into law. SB 1 is a transportation funding package with investments primarily targeted toward fix-it-first infrastructure projects. Among its provisions, SB 1 provides an increase in local streets and roads funding for each city and county, funding for multi-modal improvements and transit operations, and competitive grant programs to provide new transportation improvements.

SB 1 augmented funding for three existing programs, including the Active Transportation Program (ATP), SHOPP, and STIP. These programs fund projects to encourage biking and walking; capital improvements related to safety, maintenance, operation, and rehabilitation; and highway and transit improvements, respectively. Other programs established through SB 1 include the Local Partnership Program, which provides funding to agencies in which voters have approved fees or taxes solely dedicated to transportation; Trade Corridor Enhancement Program, funding infrastructure on trade corridors; Local Streets and Roads Program, providing funds to cities and counties for basic road maintenance; and Solutions for Congested Corridors, funding projects designed to reduce congestion in highly traveled corridors. Most SB 1 programs are awarded on a competitive basis; therefore, growth rate assumptions are based primarily on prior award experience and the anticipated percent of the typical regional share.

Future State Revenues for Transportation

As noted earlier, some of the options for funding transportation include a mileage-based user fee. In 2013, the State of Oregon passed Senate Bill 810, establishing the nation's first mileage-based user fee revenue program for light vehicles and has been using this volunteer-based program since 2015. Other states around the country, including the State of Washington, are studying the potential of a mileage-based user fee as a transportation funding source that may replace or supplement the current gas tax.

Senate Bill 1077 (SB 1077) (DeSaulnier), enacted in 2014, authorized an advisory committee to study and develop similar options that was implemented as a pilot project in 2017. Pursuant to SB 1077, the CTC, in conjunction with the California State Transportation Agency (CalSTA), established a 15-member Technical Advisory Committee (TAC) that studied all aspects of road charging, with an emphasis on certain mandated considerations such as privacy, data security and a host of technology implications. The TAC prepared and submitted to CalSTA official recommendations for the design of the live road charge pilot demonstration that concluded on March 31, 2017.

High-Speed Rail

The Governor and the state have committed to building a high-speed rail system. Senate Bill 1029 (Hancock, 2012) appropriated $8 billion in federal and state funds to construct the first segment of the high-speed rail in the Central Valley. Based on the current plan, the first phase of the system will run from San Francisco to the Los Angeles basin. The line will be extended north to Sacramento and south to San Diego. There is no specific timeline for the San Diego segment, so the 2019 Federal RTP assumes that the San Diego segment may be built toward end of the 2019 Federal RTP period.[7]

Other State Funds

Other funds administered by the state include the ATP for non-motorized projects, the Cap-and-Trade Program, the State Transit Assistance program dedicated to public transit operations and capital support, the FASTLANE Grants program for freight projects and state managed federal programs such as the Highway Bridge Program and the Highway Safety Improvement Program.

SANDAG is collaborating with other regional agencies, transportation providers, organizations, and associations statewide to develop a set of principles for the next federal surface transportation authorization.

Federal Funding

SANDAG is working toward the completion of federally-funded transportation projects, while also seeking additional discretionary funding for improved transportation infrastructure at the border, major transit projects, and other transportation improvements. The Fixing America's Surface Transportation (FAST) Act was signed by President Obama in 2015 and continued many of the provisions of the previous authorization, the Moving Ahead for Progress in the 21st Century Act. With the FAST Act due to expire in 2020, the agency continues to work with regional, state, and national partners toward a long-term highway authorization replacement.

SANDAG is collaborating with other regional agencies, transportation providers, organizations, and associations statewide to develop a set of principles and recommended funding levels for the next federal surface transportation authorization. The effort to build support for these principles continues, so that California can present a clear and unified position as federal legislation is developed.

The Highway Trust Fund, which is the source of most federal funding for the nation's roads and transit infrastructure, has seen revenues fall short of expenditures for more than a decade. Drawing down trust fund balances and transferring money from the general fund have served as temporary fixes, but these measures have not addressed the underlying challenge of declining revenues from the federal fuel excise tax which has not seen an increase since 1993 and is not indexed to inflation. The FAST Act provided $70 billion in general funds transfers to the Highway Trust Fund from Fiscal Year 2016 through Fiscal Year 2020. Projections indicate that Congress would need to provide $94 billion over the next five years merely to maintain FAST Act spending levels that are generally considered inadequate. The American Society of Civil Engineers estimates a $1.1 trillion shortfall between the need for surface transportation improvements and the estimated funding available. As with the state funds, the 2019 Federal RTP assumes several potential options, such as an increase in the federal fuel tax on gasoline.

While these negotiations on the infrastructure funding measure are underway, the 2019 Federal RTP assumes continuation of the various funding programs as well as new federal revenue sources based on discussions and actions by Congress.

Federal Transit Administration (FTA) Programs

The 2019 Federal RTP assumes that the formula programs – Sections 5307, 5337, 5339, 5310, and 5311 – will continue. The majority of these funds are passed through to the two transit agencies while others also are passed through to social services transportation providers. The 2019 Federal RTP also includes assumptions of discretionary funding for both large scale projects under the New Starts Program, and smaller projects under the Small Starts program.

The 2019 Federal RTP also includes the use of Grant Anticipation Notes backed by the FTA New Starts Program, specifically for the Mid-Coast Trolley project. This project was awarded a Full Funding Grant Agreement under the New Starts Program. Due to the anticipated long duration to fully appropriate all the New Starts funds, SANDAG plans has securitized the FTA funds in order to complete the project.

Federal Highway Administration (FHWA) Programs

As with the FTA formula programs, the 2019 Federal RTP assumes the continuation of the FHWA formula programs, which include the Congestion Mitigation and Air Quality Improvement program and the Regional Surface Transportation Block Grant Program. Discretionary funds are included in the near term for awarded funding; however, the 2019 Federal RTP assumes that any additional discretionary funds would become available beginning in 2025.

Future Federal Revenues for Transportation

Federal lawmakers continue to discuss approaches for a long-term, sustainable transportation bill. The federal gas tax has not been increased since 1993, and it has not been indexed for inflation. As a result, the Highway Trust Fund has been running on empty. Congress does recognize the crisis and various proposals have been introduced and discussed. In the meantime, the 2019 Federal RTP assumes that a potential increase to the federal gas tax, beginning in 2024, will be conservative.

Addressing Potential Funding Shortfalls

Planning for investments funded with anticipated income can be challenging. Table O.1 in Appendix O: Transportation Financial Background reviews each revenue source, the risks associated with relying on them for projects, and what can be done if anticipated revenues fall short. Although the revenue forecast is based on trends for existing revenue sources as well as reasonable assumptions about potential changes in the future, occasionally there are significant changes that cannot be easily predicted. These include economic downturns and the approval of new funding sources. Fortunately, the Regional Transportation Plan is reviewed and updated every four years to take into account these changes, and to make the necessary adjustments to the timing and availability of revenues to pay for projects.

State Route 125

SANDAG entered into a 40-year franchise agreement with Caltrans in December 2011 to manage and operate the State Route 125 (SR 125) South Bay Expressway Toll Facility. The SR 125 Toll Road is a 10-mile, traditional toll facility that lies on the southernmost portion of SR 125. The program is managed to be financially self-sufficient, with all management, operating, and debt service expenses being paid for from toll revenue generated on the facility. Revenues are generated from tolls, toll related activities, and interest. Table 3.3 displays the projected revenues and costs associated with this facility. Once the debts for the facility are paid off, toll revenues must be used for maintenance, operations, and transit within the corridor.[8]

Table 3.3

SR 125 South Bay Expressway Toll Facility: Projected Revenues and Costs

Financial Model (In Millions, 2019)	2019-2025	2026-2035	2036-2043	Total
Total Revenues	$338.9	$619.5	$604.9	$1,563.3
Operating Expenses	$107.8	$235.0	$269.2	$612.0
Major Maintenance Reserves	$133.9	$245.0	$241.4	$620.3
Debt Service	$97.2	$139.5	$94.3	$331.0

Future Needs

What if our region had an unlimited budget? SANDAG considered this too, in order to get a clear-eyed view of what the region is actually expected to need in the years leading up to mid-century. This "Unconstrained Needs Analysis" provided a cost estimate for additional projects, programs, and services that would meet our transportation demands through 2050. This included the costs for operating, maintaining, and rehabilitating the transportation system regionwide. Obviously, this would cost more than our actual investment plan, but it's worth looking at because it shows the total actual needs for the region (See Table A.5 in Appendix A).[9]

Looking Ahead

In the next chapter, we'll review the benefits of the 2019 Federal RTP. Many of these benefits come from the transportation, smart growth, and environmental mitigation investments discussed in Chapter 2. These are benefits for people throughout the region, regardless of where they're from, their economic circumstances, or their background. The 2019 Federal RTP was created to achieve gains across our region, enhancing the quality of life for all of us.

Endnotes

[1] For more details about each source of funding, see Appendix O: Transportation Financial Background.

[2] *TransNet* Extension Ordinance and Expenditure Plan Commission Ordinance 04-01. Section 16 of the Ordinance "lock-boxes" some projects such as State Route 76 and the Mid-Coast light rail line by providing that these projects cannot be removed from the Expenditure Plan without a vote by the electorate.

[3] A list of projects in our investment plan can be found in Appendix A: Transportation Projects, Costs, and Phasing.

[4] The ATP includes the Regional Program, Local Bike Projects, Local Pedestrian/Safety/Traffic Calming, and Safe Routes to School.

[5] Please see Appendix E for a more detailed breakdown of the Transportation Systems Management and Transportation Demand Management expenditures by phase.

[6] A consensus (simple average) of three independent national forecasts of real rates of growth in per-capita retail sales (nationally recognized forecasts by IHS Global Insight, Moody's, and California Economic Forecast/Caltrans).

[7] High-speed Rail (HSR) is not a proposed Regional Plan project. Its funding and implementation will be determined by the State of California rather than by entities within this region. However, its revenues and expenditures are included in the Regional Plan because the HSR segment between Los Angeles and San Diego, via the Inland Empire, is expected to provide connectivity for the San Diego region with the rest of the state. Therefore, it is an integral part of the planned transportation infrastructure for our region.

[8] Streets and Highways Code section 143.1(b).

[9] A list of these unconstrained projects is shown in Appendix A.

Chapter 4
Benefits of the Plan

San Diego FORWARD
The Regional Transportation Plan

4 Benefits of the Plan

Fostering economic vitality

How We Can All Benefit

Making our transportation system more efficient will help generate tens of thousands of jobs, billions of dollars in economic output, and ultimately create economic opportunity for people across the financial spectrum. In other words, a healthy transportation system makes a robust regional economy possible.

A healthy transportation system makes a robust regional economy possible.

San Diego Forward: The 2019 Federal Regional Transportation Plan (2019 Federal RTP) does more than just outline a construction effort to build transportation choices. It makes connections that will fuel the continued success of the economy: it connects businesses with customers, future employees with education and training, suppliers and manufacturers with retailers and services industries. The more freely these connections flow, the more economic benefits will be realized.

When we think about our region's economic health, it's important to recognize that the transportation system:

- **Moves goods and services** through our binational megaregion.
- **Provides access and connects people and neighborhoods** of all income levels to jobs, education, recreational opportunities, and key destinations throughout the region.
- **Promotes health** through a variety of transportation choices that encourage active living.
- **Creates jobs** by efficiently connecting workers with jobs through construction and operation of the transportation network.

While the 2019 Federal RTP helps drive economic growth, it also will achieve environmental sustainability by guiding the region toward more choices for mobility, smarter growth, protected open spaces, healthier communities with more active people and less air pollution, more efficient water use, and reduced greenhouse gas emissions – benefits we've talked about in previous chapters.

Planning for Economic Prosperity

With long-range planning, our region can capitalize on, improve upon, and protect the qualities that make it a great place to live and drive a successful local economy. These qualities include an educated workforce, energetic centers of employment, a spectacular natural environment, proximity to the international border, and an abundance of recreational activities – to name just a few of our best attributes.

Smart growth, as we've discussed, can help us retain many of these attributes and make them better. Many American metropolitan areas are being reinvigorated with mixed-use, "walkable" developments that are served by a variety of transportation choices, including more frequent and farther-reaching networks of public transit. These developments are especially attractive to younger people entering the workforce.[1] They also serve the needs of an increasing number of older individuals in our region who have varied transportation needs and may rely on transit and/or specialized transportation services.

Our Circulatory System

The transportation system acts as an economic circulatory system, allowing businesses to access raw materials, ship finished goods, and reach customers. To function at its best, it must efficiently connect workers with jobs, future employees with education and training, and industries with one another, as well as with points outside San Diego County. The region's current transportation network relies on an efficient network of freeways and arterials, multiple airports, a seaport, expanding bike routes and other options for active transportation, a growing transit system, and fast-developing shared mobility services. With the population and job growth projected in our future, keeping this system running well and adding layers of transportation choices in an environmentally-conscious way will be critical to our region's economic future. Put simply, an efficient and healthy transportation system *reduces costs* for businesses and people, and it does this sustainably.

Keeping the transportation system running well and adding layers of transportation choices in an environmentally-conscious way will be critical to our region's economic future.

A high-quality transportation system that serves a growing region not only fuels its economy, it also determines *how* that economy grows. The price of housing and where it's situated, how much tax revenue municipalities take in to serve the region, and where businesses decide to locate all are influenced by the quality of local and regional transportation. Meanwhile, development patterns impact the kinds of transportation options we have. And those transportation options, in turn, influence our access to jobs and residential areas, our traffic congestion and commute times, the state of our natural environment, how healthy we are, and how and where business develops.

Connecting with Public Investments

We know that the physical "clustering" of similar types of businesses can stimulate the growth of an industry, innovation, and entrepreneurship.[2, 3] The biotech and brewing industries in San Diego are great examples. Retail, manufacturing, shipping, and construction businesses need transportation infrastructure and particular patterns of land use to thrive. Businesses depend on roadways, rails, and ports, but they also depend on sidewalks and parks to attract customers and employees. Supporting emerging technologies, such as wireless communications that help maximize the efficiency of transit and highways, helps stimulate an area's business climate as well. The economics of public investments must be properly considered in order for policy-makers to make effective decisions that help promote the growth of industries and entrepreneurial areas vital to the region.

Promoting Both Economic Vitality and Equity: The Big Picture

Improving our economy is critical for everyone. Our goal is a balance between economic sectors - characterized by many different types of industries, a healthy middle class, a strong labor force, and high paying jobs. San Diego is blessed with a diverse economy, with no sector representing more than 16 percent of employment in the region, and nearly two-thirds of that employment is in sectors that have proven resistant to recession. However, the San Diego region today has an "hourglass economy" – with many high-paying jobs and many low-paying jobs, and relatively few in between. This phenomenon of a shrinking middle class has been seen nationwide and it presents serious challenges.

One alarming trend is that the percentage of people in poverty in the San Diego region has grown, from roughly 11 percent in 2007 to more than 13 percent in 2017. This comes partly as a severe housing shortage has driven up the cost of houses and apartments to peak levels, and burdens lower-income families. It's clear that not everyone shares in the region's growing economic prosperity.

Poverty, housing insecurity, and persistent inequality undermine our regional economy. Joblessness is at near-record lows, but wage growth has not kept pace. Higher home prices relative to lower wages results in less potential for taxable retail sales growth and sales tax revenues. For our region's economy to truly thrive, everyone must have the opportunity to prosper.

The Need for Widespread Access to Quality Transportation

One of the biggest challenges for low-income communities, and one that can prolong poverty, is limited access to transportation. Low-income individuals in areas without adequate public transit often have to spend disproportionate amounts of time and money to access education, jobs, and recreation. These practical, transportation-related barriers make it difficult for people in poverty to access education and training, cutting into our region's potential for producing skilled workers. Improving transportation options for low-income neighborhoods can help people lift themselves up the economic ladder. Widespread access to quality transportation is equally important to employers, who need to draw from a broad pool of potential employees of varying skill levels.

It's difficult to overstate the importance of transportation options for people who are economically disadvantaged. Without access to transportation, it's extremely difficult for poor people to improve their economic prospects. For many low-income individuals, the costs of owning and operating a car are prohibitive. As a result, investing in more transportation options regionally can increase economic opportunities for people who most need it.

Our 2019 Federal RTP will make transportation investments in low-income communities, increasing access to high-frequency public transit by 23 percent[4, 5].

One key to better connecting low-income communities with the rest of the economy will be the changing land-use patterns reflected in the 2019 Federal RTP. Many low-income communities in the region are close to city centers. And like other metropolitan areas around the country, the San Diego region has seen a resurgence of development in downtown areas and in surrounding neighborhoods. It's a trend that our 2019 Federal RTP supports with investments in public transit projects and incentives for smart growth, biking and walking, and other projects that will encourage people to travel without a car.

Achieving Social Equity

Social equity and environmental justice aren't just obscure academic terms. They are embedded in the cherished right to equal opportunity that we value so much as Americans. By making investments in lower-income and minority communities, the 2019 Federal RTP gives everyone an opportunity to participate in the economy, which benefits all our communities. In transportation planning, striving for social equity and environmental justice requires involving a wide variety of communities and stakeholders so all people can help shape their futures. We should all have the opportunity to participate in planning the future of our region. For most of us, it's difficult to get involved in regional planning due to our busy lives. For some of us, it is particularly hard because of additional barriers to involvement that include language, not understanding our rights, a lack of familiarity with the planning process, and in some cases a fear of getting involved. Communities with high concentrations of low-income individuals and minorities, as well as members of federally recognized tribes, are often underrepresented in the planning process so SANDAG carries out extensive outreach to ensure that these groups have a meaningful voice in the regional planning process.[6]

Defining Social Equity:
SANDAG uses the term **social equity** as shorthand for an overarching goal that combines the concept of environmental justice, the federal laws in Title VI, the Americans With Disabilities Act, and National Environmental Policy Act, and various other federal and state laws intended to promote an equitable distribution of benefits and burdens from SANDAG projects and programs.

As SANDAG developed the 2019 Federal RTP, we partnered with a network of Community-Based Organizations (CBOs) from a wide range of disadvantaged communities from all across the region. Right from the beginning, these organizations helped to ensure that the needs and issues of their communities were heard and considered in a timely manner throughout each step of the planning process. They also helped to shape how we measured whether the 2019 Federal RTP improves people's access to transportation choices equitably.[7] Access to key amenities is critical for everyone. We need to be able to count on the transportation system to get us to our jobs or to school or to the doctor, as well as to the store, or the park, regardless of our income or background. In addition, through our government-to-government relationship, SANDAG and the tribal nations in the region worked together throughout the planning process to make sure that tribal needs and concerns were heard and considered.[8] The San Diego Regional Tribal Summit, held in April 2018, allowed tribal nations and the SANDAG Board of Directors to develop coordinated strategies to pursue.

San Diego Forward: For An Equitable Future

Working with CBOs, SANDAG identified specific populations that would need special attention in the planning process. These included minorities, people with low income (200 percent of the Federal Poverty Rate), and seniors who are 75 years and older. We performed a social equity analysis using several performance measures to determine how the 2019 Federal RTP would benefit or burden disadvantaged populations in comparison to the rest of the region. The key is that no one group or population should get the short end of the stick; the benefits and the burdens of the 2019 Federal RTP should be equitably distributed.

While conducting its social equity analysis for minority, low-income, and senior populations,[9] SANDAG used a threshold of significance of 20 percentage points. The analysis indicates, however, that implementation of the 2019 Federal RTP will not cause any disproportionate effects or disparate impacts for the low-income, minority, or senior populations in our region.[10] Here are some key findings from our social equity analysis:

- In 2016, 41 percent of low-income people in our region had access to high- frequency transit; in 2050, with the 2019 Federal RTP's projects in place, 64 percent will have access. When compared to groups who are not low-income, the low-income populations will benefit equally in their access to high-frequency transit.
- Access to bike facilities improves for everyone substantially, and equitably. In 2016, 63 percent of minorities had access to those facilities, but with the 2019 Federal RTP, 70 percent will be within a quarter of a mile from a bike facility by 2050.
- Overall, disadvantaged populations will share proportionately in having better access to more transportation options.
- No population group will experience heavier burdens of toxic air emissions than any other group as a result of the 2019 Federal RTP.

Recognizing the Value of Tribal Nations in the Region

Our region is enriched by the presence of 18 tribal nations. The tribal members of today's bands represent four Indian cultural/linguistic groups (the Luiseño, the Cahuilla, the Cupeño, and the Kumeyaay), who have populated this entire region for more than 10,000 years, taking advantage of its abundant natural resources and diverse ecological system for their livelihoods. Today these nations support the regional economy through their economic activities such as gaming, energy production and hospitality.

Defining Environmental Justice: Environmental justice is defined as the **fair treatment** and **meaningful involvement** of all people regardless of race, color, national origin, or income. **Fair treatment** means no group of people should bear a disproportionate burden of environmental harms and risks, including those resulting from the negative environmental consequences of industrial, governmental, and commercial operations or programs and policies.

Meaningful involvement means a) potentially affected community members have an appropriate opportunity to participate in decisions about a proposed activity that will affect their environment and/or health; b) the public's contribution can influence the regulatory agency's decision; c) the concerns of all participants involved will be considered in the decision-making process; and d) the decision makers seek out and facilitate the involvement of those potentially affected.

Gaming is a traditional social activity among many tribal nations; San Diego County now has ten tribal gaming facilities, which is the greatest number of Indian gaming facilities in any county in the United States. Gaming-related and other types of development have led to rapid economic growth for a number of tribes, while also providing jobs and stimulating the regional economy. In the San Diego region, statistics show that the Indian gaming industry as a whole has created more than 10,000 jobs in the region, resulting in a $1 billion industry with about $263 million in goods and services purchased annually and $500 million in payroll. It should be noted, however, that the median income among the Native American population remains below the national average, and some gaming enterprises have been much more successful than others.[11]

For more than fifteen years, SANDAG and the Southern California Tribal Chairmen's Association (SCTCA) have had a government-to-government framework to engage in planning dialogue and action at the regional level. Collaboration with our tribal counterparts has focused on transportation, cultural resources, conservation, energy and economic development. In 2018 SCTCA and SANDAG collaborated on the development of an Intraregional Tribal Transportation Strategy to assess the multimodal needs of the tribes in a regional context (see Appendix U3).

Realizing the Benefits of Living on An International Border

The San Diego region and northern Baja California are linked socially and economically. Think about the amount of goods and the number of people flowing everyday across our borders. The ports of entry along the border, as we discussed in Chapter 2, are among the busiest in the world. The San Diego region imports over 85 percent of its energy and about 75 percent of its water each year, and it shares delivery systems for these resources with Mexico.[12] Consequently, roadways, ports of entry, energy transmission lines, and water delivery systems are all issues of common concern for the San Diego region and our neighbors to the south. Collaboration with our Mexican counterparts has focused on transportation and housing, energy and water supply, the environment, and economic development. More recently collaborative efforts also have included active transportation, public health, and climate change (see Appendix U14).

Our region's economy is binational in character, especially when considering the industry clusters that thrive here. Our geographic location means there is some reliance on Mexico's large labor force. The economy of Tijuana and the greater Baja California region have benefited from employment opportunities across the border in the San Diego region, and our region has benefited from employment opportunities in Baja California. Mexico has taken several steps to bolster economic development along its northern border, such as recent cuts in value-added and income taxes for northern border municipalities, and the earlier creation of the maquiladora program. The maquiladora industry is a big source of employment opportunities in Baja California and in the San Diego region; you only have to look at the large number of transnational corporations with sister facilities north of the border.

The economy of Tijuana and the greater Baja California region have benefited from employment opportunities across the border in the San Diego region, and our region has benefited from employment. opportunities in Baja California.

Employment in the maquiladora industry in Baja California doubled between 1991 and 2004. In Tijuana, employment in the sector reached its peak in 2008, with more than 200,000 people employed. There are now about 195,000 people employed by 590 maquiladora companies in Tijuana. That number represents 11.5 percent of Mexico's total number of manufacturing plants in 2018.[13]

By taking advantage of research and development hubs in San Diego, and advanced manufacturing capabilities in Baja California, goods are jointly produced in the United States and Mexico. They often cross the border many times before becoming finished products. This phenomenon of joint production is illustrated by the fact that Mexican exports to the United States contain 40 percent U.S. content, which greatly exceeds the U.S. value-added of any other foreign imports.[14] This manufacturing interdependence has huge implications for the local, regional, and national economy, given the enormous scale of U.S.-Mexico trade.

Bilateral Trade

The ports of entry between the United States and Mexico in our region are the main conduits for our economic relationship. The massive number of people and goods that cross the international border, and the intense economic activity at the border, are testaments to the close economic ties between the San Diego region and Baja California. In 2018, the dollar value of bilateral trade that passed through the ports of entry connecting San Diego County and Baja California was more than $47.6 billion.

In addition to trade, crossborder tourism, commerce, and commuting also are important players in the regional economy. Similarly, tourism in Baja California is a key source of revenue for that region, and anecdotal evidence suggests that northern Baja California is making up for a shortfall in affordable housing in San Diego. These trends mean that people who live on one side of the border but work on the other are subject to significant commuting delays at the ports of entry every day – damaging both economies and highlighting an important transportation-related problem that is addressed in this 2019 Federal RTP through the development of the State Route 11 project and new Otay Mesa East Port of Entry (POE). State Route 11, much of which has already been constructed, will connect the future POE with the rest of the region's freeway system via State Route 905 and the South Bay Expressway. It will offer an alternative to the highly congested border crossings at Otay Mesa and San Ysidro, benefitting the regional economy and the environment by reducing border-crossing wait times.

Megaregions

Residents of San Diego County live in two overlapping megaregions – interdependent groups of metropolitan areas in a single geographic area bound by interdependent relationships on several levels: environmental, economic, shared border infrastructure, a linked transportation system, related land use policies, history, and culture. Our binational community, like other megaregions around the world, has an opportunity to leverage its crossborder economic relationships to become more globally competitive.

The San Diego region actually is considered part of two megaregions – the greater California megaregion and the greater binational megaregion. The greater California megaregion includes five important metropolitan areas in terms of freight movement (Los Angeles/Long Beach, Sacramento, San Diego, San Francisco/San Jose, and Las Vegas, Nevada). The four metropolitan centers in California are located on or nearby the Interstate 5 (I-5) corridor.[15]

Our binational megaregion is part of the "Cali Baja Binational Megaregion Initiative," which promotes the entire border region between California and Baja California, Mexico as a globally unique, binational location for business investments.[16] The San Diego-Northern Baja California region is becoming an increasingly important, interdependent trade and commuting corridor with a distinct global competitive advantage. It's important for us to do all we can to understand the diverse landscapes, politics, economics, languages, and cultures of our geographic international neighbor as we plan for this unique and promising binational megaregion.

The Economic Analysis of our Regional Transportation Plan

To measure the potential impacts of our 2019 Federal RTP on the local economy, SANDAG conducted a benefit-cost analysis. The Benefit-Cost Analysis (BCA) uses the outputs of the SANDAG activity-based travel model to determine if the benefits measured in the model outweigh the costs. This analysis tells us things such as how much time and money drivers and transit riders will save, and how much safer, healthier, and cleaner our system becomes as the 2019 Federal RTP is implemented. We can then compare those monetized benefits to the cost of the Regional Plan to get a "benefit-cost (B-C) ratio." The results indicate that the benefits of the 2019 Federal RTP, are somewhat less than the costs, with a B-C ratio of 0.61. But benefit-cost analysis cannot capture the entirety of the economic benefit from transportation improvements, as BCA captures only those metrics that can be modeled. The economic value of expanding access to jobs, education, and recreation for residents is not fully captured, nor is the economic value to businesses of expanded access to customers, suppliers, and employees. The economic development potential of an expanded system is not captured, as the land-use and economic forecast used is static. A B-C ratio below one suggests that these investments are not worth making, but that would be an oversimplification. The primary driver of these benefits is time savings, which represent 80 percent of the benefits, followed by reduced operating costs, and the rest of the benefits categories. Detailed results and methodology are available in Appendix P: Benefit Cost Analysis, which spells out the methods and results of the BCA in detail.

Taking Action

Developing our Regional Transportation Plan is one thing. Taking action is another. In the next and final chapter, we'll discuss key actions we'll take to implement the 2019 Federal RTP. We'll also review how we'll check our progress over time, to ensure that we realize our ambitious vision for the future.

Endnotes

[1] "How Smaller Cities Can Attract (And Keep) Millennials"; Governing, December 11, 2017; https://www.governing.com/commentary/col-how-smaller-cities-attract-keep-millennials.html

[2] "6 Rules For Better, More Inclusive Economic Development in Cities"; Citylab, February 26, 2019; https://www.citylab.com/perspective/2019/02/amazon-hq2-new-york-incentives-economic-development-cities/583540/

[3] Harvard Business School Institute for Strategies and Competitiveness; http://www.isc.hbs.edu/econ-clusters.htm

[4] See Appendix H: Social Equity: Engagement and Analysis for more information on the Social Equity Analysis.

[5] See Appendix H, Figure H.6 on page 17.

[6] Tribal consultation and Tribal transportation plans are included in Appendix G: Tribal Consultation Process for San Diego Forward: Communication, Cooperation, and Coordination. An overview of the Tribal Consultation plan is discussed in Appendix F: Public Involvement Program.

[7] The SANDAG Public Involvement Program is included in Appendix F and specifics about the CBO Outreach Network are included in Appendix H.

[8] The Tribal Consultation process is included in Appendix G.

[9] Discussed further in Appendix H.

[10] The complete social equity analysis is included in Appendix H.

[11] Santa Ysabel and La Posta both opened gaming facilities only to go bankrupt within a couple of years. La Jolla just opened a Casino Outpost in 2019.

[12] https://www.sdcwa.org/annualreport/2018/diversification-conservation.php

[13] Mexico's National Institute of Statistics and Geography (Instituto Nacional de Estadística y Geografía (or INEGI, in Spanish), Programa de la Industria Manufacturera, Maquiladora y de Servicios de Exportación IMMEX. (retreived May 2019)

[14] Robert Koopman, William Powers, Zhi Wang and Shang-Jin Wei, "Give Credit Where Credit is Due: Tracing Value Added in Global Supply Chains," National Bureau of Economic Research Working Paper No. 16426, Cambridge, Massachusetts: September 2010

[15] Federal Highway Administration, Literature Review of Organizational Structures and Finance of Multi-jurisdictional Initiatives and the Implications for Megaregion Transportation Planning in the U.S., submitted by Georgia Tech Research Corporation, October 2011.

[16] CaliBaja Mega-Region Initiative http://www.calibaja.net/cbdb/p/, (accessed October 2014).

Chapter 5
Ensuring Performance

5 Ensuring Performance

Implementing the Plan and monitoring our progress

Putting San Diego Forward: The Regional Transportation Plan into Action

San Diego Forward: The 2019 Federal Regional Transportation Plan (2019 Federal RTP) is a blueprint for how we'll grow and get around in the future. Putting the 2019 Federal RTP into action requires concrete steps – steps we need to take now to realize our vision, goals, and objectives for 2050 and beyond. This final chapter serves as the Action Element for the 2019 Federal RTP. It discusses key actions, and it shows how we'll measure our progress.

The 2019 Federal RTP, like others before it, will take time to implement. But these plans do get implemented. Each regional transportation plan builds upon the one before it, reflecting the new realities of changing demographics, economics, new laws, and other developments. They are continually reevaluated, revised, and refined – all in the service of ensuring a high quality of life in our region for years to come.

The Importance of Collaboration and Incentives

The 2019 Federal RTP has been built collaboratively with a wide variety of people and stakeholders, as we've discussed in previous chapters. Public involvement will help strengthen support for several key actions, including enhancing the connections between transportation and how we use land; reinforcing the links between our local and regional plans; and providing the framework to collaborate on implementing the 2019 Federal RTP.

The 2019 Federal RTP calls for using federal, state, regional, and local transportation funds, in conjunction with locally-generated incentives, as catalysts to promote smart growth, economic prosperity, and sustainable development. As people see changes develop around our region – whether they're biking or walking projects, new Trolley lines, enhancements to our freeway networks, local smart growth projects, binational infrastructure projects, or initiatives that preserve and enhance our environment – they'll want to see them in their own cities, neighborhoods, and the places where they work. That's why our implementation strategy also includes incentives to help communities across the region realize their own specific goals.

In past decades, our region has developed a variety of incentives funded through the local *TransNet* half-cent sales tax. *TransNet* grant programs will continue to play a big role in providing incentives for the 2019 Federal RTP. They include:

- The Active Transportation Grant Program, which funds bike and pedestrian plans, projects, and education and training programs.
- The Smart Growth Incentive Program, which funds planning and infrastructure projects that support mixed use and higher density development in the urbanized areas of the region near existing and planned public transportation. The program also supports long-term sustainability by encouraging development in areas that are not being used as habitat, farmland, rural land, or open space.

- The Environmental Mitigation Program, which funds the acquisition, management, and monitoring of habitat preservation lands and environmentally sensitive species.
- The Senior Mini-Grant Program, which funds specialized transportation services for seniors.

Other tools and incentives provided by SANDAG help the region grow as envisioned in the 2019 Federal RTP. They include:

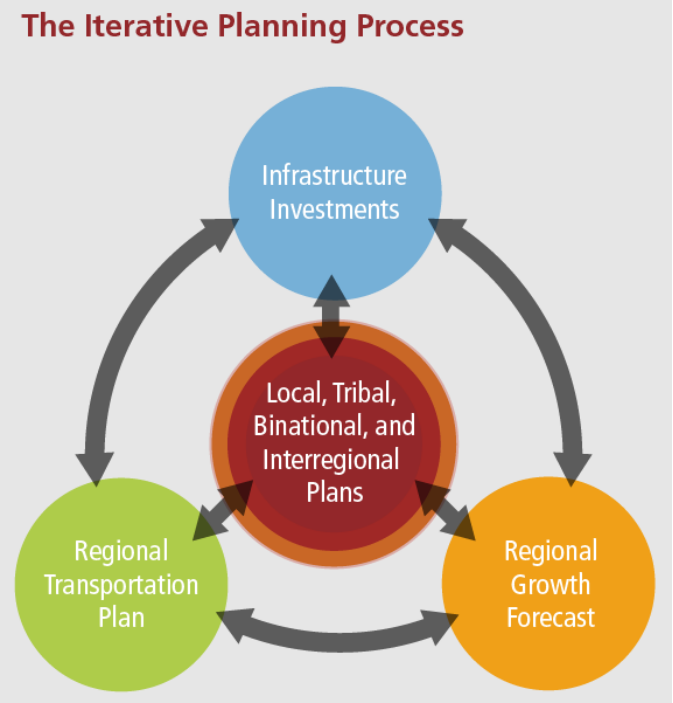
- Technical assistance, such as the Smart Growth Toolbox;[1] the Smart Growth Concept Map;[2] Smart Growth Design Guidelines;[3] smart growth visual simulations;[4] guidelines for integrating Transportation Demand Management into the development process;[5] the Regional Parking Management Toolbox;[6] guidelines for planning and designing for pedestrians;[7] a Smart Growth trip generation tool;[8] Regional Transit Oriented Development Strategy;[9] and customized land use and transportation modeling, forecasting work, and subregional planning.
- The Bike Month Mini-Grant Program funds events that educate, promote, and encourage biking as a viable transportation choice.
- The Walk, Ride, and Roll to School Program, which awards mini-grants to public or private K-12 schools or school districts to educate and encourage active forms of transportation to and from school, and to promote pedestrian safety around schools.

How the Plan Gets Used: Evolving Over Time to Reflect Changing Conditions

As a planning agency, SANDAG understands that change is inevitable. So implementing the 2019 Federal RTP will be part of an "iterative process." Here' what we mean – as illustrated in the following Iterative Planning Process graphic: Local general plans and policies, as well as binational, tribal, and interregional plans, feed information into the SANDAG regional forecast for growth. The forecast aggregates that information to create a picture of the region's overall land use pattern of the future, which is included in the 2019 Federal RTP. That big-picture land use pattern is then used to determine regional transportation needs. The 2019 Federal RTP, in turn, guides other agencies' plans and infrastructure investments, such as those of the San Diego County Water Authority, local government water and wastewater infrastructure, energy providers such as San Diego Gas & Electric, and others that rely on population, housing, and employment projections.

The policies and actions included in the 2019 Federal RTP can also influence future changes to local land use plans and crossborder plans. These local and crossborder planning efforts then get incorporated into the next regional forecast for growth.

By updating the regional transportation plan every four years, as required by federal law, SANDAG captures changes, refines its analyses, and continues to incorporate policies and ideas that move us forward.



Actions to Implement the Plan

As noted in Chapter 1, the 2019 Federal RTP establishes the following vision, goals, and policy objectives.

To provide innovative mobility choices and planning to support a sustainable and healthy region, a vibrant economy, and an outstanding quality of life for all.

A key question is: What actions should we take to implement the 2019 Federal RTP and most effectively achieve our vision, goals, and policy objectives?

The 2019 Federal RTP will be implemented with a combination of both near-term actions and continuing actions. As we discussed in Chapter 3, transportation projects and programs will be phased in over the life of the plan. So, the actions we identify will be either "near-term" (intended to be completed before the adoption of the next regional plan), or "continuing" to support the longer-term implementation of projects and programs.

The most important near-term action related to transportation is to implement the Regional Transportation Improvement Program (RTIP), which includes the transportation projects and improvements scheduled to receive funding in this region over the next five years. Some examples include adding carpool lanes to Interstate 5; completing the extension of the Mid-Coast Trolley; and continuing to double track the region's coastal rail corridor (our portion of the Los Angeles-San Diego-San Luis Obispo Corridor [LOSSAN]). RTIP projects, which include identified funding sources and detailed implementation schedules, are the concrete next steps of the region's transportation capital improvement plan. They also provide a foundation for the additional, longer-term transportation projects included in the 2019 Federal RTP.

The 2019 Federal RTP helps SANDAG set budget priorities, with its near-term actions incorporated into the agency's annual budgets for the next few budgeting cycles. Below is a list of *near-term* actions – not necessarily in order of priority but numbered for easy reference – planned for completion prior to the adoption of the next Regional Plan in 2021. Following the near-term actions is a list of *continuing* SANDAG actions necessary to implement the 2019 Federal RTP, organized according to its three goals.

Near-Term Actions

1. Implement the RTIP as detailed above.
2. Develop a long-term specialized transportation strategy through 2050, as part of the next biennial update of the SANDAG Coordinated Plan, to address the increasing specialized service needs of seniors and people with disabilities.[10]
3. Implement the San Diego Regional Alternative Fuel Readiness Plan.
4. Promote Vehicle Mile Travel (VMT) reduction by applying the Regional Complete Streets Policy to relevant SANDAG plans, programs, and projects.
5. Incorporate regional transportation model enhancements to provide more robust data regarding bike and pedestrian travel, carpools, vanpools, carshare, and public health.
6. Expand the Integrated Corridor Management Concept and design for up to three corridors.

7. Complete the implementation of the ten-year *TransNet* Program review recommendations.

8. Develop innovative financing tools to self-finance near-term projects for the new border crossing at Otay Mesa East.

9. Participate in the target-setting process and monitoring for federal performance measures and report on progress toward the achievement of these federal performance measure targets in the new System Performance Report.

10. Support the implementation of the Intraregional Tribal Transportation Strategy with tribal nations in the region.

11. Develop a regional military base access plan and implementation program.

Continuing Actions

Healthy Environment and Communities

1. Continue to provide and/or expand incentive programs that support the reduction of greenhouse gas emissions, protect open space and farmland, and create great places to live, work, and play.

2. Through incentives and collaboration, continue to work to increase the supply and variety of housing types affordable for people of all ages and income levels in areas with frequent transit service and with access to a variety of services.

3. Continue to refine planning and modeling tools to assess the public health implications of regional and local plans and projects.

4. Continue to support wildlife and habitat conservation through the acquisition, management, and monitoring of the region's habitat preserve areas through the *TransNet* Environmental Mitigation Program incentive program and implementation of the Multiple Species Conservation Program and Multiple Habitat Conservation Program.

5. Promote the use of both zero-emission vehicles and alternative fuels and ensure that we have the infrastructure to support these innovations.

6. Support the efforts of local jurisdictions to implement their Energy Roadmap Programs to save energy in their own operations and in their larger communities.

7. Develop strategies to enhance our region's ability to adapt to the consequences of climate change, including planning and design strategies to help communities to cope with hazardous events such as storms, heat waves, wildfires, or ongoing drought.

8. Continue to help improve our regional air quality through the implementation of transportation investments detailed in the 2019 Federal RTP, coupled with improvements in fuel and vehicle technologies.

Innovative Mobility and Planning

9. Work with partner agencies to implement the transportation projects contained in the 2019 Federal RTP. These include:

    - Putting into operation the public transit projects included in the investment plan between now and 2050 (LOSSAN rail, COASTER, high-speed train, Trolley, SPRINTER, *Rapid* services, airport services, local bus services, streetcar/shuttles, and specialized services for seniors and people with disabilities).
    - Fulfilling the Active Transportation Program, including building out the regional bike network, safety improvements for people biking and walking, Safe Routes to School, Safe Routes to Transit, education and data collection efforts, and active transportation improvements when highway and freeway interchanges are improved.
    - Improving, rehabilitating, and maintaining local streets and roads
    - Deploying advanced signal technologies to extend green lights for buses and other transit vehicles.
    - Instituting technology and management systems that optimize the flow of the Regional Arterial System.
    - Supporting a flexible highway system with Managed Lanes, carpool lanes, or transit-only lanes, which will result in a fully interconnected network of Managed Lanes, including direct Managed Lane connectors.
    - Constructing rail grade separation projects in key locations.
    - Enhancing our border crossings to cut delays for individual international crossings and trade.

10. Conduct advanced planning on the highest priority segments of the proposed new transit services included in the 2019 Federal RTP.

11. Continue to seek funding for transportation investments that provide a variety of choices, and which reduce greenhouse gas emissions and promote healthy lifestyles through more active transportation.

12. Continue to provide capital and planning grants to local jurisdictions to support smart growth, biking and walking, and seek additional funds to leverage existing grant programs.

13. Implement state-of-the-art technologies and Transportation Demand and Systems Management Programs to provide more mobility choices and allow the transportation system to function more efficiently.

14. Work with partner agencies to develop a regional Transportation Systems Management & Operational (TSM&O) Strategy. TSM&O focuses on establishing multi-agency partnerships to allow transportation systems and services to work together, regardless of institutional boundaries. For example, an objective under TSM&O can include using real-time congestion data to improve signal timing across agencies under a common and established shared objective, and providing coordination to better manage traffic entering and exiting the freeway during major incidents. A TSM&O strategy will set forth opportunities for efficiently managing the transportation system to its full performance potential under a common, multi-modal, and shared multi-agency perspective.

15. Continue to work with member agencies on parking management solutions.

16. Link technologies in vehicles and mobile devices to improve the way people travel and reduce VMT. These include emerging technologies such as autonomous vehicles, expansion of the regional communications network, smart parking systems, and universal transportation payment systems.

17. Continue to pursue opportunities to expand shared mobility services near Smart Growth Opportunity Areas in the region. Examples of shared mobility services include carsharing, bike and scooter sharing, real-time ridesharing, Transportation Network Companies (e.g., Uber, Lyft), neighborhood electric vehicles, and on-demand shuttle and jitney services.

18. Support the development of policies, programs, and funding for moving goods in the state and nation, as well as for infrastructure in the region that supports moving goods.

19. Coordinate with the Airport Authority to implement the Regional Aviation Strategic Plan and the Airport Multimodal Accessibility Plan to maximize the efficiency and effectiveness of existing and planned aviation facilities. Collaboratively, explore options and identify transportation solutions to improve connectivity to the San Diego International Airport.

20. Continue to seek innovative financing tools and new funding sources to implement the 2019 Federal RTP.

Vibrant Economy

21. Continue to apply social equity and environmental justice considerations in the implementation of SANDAG projects and programs.

22. Continue to collaborate with key partners and stakeholders, including representatives from low-income and minority communities, and actively involve the public in the planning process.

23. Leverage available funds in order to maximize every dollar, and advocate for legislation that supports implementation of the 2019 Federal RTP.

24. Continue to leverage our crossborder economic relationships with binational and global interests to become more globally competitive and strengthen our megaregion.[11]

25. Coordinate intergovernmental planning with our crossborder and interregional partners, and with tribal governments within the San Diego region to promote collaborative solutions.

26. Continue to coordinate with the San Diego County Water Authority on longer-term demand forecasting to ensure adequate and reliable water supplies for the future.

27. Continue to monitor implementation of the Regional Transportation Plan, through the production of the Regional Performance Monitoring Report.

Monitoring Important Issues Outside the Scope of the Regional Transportation Plan

SANDAG doesn't have direct responsibility for issues such as water quality, water supply, solid waste, education, libraries, police/crime, hospitals, local parks, and other issues that have regional significance. Other agencies and city and county departments, with which we collaborate and coordinate, are actively working on these priorities. In many cases, these other entities have their own plans that address them.

For example, the San Diego County Water Authority has adopted plans identifying water sources, water projections, conservation targets, and infrastructure enhancements. The County of San Diego addresses solid waste and recycling issues. And the region's school districts, community college districts, and local universities address and plan for educational facilities and curriculum needs.

Because SANDAG is responsible for growth projections and transportation infrastructure, we are frequently in touch with these other agencies and departments to ensure maximum collaboration. And because these issues affect our quality of life, we measure and monitor some data related to them in order to consider the broader regional picture.

Monitoring the Plan's Success

How will we know if our Regional Transportation Plan is achieving the goals we have set? We will have to track our progress as we implement the plan our Regional Transportation Plan over time. A few years down the road, we should be able to answer the question, "How well are we doing?" If we are not achieving our goals, we should consider changes to the Regional Transportation Plan when it is updated.

To track the Regional Transportation Plan's performance, we identified 23 "performance monitoring indicators."[12] These indicators will help us gauge the Regional Transportation Plan's progress toward an increase in the choices that people have to get around, expanded access to public transit, improved regional air quality, a more efficient and innovative use of energy, a stronger economy, and enhanced public health. These indicators will be revised periodically as new plans are adopted to reflect new and changing conditions.

In Figure 5.1, the performance indicators are grouped into categories that reflect the vision and goals of the 2019 Federal RTP:

Figure 5.1

Performance Monitoring Indicators

HEALTHY ENVIRONMENT & COMMUNITIES	VIBRANT ECONOMY	INNOVATIVE MOBILITY & PLANNING
• Share of new housing units and jobs located in Smart Growth Opportunity Areas	• Travel times to jobs	• Commute mode share
• Share of new housing units within County Water Authority water service boundary	• Real per capita income, compared with California and the United States	• Annual transit boardings
• Habitat conserved within designated preserve areas	• Regional poverty rate, compared with California and the United States	• Border wait times
• Beach widths	• Percent of households with housing costs greater than 35 percent of income	• Border crossing volumes
• Impaired waterbodies	• Annual income needed to afford fair market rent	• Travel times and volumes for all modes
• Air quality	• Regional crime rate	• Alternative fuel vehicle ownership
• Fatalities/serious injuries per Vehicle Miles Traveled		
• Diversity of water supply		
• Diversity of energy supply and use		
• Electric and natural gas consumption by sector		
• Water consumption		

Data for these indicators was compiled and detailed in the Regional Performance Monitoring Report.[13] The report will be updated in a timeframe that is staggered with the preparation of the next regional plan.

Federal System Performance Report

The Metropolitan Planning Rule issued by the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) requires a performance-based approach that links investment priorities to achievement of performance targets. FHWA and FTA established performance measures in key areas, including safety, infrastructure condition, congestion, system reliability, emissions, and freight movement. Additionally, FTA issued the Transit Asset Management rule, which includes state of good repair performance measures.

In coordination with Caltrans, Metropolitan Transit System, North County Transit District, and other stakeholders, SANDAG – as the metropolitan planning organization for the San Diego region – established regional performance targets. The 2019 Federal RTP is required to include a System Performance Report that evaluates the condition and performance of the transportation system with respect to those performance targets (see Appendix D).[14]

Federal Congestion Management Process

SANDAG also addresses congestion management through a process involving an analysis of multimodal metropolitan-wide strategies. These strategies are cooperatively developed to foster safety and integrated management of new and existing transportation facilities that are eligible for federal funding (see Appendix C).[15]

Conclusion: Forging a Shared Path toward a Sustainable and Prosperous Future

The 2019 Federal RTP will guide us toward a future that supports economic prosperity, offers people more options for getting around, encourages the creation of healthy and livable communities, improves air quality, and preserves our natural environment.

SANDAG, the region's 18 cities and the County, member agencies, our binational, interregional and tribal partners, and regional stakeholders can work together to implement the 2019 Federal RTP. When implemented, the 2019 Federal RTP will:

- Provide more mobility choices for individuals and businesses.
- Increase access to jobs, services, and recreation. Make $208 billion in transportation investments equitably throughout the region.
- Provide more than 100 new miles of Trolley and SPRINTER service, and more than 160 miles of Managed Lanes to facilitate carpools, vanpools, and *Rapid* transit service.
- Provide $6.2 billion for regional and local bike and pedestrian projects and programs, and encourage exercise through active transportation.

- Accommodate housing needs to meet the projected population growth in the San Diego region, and improve housing choices for all income levels.
- Preserve more than half of our land as open space, parkland, and natural habitat.
- Strengthen collaboration with Mexico, tribal partners, and neighboring counties throughout the San Diego-Baja California megaregion.

Our Regional Transportation Plan is a "living" document; it will change over time as policies and programs evolve. We'll update it at least every four years to inform the region about our accomplishments, add new objectives, and adapt it to the region's changing needs.

Thank you for spending the time to learn about the 2019 Federal RTP. After all, it belongs to all of us. Together we can build a future that we all want. A future in which our region grows in new and exciting ways yet preserves the qualities we love most about this very special place.

Let's work together to move San Diego Forward!

Endnotes

[1] http://www.sandag.org/index.asp?classid=12&projectid=334&fuseaction=projects.detail

[2] http://www.sandag.org/index.asp?projectid=296&fuseaction=projects.detail

[3] http://www.sandag.org/index.asp?projectid=344&fuseaction=projects.detail

[4] http://www.sandag.org/index.asp?projectid=334&fuseaction=projects.detail#visualization

[5] http://www.sandag.org/index.asp?projectid=19&fuseaction=projects.detail

[6] http://www.sdforward.com/mobility-planning/parking-toolbox

[7] http://www.sandag.org/index.asp?subclassid=98&fuseaction=home.subclasshome

[8] http://www.sandag.org/index.asp?classid=13&projectid=378&fuseaction=projects.detail

[9] http://www.sandag.org/index.asp?classid=12&projectid=500&fuseaction=projects.detail

[10] The Coordinated Plan is the region's short-range transit and specialized transportation document and can be found in Appendix U.1: The 2018 Coordinated Plan

[11] A definition of Megaregion can be found in Appendix K: Glossary of Transportation Terms, Abbreviations, and Acronyms.

[12] The 20 performance indicators are detailed in Appendix S: Monitoring Performance.

[13] Detailed methodology is included in Appendix S.

[14] Appendix D: Federal System Performance Report

[15] Appendix C: Federal Congestion Management Process

Appendix A

Transportation Projects, Costs, and Phasing

Appendix Contents

Transportation Projects, Costs, and Phasing

This appendix includes information for both the 2019 Federal Regional Transportation Plan Revenue Constrained Plan and Unconstrained (i.e., illustrative) list of projects. Detailed transit, managed lanes and highway, goods movement, and active transportation project listings, cost estimates, and phasing are included for the Revenue Constrained Plan. For the Unconstrained Transportation scenario, detailed descriptions and cost estimates are provided for the same types of projects.

Revenue Constrained Projects

Table A.1 lists the capital improvements in the 2050 Revenue Constrained Plan in 2019 and year of expenditure (YOE) dollars. Table A.2 lists these revenue constrained projects by phase and Table A.3 includes the phased Revenue Constrained arterial projects. Table A.4 shows Revenue Constrained Freight and Goods Movement projects. Figures A.1 through A.9 depict the Revenue Constrained 2025, 2035, and 2050 transit, highway, and active transportation improvements (Regional Bike Network), respectively. Figure A.10 shows the Planned California High-Speed Train Overview. Figure A.11 shows the high frequency local bus routes by 2025 and 2035. Figures A.12, A.13, and A.14 show the 2016 Transit System, Managed Lanes and Highway Network, and Bike Network, respectively. Figure A.15 shows the Regional Arterial System. The California Coastal Trail and County of San Diego Community Trails are shown in Figure A.16. The regionally significant projects and the timing for when they are expected to be open to traffic in each conformity analysis year are documented in Appendix B in Tables B.11 through B.13.

Unconstrained Projects

Table A.5 lists the major capital improvements included in the Revenue Constrained and the Unconstrained Network which also are shown in Figures A.17, A.18, and A.19. Additionally, Figure A.20 illustrates the Unconstrained Goods Movement Strategy and Figure A.21 depicts the National Highway Freight Network (California South), which was established by the Federal Highway Administration.

No-Build Projects

Table A.6 lists the projects included in the No-Build Scenario.

Table A.1

Revenue Constrained Projects

Transit Facilities

TransNet	Service	Route	Description	Cost ($2019); millions	Cost ($YOE); millions
TransNet	COASTER	398	Double tracking (includes grade separations at Leucadia Blvd and two other locations, stations/platforms at Convention Center/Gaslamp Quarter and Del Mar Fairgrounds, Del Mar Tunnel, and extensions to the Convention Center and Camp Pendleton)	$5,754	$10,439
TransNet	SPRINTER	399	SPRINTER efficiency improvements and double tracking (Oceanside to Escondido and six rail grade separations at El Camino Real, Melrose Dr, Vista Village Dr/Main St, North Dr, Civic Center, Auto Parkway and Mission Ave)	$1,287	$1,564
	SPRINTER	399	Branch Extension to Westfield North County	$239	$479
	SPRINTER	588	SPRINTER Express	$332	$545
TransNet	Trolley	510	Mid-Coast Trolley Extension	$919	$919
	Trolley	510	Blue Line/Mid-Coast Frequency Enhancements and rail grade separations at 28th St, 32nd St, E St, H St, Palomar St, at Taylor St and Ash St, and Blue/ Orange Track Connection at 12th/Imperial	$586	$844
	Trolley	520	Orange Line Frequency Enhancements and four rail grade separations at Euclid Ave, Broadway/ Lemon Grove Ave, Allison Ave/University Ave, Severin Dr	$363	$453
	Trolley	530	Green Line Frequency Enhancements	$0	$0
	Trolley	560	SDSU to Downtown San Diego via El Cajon Blvd/ Mid-City (transition of Mid-City *Rapid* to Trolley)	$3,251	$6,676
	Trolley	561	UTC to COASTER Connection (extension of Route 510)	$467	$581
	Trolley	562	San Ysidro to Carmel Valley via National City/ Chula Vista via Highland Ave/ 4th Ave, Southeast San Diego, Mid-City, Mission Valley, and Kearny Mesa	$6,766	$10,679
	Trolley	563	Pacific Beach to El Cajon Transit Center via Balboa and Kearny Mesa	$1,579	$3,024
	Rapid	2	North Park to Downtown San Diego via 30th St, Golden Hill	$54	$62
	Rapid	10	La Mesa to Ocean Beach via Mid-City, Hillcrest, Old Town	$57	$65
	Rapid	11	Spring Valley to SDSU via Southeast San Diego, Downtown, Hillcrest, Mid-City	$154	$199
	Rapid	28	Point Loma to Kearny Mesa via Old Town, Linda Vista	$67	$80
	Rapid	30	Old Town to Sorrento Mesa via Pacific Beach, La Jolla, UTC	$143	$172

Table A.1 (continued)

Revenue Constrained Projects

Transit Facilities (continued)

TransNet	Service	Route	Description	Cost ($2019); millions	Cost ($YOE); millions
	Rapid	41	Fashion Valley to UTC/UC San Diego via Linda Vista and Clairemont	$75	$90
	Rapid	90	El Cajon Transit Center to San Diego International Airport ITC via SR 94, City College (peak only)	$27	$32
	Rapid	103	Solana Beach to Sabre Springs Rapid station via Carmel Valley	$91	$152
	Rapid	120	Kearny Mesa to Downtown San Diego via Mission Valley	$127	$145
	Rapid	235	Temecula (peak only) Extension of Escondido to Downtown San Diego *Rapid* (formerly Route 610)	$133	$222
	Rapid	440	Carlsbad to Escondido Transit Center via Palomar Airport Rd	$140	$234
	Rapid	471	Downtown Escondido to East Escondido	$46	$94
	Rapid	473	UTC/UC San Diego to Oceanside via Hwy 101 Coastal Communities, Carmel Valley	$176	$267
	Rapid	474	Oceanside to Vista via Mission Ave/Santa Fe Rd Corridor	$99	$202
	Rapid	477	Camp Pendleton to Carlsbad Village via College Blvd, Plaza Camino Real	$109	$181
	Rapid	550	SDSU to Palomar Station via East San Diego, Southeast San Diego, National City	$112	$126
	Rapid	635	Eastlake to Palomar Trolley via Main St Corridor	$105	$126
	Rapid	636	SDSU to Spring Valley via East San Diego, Lemon Grove, Skyline	$53	$88
	Rapid	637	North Park to 32nd St Trolley via Golden Hill	$60	$101
	Rapid	638	Iris Trolley to Otay Mesa via Otay, Airway Dr, SR 905 Corridor	$52	$67
	Rapid	640A/640B	Route 640A: I-5 - San Ysidro to Old Town Transit Center via City College Route 640B: I-5 Iris Trolley/Palomar to Kearny Mesa via City College	$208	$229
	Rapid	650	Chula Vista to Palomar Airport Rd Business Park via I-805/I-5 (peak only)	$112	$186
	Rapid	653	Mid-City to Palomar Airport Rd via Kearny Mesa/ I-805/I-5	$14	$22
TransNet	*Rapid*	688/689/690	Route 688: San Ysidro to Sorrento Mesa via I-805/ I-15/SR 52 Corridors (peak only); Route 689: Otay Mesa Port of Entry (POE) to UTC/Torrey Pines via Otay Ranch/ Millennia, I-805 Corridor (Peak Only); Route 690: Mid-City to Sorrento Mesa via I-805 Corridor (Peak Only)	$623	$757

Table A.1 (continued)

Revenue Constrained Projects

Transit Facilities (continued)

TransNet	Service	Route	Description	Cost ($2019); millions	Cost ($YOE); millions
	Rapid	709	H St Trolley to Millennia via H St Corridor, Southwestern College	$89	$101
	Rapid	870	El Cajon to UTC via Santee, SR 52, I-805	$100	$190
	Rapid	890	El Cajon to Sorrento Mesa via SR 52, Kearny Mesa	$16	$31
	Rapid	950 (formerly 905)	Extension of Iris Trolley Station to Otay Mesa Port of Entry (POE) route with new service to Imperial Beach	$3	$3
	Rapid	910	Coronado to Downtown via Coronado Bridge	$54	$65
	Rapid	SR163 DARs	Kearny Mesa to Downtown San Diego via SR 163. Stations at Sharp/ Children's Hospital, University Ave, and Fashion Valley Transit Center	$204	$215
	Shuttle	448/449	San Marcos Shuttle[1]	$0	$0
	Streetcar	553	Downtown San Diego: Little Italy to East Village[2]	$15	$20
	Streetcar	554	Hillcrest/Balboa Park/Downtown San Diego Loop[2]	$39	$45
	Streetcar	555	30th St to Downtown San Diego via North Park/ Golden Hill[2]	$23	$29
	Streetcar	565	Mission Beach to La Jolla via Pacific Beach[2]	$34	$57
	Airport Express	--	Airport Express Routes[3]	$71	$82
	Intermodal Transit Center	--	San Diego International Airport Intermodal Transit Center and I-5 Direct Connector Ramps	$231	$258
	Intermodal Transit Center	--	San Ysidro Intermodal Transit Center	$160	$209
	Other	--	Vehicles	$2,740	$4,553
	Other	--	Transit System Rehabilitation	$2,065	$3,777
	Other	--	Maintenance Facilities, Park and Ride, Transit Center Expansions	$2,016	$2,476
	Other	--	ITS, Regulatory Compliance	$496	$674
			Subtotal	**$32,736**	**$52,887**

Table A.1 (continued)

Revenue Constrained Projects

Managed Lanes/Toll Lanes Projects

TransNet	Freeway	From	To	Existing	With Improvements	Transit Route	Cost ($2019); millions	Cost ($YOE); millions
TransNet	I-5	SR 905	SR 54	8F	8F+2ML	640	$542	$627
TransNet	I-5	SR 54	SR 15	8F	10F+2ML	640	$467	$540
TransNet	I-5	I-8	La Jolla Village Dr	8F/10F	8F/10F+2ML		$978	$2,067
TransNet	I-5	La Jolla Village Dr I-5/I-805 Merge	I-5/805 Merge SR 56	8F/14F 8F/14F+ 2ML	8F/14F+2ML 8F/14F+4ML	650, 653	$422	$513
TransNet	I-5	SR 56 Manchester Ave	Manchester Ave Vandegrift Blvd	8F+2ML 8F	8F+4ML 8F+4ML	650, 653	$2,881	$4,537
	I-5	Vandegrift Blvd	Orange County	8F	8F+4T		$3,165	$6,687
	SR 11/ Otay Mesa East POE	SR 125	Mexico	--	4T+POE	905	$472	$472
	SR 15	I-5	SR 94	6F	8F+2ML		$185	$391
TransNet	SR 15	SR 94	I-805	6F	6F+2ML	235, 610	$41	$59
TransNet	I-15	Viaduct	--	8F	8F+2ML	235, 610, 653, 690	$1,040	$2,197
TransNet	I-15	I-8	SR 163	8F	8F+2ML	235, 610, 653, 690	$64	$72
	I-15	SR 78	Riverside County	8F	8F+4T	610	$1,744	$3,684
TransNet	SR 52	I-805	I-15	6F	6F+2ML	653, 870, 890	$238	$503
TransNet	SR 52	I-15	SR 125	4F/6F	4F/6F+2ML(R)	870, 890	$405	$856
TransNet	SR 54	I-5	SR 125	6F	6F+2ML		$151	$319
TransNet	SR 78	I-5	I-15	6F	6F+2ML		$1,621	$2,127
TransNet	SR 94	I-5	SR 125	8F	8F+2ML	90, 225, 235, 610,	$1,229	$2,012
TransNet	SR 125	SR 54 SR 94	SR 94 I-8	6F 8F	6F+2ML 10F+2ML	90	$690	$1,457
TransNet	I-805	SR 905	Palomar St	8F	8F+2ML	688	$235	$316
TransNet	I-805	SR 54	SR 94	8F+2ML	8F+4ML	225, 650, 688, 689	$742	$998
TransNet	I-805	SR 94	Carroll Canyon Rd	8F	8F+4ML	30, 225, 650, 653, 688, 689, 690, 870, 890	$3,295	$5,939
						Subtotal	**$20,607**	**$36,373**

Table A.1 (continued)

Revenue Constrained Projects

Highway Projects

TransNet	Freeway	From	To	Existing	With Improvements	Cost ($2019); millions	Cost ($YOE); millions
TransNet	I-8	2nd St	Los Coches	4F/6F	6F	$44	$94
	SR 52	I-5	I-805	4F	6F	$151	$319
TransNet	SR 52	Mast Blvd	SR 125	4F	6F	$103	$147
TransNet	SR 56	I-5	I-15	4F	6F	$192	$405
TransNet	SR 67	Mapleview St	Dye Rd	2C/4C	4C	$673	$1,340
TransNet	SR 94	SR 125	Avocado Blvd	4F	6F	$190	$401
TransNet	SR 94	Avocado Blvd	Jamacha	4C	6C	$124	$261
TransNet	SR 94	Jamacha	Steele Canyon Rd	2C/4C	4C	$54	$115
	SR 125	SR 905	San Miguel Rd	4T	8F	$439	$741
	SR 125	San Miguel Rd	SR 54	4F	8F	$241	$509
					Subtotal	**$2,211**	**$4,332**

Operational Improvements

TransNet	Freeway	From	To	Existing	With Improvements	Cost ($2019); millions	Cost ($YOE); millions
TransNet	I-5	SR 15	I-8	8F	8F+Operational	$1,985	$4,194
	I-8	I-5	SR 125	8F/10F	8F/10F+Operational	$907	$1,917
	I-8	SR 125	2nd St	6F/8F	6F/8F+Operational	$227	$480
	SR 76	I-15	Couser Canyon	2C/4C	4C/6C+Operational	$178	$376
					Subtotal	**$3,297**	**$6,967**

Table A.1 (continued)

Revenue Constrained Projects

Managed Lanes Connectors

TransNet	Freeway	Intersecting Freeway	Movement	Cost ($2019); millions	Cost ($YOE); millions
TransNet	I-5	I-805	North to North and South to South	*	*
	I-5	SR 78	South to East and West to North, North to East and West to South	$344	$451
TransNet	SR 15	SR 94	South to West and East to North	$97	$127
	SR 15	I-805	North to North and South to South	$110	$124
	I-15	SR 52	West to North and South to East	$177	$374
TransNet	I-15	SR 78	East to South and North to West	$144	$171
	I-805	SR 94	North to West and East to South	$137	$180
	I-805	SR 52	West to North and South to East	*	*
* Project Cost included in associated Managed Lane Project			**Subtotal**	**$1,009**	**$1,427**

Freeway Connectors

TransNet	Freeway	Intersecting Freeway	Movement	Cost ($2019); millions	Cost ($YOE); millions
TransNet	I-5	SR 56	West to North and South to East	$371	$487
TransNet	I-5	SR 78	South to East and West to South	$371	$487
	I-15	SR 56	North to West	$104	$219
TransNet	SR 94	SR 125	South to East	$94	$106
TransNet	SR 94	SR 125	West to North	$110	$134
			Subtotal	**$1,050**	**$1,433**
			TOTAL	**$28,174**	**$50,532**

Table A.1 (continued)

Revenue Constrained Projects

Active Transportation Projects

Project	Jurisdiction(s)	Cost ($2019) millions	Cost ($YOE) millions
Uptown - Fashion Valley to Downtown San Diego	San Diego	$13.0	$13.0
Uptown - Old Town to Hillcrest	San Diego	$1.0	$1.0
Uptown - Hillcrest to Balboa Park	San Diego	$2.0	$2.0
North Park - Mid-City - City Heights	San Diego	$7.0	$8.0
North Park - Mid-City - Hillcrest to City Heights (City Heights – Old Town Corridor)	San Diego	$5.0	$6.0
North Park - Mid-City - City Heights to Rolando	San Diego	$3.0	$3.0
San Diego River Trail - Qualcomm Stadium	San Diego	$1.0	$1.0
Bayshore Bikeway - Main St to Palomar	Chula Vista/ Imperial Beach	$1.0	$1.0
Inland Rail Trail (Combination of four projects)	San Marcos/ Vista/ Co. of San Diego	$35.0	$35.0
Coastal Rail Trail Encinitas - Chesterfield to Solana Beach	Encinitas	$0.5	$1.0
Pershing and El Prado - North Park to Downtown San Diego	San Diego	$7.0	$8.0
Pershing and El Prado - Cross-Park	San Diego	$1.0	$1.0
San Ysidro to Imperial Beach - Bayshore Bikeway Connection	Imperial Beach/ San Diego	$8.0	$9.0
Terrace Dr/Central Ave - Adams to Wightman	San Diego	$4.0	$5.0
San Diego River Trail – I-805 to Fenton	San Diego	$3.0	$3.0
San Diego River Trail - Short gap connections	San Diego	$2.0	$2.0
Coastal Rail Trail Encinitas - Leucadia to G St	Encinitas	$7.0	$8.0
Bayshore Bikeway - Barrio Logan	San Diego	$25.8	$39.0
San Diego River Trail - Father Junipero Serra Trail to Santee	Santee	$9.5	$14.0
Downtown to Southeast connections	San Diego	$8.8	$14.0
Coastal Rail Trail San Diego - UTC	San Diego	$0.8	$1.0
Coastal Rail Trail San Diego - Rose Canyon	San Diego	$8.7	$13.0
Coastal Rail Trail San Diego - Pac Hwy (W Washington St to Laurel St)	San Diego	$7.0	$11.0
Coastal Rail Trail San Diego - Pac Hwy (Laurel St to Santa Fe Depot)	San Diego	$13.9	$21.0
Coastal Rail Trail San Diego – Pac Hwy (Taylor St to W Washington St)	San Diego	$7.0	$11.0
Coastal Rail Trail San Diego- Pac Hwy (Fiesta Island Rd to Taylor St)	San Diego	$12.2	$18.0
City Heights /Encanto/Lemon Grove	Lemon Grove/ San Diego	$12.2	$18.0
City Heights/Fairmount Corridor	San Diego	$20.9	$28.0

Table A.1 (continued)

Revenue Constrained Projects

Active Transportation Projects (continued)

Project	Jurisdiction(s)	Cost ($2019) millions	Cost ($YOE) millions
Rolando to Grossmont/La Mesa	La Mesa/El Cajon/ San Diego	$3.5	$5.0
La Mesa/Lemon Grove/El Cajon connections	Lemon Grove/ La Mesa	$10.4	$16.0
San Diego River Trail - Qualcomm Stadium to Ward Rd	San Diego	$3.5	$5.0
San Diego River Trail - Rancho Mission Rd to Camino Del Rio North	San Diego	$0.5	$1.0
Coastal Rail Trail San Diego - Rose Creek Mission Bay Connection	San Diego	$7.0	$11.0
Coastal Rail Trail Carlsbad - Reach 4 Cannon to Palomar Airport Rd	Carlsbad	$8.7	$13.0
Coastal Rail Trail Carlsbad - Reach 5 Palomar Airport Rd to Poinsettia Station	Carlsbad	$5.2	$8.0
Coastal Rail Trail Encinitas - Carlsbad to Leucadia	Encinitas	$12.2	$18.0
Coastal Rail Trail Del Mar	Del Mar	$0.7	$1.0
Coastal Rail Trail San Diego - Del Mar to Sorrento via Carmel Valley	Del Mar/ San Diego	$0.7	$1.0
Coastal Rail Trail San Diego - Carmel Valley to Roselle via Sorrento	San Diego	$1.6	$2.0
Coastal Rail Trail San Diego - Roselle Canyon	San Diego	$8.7	$13.0
Chula Vista/National City connections	Chula Vista/ National City	$19.1	$25.0
Pacific Beach to Mission Beach	San Diego	$17.4	$23.0
Ocean Beach to Mission Bay	San Diego	$41.8	$51.0
San Diego River Trail - Bridge connection (Sefton Field to Mission Valley YMCA)	San Diego	$12.2	$18.0
San Diego River Trail - Mast Park to Lakeside baseball park	Santee	$17.4	$23.0
I-8 Flyover - Camino del Rio S to Camino del Rio N	San Diego	$17.4	$23.0
Coastal Rail Trail Oceanside - Broadway to Eaton	Oceanside	$0.7	$1.0
El Cajon - Santee connections	El Cajon/La Mesa/ Santee	$20.9	$28.0
San Diego River Trail - Father JS Trail to West Hills Pkwy	San Diego	$5.2	$8.0
Inland Rail Trail Oceanside	Oceanside	$33.1	$40.0
Coastal Rail Trail Carlsbad - Reach 3 Tamarack to Cannon	Carlsbad	$8.7	$13.0
Clairemont Dr (Mission Bay to Burgener)	San Diego	$13.9	$21.0
Harbor Dr (Downtown to Ocean Beach)	San Diego	$12.2	$18.0
Mira Mesa Bike Blvd	San Diego	$7.0	$11.0
Sweetwater River Bikeway Ramps	National City	$15.7	$24.0
Coastal Rail Trail Oceanside - Alta Loma Marsh bridge	Oceanside	$8.7	$13.0
Coastal Rail Trail San Diego - Mission Bay (Clairemont to Tecolote)	San Diego	$5.2	$8.0
Bayshore Bikeway Coronado - Golf course adjacent	Coronado	$5.2	$8.0

Table A.1 (continued)

Revenue Constrained Projects

Active Transportation Projects (continued)

Project	Jurisdiction(s)	Cost ($2019) millions	Cost ($YOE) millions
San Luis Rey River Trail	Oceanside, Unincorporated	$64.4	$122.0
Encinitas-San Marcos Corridor – Double Peak Dr to San Marcos Blvd	San Marcos	$20.9	$48.0
Escondido Creek Bikeway – Quince St to Broadway	Escondido	$3.5	$8.0
Escondido Creek Bikeway – Escondido Creek to Washington Ave	Escondido	$1.7	$4.0
Escondido Creek Bikeway – 9th Ave to Escondido Creek	Escondido	$1.7	$4.0
Escondido Creek Bikeway – El Norte Pkwy to northern bikeway terminus	Escondido	$10.4	$24.0
Encinitas to San Marcos Corridor – Leucadia Blvd to El Camino Real	Carlsbad, Encinitas	$3.5	$8.0
I-15 Bikeway – Via Rancho Pkwy to Lost Oak Ln	Escondido	$7.0	$16.0
I-15 Bikeway – Rancho Bernardo Community Park to Lake Hodges Bridge	San Diego	$5.2	$12.0
I-15 Bikeway – Camino del Norte to Aguamiel Rd	San Diego	$22.6	$40.0
I-15 Bikeway – Poway Rd interchange to Carmel Mountain Rd	San Diego	$29.6	$52.0
SR 56 Bikeway – Azuaga St to Rancho Penasquitos Blvd	San Diego	$3.5	$8.0
I-15 Bikeway – Murphy Canyon Rd to Affinity Ct	San Diego	$69.6	$115.0
SR 56 Bikeway – El Camino Real to Caminito Pointe	San Diego	$3.5	$8.0
SR 52 Bikeway – I-5 to Santo Rd	San Diego	$52.2	$104.0
SR 52 Bikeway – SR 52/Mast Dr to San Diego River Trail	San Diego	$3.5	$8.0
I-8 Corridor – San Diego River Trail to Riverside Dr	Unincorporated	$3.5	$8.0
I-805 Connector – Bonita Rd to Floyd Ave	Chula Vista, Unincorporated	$10.5	$24.0
SR 125 Connector – Bonita Rd to U.S.-Mexico Border	Chula Vista, San Diego	$67.9	$118.0
SR 905 Connector – E Beyer Blvd to U.S.-Mexico Border	San Diego, Unincorporated	$59.2	$103.0
El Camino Real Bike Lanes – Douglas Dr to Mesa Dr	Oceanside	$1.7	$4.0
Vista Way Connector from Arcadia	Vista, Unincorporated	$3.7	$8.0
I-15 Bikeway – W Country Club Ln to Nutmeg St	Escondido	$7.0	$16.0
El Camino Real Bike Lanes – Marron Rd to SR 78 offramp	Carlsbad	$0.5	$1.0
Carlsbad to San Marcos Corridor – Paseo del Norte to Avenida Encinas	Carlsbad	$0.7	$2.0
Encinitas to San Marcos Corridor – Kristen Ct to Ecke Ranch Rd	Encinitas	$0.7	$2.0
Encinitas to San Marcos Corridor – Encinitas Blvd/I-5 Interchange	Encinitas	$0.3	$1.0
Mira Mesa Corridor – Reagan Rd to Parkdale Ave	San Diego	$0.7	$2.0
Mira Mesa Corridor – Scranton Rd to I-805	San Diego	$0.7	$2.0

Table A.1 (continued)

Revenue Constrained Projects

Active Transportation Projects (continued)

Project	Jurisdiction(s)	Cost ($2019) millions	Cost ($YOE) millions
Mira Mesa Corridor – Sorrento Valley Rd to Sorrento Valley Blvd	San Diego	$1.4	$3.0
Mid-County Bikeway – I-5/Via de la Valle Interchange	San Diego	$0.5	$1.0
Mid-County Bikeway – Rancho Santa Fe segment	San Diego, Unincorporated	$5.2	$12.0
El Camino Real Bike Lanes – Manchester Ave to Tennis Club Dr	Encinitas	$0.9	$2.0
Mid-County Bikeway – Manchester Ave/I-5 Interchange to San Elijo Ave	Encinitas	$1.4	$3.0
Central Coast Corridor – Van Nuys St to San Rafael Pl	San Diego	$1.0	$4.0
Clairemont – Centre-City Corridor – Coastal Rail Trail to Genesee Ave	San Diego	$3.5	$8.0
SR 125 Corridor – Mission Gorge Rd to Glen Vista Way	Santee	$0.5	$1.0
SR 125 Corridor – Prospect Ave to Weld Blvd	Santee, El Cajon	$1.4	$3.0
I-8 Corridor – Lakeside Ave to SR 67	Unincorporated	$0.9	$2.0
I-8 Corridor – Willows Rd to SR 79	Unincorporated	$8.7	$19.0
E County Northern Loop – N. Marshall Ave to El Cajon Blvd	El Cajon	$0.5	$1.0
E County Northern Loop – Washington Ave to Dewitt Ct	El Cajon	$1.7	$4.0
E County Northern Loop – SR 94 onramp to Del Rio Rd	Unincorporated	$0.3	$1.0
E County Southern Loop – Pointe Pkwy to Omega St	Unincorporated	$1.4	$3.0
SR 125 Corridor – SR 94 to S of Avocado St	Unincorporated	$1.9	$4.0
Centre City – La Mesa Corridor – Gateside Rd to Campo Rd	La Mesa, Unincorporated	$0.7	$2.0
Bay to Ranch Bikeway – River Ash Dr to Paseo Ranchero	Chula Vista	$0.9	$2.0
Mid-County Bikeway – San Elijo Ave to 101 Terminus	Encinitas	$1.7	$4.0
Central Coast Corridor – Van Nuys St	San Diego	$0.3	$1.0
E County Northern Loop – El Cajon Blvd to Washington Ave	El Cajon	$1.7	$4.0
E County Northern Loop – Calavo Dr to Sweetwater Springs Blvd	Unincorporated	$1.2	$3.0
Central Coast Corridor – Torrey Pines Rd to Nautilus St	San Diego	$10.4	$23.0
Central Coast Corridor – Via Del Norte to Van Nuys St	San Diego	$8.7	$19.0
Kearny Mesa to Beaches Corridor – Ingraham St from Garnet Ave to Pacific Beach Dr	San Diego	$3.5	$8.0
Kearny Mesa to Beaches Corridor – Clairemont Dr to Genesee Ave	San Diego	$17.4	$31.0
Kearny Mesa to Beaches Corridor – Genesee Ave to Linda Vista Dr	San Diego	$10.4	$23.0
Bay to Ranch Bikeway – E J St from 2nd Ave to Paseo Del Rey	Chula Vista	$20.9	$36.0
Chula Vista Greenbelt – Bay Blvd to Oleander Ave	Chula Vista	$29.6	$51.0
Safe Routes to Transit at new transit stations	Various	$1,230	$1,943
Local Bike and Pedestrian Projects	Various	$1,399	$2,211

Table A.1 (continued)

Revenue Constrained Projects

Active Transportation Projects (continued)

Project	Jurisdiction(s)		Cost ($2019) millions	Cost ($YOE) millions
Regional Bicycle and Pedestrian Programs	Various		$34	$54
Regional Safe Routes to School Implementation	Various		$78	$123
		Subtotal	**$3,892**	**$6,226**
		TOTAL	**$64,803**	**$109,645**

[1] Capital cost to be funded by the City of San Marcos

[2] Streetcar cost is representative of 10% of the total capital cost

[3] Capital cost to be funded by aviation and other private funds

Table A.2

Phased Revenue Constrained Projects

Transit Facilities

Year Built By	Service	Route	Description	Cost ($2019); millions	Cost ($YOE); millions
2025	COASTER	398	Double tracking (20-minute peak frequencies and 120-minute off-peak frequencies)	$609	$693
2025	Trolley	510	Mid-Coast Trolley Extension	$919	$919
2025	*Rapid*	2	North Park to Downtown San Diego via 30th St, Golden Hill	$54	$62
2025	*Rapid*	10	La Mesa to Ocean Beach via Mid-City, Hillcrest, Old Town	$57	$65
2025	*Rapid*	120	Kearny Mesa to Downtown via Mission Valley	$127	$145
2025	*Rapid*	550	SDSU to Palomar Station via East San Diego, Southeast San Diego, National City	$112	$126
2025	*Rapid*	709	H St Trolley Station to Millennia via H St Corridor, Southwestern College	$89	$101
2025	*Rapid*	950 (formerly 905)	Extension of Iris Trolley Station to Otay Mesa Port of Entry (POE) route with new service to Imperial Beach	$3	$3
2025	*Rapid*	SR 163 DARs	Kearny Mesa to Downtown via SR 163. Stations at Sharp/Children's Hospital, University Ave, and Fashion Valley Transit Center	$204	$215
2025	Streetcar	554	Hillcrest/Balboa Park/Downtown San Diego Loop[3]	$39	$45
2025	Shuttle	448/449	San Marcos Shuttle[1]	$0	$0
2025	Airport Express	--	Airport Express Routes[2]	$71	$82
2025	Intermodal Transit Center	--	San Diego International Airport Intermodal Transit Center and I-5 Direct Connector Ramps	$231	$258
2025	Other	--	Other Improvements (Vehicles, transit system rehabilitation, maintenance facilities, ITS, regulatory compliance, Park and Ride, transit center expansions)	$721	$798
2025	--	--	Local Bus Routes - 15 minutes in key corridors	--	--
2035	COASTER	398	Double tracking (20-minute peak frequencies and 60-minute off-peak frequencies, grade separations at Leucadia Blvd, stations/platforms at Convention Center/Gaslamp Quarter and Del Mar Fairgrounds, and extension to Camp Pendleton)	$1,224	$1,488
2035	SPRINTER	399	SPRINTER efficiency improvements (20-minute frequencies by 2025); double tracking Oceanside to Escondido for 10-minute frequencies and six rail grade separations at El Camino Real, Melrose Dr, Vista Village Dr/Main St, North Dr, Civic Center, Auto Pkwy and Mission Ave	$1,287	$1,564

Table A.2 (continued)

Phased Revenue Constrained Projects

Transit Facilities (continued)

Year Built By	Service	Route	Description	Cost ($2019); millions	Cost ($YOE); millions
2035	Trolley	510	Phase I - Blue Line Frequency Enhancements and rail grade separations at 28th St, 32nd St, E St, H St, Palomar St, and Blue/Orange Track Connection at 12th/Imperial	$279	$339
2035	Trolley	520	Orange Line Frequency Enhancements and four rail grade separations at Euclid Ave, Broadway/Lemon Grove Ave, Allison Ave/University Ave, Severin Dr	$363	$453
2035	Trolley	561	UTC to COASTER Connection (extension of Route 510)	$467	$581
2035	Trolley	562	Phase I - San Ysidro to Kearny Mesa via Chula Vista via Highland Ave/4th Ave, National City, Southeast San Diego, Mid-City, and Mission Valley	$4,575	$6,290
2035	*Rapid*	11	Spring Valley to SDSU via Southeast San Diego, Downtown, Hillcrest, Mid-City	$154	$199
2035	*Rapid*	28	Point Loma to Kearny Mesa via Old Town, Linda Vista	$67	$80
2035	*Rapid*	30	Old Town to Sorrento Mesa via Pacific Beach, La Jolla, UTC	$143	$172
2035	*Rapid*	41	Fashion Valley to UTC/UC San Diego via Linda Vista and Clairemont	$75	$90
2035	*Rapid*	90	El Cajon Transit Center to San Diego International Airport ITC via SR 94, City College (peak only)	$27	$32
2035	*Rapid*	473	Phase I - Solana Beach to UTC/UC San Diego via Hwy 101 Coastal Communities, Carmel Valley	$58	$70
2035	*Rapid*	635	Eastlake to Palomar Trolley via Main St Corridor	$105	$126
2035	*Rapid*	638	Iris Trolley Station to Otay Mesa via Otay, Airway Dr, SR 905 Corridor	$52	$67
2035	*Rapid*	640A/ 640B	Route 640A: I-5 - San Ysidro to Old Town Transit Center via City College; 640B: I-5 Iris Trolley/Palomar to Kearny Mesa via City College	$208	$229
2035	*Rapid*	688/ 689/ 690	Route 688: San Ysidro to Sorrento Mesa via I-805/I-15/ SR 52 Corridors (Peak Only); Route 689: Otay Mesa Port of Entry (POE) to UTC/Torrey Pines via Otay Ranch/ Millennia, I-805 Corridor (Peak Only); Route 690: Mid-City to Sorrento Mesa via I-805 Corridor (Peak Only)	$623	$757
2035	*Rapid*	910	Coronado to Downtown via Coronado Bridge	$54	$65
2035	Streetcar	553	Downtown San Diego: Little Italy to East Village[3]	$15	$20
2035	Streetcar	555	30th St to Downtown San Diego via North Park/ Golden Hill[3]	$23	$29
2035	Intermodal Transit Center	--	Phase I - San Ysidro Intermodal Transit Center	$129	$158
2035	Other	--	Other Improvements (Vehicles, transit system rehabilitation, maintenance facilities, ITS, regulatory compliance, Park and Ride, transit center expansions)	$2,872	$3,843

Table A.2 (continued)

Phased Revenue Constrained Projects

Transit Facilities (continued)

Year Built By	Service	Route	Description	Cost ($2019); millions	Cost ($YOE); millions
2035	--	--	Local Bus Routes - 10 minutes in key corridors	--	--
2050	COASTER	398	Double tracking (completes double tracking; includes Del Mar Tunnel) plus 2 grade separations	$3,921	$8,258
2050	SPRINTER	399	Branch Extension to Westfield North County	$239	$479
2050	SPRINTER	588	SPRINTER Express	$332	$545
2050	Trolley	510	Phase II - Blue Line rail grade separations at Taylor St and Ash St	$307	$505
2050	Trolley	520	Orange Line Frequency Enhancements	$0	$0
2050	Trolley	530	Green Line Frequency Enhancements	$0	$0
2050	Trolley	560	SDSU to Downtown via El Cajon Blvd/Mid-City (transition of Mid-City *Rapid* to Trolley)	$3,251	$6,676
2050	Trolley	562	Phase II - Kearny Mesa to Carmel Valley	$2,191	$4,389
2050	Trolley	563	Pacific Beach to El Cajon Transit Center	$1,579	$3,024
2050	*Rapid*	103	Solana Beach to Sabre Springs *Rapid* station via Carmel Valley	$91	$152
2050	*Rapid*	440	Carlsbad to Escondido Transit Center via Palomar Airport Rd	$140	$234
2050	*Rapid*	471	Downtown Escondido to East Escondido	$46	$94
2050	*Rapid*	473	Phase II - Oceanside to Solana Beach via Hwy 101 Coastal Communities	$118	$197
2050	*Rapid*	474	Oceanside to Vista via Mission Ave/Santa Fe Rd Corridor	$99	$202
2050	*Rapid*	477	Camp Pendleton to Carlsbad Village via College Blvd, Plaza Camino Real	$109	$181
2050	*Rapid*	235	Temecula (peak only) Extension of Escondido to Downtown *Rapid* (formerly Route 610)	$133	$222
2050	*Rapid*	636	SDSU to Spring Valley via East San Diego, Lemon Grove, Skyline	$53	$88
2050	*Rapid*	637	North Park to 32nd St Trolley Station via Golden Hill	$60	$101
2050	*Rapid*	650	Chula Vista to Palomar Airport Rd Business Park via I-805/I-5 (peak only)	$112	$186
2050	*Rapid*	653	Mid-City to Palomar Airport Rd via Kearny Mesa/I-805/I-5	$14	$23
2050	*Rapid*	870	El Cajon to UTC via Santee, SR 52, I-805	$100	$190
2050	*Rapid*	890	El Cajon to Sorrento Mesa via SR 52, Kearny Mesa	$16	$31
2050	Streetcar	565	Mission Beach to La Jolla via Pacific Beach[3]	$34	$57
2050	Intermodal Transit Center	--	Phase II - San Ysidro Intermodal Transit Center	$31	$51

Table A.2 (continued)

Phased Revenue Constrained Projects

Transit Facilities (continued)

Year Built By	Service	Route	Description	Cost ($2019); millions	Cost ($YOE); millions
2050	Other	--	Other Improvements (Vehicles, transit system rehabilitation, maintenance facilities, ITS, regulatory compliance, Park and Ride, transit center expansions)	$3,724	$6,839
			Subtotal	**$32,736**	**$52,887**

Table A.2 (continued)

Phased Revenue Constrained Projects

Managed Lanes/Toll Lanes

Year Built By	Freeway	From	To	Existing*	With Improvements	Transit Route	Cost ($2019); millions	Cost ($YOE); millions
2025	I-5	Manchester Ave	SR 78	8F	8F+2ML	650, 653	$51	$51
2025	I-5	SR 78	Vandegrift Blvd	8F	8F+2ML		$116	$131
2025	SR 11/Otay Mesa East Port of Entry (POE)	SR 125	Mexico	--	4T+POE	905	$472	$472
2025	I-15	I-8	SR 163	8F	8F+2ML	235, 610, 653, 690	$64	$72
2025	I-805	SR 94	SR 15	8F	8F+2ML	225, 650, 688, 689	$234	$264
2035	I-5	SR 905	SR 54	8F	8F+2ML	640	$542	$627
2035	I-5	SR 54	SR 15	8F	10F+2ML	640	$467	$540
2035	I-5	La Jolla Village Dr I-5/I-805 Merge	I-5/805 Merge SR 56	8F/14F 8F/14F+ 2ML	8F/14F+2ML 8F/14F+4ML	650, 653	$422	$513
2035	I-5	SR 56	SR 78	8F+2ML	8F+4ML	650, 653	$2,082	$3,019
2035	SR 15	SR 94	I-805	6F	6F+2ML	235, 610	$41	$59
2035	SR 78	I-5	I-15	6F	6F+2ML		$1,621	$2,127
2035	SR 94	I-5	I-805	8F	8F+2ML	90, 225, 235, 610	$728	$955
2035	I-805	SR 905	Palomar St	8F	8F+2ML	688	$235	$316
2035	I-805	SR 54	SR 94	8F+2ML	8F+4ML	225, 650, 688, 689	$742	$998
2035	I-805	SR 163	SR 52	8F	8F+2ML	650, 688, 689, 690	$195	$269
2035	I-805	SR 52	Carroll Canyon Rd	8F+2ML	8F+4ML	30, 650, 653, 688, 689, 690, 870, 890	$778	$996
2050	I-5	I-8	La Jolla Village Dr	8F/10F	8F/10F+2ML		$978	$2,067
2050	I-5	SR 78	Vandegrift Blvd	8F+2ML	8F+4ML		$632	$1,336
2050	I-5	Vandegrift Blvd	Orange County	8F	8F+4T		$3,165	$6,687
2050	SR 15	I-5	SR 94	6F	8F+2ML		$185	$391

Table A.2 (continued)

Phased Revenue Constrained Projects

Managed Lanes/Toll Lanes (continued)

Year Built By	Freeway	From	To	Existing*	With Improvements	Transit Route	Cost ($2019); millions	Cost ($YOE); millions
2050	I-15	Viaduct	--	8F	8F+2ML	235, 610, 653, 690	$1,040	$2,197
2050	I-15	SR 78	Riverside County	8F	8F+4T	610	$1,744	$3,684
2050	SR 52	I-805	I-15	6F	6F+2ML	653, 870, 890	$238	$503
2050	SR 52	I-15	SR 125	4F/6F	4F/6F+2ML(R)	870, 890	$405	$856
2050	SR 54	I-5	SR 125	6F	6F+2ML		$151	$319
2050	SR 94	I-805	SR 125	8F	8F+2ML	90	$501	$1,057
2050	SR 125	SR 54 SR 94	SR 94 I-8	6F 8F	6F+2ML 10F+2ML	90	$690	$1,457
2050	I-805	SR 94	SR 15	8F+2ML	8F+4ML	225, 650, 688, 690	$83	$175
2050	I-805	SR 15	SR 163	8F/10F	8F/10F+4ML	650, 688, 689, 690	$1,567	$3,310
2050	I-805	SR 163	SR 52	8F+2ML	8F+4ML	650, 688, 689, 690	$438	$925
						Subtotal	**$20,607**	**$36,373**

Table A.2 (continued)

Phased Revenue Constrained Projects

Highway Projects

Year Built By	Freeway	From	To	Existing*	With Improvements	Cost ($2019); millions	Cost ($YOE); millions
2025	SR 67	Mapleview St	Gold Bar Ln	2C	4C	$82	$92
2035	SR 52	Mast Blvd	SR 125	4F	6F	$103	$147
2050	I-8	2nd St	Los Coches	4F/6F	6F	$44	$94
2050	SR 52	I-5	I-805	4F	6F	$151	$319
2050	SR 56	I-5	I-15	4F	6F	$192	$405
2050	SR 67	Gold Bar Ln	Dye Rd	2C/4C	4C	$591	$1,248
2050	SR 94	SR 125	Avocado Blvd	4F	6F	$190	$401
2050	SR 94	Avocado Blvd	Jamacha	4C	6C	$124	$261
2050	SR 94	Jamacha	Steele Canyon Rd	2C/4C	4C	$54	$115
2050	SR 125	SR 905	San Miguel Rd	4T	8F	$439	$741
2050	SR 125	San Miguel Rd	SR 54	4F	8F	$241	$509
					Subtotal	**$2,211**	**$4,332**

Operational Improvements

Year Built By	Freeway	From	To	Existing*	With Improvements	Cost ($2019); millions	Cost ($YOE); millions
2050	I-5	SR 15	I-8	8F	8F+Operational	$1,985	$4,194
2050	I-8	I-5	SR 125	8F/10F	8F/10F+Operational	$907	$1,917
2050	I-8	SR 125	2nd St	6F/8F	6F/8F+Operational	$227	$480
2050	SR 76	I-15	Couser Canyon	2C/4C	4C/6C+Operational	$178	$376
					Subtotal	**$3,297**	**$6,967**

Table A.2 (continued)

Phased Revenue Constrained Projects

Managed Lanes Connectors

Year Built By	Freeway	Intersecting Freeway	Movement	Cost ($2019); millions	Cost ($YOE); millions
2025	SR 15	I-805	North to North and South to South	$110	$124
2035	I-5	SR 78	South to East and West to North, North to East and West to South	$344	$451
2035	I-5	I-805	North to North and South to South	*	*
2035	I-15	SR 78	East to South and North to West	$144	$171
2035	SR 15	SR 94	South to West and East to North	$97	$127
2035	I-805	SR 94	North to West and East to South	$137	$180
2050	I-15	SR 52	West to North and South to East	$177	$374
2050	I-805	SR 52	West to North and South to East	*	*
			Subtotal	**$1,009**	**$1,427**

* Project Cost included in associated Managed Lane Project

Freeway Connectors

Year Built By	Freeway	Intersecting Freeway	Movement	Cost ($2019); millions	Cost ($YOE); millions
2025	SR 94	SR 125	South to East	$94	$106
2035	I-5	SR 56	West to North and South to East	$371	$487
2035	I-5	SR 78	South to East and West to South	$371	$487
2035	SR 94	SR 125	West to North	$110	$134
2050	I-15	SR 56	North to West	$104	$219
			Subtotal	**$1,050**	**$1,433**

Table A.2 (continued)

Phased Revenue Constrained Projects

Active Transportation Projects

Year Built By	Project	Jurisdiction(s)	Project Phase	Cost ($2019); millions	Cost ($YOE); millions
2025	Uptown - Fashion Valley to Downtown San Diego	San Diego	Const.	$13.0	$13.0
2025	Uptown - Old Town to Hillcrest	San Diego	Const.	$1.0	$1.0
2025	Uptown - Hillcrest to Balboa Park	San Diego	Const.	$2.0	$2.0
2025	North Park - Mid-City - City Heights	San Diego	Const.	$7.0	$8.0
2025	North Park - Mid-City - Hillcrest to City Heights (City Heights - Old Town Corridor)	San Diego	Const.	$5.0	$6.0
2025	North Park - Mid-City - City Heights to Rolando	San Diego	Const.	$3.0	$3.0
2025	San Diego River Trail - Qualcomm Stadium	San Diego	Const.	$1.0	$1.0
2025	Bayshore Bikeway - Main St to Palomar	Chula Vista/ Imperial Beach	Const.	$1.0	$1.0
2025	Inland Rail Trail (combination of four projects)	San Marcos, Vista, Co. of San Diego	Const.	$35.0	$35.0
2025	Pershing and El Prado - North Park to Downtown San Diego	San Diego	Const.	$7.0	$8.0
2025	Pershing and El Prado - Cross-Park	San Diego	Const.	$1.0	$1.0
2025	Terrace Dr/Central Ave - Adams to Wightman	San Diego	Const.	$4.0	$5.0
2025	San Diego River Trail – I-805 to Fenton	San Diego	Const.	$3.0	$3.0
2025	San Diego River Trail - Short gap connections	San Diego	Const.	$2.0	$2.0
2025	Coastal Rail Trail Encinitas - Leucadia to G St	Encinitas	Const.	$7.0	$8.0
2025	San Ysidro to Imperial Beach - Bayshore Bikeway Connection	Imperial Beach/ San Diego	Const.	$8.0	$9.0
2025	Bayshore Bikeway – Barrio Logan	San Diego	Const.	$25.8	$39.0
2025	Coastal Rail Trail San Diego – Rose Creek Mission Bay Connection	San Diego	Const.	$7.0	$11.0
2025	Other Active Transportation Programs and Projects[4]	Various	Various	$600	$654.0
2035	Downtown to Southeast connections - East Village	San Diego	ROW	$1.1	$2.0
2035	Downtown to Southeast connections – Downtown San Diego to Encanto	San Diego	ROW	$4.1	$6.0
2035	Downtown to Southeast connections – Downtown San Diego to Golden Hill	San Diego	Const.	$3.6	$6.0
2035	Coastal Rail Trail San Diego - UTC	San Diego	Const.	$0.8	$1.0
2035	Coastal Rail Trail San Diego - Rose Canyon	San Diego	Const.	$8.7	$13.0
2035	Coastal Rail Trail San Diego - Pac Hwy (W Washington St to Laurel St)	San Diego	Const.	$7.0	$11.0
2035	Coastal Rail Trail San Diego - Pac Hwy (Laurel St to Santa Fe Depot)	San Diego	Const.	$13.9	$21.0
2035	Coastal Rail Trail San Diego - Encinitas Chesterfield to Solana Beach	Encinitas	Const.	$0.5	$1.0

Table A.2 (continued)

Phased Revenue Constrained Projects

Active Transportation Projects (continued)

Year Built By	Project	Jurisdiction(s)	Project Phase	Cost ($2019); millions	Cost ($YOE); millions
2035	Coastal Rail Trail San Diego – Pac Hwy (Taylor St to W Washington St)	San Diego	Const.	$7.0	$11.0
2035	Coastal Rail Trail San Diego- Pac Hwy (Fiesta Island Rd to Taylor St)	San Diego	Const.	$12.2	$18.0
2035	San Diego River Trail - Father Junipero Serra Trail to Santee	Santee	Const.	$9.5	$14.0
2035	City Heights /Encanto/Lemon Grove	Lemon Grove/ San Diego	Const.	$12.2	$18.0
2035	City Heights/Fairmount Corridor	San Diego	Const.	$20.9	$28.0
2035	Rolando to Grossmont/La Mesa	La Mesa/ El Cajon/ San Diego	Const.	$3.5	$5.0
2035	La Mesa/Lemon Grove/El Cajon connections	Lemon Grove/ La Mesa	Const.	$10.4	$16.0
2035	San Diego River Trail - Qualcomm Stadium to Ward Rd	San Diego	Const.	$3.5	$5.0
2035	San Diego River Trail - Rancho Mission Rd to Camino Del Rio North	San Diego	Const.	$0.5	$1.0
2035	Coastal Rail Trail Carlsbad - Reach 4 Cannon to Palomar Airport Rd	Carlsbad	Const.	$8.7	$13.0
2035	Coastal Rail Trail Carlsbad - Reach 5 Palomar Airport Rd to Poinsettia Station	Carlsbad	Const.	$5.2	$8.0
2035	Coastal Rail Trail Encinitas - Carlsbad to Leucadia	Encinitas	Const.	$12.2	$18.0
2035	Coastal Rail Trail Del Mar	Del Mar	Const.	$0.7	$1.0
2035	Coastal Rail Trail San Diego - Del Mar to Sorrento via Carmel Valley	Del Mar/ San Diego	Const.	$0.7	$1.0
2035	Coastal Rail Trail San Diego - Carmel Valley to Roselle via Sorrento	San Diego	Const.	$1.6	$2.0
2035	Coastal Rail Trail San Diego - Roselle Canyon	San Diego	Const.	$8.7	$13.0
2035	Chula Vista/National City connections	Chula Vista/ National City	Const.	$19.1	$25.0
2035	Pacific Beach to Mission Beach	San Diego	Const.	$17.4	$23.0
2035	Ocean Beach to Mission Bay	San Diego	Const.	$41.8	$51.0
2035	San Diego River Trail - Bridge connection (Sefton Field to Mission Valley YMCA)	San Diego	Const.	$12.2	$18.0
2035	San Diego River Trail - Mast Park to Lakeside baseball park	Santee	Const.	$17.4	$23.0
2035	I-8 Flyover - Camino del Rio S to Camino del Rio N	San Diego	Const.	$17.4	$23.0
2035	Coastal Rail Trail Oceanside - Broadway to Eaton	Oceanside	Const.	$0.7	$1.0
2035	El Cajon - Santee connections	El Cajon/ La Mesa/ Santee	Const.	$20.9	$28.0
2035	San Diego River Trail - Father JS Trail to West Hills Pkwy	San Diego	Const.	$5.2	$8.0
2035	Inland Rail Trail Oceanside	Oceanside	Const.	$33.1	$40.0

Table A.2 (continued)

Phased Revenue Constrained Projects

Active Transportation Projects (continued)

Year Built By	Project	Jurisdiction(s)	Project Phase	Cost ($2019); millions	Cost ($YOE); millions
2035	Coastal Rail Trail Carlsbad - Reach 3 Tamarack to Cannon	Carlsbad	Const.	$8.7	$13.0
2035	Clairemont Dr (Mission Bay to Burgener)	San Diego	Const.	$13.9	$21.0
2035	Harbor Dr (Downtown to Ocean Beach)	San Diego	Const.	$12.2	$18.0
2035	Mira Mesa Bike Blvd	San Diego	Const.	$7.0	$11.0
2035	Sweetwater River Bikeway Ramps	National City	Const.	$15.7	$24.0
2035	Coastal Rail Trail Oceanside - Alta Loma Marsh bridge	Oceanside	Const.	$8.7	$13.0
2035	Coastal Rail Trail San Diego - Mission Bay (Clairemont to Tecolote)	San Diego	Const.	$5.2	$8.0
2035	Bayshore Bikeway Coronado - Golf course adjacent	Coronado	Const.	$5.2	$8.0
2035	Other Active Transportation Programs and Projects[4]	Various	Various	$857.0	$1,179
2050	San Luis Rey River Trail	Oceanside, Unincorporated	Const.	$64.4	$122.0
2050	Encinitas-San Marcos Corridor – Double Peak Dr to San Marcos Blvd	San Marcos	Const.	$20.9	$48.0
2050	Escondido Creek Bikeway – Quince St to Broadway	Escondido	Const.	$3.5	$8.0
2050	Escondido Creek Bikeway – Escondido Creek to Washington Ave	Escondido	Const.	$1.7	$4.0
2050	Escondido Creek Bikeway – 9th Ave to Escondido Creek	Escondido	Const.	$1.7	$4.0
2050	Escondido Creek Bikeway – El Norte Pkwy to northern bikeway terminus	Escondido	Const.	$10.4	$24.0
2050	Encinitas to San Marcos Corridor – Leucadia Blvd to El Camino Real	Carlsbad, Encinitas	Const.	$3.5	$8.0
2050	I-15 Bikeway – Via Rancho Pkwy to Lost Oak Ln	Escondido	Const.	$7.0	$16.0
2050	I-15 Bikeway – Rancho Bernardo Community Park to Lake Hodges Bridge	San Diego	Const.	$5.2	$12.0
2050	I-15 Bikeway – Camino del Norte to Aguamiel Rd	San Diego	Const.	$22.6	$40.0
2050	I-15 Bikeway – Poway Rd interchange to Carmel Mountain Rd	San Diego	Const.	$29.6	$52.0
2050	SR 56 Bikeway – Azuaga St to Rancho Peñasquitos Blvd	San Diego	Const.	$3.5	$8.0
2050	I-15 Bikeway – Murphy Canyon Rd to Affinity Ct	San Diego	Const.	$69.6	$115.0
2050	SR 56 Bikeway – El Camino Real to Caminito Pointe	San Diego	Const.	$3.5	$8.0
2050	SR 52 Bikeway – I-5 to Santo Rd	San Diego	Const.	$52.2	$104.0
2050	SR 52 Bikeway – SR 52/Mast Dr to San Diego River Trail	San Diego	Const.	$3.5	$8.0
2050	I-8 Corridor – San Diego River Trail to Riverside Dr	Unincorporated	Const.	$3.5	$8.0

Table A.2 (continued)

Phased Revenue Constrained Projects

Active Transportation Projects (continued)

Year Built By	Project	Jurisdiction(s)	Project Phase	Cost ($2019); millions	Cost ($YOE); millions
2050	I-805 Connector – Bonita Rd to Floyd Ave	Chula Vista, Unincorporated	Const.	$10.5	$24.0
2050	SR 125 Connector – Bonita Rd to U.S.-Mexico Border	Chula Vista, San Diego	Const.	$67.9	$118.0
2050	SR 905 Connector – E Beyer Blvd to U.S.-Mexico Border	San Diego, Unincorporated	Const.	$59.2	$103.0
2050	El Camino Real Bike Lanes – Douglas Dr. to Mesa Dr.	Oceanside	Const.	$1.7	$4.0
2050	Vista Way Connector from Arcadia	Vista Unincorporated	Const.	$3.7	$8.0
2050	I-15 Bikeway – W Country Club Ln to Nutmeg St	Escondido	Const.	$7.0	$16.0
2050	El Camino Real Bike Lanes – Marron Rd to SR 78 off ramp	Carlsbad	Const.	$0.5	$1.0
2050	Carlsbad to San Marcos Corridor – Paseo del Norte to Avenida Encinas	Carlsbad	Const.	$0.7	$2.0
2050	Encinitas to San Marcos Corridor – Kristen Ct to Ecke Ranch Rd	Encinitas	Const.	$0.7	$2.0
2050	Encinitas to San Marcos Corridor – Encinitas Blvd/ I-5 Interchange	Encinitas	Const.	$0.3	$1.0
2050	Mira Mesa Corridor – Reagan Rd to Parkdale Ave	San Diego	Const.	$0.7	$2.0
2050	Mira Mesa Corridor – Scranton Rd to I-805	San Diego	Const.	$0.7	$2.0
2050	Mira Mesa Corridor – Sorrento Valley Rd to Sorrento Valley Blvd	San Diego	Const.	$1.4	$3.0
2050	Mid-County Bikeway – I-5/Via de la Valle Interchange	San Diego	Const.	$0.5	$1.0
2050	Mid-County Bikeway – Rancho Santa Fe segment	San Diego, Unincorporated	Const.	$5.2	$12.0
2050	El Camino Real Bike Lanes – Manchester Ave to Tennis Club Dr	Encinitas	Const.	$0.9	$2.0
2050	Mid-County Bikeway – Manchester Ave/ I-5 Interchange to San Elijo Ave	Encinitas	Const.	$1.4	$3.0
2050	Central Coast Corridor – Van Nuys St to San Rafael Pl	San Diego	Const.	$1.0	$4.0
2050	Clairemont – Centre-City Corridor – Coastal Rail Trail to Genesee Ave	San Diego	Const.	$3.5	$8.0
2050	SR 125 Corridor – Mission Gorge Rd to Glen Vista Way	Santee	Const.	$0.5	$1.0
2050	SR 125 Corridor – Prospect Ave to Weld Blvd	Santee, El Cajon	Const.	$1.4	$3.0
2050	I-8 Corridor – Lakeside Ave to SR 67	Unincorporated	Const.	$0.9	$2.0
2050	I-8 Corridor – Willows Rd to SR 79	Unincorporated	Const.	$8.7	$19.0
2050	E County Northern Loop – N Marshall Ave to El Cajon Blvd	El Cajon	Const.	$0.5	$1.0
2050	E County Northern Loop – Washington Ave to Dewitt Ct	El Cajon	Const.	$1.7	$4.0

Table A.2 (continued)

Phased Revenue Constrained Projects

Active Transportation Projects (continued)

Year Built By	Project	Jurisdiction(s)	Project Phase	Cost ($2019); millions	Cost ($YOE); millions
2050	E County Northern Loop – SR 94 onramp to Del Rio Rd	Unincorporated	Const.	$0.3	$1.0
2050	E County Southern Loop – Pointe Pkwy to Omega St	Unincorporated	Const.	$1.4	$3.0
2050	SR 125 Corridor – SR 94 to S of Avocado St	Unincorporated	Const.	$1.9	$4.0
2050	Centre City – La Mesa Corridor – Gateside Rd to Campo Rd	La Mesa, Unincorporated	Const.	$0.7	$2.0
2050	Bay to Ranch Bikeway – River Ash Dr to Paseo Ranchero	Chula Vista	Const.	$0.9	$2.0
2050	Mid-County Bikeway – San Elijo Ave to 101 Terminus	Encinitas	Const.	$1.7	$4.0
2050	Central Coast Corridor – Van Nuys St	San Diego	Const.	$0.3	$1.0
2050	E County Northern Loop – El Cajon Blvd to Washington Ave	El Cajon	Const.	$1.7	$4.0
2050	E County Northern Loop – Calavo Dr to Sweetwater Springs Blvd	Unincorporated	Const.	$1.2	$3.0
2050	Central Coast Corridor – Torrey Pines Rd to Nautilus St	San Diego	Const.	$10.4	$23.0
2050	Central Coast Corridor – Via Del Norte to Van Nuys St	San Diego	Const.	$8.7	$19.0
2050	Kearny Mesa to Beaches Corridor – Ingraham St from Garnet Ave to Pacific Beach Dr	San Diego	Const.	$3.5	$8.0
2050	Kearny Mesa to Beaches Corridor – Clairemont Dr to Genesee Ave	San Diego	Const.	$17.4	$31.0
2050	Kearny Mesa to Beaches Corridor – Genesee Ave to Linda Vista Dr	San Diego	Const.	$10.4	$23.0
2050	Bay to Ranch Bikeway – E J St from 2nd Ave to Paseo Del Rey	Chula Vista	Const.	$20.9	$36.0
2050	Chula Vista Greenbelt – Bay Blvd to Oleander Ave	Chula Vista	Const.	$29.6	$51.0
2050	Other Active Transportation Programs and Projects[4]	Various	Various	$1,285	$2,498
			Subtotal	**$3,892**	**$6,226**
			TOTAL	**$64,802**	**$109,645**

* Based on facility configuration at time of project construction.

[1] Capital cost to be funded by the City of San Marcos

[2] Capital cost to be funded by aviation and other private funds

[3] Streetcar cost is representative of 10 percent of the total capital cost

[4] Includes Safe Routes to Transit projects at new transit station areas, local bike projects, local pedestrian/safety/traffic calming projects, regional bicycle and pedestrian programs and Regional Safe Routes to School implementation.

Table A.3

Phased Revenue Constrained Arterial Projects[1]

Year Built By	SANDAG ID	Lead Agency	Project Title	Project Description
2025	CB04B	Carlsbad	El Camino Real and Cannon Rd	Along the eastside of El Camino Real just south of Cannon Rd, widen to prime arterial standards with three through lanes, a right turn lane, and a sidewalk approaching the intersection
2025	CB12	Carlsbad	College Blvd Reach A - Badger Ln to Cannon Rd	From Badger Ln to Cannon Rd, construct a new segment of College Blvd to provide 4-lane roadway with raised median, bike lanes, and sidewalks/trails in accordance with major arterial standards
2025	CB13	Carlsbad	Poinsettia Ln Reach E - Cassia Dr to Skimmer Ct	From Cassia Dr to Skimmer Ct, construct a new 4-lane roadway with median, bike lanes, and sidewalks/trails to major arterial standards
2025	CB22	Carlsbad	Avenida Encinas, widen from Palomar Airport Rd to Encinas Water Pollution Control Facility	Avenida Encinas from Palomar Airport Rd southerly to existing improvements adjacent to the Embarcadero Lane, roadway widening to secondary arterial standards
2025	CB31	Carlsbad	El Camino Real – La Costa Ave to Arenal Rd	Along El Camino Real from 700 feet north of La Costa Ave to Arenal Rd, widening along the southbound side of the roadway to provide three travel lanes and a bike lane in accordance with prime arterial standards
2025	CB32	Carlsbad	El Camino Real Widening - Cassia to Camino Vida Roble	Widen El Camino Real from 900 feet north of Cassia Rd to Camino Vida Roble, along the northbound side of the roadway to provide three travel lanes and a bike lane in accordance with prime arterial standards
2025	CB35	Carlsbad	Palomar Airport Rd - Palomar Airport Rd to Paseo Del Norte	Lengthen the left turn pocket along eastbound Palomar Airport Rd to northbound Paseo Del Norte
2025	CHV08	Chula Vista	Willow St Bridge Project - Bonita Rd to Sweetwater Rd	Replace 2-lane bridge with 4-lane bridge (Phase II)
2025	CHV69	Chula Vista	Heritage Rd Bridge	Heritage Rd from Main St/Nirvana Ave to Entertainment Circle, widen and lengthen bridge over Otay River from 4-lane to 6-lane bridge that accommodates shoulders, sidewalk, and medial; project is on Heritage Rd from the intersection of Main St and Nirvana Ave to Entertainment Circle
2025	CNTY14A	San Diego County	South Santa Fe Ave South	South Santa Fe from 700 feet south of Woodland Dr to Smilax Rd, widening of South Santa Fe Ave to a 5-lane major road with a center left turn lane, curb, gutter, sidewalk, bike lanes, and drainage improvements.
2025	CNTY21	San Diego County	Bradley Ave Overpass at SR 67	Widen Bradley Ave from Magnolia Ave to Mollison Ave; widen from 2 lanes to 4 lanes plus sidewalks. Replace 2-lane bridge over SR 67 with a 6-lane bridge, which accommodates turn pockets.

Table A.3 (continued)

Phased Revenue Constrained Arterial Projects

Year Built By	SANDAG ID	Lead Agency	Project Title	Project Description
2025	CNTY24	San Diego County	Cole Grade Rd	Cole Grade Rd from north of Horse Creek Trail to south of Pauma Heights Rd, widen to accommodate 14-foot traffic lane in both directions, 12-foot center 2-way left turn, 6-foot bike lane and 10-foot pathway
2025	ESC02A	Escondido	East Valley/ Valley Center	Widen roadway from 4 to 6 lanes with raised medians and left turn pockets; modify signal at Lake Wohlford and Valley Center Rd; widen bridge over Escondido Creek
2025	ESC04	Escondido	Citracado Parkway II	West Valley to Harmony Grove, widen from 2 to 4 lanes with raised medians; construct bridge over Escondido Creek
2025	ESC06	Escondido	El Norte Pkwy Bridge at Escondido Creek - Kaile Ln to Key Lime Way	Construct missing 2-lane bridge at Escondido Creek
2025	ESC08	Escondido	Felicita Ave/Juniper St - from Escondido Blvd to Juniper St and from Juniper St to Chestnut St	Widen from 2 to 4 lanes with left turn pockets, raised medians on Felicita; new traffic signals at Juniper and Chestnut, Juniper and 13th Ave, Juniper and 15th Ave; modify traffic signal at Juniper and Felicita
2025	ESC24	Escondido	Centre City Pkwy	Mission Rd to SR 78, widen 4 lanes to 6 lanes with intersection improvements
2025	NC01	National City	Plaza Blvd Widening	Plaza Blvd from Highland Ave to Euclid Ave, widen from 2 to 3 lanes including a new traffic lane in each direction, new sidewalks, sidewalk widening, traffic signal upgrades, and interconnection at Plaza Blvd
2025	O22	Oceanside	College Blvd - Avenida de la Plate to Waring Road	Widen from the existing 4 lanes to 6 lanes with bike lanes and raised median
2025	SD34	San Diego	El Camino Real	In San Diego on El Camino Real from San Dieguito Rd to Via de la Valle, reconstruct and widen from 2 to 4 lanes and extend transition lane and additional grading to avoid biological impacts (CIP 52-479.0)
2025	SD70	San Diego	West Mission Bay Dr Bridge	In San Diego, replace bridge and increase from 4- to 6-lane bridge including Class II bike lane (CIP 52-643.0/S00871)
2025	SD83	San Diego	SR 163/Friars Rd. Interchange Modification	Widen and improve Friars Road and overcrossing; reconstruct interchange including improvements to ramp intersections (Phase 1); construct new connector roadways and structures (Phase 2); construct auxiliary lanes along northbound and southbound SR163 (Phase 3) (CIP Legacy#52-455.0,WBS# S-00851)
2025	SD102A	San Diego	Otay Truck Route Widening	On Otay Truck Route in San Diego from Drucker Ln to La Media, add one lane (total 3 lanes) for trucks; from Britannia to La Media, add one lane for trucks and one lane for emergency vehicles (border patrol/fire department access); along Britannia from Britannia Court to the Otay Truck Route - add one lane for trucks

Table A.3 (continued)

Phased Revenue Constrained Arterial Projects

Year Built By	SANDAG ID	Lead Agency	Project Title	Project Description
2025	SD190	San Diego	Palm Ave/I-805 Interchange	Improvements to the Palm Avenue Bridge over I-805; repairs to the bridge approaches; a new Project Study Report (PSR) and Preliminary Environmental Assessment Report (PEAR). Phase II will include widening of the bridge, realignment of existing ramps, possible addition of northbound looping entrance ramp, restriping of traffic lanes, and signal modifications.
2025	SD247	San Diego	Camino del Sur and Carmel Mountain Road	On Camino del Sur from Carmel Mountain Road to Dormouse Road, and on Camino del Sur from Torrey Santa Fe to Carmel Mountain Rd, construction of Camino del Sur as a two-lane interim roadway (S00872 and RD15000). Project also includes construction of Carmel Mountain Road, from Sundance Avenue to Camino del Sur as a four-lane major street with Class II bicycle lanes.
2025	SM19	San Marcos	Grand Ave Bridge and Street Improvements	From Discovery St to San Marcos Blvd, construct 4-lane arterial bridge and a 6-lane arterial street from Craven to Grand Ave
2025	SM22	San Marcos	South Santa Fe - Bosstick to Smilax	From Bosstick to Smilax, realign and signalize the South Santa Fe/Smilax intersection (Phase I)
2025	SM24	San Marcos	Woodland Pkwy Interchange Improvements	From La Moree Rd to Rancheros Dr, modify existing ramps at Woodland Pkwy and Barham Dr; widen and realign SR 78 undercrossing and associated work
2025	SM31	San Marcos	Discovery St Improvements	From Via Vera Cruz to Bent Ave/Craven Rd, widen roadway to 4-lane secondary arterial
2025	SM32	San Marcos	Via Vera Cruz Bridge and Street Improvements	From San Marcos Blvd to Discovery St, widen to 4-lane secondary arterial and construct a bridge at San Marcos Creek
2025	SM42	San Marcos	Street Improvements: Discovery St - Craven Rd to West of Twin Oaks Valley Rd	In the City of San Marcos, on Discovery St from Craven Rd to west of Twin Oaks Valley Rd, construct approximately 5,100 lineal feet of a new 6-lane roadway
2025	SM48	San Marcos	Creekside Dr	Construct approximately 3,000 feet of a 2-lane collector road from Via Vera Cruz to Grand Ave in the City of San Marcos. The road will include two 12-foot lanes, diagonal parking on the north side, and parallel parking on the south side. In addition, the project also will include a 10-foot bike trail meandering along the south side.
2025	CB34	Carlsbad	Palomar Airport Rd - Palomar Airport Rd to Paseo Del Norte	Widening along eastbound Palomar Airport Rd to provide a dedicated right turn lane to southbound Paseo Del Norte
2025	CNTY34	San Diego County	Dye Rd Extension	Dye Rd to San Vicente Rd - in Ramona, study, design, and construct a 2-lane community collector road with intermittent turn lanes, bike lanes, curb, gutter, and pathway/walkway

Table A.3 (continued)

Phased Revenue Constrained Arterial Projects

Year Built By	SANDAG ID	Lead Agency	Project Title	Project Description
2025	CNTY35	San Diego County	Ramona St Extension	From Boundary Ave to Warnock Dr - in the community of Ramona, construct new road extension, 2 lanes with intermittent turn lanes, bike lanes, and walkway/pathway
2025	CNTY88	San Diego County	Ashwood Street Corridor Improvements – Mapleview to Willow	Ashwood Street/Wildcat Canyon Road from Mapleview Street to 1100 feet north of Willow Road in Lakeside-traffic signal improvements at Mapleview and Ashwood; traffic signal installation at Willow and Ashwood/Wildcat Canyon; and the addition of turn lanes, addition of a passing lane in a non-urbanized area, bike lanes, and pedestrian facilities.
2025	V15	Various Agencies	I-5/Gilman Dr. Bridge	In San Diego, construct new overcrossing over I-5 between Gilman Drive and Medical Center Drive
2025	V18	Various Agencies	I-5/Voigt Drive Improvements	Between La Jolla Village Drive and Genesee Avenue - in San Diego, on Interstate 5, construction of the realignment of both Campus Point and Voigt Drive between I-5 and Genesee Avenue
2035	SD81	San Diego	Genesee Ave – Nobel Dr to SR 52	In San Diego, future widening to 6-lane major street north of Decoro St and to a 6-lane primary arterial south of Decoro St and included Class II bicycle lanes (CIP 52-458.0)
2035	SD190	San Diego	Palm Avenue/I-805 Interchange	Phase III will provide the ultimate build-out of the project which will incorporate improvements of Phase II plus the northbound and southbound entrance ramps (CIP 52-640.0)
2035	SM10	San Marcos	SR 78/Smilax	Construct new interchange at Smilax Rd interchange and SR 78 improvements

[1] The arterials listed in this table reflect locally initiated projects that were submitted by local jurisdictions in the 2018 Regional Transportation Improvement Program.

Table A.4

Revenue Constrained Freight and Goods Movement Projects

Rail Facilities (Shared Use Freight and Passengers)

Service	Route	Description	Cost ($2019); millions	Cost ($YOE); millions
COASTER/ BNSF	398	Double tracking (includes grade separations at Leucadia Blvd and two other locations, stations/platforms at Convention Center/Gaslamp Quarter and Del Mar Fairgrounds, Del Mar Tunnel, and extensions to the Convention Center and Camp Pendleton)	$5,754	$10,439
SPRINTER/ BNSF	399	SPRINTER efficiency improvements and double tracking (Oceanside to Escondido and six rail grade separations at El Camino Real, Melrose Dr, Vista Village Dr/Main St, North Dr, Civic Center, Auto Parkway and Mission Ave)	$1,287	$1,564
SPRINTER/ BNSF	588	SPRINTER Express	$322	$545
Trolley/ BNSF	510	Blue Line/Mid-Coast Frequency Enhancements and rail grade separations at 28th St, 32nd St, E St, H St, Palomar St, at Taylor St and Ash St, and Blue/Orange Track Connection at 12th/Imperial	$586	$844
Trolley/ BNSF	520	Orange Line Frequency Enhancements and four rail grade separations at Euclid Ave, Broadway/Lemon Grove Ave, Allison Ave/University Ave, Severin Dr	$363	$453
		Subtotal	**$8,312**	**$13,845**

Managed Lanes / Toll Lanes

Freeway	From	To	Existing	With Improvements	Transit Route	Cost ($2019); millions	Cost ($YOE); millions
I-5	SR 905	SR 54	8F	8F+2ML	640	$542	$627
I-5	SR 54	SR 15	8F	10F+2ML	640	$467	$540
I-5	I-8	La Jolla Village Dr	8F/10F	8F/10F+2ML		$978	$2,067
I-5	La Jolla Village Dr I-5/I-805 Merge	I-5/I-805 Merge SR 56	8F/14F 8F/14F+2ML	8F/14F+2ML 8F/14F+4ML	650, 653	$422	$513
I-5	SR 56 Manchester Ave	Manchester Ave Vandegrift Blvd	8F+2ML 8F	8F+4ML 8F+4ML	650, 653 650, 653	$2,881	$4,537
I-5	Vandegrift Blvd	Orange County	8F	8F+4T		$3,165	$6,687
SR 11/ Otay Mesa East POE	SR 125	Mexico	--	4T+POE	905	$472	$472
SR 15	I-5	SR 94	6F	8F+2ML		$185	$391
SR 15	SR 94	I-805	6F	6F+2ML	235, 610	$41	$59
I-15	Viaduct		8F	8F+2ML	235, 610, 653, 690	$1,040	$2,197
I-15	I-8	SR 163	8F	8F+2ML	235, 610, 653, 690	$64	$72

Table A.4 (continued)

Revenue Constrained Freight and Goods Movement Projects

Managed Lanes / Toll Lanes (continued)

Freeway	From	To	Existing	With Improvements	Transit Route	Cost ($2019); millions	Cost ($YOE); millions
I-15	SR 78	Riverside County	8F	8F+4T	610	$1,744	$3,684
SR 52	I-805	I-15	6F	6F+2ML	653, 870, 890	$238	$503
SR 52	I-15	SR 125	4F/6F	4F/6F+2ML(R)	870, 890	$405	$856
SR 54	I-5	SR 125	6F	6F+2ML		$151	$319
SR 78	I-5	I-15	6F	6F+2ML		$1,621	$2,127
SR 94	I-5	SR 125	8F	8F+2ML	90, 225, 235, 610,	$1,229	$2,012
SR 125	SR 54 SR 94	SR 94 I-8	6F 8F	6F+2ML 10F+2ML	90	$690	$1,457
I-805	SR 905	Palomar St	8F	8F+2ML	688	$235	$316
I-805	SR 54	SR 94	8F+2ML	8F+4ML	225, 650, 688, 689	$742	$998
I-805	SR 94	Carroll Canyon Rd	8F	8F+4ML	30, 225, 650, 653, 688, 689, 690, 870, 890	$3,295	$5,939
					Subtotal	**$20,607**	**$36,373**

Highway Projects

Freeway	From	To	Existing	With Improvements	Cost ($2019); millions	Cost ($YOE); millions
I-8	2nd St	Los Coches	4F/6F	6F	$44	$94
SR 52	Mast Blvd	SR 125	4F	6F	$103	$147
SR 56	I-5	I-15	4F	6F	$192	$405
SR 94	SR 125	Avocado Blvd	4F	6F	$190	$401
SR 94	Avocado Blvd	Jamacha	4C	6C	$124	$261
SR 94	Jamacha	Steele Canyon Rd	2C/4C	4C	$54	$115
SR 125	SR 905	San Miguel Rd	4T	8F	$439	$741
SR 125	San Miguel Rd	SR 54	4F	8F	$241	$509
				Subtotal	**$1,387**	**$2,673**

Table A.4 (continued)

Revenue Constrained Freight and Goods Movement Projects

Operational Improvements

Freeway	From	To	Existing	With Improvements	Cost ($2019); millions	Cost ($YOE); millions
I-5	SR 15	I-8	8F	8F+Operational	$1,985	$4,194
I-8	I-5	SR 125	8F/10F	8F/10F+Operational	$907	$1,917
I-8	SR 125	2nd St	6F/8F	6F/8F+Operational	$227	$480
				Subtotal	**$3,119**	**$6,591**

Freeway Connectors

Freeway	Intersecting Freeway	Movement	Cost ($2019); millions	Cost ($YOE); millions
I-5	SR 56	West to North and South to East	$371	$487
I-5	SR 78	South to East and West to South	$371	$487
I-15	SR 56	North to West	$104	$219
SR 94	SR 125	South to East	$94	$106
SR 94	SR 125	West to North	$110	$134
		Subtotal	**$1,050**	**$1,433**

Goods Movement

Year Built By	Air Cargo System Improvement	Cost ($2019) millions	Cost ($YOE) millions
2020	SDIA Interior Northside Roadway	$5	$5
2020	SDIA Air Cargo Facility Improvements for cargo storage and handling	$27	$27
	Subtotal	**$32**	**$32**
	TOTAL	**$34,507**	**$60,947**

Table A.5

Revenue Constrained and Unconstrained Projects[1] [A]

Transit Facilities

Service	Route	Description	Revenue Constrained Peak/Off-Peak (minutes)	Unconstrained Peak/Off-Peak (minutes)	Unconstrained Cost ($2019); millions
HSR	598	Commuter Rail Overlay (Temecula to Airport ITC)	NA	15/15	$462
HSR	--	Extension from Airport ITC to San Ysidro/ Otay Mesa	NA	15/60	$3,719
COASTER	398	Double tracking, grade separation at Leucadia Blvd and two other locations, stations/platforms at Convention Center/ Petco Park and Del Mar Fairgrounds, and extension to Gaslamp and Camp Pendleton	20/60	15/15	$8,204
COASTER	398	COASTER extension to National City	NA	15/15	$1,224
SPRINTER	399	SPRINTER efficiency improvements; double tracking Oceanside to Escondido; includes six rail grade separations at El Camino Real, Melrose Dr, Vista Village Dr/Main St, North Dr, Civic Center, Auto Pkwy and Mission Ave and a Branch Extension to Westfield North County[1]	10/10	7.5/7.5	$1,287
SPRINTER	588	SPRINTER Express	10/15	10/15	$332
Trolley	510	Mid-Coast Trolley Extension	7.5/7.5	7.5/7.5	$919
Trolley	510	Blue Line/Mid-Coast Frequency Enhancements and rail grade separations at 28th St, 32nd St, E St, H St, Palomar St, Taylor and Ash St, and Blue/Orange Track Connection at 12th/Imperial	7.5/7.5	7.5/7.5	$586
Trolley	520	Orange Line Frequency Enhancements and four rail grade separations at Euclid Ave, Broadway/Lemon Grove Ave, Allison Ave/University Ave, Severin Dr	7.5/7.5	7.5/7.5	$363
Trolley	522	Orange Line Express - El Cajon to San Diego International Airport Intermodal Transit Center (ITC)	NA	10/10	$269
Trolley	540	Blue Line Express - Santa Fe Depot to San Ysidro via Downtown	NA	10/10	$532
Trolley	550	SDSU to Palomar Station via East San Diego, Southeast San Diego, National City	NA	7.5/7.5	$2,152
Trolley	560	SDSU to Downtown San Diego via El Cajon Blvd/Mid-City (transition of Mid-City *Rapid* to Trolley)	7.5/7.5	7.5/7.5	$3251
Trolley	561	UTC COASTER Connection	7.5/7.5	7.5/7.5	$467
Trolley	561	COASTER Connection to Sorrento Mesa/Carroll Canyon (extension of Route 510)	NA	7.5/7.5	$1,121
Trolley	562	San Ysidro to Carmel Valley via Chula Vista, National City, Southeast San Diego, Mid-City, Mission Valley, and Kearny Mesa	7.5/10	7.5/7.5	$4,575

Table A.5 (continued)

Revenue Constrained and Unconstrained Projects

Transit Facilities (continued)

Service	Route	Description	Revenue Constrained Peak/Off-Peak (minutes)	Unconstrained Peak/Off-Peak (minutes)	Unconstrained Cost ($2019); millions
Trolley	562	San Ysidro to Carmel Valley via Chula Vista, National City, Southeast San Diego, Mid-City, Mission Valley, and Kearny Mesa	7.5/10	7.5/7.5	$4,575
Trolley	563	Pacific Beach to El Cajon Transit Center via Balboa and Kearny Mesa	7.5/10	7.5/7.5	$1,579
Trolley	564	Otay Mesa Border Crossing to Western Chula Vista via Otay Ranch/Millennia	NA	7.5/7.5	$1,362
Trolley	566	Palomar St Trolley Station to Carmel Valley via Mid-City, Kearny Mesa (Route 562 Express)	NA	10/10	$456
Trolley	510, 520, 540, 522 and 560	Downtown Trolley Tunnel	NA	7.5/7.5	$3,626
Rapid	2	North Park to Downtown San Diego via 30th St, Golden Hill	10/10	10/10	$54
Rapid	10	La Mesa to Ocean Beach via Mid-City, Hillcrest, Old Town	10/10	10/10	$57
Rapid	11	Spring Valley to SDSU via Southeast San Diego, Downtown, Hillcrest, Mid-City	10/10	10/10	$154
Rapid	28	Point Loma to Kearny Mesa via Old Town, Linda Vista	10/10	10/10	$67
Rapid	30	Old Town to Sorrento Mesa via Pacific Beach, La Jolla, UTC	10/10	10/10	$143
Rapid	41	Fashion Valley to UTC/UC San Diego via Linda Vista and Clairemont	10/10	10/10	$75
Rapid	90	El Cajon Transit Center to San Diego International Airport ITC via SR 94, City College (peak only)	15/NA	10/10	$27
Rapid	103	Solana Beach to Sabre Springs *Rapid* station via Carmel Valley	15/15	15/15	$91
Rapid	120	Kearny Mesa to Downtown via Mission Valley	10/10	10/10	$127
Rapid	235	Temecula (peak only) Extension of Escondido to Downtown *Rapid* (formerly Route 610)	10/NA	10/NA	$133
Rapid	430	Oceanside to Escondido (peak only)	NA	10/10	$326
Rapid	440	Carlsbad to Escondido Transit Center via Palomar Airport Rd	10/10	10/10	$140
Rapid	471	Downtown Escondido to East Escondido	10/10	10/10	$46
Rapid	473	UTC/UC San Diego to Oceanside via Hwy 101 Coastal Communities, Carmel Valley	10/10	10/10	$58
Rapid	474	Oceanside to Vista via Mission Ave/ Santa Fe Road Corridor	10/10	10/10	$99
Rapid	477	Camp Pendleton to Carlsbad Village via College Blvd, Plaza Camino Real	10/10	10/10	$109

Table A.5 (continued)

Revenue Constrained and Unconstrained Projects

Transit Facilities (continued)

Service	Route	Description	Revenue Constrained Peak/Off-Peak (minutes)	Unconstrained Peak/Off-Peak (minutes)	Unconstrained Cost ($2019); millions
Rapid	550	SDSU to Palomar Station via East San Diego, Southeast San Diego, National City[2]	10/10	NA	$112
Rapid	635	Eastlake to Palomar Trolley via Main St Corridor	10/10	10/10	$105
Rapid	636	SDSU to Spring Valley via East San Diego, Lemon Grove, Skyline	10/10	10/10	$53
Rapid	637	North Park to 32nd St Trolley via Golden Hill	10/10	10/10	$60
Rapid	638	Iris Trolley to Otay Mesa via Otay, Airway Dr, SR 905 Corridor	10/10	10/10	$52
Rapid	639	Iris Trolley Station to North Island via Imperial Beach and Silver Strand, Coronado	NA	10/10	$73
Rapid	640A/ 640B	Route 640A: I-5 - San Ysidro to Old Town Transit Center via City College Route 640B: I-5 Iris Trolley/Palomar to Kearny Mesa via City College	640A = 10/15 640B=15/NA	640A = 10/15 640B=15/NA	$208
Rapid	650	Chula Vista to Palomar Airport Rd Business Park via I-805/I-5 (peak only)	15/NA	15/NA	$112
Rapid	652	Downtown to UTC via Kearny Mesa Guideway/I-805	NA	10/10	$4
Rapid	653	Mid-City to Palomar Airport Rd via Kearny Mesa/I-805/I-5	15/NA	15/NA	$14
Rapid	688/ 689/ 690	San Ysidro to Sorrento Mesa via I-805/I-15/SR 52 Corridors; Otay Mesa Port of Entry (POE) to UTC/Torrey Pines via Otay Ranch/Millennia, I-805 Corridor; Mid City to Sorrento Mesa via I-805 Corridor. All Peak Only	15/NA	15/NA (no Rt 690)	$623
Rapid	692	Grossmont Center to Otay Town Center/Millennia via Southwest College, SR125, Spring Valley	NA	10/10	$7
Rapid	709	H St Trolley to Millennia via H St Corridor, Southwestern College	10/10	10/10	$89
Rapid	870	El Cajon to UTC via Santee, SR 52, I-805	10/NA	10/15	$10
Rapid	890	El Cajon to Sorrento Mesa via SR 52, Kearny Mesa	10/NA	10/NA	$16
Rapid	950 (formerly 905)	Extension of Iris Trolley Station to Otay Mesa Port of Entry (POE) with new service to Imperial Beach	10/10	10/10	$3
Rapid	910	Coronado to Downtown via Coronado Bridge	10/10	10/10	$54
Rapid	940	Oceanside to Sorrento Mesa via I-5, Carlsbad, Encinitas (peak only)	NA	10/0	$53

Table A.5 (continued)

Revenue Constrained and Unconstrained Projects

Transit Facilities (continued)

Service	Route	Description	Revenue Constrained Peak/Off-Peak (minutes)	Unconstrained Peak/Off-Peak (minutes)	Unconstrained Cost ($2019); millions
Rapid	SR 163 DARs	Kearny Mesa to Downtown via SR 163. Stations at Sharp/Children's Hospital, University Ave, and Fashion Valley Transit Center	✓	✓	204
Shuttle	448/449	San Marcos Shuttle[3]	10/10	10/10	$0
Streetcar	551	Chula Vista Downtown[4]	NA	10/10	$19
Streetcar	552	National City Downtown[4]	NA	10/10	$56
Streetcar	553	Downtown San Diego: Little Italy to East Village[4]	10/10	10/10	$15
Streetcar	554	Hillcrest/Balboa Park/Downtown San Diego Loop[4]	10/10	10/10	$39
Streetcar	555	30th St to Downtown San Diego via North Park/Golden Hill[4]	10/10	10/10	$23
Streetcar	557	El Cajon Downtown[4]	NA	10/10	$22
Streetcar	558	Escondido Downtown[4]	NA	10/10	$69
Streetcar	559	Oceanside Downtown[4]	NA	10/10	$63
Streetcar	565	Mission Beach to La Jolla via Pacific Beach[4]	10/10	10/10	$34
Airport Express	-	Airport Express Routes[5]	30/30	30/30	$71
Local	-	Local Bus Routes - 15 minutes in key corridors	15/15	15/15	NA
Local	-	Local Bus Routes - 10 minutes in key corridors	10/10	10/10	NA
Intermodal Transit Center	-	San Diego International Airport Intermodal Transit Center	✓	✓	$231
Intermodal Transit Center	-	San Ysidro Intermodal Transit Center	✓	✓	$161
Intermodal Transit Center	-	Otay Mesa East Intermodal Transit Center	NA	✓	$0
Other	-	Other Improvements (Vehicles, transit system rehabilitation, maintenance facilities, ITS, regulatory compliance, park and ride, and transit center expansions)	✓	✓	$7,317
				Subtotal	**$48,164**

Table A.5 (continued)

Revenue Constrained and Unconstrained Projects

Managed Lanes / Toll Lanes / Highway Projects / Operational Improvements

Freeway	From	To	Existing or Planned Phase	Revenue Constrained	Unconstrained	Unconstrained Cost ($2019) millions
I-5	SR 905	SR 54	8F	8F+2ML	8F+2ML	$542
I-5	SR 54	SR 15	8F	10F+2ML	10F+2ML	$467
I-5	I-15	I-8	8F	8F+Operational	8F+Operational	$1985
I-5	I-8	La Jolla Village Dr	8F/10F	8F/10F+2ML	8F/10F+2ML	$978
I-5	La Jolla Village Dr	I-5/805 Merge	8F/14F	8F/14F+2ML+conn	8F/14F+2ML+conn	$422
I-5	I-5/I-805 Merge	SR 56	8F/14F +2ML	8F/14F+4ML	8F/14F+4ML	
I-5	SR 56	Manchester Ave	8F+2ML	8F+4ML	8F+4ML	$2881
I-5	Manchester Ave	Vandegrift Blvd	8F	8F+4ML	8F+4ML	
I-5	Vandegrift Blvd	Orange County	8F	8F+4T	8F+4T	$3,165
I-8	I-5	SR 125	8F/10F	8F/10F+ Operational	8F/10F+ Operational	$907
I-8	SR 125	2nd St	6F/8F	6F/8F+ Operational	6F/8F+Operational	$227
I-8	2nd St	Los Coches	4F/6F	6F	6F	$44
I-8	Los Coches	Dunbar Rd[6]	4F/6F	4F/6F	6F	$178
SR 11/ Otay Mesa East POE	SR 125	Mexico	--	4T + POE	4T + POE	$472
SR 15	I-5	SR 94	6F	8F+2ML	8F+2ML	$185
SR 15	SR 94	I-805	6F	6F+2ML	6F+2ML	$41
I-15	Viaduct		8F	8F+2ML	8F+2ML	$1040
I-15	I-8	SR 163	8F	8F+2ML	8F+2ML	$64
I-15	Centre City Pkwy	SR 78	8F/10F+4ML	8F/10F+4ML	10F+4ML	$316
I-15	SR 78	Riverside County	8F	8F+4T	8F+4T	$1,744
SR 52	I-5	I-805	4F	6F	6F	$151
SR 52	I-805	I-15	6F	6F+2ML+Conn.	6F+2ML+Conn.	$238
SR 52	I-15	SR 125[6]	6F	6F+2ML(R)	6F+3ML(R)	$516
SR 52	Mast Blvd	SR 125	4F	6F	6F	$103
SR 52	SR 125	SR 67[6]	4F	4F	6F	$344
SR 54	I-5	SR 125[6]	6F	6F+2ML	6F/8F+2ML	$313
SR 56	I-5	I-15	4F	6F	6F +2ML	$1,084
SR 67	I-8	Mapleview St[6]	4F/6F	4F/6F	6F/8F	$192

Table A.5 (continued)

Revenue Constrained and Unconstrained Projects

Managed Lanes / Toll Lanes / Highway Projects / Operational Improvements (continued)

Freeway	From	To	Existing or Planned Phase	Revenue Constrained	Unconstrained	Unconstrained Cost ($2019) millions
SR 67	Mapleview St	Dye Rd	2C/4C	4C	4C	$673
SR 76	I-5	Melrose	4E	4E	6E	$316
SR 76	I-15	Couser Canyon	2C/4C	4C/6C+ Operational	4C/6C+ Operational	$178
SR 76	Couser Canyon	SR 79	2C	2C	2C+Operational	$861
SR 78	I-5	I-15	6F	6F+2ML+ Operational	6F+2ML+ Operational	$1,621
SR 94	I-5	I-805	8F	8F+2ML	8F+2ML	$728
SR 94	I-805	College Ave[6]	8F	8F+2ML	8F/10F+2ML	$673
SR 94	College Ave	SR 125	8F	8F+2ML	8F+2ML	$234
SR 94	SR 125	Avocado Blvd	4F	6F	6F	$190
SR 94	Avocado Blvd	Jamacha	4C	6C	6C	$124
SR 94	Jamacha	Steele Canyon Rd	2C/4C	4C	6C	$54
SR 125	SR 905	San Miguel Rd	4T	8F	8F	$439
SR 125	San Miguel Rd	SR 54	4F	8F	8F	$241
SR 125	SR 54	SR 94[6]	6F	6F+2ML	8F+2ML	$199
SR 125	SR 94	I-8	8F	10F+2ML	10F+2ML	$399
SR 125	I-8	SR 52[6]	6F	6F	6F+2ML	$358
SR 163	I-805	I-15	8F	8F	8F+2ML	$453
SR 241	Orange County	I-5	--	--	6T	$652
I-805	SR 905	Palomar St	8F	8F+2ML	8F+2ML	$235
I-805	SR 54	SR 94	8F +2ML	8F+4ML	8F+4ML	$742
I-805	SR 94	Carroll Canyon Rd	8F	8F+4ML	8F+4ML	$3,295
SR 905	I-5	I-805[6]	4F	4F	8F	$214
SR 905	I-805	Mexico[6]	6F	6F	8F	$275
					Subtotal	**$31,753**

Managed Lanes Connectors

Freeway	Intersecting Freeway	Movement	Revenue Constrained	Unconstrained	Unconstrained Cost ($2019) millions
I-5	SR 15	North to North and South to South		✓	$268
I-5	SR 54	West to South and North to East		✓	$165
I-5	SR 54	South to East and West to North		✓	$165
I-5	SR 56	South to East and West to North		✓	$241
I-5	SR 56	North to East and West to South		✓	$207

Table A.5 (continued)

Revenue Constrained and Unconstrained Projects

Managed Lanes Connectors (continued)

Freeway	Intersecting Freeway	Movement	Revenue Constrained	Unconstrained	Unconstrained Cost ($2019) millions
I-5	SR 78	South to East and West to North, North to East and West to South	✓	✓	$344
I-5	I-805	North to North and South to South	✓	✓	*
I-15	SR 52	West to North and South to East	✓	✓	$177
I-15	SR 52	West to South and North to East		✓	$192
I-15	SR 56	East to North and South to West		✓	$234
I-15	SR 78	East to South and North to West	✓	✓	$144
I-15	SR 163	North to North and South to South		✓	$220
SR 15	SR 94	South to West and East to North	✓	✓	$97
SR 15	I-805	North to North and South to South	✓	✓	$110
SR 52	SR 125	North to West and East to South		✓	$151
SR 94	SR 125	East to North and South to West		✓	$199
I-805	SR 52	West to North and South to East	✓	✓	*
I-805	SR 54	North to West and East to South		✓	$214
I-805	SR 94	North to West and East to South	✓	✓	$137
I-805	SR 94	West to South and North to East		✓	$295
I-805	SR 94	East to North and South to East		✓	$288
I-805	SR 163	North to North and South to South		✓	$261
				Subtotal	**$4,109**

Freeway Connectors

Freeway	Intersecting Freeway	Movement	Revenue Constrained	Unconstrained	Unconstrained Costs ($2019) millions
I-5	I-8	East to North and South to West[7]		✓	$439
I-5	SR 56	West to North and South to East	✓	✓	$371
I-5	SR 78	South to East and West to South	✓	✓	$371
I-5	SR 94	North to East[7]		✓	$178
I-15	SR 56	North to West	✓	✓	$104
SR 94	SR 125	South to East and West to North	✓	✓	$204
SR 11/ SR 905	SR 125	EB SR 11 and WB SR 11 to NB SR 125, NB SR 905 to NB SR 125	✓	✓	$35
SR 11/ SR 905	SR 125	SB 125 to WB SR 905, SB SR 125 to EB SR 11, SB SR 125 to SB SR 905	✓	✓	$101
				Subtotal	**$1,803**

Table A.5 (continued)

Revenue Constrained and Unconstrained Projects

Maritime System Improvements	Revenue Constrained	Unconstrained	Unconstrained Costs ($2019) millions
Goods Movement			
Tenth Ave Marine Terminal (TAMT) Marine Cargo Staging and Handling Projects, including but not limited to: enhanced open storage, shed demolition, cargo handling infrastructure improvements, wharf reinforcements, additional crane, on-dock shorepower, improvements to facilitate "marine highway" cargo, and front gate technology enhancements.[8]		✓	$120
TAMT Freight Rail Improvements, including but not limited to: track upgrades and increased staging area for rail cargo and loading[8]		✓	$38
National City Marine Terminal (NCMT) Marine Cargo Staging and Handling Projects, including but not limited to: construct garages for additional roll-on/roll-off cargo storage, wharf extension to create two new berths, and improvements to facilitate "marine highway" cargo.[8]		✓	$129
NCMT Freight Rail Improvements, including but not limited to: additional rail storage facilities in the vicinity of the balloon track.[8]		✓	$4
Harbor Dr Multimodal Corridor Improvements, including but not limited to: improvements at 32nd St and Vesta St; pedestrian crossings and bridges; various truck improvements; bikeway accommodations; streetscape, safety, and parking improvements.[8]		✓	$371
Rail Mainline Capacity			
Desert Line Basic Service, Rehabilitation[9]		✓	$248
Rail Intermodal System Improvements			
Logistics Center Mid County[8]		✓	$2,897
Logistics Center North County[8]		✓	$226
Rail Safety, Tunnels			
LOSSAN Grade Separations (locations TBD)		✓	$354
Pipeline			
I-15 Access to Kinder Morgan (KM) MV Terminal[8]		✓	NA
KM, New Miramar Junction/Terminal/Tanks[9]		✓	NA
KM Expand to 16 Pipe/Extend to Mexico[9]		✓	NA
Border System Improvements			
Otay Mesa Southbound Truck Route Improvements[9]		✓	$48
Jacumba Port of Entry (POE)[9]		✓	NA
Otay Mesa Port of Entry Modernization Project[9]		✓	$86
Truck Rest Stop			
Truck parking at SR 76/I-15[8]		✓	$19
Truck staging at border[8]		✓	$41
Truck rest stop with restrooms, location TBD[8]		✓	NA

Table A.5 (continued)

Revenue Constrained and Unconstrained Projects

Goods Movement (continued)

Maritime System Improvements	Revenue Constrained	Unconstrained	Unconstrained Costs ($2019) millions
Mexican Freight Projects			
Mesa de Otay II Port of Entry and Related Roads[8]		✓	NA
Tijuana Intermodal Terminal/Distribution Center[9]		✓	NA
Ensenada Port Expansion[9]		✓	NA
Mexican Rail Yard Bicentennial Multi-modal Center in Tijuana[9]		✓	NA
Jacumé Port of Entry (POE)[9]		✓	NA
Expansion of Tecate Port of Entry Cargo Inspection Facility[9]		✓	NA
Tijuana-Tecate Rail Line Improvements[9]		✓	$27
		Subtotal	**$4,608**

Table A.5 (continued)

Revenue Constrained and Unconstrained Projects

Active Transportation Projects

Project	Jurisdiction(s)	Revenue Constrained	Unconstrained	Unconstrained Cost ($2019) millions
Uptown - Fashion Valley to Downtown San Diego	San Diego	✓	✓	$13.0
Uptown - Old Town to Hillcrest	San Diego	✓	✓	$1.0
Uptown - Hillcrest to Balboa Park	San Diego	✓	✓	$2.0
North Park - Mid-City - City Heights	San Diego	✓	✓	$7.0
North Park - Mid-City - Hillcrest to City Heights (City Heights - Old Town Corridor)	San Diego	✓	✓	$5.0
North Park - Mid-City - City Heights to Rolando	San Diego	✓	✓	$3.0
Bayshore Bikeway - Main St to Palomar	Chula Vista/ Imperial Beach	✓	✓	$1.0
Coastal Rail Trail Encinitas - Chesterfield to Solana Beach	Encinitas	✓	✓	$4.8
Pershing and El Prado - Cross-Park	San Diego	✓	✓	$1.0
San Ysidro to Imperial Beach - Bayshore Bikeway Connection	Imperial Beach/ San Diego	✓	✓	$8.0
Terrace Dr/Central Ave - Adams to Wightman	San Diego	✓	✓	$4.0
San Diego River Trail – I-805 to Fenton	San Diego	✓	✓	$3.0
San Diego River Trail - Short gap connections	San Diego	✓	✓	$2.0
Coastal Rail Trail Encinitas - Leucadia to G St	Encinitas	✓	✓	$7.0
San Diego River Trail - Father Junipero Serra Trail to Santee	Santee	✓	✓	$9.5
Downtown to Southeast connections	San Diego	✓	✓	$8.8
Coastal Rail Trail San Diego - UTC	San Diego	✓	✓	$0.8
Coastal Rail Trail San Diego - Rose Canyon	San Diego	✓	✓	$8.7
Coastal Rail Trail San Diego - Pac Hwy (W Washington St to Laurel St)	San Diego	✓	✓	$7.0
Coastal Rail Trail San Diego - Pac Hwy (Laurel St to Santa Fe Depot)	San Diego	✓	✓	$13.9
Coastal Rail Trail San Diego – Pac Hwy (Taylor St to W Washington St)	San Diego	✓	✓	$7.0
Coastal Rail Trail San Diego- Pac Hwy (Fiesta Island Rd to Taylor St)	San Diego	✓	✓	$12.2
City Heights /Encanto/Lemon Grove	Lemon Grove/ San Diego	✓	✓	$12.2
City Heights/Fairmount Corridor	San Diego	✓	✓	$20.9
Rolando to Grossmont/La Mesa	La Mesa/El Cajon/ San Diego	✓	✓	$3.5
La Mesa/Lemon Grove/El Cajon connections	Lemon Grove/ La Mesa	✓	✓	$10.4

Table A.5 (continued)

Revenue Constrained and Unconstrained Projects

Active Transportation Projects (continued)

Project	Jurisdiction(s)	Revenue Constrained	Unconstrained	Unconstrained Cost ($2019) millions
San Diego River Trail - Qualcomm Stadium to Ward Rd	San Diego	✓	✓	$3.5
San Diego River Trail - Rancho Mission Rd to Camino Del Rio North	San Diego	✓	✓	$0.5
Coastal Rail Trail Carlsbad - Reach 4 Cannon to Palomar Airport Rd	Carlsbad	✓	✓	$8.7
Coastal Rail Trail Carlsbad - Reach 5 Palomar Airport Rd to Poinsettia Station	Carlsbad	✓	✓	$5.2
Coastal Rail Trail Encinitas - Carlsbad to Leucadia	Encinitas	✓	✓	$12.2
Coastal Rail Trail Del Mar	Del Mar	✓	✓	$0.7
Coastal Rail Trail San Diego - Del Mar to Sorrento via Carmel Valley	Del Mar/ San Diego	✓	✓	$0.7
Coastal Rail Trail San Diego - Carmel Valley to Roselle via Sorrento	San Diego	✓	✓	$1.6
Coastal Rail Trail San Diego - Roselle Canyon	San Diego	✓	✓	$8.7
Chula Vista National City connections	Chula Vista/ National City	✓	✓	$19.1
Pacific Beach to Mission Beach	San Diego	✓	✓	$17.4
Ocean Beach to Mission Bay	San Diego	✓	✓	$41.8
San Diego River Trail - Bridge connection (Sefton Field to Mission Valley YMCA)	San Diego	✓	✓	$12.2
San Diego River Trail - Mast Park to Lakeside baseball park	Santee	✓	✓	$17.4
I-8 Flyover - Camino del Rio S to Camino del Rio N	San Diego	✓	✓	$17.4
Coastal Rail Trail Oceanside - Broadway to Eaton	Oceanside	✓	✓	$0.7
El Cajon - Santee connections	El Cajon/ La Mesa/Santee	✓	✓	$20.9
San Diego River Trail - Father JS Trail to West Hills Parkway	San Diego	✓	✓	$5.2
Inland Rail Trail Oceanside	Oceanside	✓	✓	$33.1
Coastal Rail Trail Carlsbad - Reach 3 Tamarack to Cannon	Carlsbad	✓	✓	$8.7
Clairemont Dr (Mission Bay to Burgener)	San Diego	✓	✓	$13.9
Harbor Dr (Downtown to Ocean Beach)	San Diego	✓	✓	$12.2
Mira Mesa Bike Blvd	San Diego	✓	✓	$7.0
Sweetwater River Bikeway Ramps	National City	✓	✓	$15.7
Coastal Rail Trail Oceanside - Alta Loma Marsh bridge	Oceanside	✓	✓	$8.7
Coastal Rail Trail San Diego - Mission Bay (Clairemont to Tecolote)	San Diego	✓	✓	$5.2
Bayshore Bikeway Coronado - Golf course adjacent	Coronado	✓	✓	$5.2

Table A.5 (continued)

Revenue Constrained and Unconstrained Projects

Active Transportation Projects (continued)

Project	Jurisdiction(s)	Revenue Constrained	Unconstrained	Unconstrained Cost ($2019) millions
San Luis Rey River Trail	Oceanside, Unincorporated	✓	✓	$64.4
Encinitas-San Marcos Corridor – Double Peak Dr to San Marcos Blvd	San Marcos	✓	✓	$20.9
Escondido Creek Bikeway – Quince St to Broadway	Escondido	✓	✓	$3.5
Escondido Creek Bikeway – Escondido Creek to Washington Ave	Escondido	✓	✓	$1.7
Escondido Creek Bikeway – 9th Ave to Escondido Creek	Escondido	✓	✓	$1.7
Escondido Creek Bikeway – El Norte Pkwy to northern bikeway terminus	Escondido	✓	✓	$10.4
Encinitas to San Marcos Corridor – Leucadia Blvd to El Camino Real	Carlsbad, Encinitas	✓	✓	$3.5
I-15 Bikeway – Via Rancho Pkwy to Lost Oak Ln	Escondido	✓	✓	$7.0
I-15 Bikeway – Rancho Bernardo Community Park to Lake Hodges Bridge	San Diego	✓	✓	$5.2
I-15 Bikeway – Camino del Norte to Aguamiel Rd	San Diego	✓	✓	$22.6
I-15 Bikeway – Poway Rd interchange to Carmel Mountain Rd	San Diego	✓	✓	$29.6
SR 56 Bikeway – Azuaga St to Rancho Penasquitos Blvd	San Diego	✓	✓	$3.5
I-15 Bikeway – Murphy Canyon Rd to Affinity Ct	San Diego	✓	✓	$69.6
SR 56 Bikeway – El Camino Real to Caminito Pointe	San Diego	✓	✓	$3.5
SR 52 Bikeway – I-5 to Santo Rd	San Diego	✓	✓	$52.2
SR 52 Bikeway – SR 52/Mast Dr to San Diego River Trail	San Diego	✓	✓	$3.5
I-8 Corridor – San Diego River Trail to Riverside Dr	Unincorporated	✓	✓	$3.5
I-805 Connector – Bonita Rd to Floyd Ave	Chula Vista, Unincorporated	✓	✓	$10.5
SR 125 Connector – Bonita Rd to U.S.-Mexico Border	Chula Vista, San Diego	✓	✓	$67.9
SR 905 Connector – E Beyer Blvd to U.S.-Mexico Border	San Diego, Unincorporated	✓	✓	$59.2
El Camino Real Bike Lanes – Douglas Dr to Mesa Dr	Oceanside	✓	✓	$1.7
Vista Way Connector from Arcadia	Vista, Unincorporated	✓	✓	$3.7
I-15 Bikeway – W. Country Club Ln to Nutmeg St	Escondido	✓	✓	$7.0
El Camino Real Bike Lanes – Marron Rd to SR 78 offramp	Carlsbad	✓	✓	$0.5
Carlsbad to San Marcos Corridor – Paseo del Norte to Avenida Encinas	Carlsbad	✓	✓	$0.7

Table A.5 (continued)

Revenue Constrained and Unconstrained Projects

Active Transportation Projects (continued)

Project	Jurisdiction(s)	Revenue Constrained	Unconstrained	Unconstrained Cost ($2019) millions
Encinitas to San Marcos Corridor – Kristen Ct to Ecke Ranch Rd	Encinitas	✓	✓	$0.7
Encinitas to San Marcos Corridor – Encinitas Blvd/ I-5 Interchange	Encinitas	✓	✓	$0.3
Mira Mesa Corridor – Reagan Rd to Parkdale Ave	San Diego	✓	✓	$0.7
Mira Mesa Corridor – Scranton Rd to I-805	San Diego	✓	✓	$0.7
Mira Mesa Corridor – Sorrento Valley Rd to Sorrento Valley Blvd	San Diego	✓	✓	$1.4
Mid-County Bikeway – I-5/Via de la Valle Interchange	San Diego	✓	✓	$0.5
Mid-County Bikeway – Rancho Santa Fe segment	San Diego, Unincorporated	✓	✓	$5.2
El Camino Real Bike Lanes – Manchester Ave to Tennis Club Dr	Encinitas	✓	✓	$0.9
Mid-County Bikeway – Manchester Ave/ I-5 Interchange to San Elijo Ave	Encinitas	✓	✓	$1.4
Central Coast Corridor – Van Nuys St to San Rafael Pl	San Diego	✓	✓	$1.7
Clairemont – Centre-City Corridor – Coastal Rail Trail to Genesee Ave	San Diego	✓	✓	$3.5
SR 125 Corridor – Mission Gorge Rd to Glen Vista Way	Santee	✓	✓	$0.5
SR 125 Corridor – Prospect Ave to Weld Blvd	Santee, El Cajon	✓	✓	$1.4
I-8 Corridor – Lakeside Ave to SR 67	Unincorporated	✓	✓	$0.9
I-8 Corridor – Willows Rd to SR 79	Unincorporated	✓	✓	$8.7
E County Northern Loop – N Marshall Ave to El Cajon Blvd	El Cajon	✓	✓	$0.5
E County Northern Loop – Washington Ave to Dewitt Ct	El Cajon	✓	✓	$1.7
E County Northern Loop – SR 94 onramp to Del Rio Rd	Unincorporated	✓	✓	$0.3
E County Southern Loop – Pointe Pkwy to Omega St	Unincorporated	✓	✓	$1.4
SR 125 Corridor – SR 94 to S of Avocado St	Unincorporated	✓	✓	$1.9
Centre City – La Mesa Corridor – Gateside Rd to Campo Rd	La Mesa, Unincorporated	✓	✓	$0.7
Bay to Ranch Bikeway – River Ash Dr to Paseo Ranchero	Chula Vista	✓	✓	$0.9
Mid-County Bikeway – San Elijo Ave to 101 Terminus	Encinitas	✓	✓	$1.7
Central Coast Corridor – Van Nuys St	San Diego	✓	✓	$0.3
E County Northern Loop – El Cajon Blvd to Washington Ave	El Cajon	✓	✓	$1.7

Table A.5 (continued)

Revenue Constrained and Unconstrained Projects

Active Transportation Projects (continued)

Project	Jurisdiction(s)	Revenue Constrained	Unconstrained	Unconstrained Cost ($2019) millions
E County Northern Loop – Calavo Dr to Sweetwater Springs Blvd	Unincorporated	✓	✓	$1.2
Central Coast Corridor – Torrey Pines Rd to Nautilus St	San Diego	✓	✓	$10.4
Central Coast Corridor – Via Del Norte to Van Nuys St	San Diego	✓	✓	$8.7
Kearny Mesa to Beaches Corridor – Ingraham St from Garnet Ave to Pacific Beach Dr	San Diego	✓	✓	$3.5
Kearny Mesa to Beaches Corridor – Clairemont Dr to Genesee Ave	San Diego	✓	✓	$17.4
Kearny Mesa to Beaches Corridor – Genesee Ave to Linda Vista Dr	San Diego	✓	✓	$10.4
Bay to Ranch Bikeway – E J St from 2nd Ave to Paseo Del Rey	Chula Vista	✓	✓	$20.9
Chula Vista Greenbelt – Bay Blvd to Oleander Ave	Chula Vista	✓	✓	$29.6
Safe Routes to Transit	Various	✓	✓	$1,230.1
Local Bike Projects/Local Pedestrian/Safety/Traffic Calming	Various	✓	✓	$1,399.4
Regional Bicycle and Pedestrian Programs	Various	✓	✓	$34.3
Safe Routes to School	Various	✓	✓	$77.7
			Subtotal	**$3,821**

Active Transportation Retrofits - Safe Routes to Transit at Existing Stations

Project	Jurisdiction(s)	Revenue Constrained	Unconstrained	Unconstrained Cost ($2019) millions
Plaza Camino Real Transit Center	Carlsbad		✓	
El Camino Real at Cannon/College	Carlsbad		✓	
Carlsbad Poinsettia COASTER Station	Carlsbad		✓	
Carlsbad Village COASTER Station	Carlsbad		✓	
E St Trolley Station	Chula Vista		✓	
Old Highway 80 between El Cajon and Alpine	County - Fallbrook		✓	

Table A.5 (continued)

Revenue Constrained and Unconstrained Projects

Active Transportation Retrofits - Safe Routes to Transit at Existing Stations (continued)

Project	Jurisdiction(s)	Revenue Constrained	Unconstrained	Unconstrained Cost ($2019) millions
Fallbrook High School	County - Fallbrook		✓	
WB Jamacha Blvd at Sweetwater Springs Blvd	County - Spring Valley		✓	
Jamacha Blvd at Lamplighter Village Dr	County - Spring Valley		✓	
SB Sweetwater Rd at Troy St	County - Spring Valley		✓	
Sweetwater Rd between Jamacha Blvd and Broadway	County - Spring Valley		✓	
Buena Creek SPRINTER Station	County of San Diego		✓	
Encinitas COASTER Station	Encinitas		✓	
Encinitas pedestrian undercrossing connections	Encinitas		✓	
Escondido Transit Center	Escondido		✓	
Del Lago Transit Station	Escondido		✓	
Amaya Trolley Station	La Mesa		✓	
70th St Trolley Station	La Mesa		✓	
National City Blvd and E 32nd St/W 33rd St	National City		✓	
Oceanside Transit Center	Oceanside		✓	
Coast Highway SPRINTER Station	Oceanside		✓	
Crouch St SPRINTER Station	Oceanside		✓	
El Camino Real SPRINTER Station	Oceanside		✓	
Rancho Del Oro SPRINTER Station	Oceanside		✓	
College Blvd SPRINTER Station	Oceanside		✓	
Oceanside High School	Oceanside		✓	
San Luis Rey Transit Center	Oceanside		✓	
Tri-City Medical Center	Oceanside		✓	
32nd and Commercial Trolley Station	San Diego - Barrio Logan		✓	
Euclid Ave between Home Ave and Roselawn Ave	San Diego - City Heights		✓	
Alvarado Trolley Station	San Diego - College Area		✓	
70th St between El Cajon Blvd and Alvarado Rd	San Diego - College Area		✓	
12th and Imperial Transit Center	San Diego - Downtown		✓	

Table A.5 (continued)

Revenue Constrained and Unconstrained Projects

Active Transportation Retrofits - Safe Routes to Transit at Existing Stations (continued)

Project	Jurisdiction(s)	Revenue Constrained	Unconstrained	Unconstrained Cost ($2019) millions
Harbor Dr Pedestrian Bridge	San Diego - Downtown		✓	
Harborside Trolley Station	San Diego - Harborside		✓	
Pacific Fleet Trolley Station	San Diego - Harborside		✓	
Washington St at Hancock St/I-5 Overcrossing	San Diego - Mission Hills		✓	
WB Hotel Circle S. at Bachman Pl	San Diego - Mission Valley		✓	
Fenton Parkway Trolley Station	San Diego - Mission Valley		✓	
Grantville Trolley Station	San Diego - Mission Valley		✓	
Morena/Linda Vista Trolley Station	San Diego - Mission Valley		✓	
54th St between Euclid Ave and Chollas Pkwy	San Diego - Oak Park		✓	
EB Airway Rd at Dublin Dr	San Diego - Otay Mesa		✓	
EB Airway Rd at Excellante St (Southwestern College)	San Diego - Otay Mesa		✓	
La Media Rd at Airway Rd	San Diego - Otay Mesa		✓	
WB Siempre Vida Rd at La Media Rd	San Diego - Otay Mesa		✓	
SB Hollister St at Conifer Ave (Palm St Trolley Station)	San Diego - Palm City		✓	
NB S. Vista Ave at Beyer Blvd Trolley Station	San Diego - San Ysidro		✓	
Calle Primera between Willow Rd and Via de San Ysidro	San Diego - San Ysidro		✓	
Sorrento Valley COASTER Station	San Diego - Sorrento Valley		✓	
SB Gilman Dr at Villa La Jolla Dr	San Diego - University City		✓	
EB Eastgate Mall between I-805 and Miramar Rd	San Diego - University City		✓	
Palomar College SPRINTER Station	San Marcos		✓	
San Marcos Civic Center SPRINTER Station	San Marcos		✓	
Cal State San Marcos SPRINTER Station	San Marcos		✓	
Nordahl Rd SPRINTER Station	San Marcos		✓	

Table A.5 (continued)

Revenue Constrained and Unconstrained Projects

Active Transportation Retrofits - Safe Routes to Transit at Existing Stations (continued)

Project	Jurisdiction(s)	Revenue Constrained	Unconstrained	Unconstrained Cost ($2019) millions
Rancheros Dr/State Department of Rehabilitation	San Marcos		✓	
Solana Beach COASTER Station	Solana Beach		✓	
Melrose Dr SPRINTER Station	Vista		✓	
Vista Transit Center	Vista		✓	
Civic Center-Vista SPRINTER Station	Vista		✓	
Sweetwater Rd between Jamacha Blvd and Broadway	County - Spring Valley		✓	
			Subtotal	**$558**[10]

Active Transportation Retrofits - Bicycle/Pedestrian Improvements at Freeway Interchanges

Project	Jurisdiction(s)	Revenue Constrained	Unconstrained	Unconstrained Cost ($2019) millions
Navajo Rd at SR 125	El Cajon		✓	
Fletcher Parkway/Graves Rd at SR 67	El Cajon		✓	
West Bernardo / Pomerado Rd at I-15	San Diego		✓	
Rancho Bernardo Rd at I-15	San Diego		✓	
Bernardo Center Dr at I-15	San Diego		✓	
Balboa Ave at SR 163	San Diego		✓	
Friars Rd at SR 163	San Diego		✓	
Quince St at SR 163	San Diego		✓	
6th St / University Ave at SR 163	San Diego		✓	
Washington St at SR 163	San Diego		✓	
Richmond St at SR 163	San Diego		✓	
SR 905 / Tocayo Ave at I-5	San Diego		✓	
Dairy Mart Rd / San Ysidro Rd at I-5	San Diego		✓	
Via De San Ysidro at I-5	San Diego		✓	
Camino De La Plaza at I-5, I-805	San Diego		✓	
West Mission Bay Dr at I-8	San Diego		✓	
E San Ysidro Blvd at I-805	San Diego		✓	
SR 905 at I-805	San Diego		✓	
Picador Blvd/ Smythe Ave at SR 905	San Diego		✓	
Camino Del Rio West at I-5 NB/I-8 EB	San Diego		✓	
Camino Del Rio West at I-5 SB	San Diego		✓	
Winter Gardens Blvd at SR 67	San Diego County		✓	

Table A.5 (continued)

Revenue Constrained and Unconstrained Projects

Active Transportation Retrofits - Bicycle/Pedestrian Improvements at Freeway Interchanges (continued)

Project	Jurisdiction(s)	Revenue Constrained	Unconstrained	Unconstrained Cost ($2019) millions
Riverford Rd at SR 67	San Diego County		✓	
Bradley Ave at SR 67	San Diego County		✓	
Tavern Rd at I-8	San Diego County		✓	
Willows Rd at I-8	San Diego County		✓	
Japatul Valley Rd at I-8	San Diego County		✓	
Sunrise Highway at I-8	San Diego County		✓	
Pine Valley Rd at I-8	San Diego County		✓	
Buckman Springs Rd at I-8	San Diego County		✓	
Kitchen Creek Rd at I-8	San Diego County		✓	
Crestwood Rd at I-8	San Diego County		✓	
Campo Blvd at I-8	San Diego County		✓	
Jacumba at I-8	San Diego County		✓	
In-Ko-Pah Park Rd at I-8	San Diego County		✓	
Magnolia Ave at SR 52	Santee		✓	
Prospect Ave at SR 67	Santee		✓	
			Subtotal	**$62**[11]
			Subtotal Active Transportation	**$4,441**
			TOTAL	**$94,878**

[1] Unconstrained rail facilities (shared use freight and passengers)

[2] *Rapid* Route 550 appeared only as a Trolley route in the Unconstrained Network

[3] Capital cost to be funded by the City of San Marcos

[4] Streetcar cost is representative of 10 percent of the total capital cost

[5] Capital cost to be funded by aviation and other private funds

[6] Unconstrained Managed Lanes/Highway (shared use freight and passengers)

[7] Unconstrained Freeway Connectors (shared use freight and passengers)

[8] Projects that require innovative financing strategies which require development with multiple parties

[9] Projects of interest to SANDAG; to be financed by other parties

[10] The subtotal reflects estimated Safe Routes to Transit Retrofit project costs ranging from $186,000 to $7.5 million per stop area or station area

[11] The subtotal reflects estimated Freeway Interchange Retrofit project costs ranging from $500,000 to $3 million per interchange

[A] Projects included in the Unconstrained transportation network show a check mark in the Unconstrained column. Projects which are included in the Revenue Constrained network show check marks in both the Revenue Constrained and Unconstrained columns. Between both networks, for Transit Facilities, some projects show different service frequencies. For Managed Lanes/ Toll Lanes/Highway Projects/Operational Improvements, some projects show different number of lanes between the Constrained and Unconstrained networks.

Table A.6

No-Build Projects

Transit Services

Route #	Description	Note
225	South Bay *Rapid* Otay Mesa to Downtown	In Service
398	LOSSAN Double Tracking (selected segments)	Under Construction
510	Mid-Coast LRT Old Town to University Towne Center	Under Construction

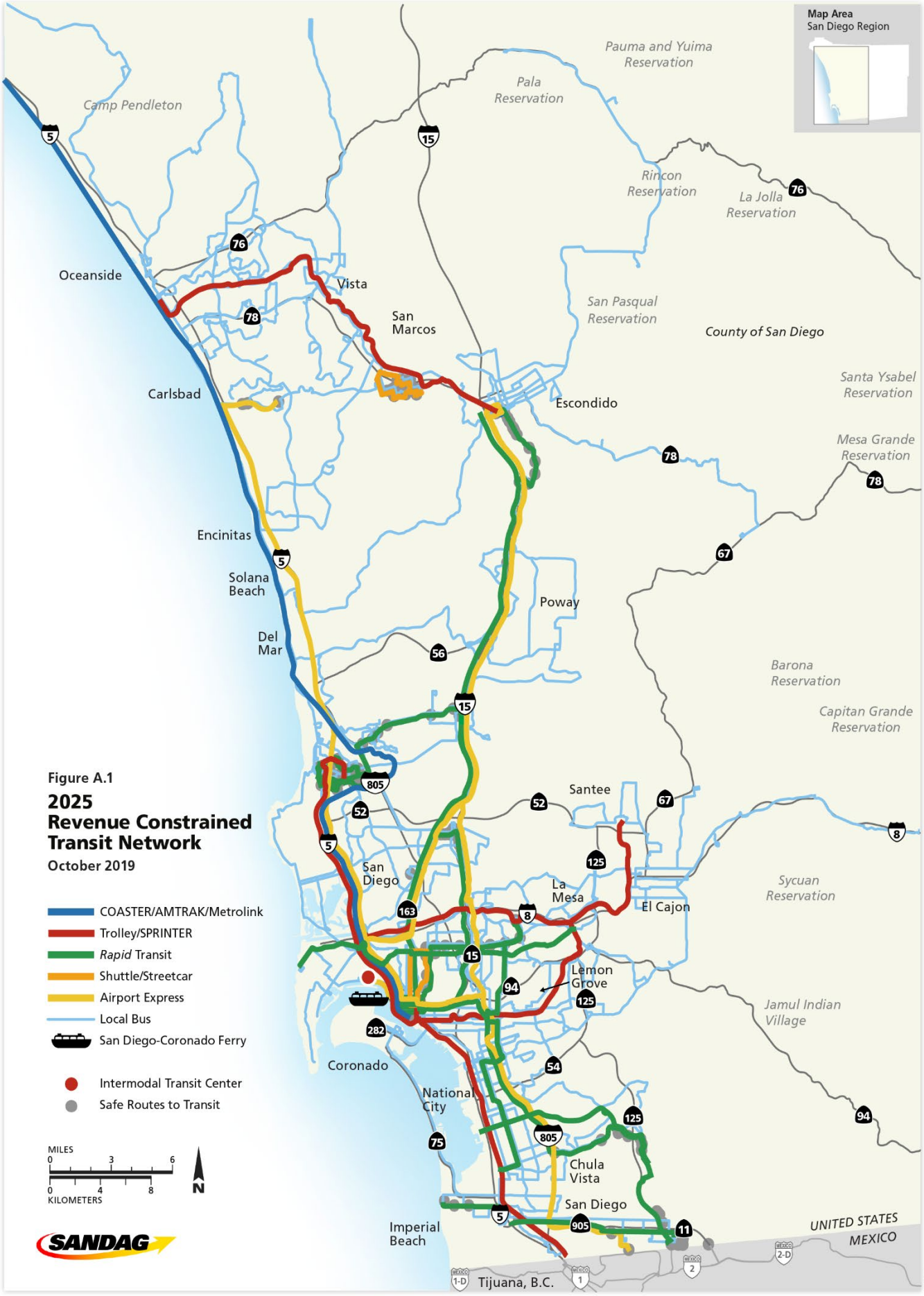
Managed Lanes / Highway Projects

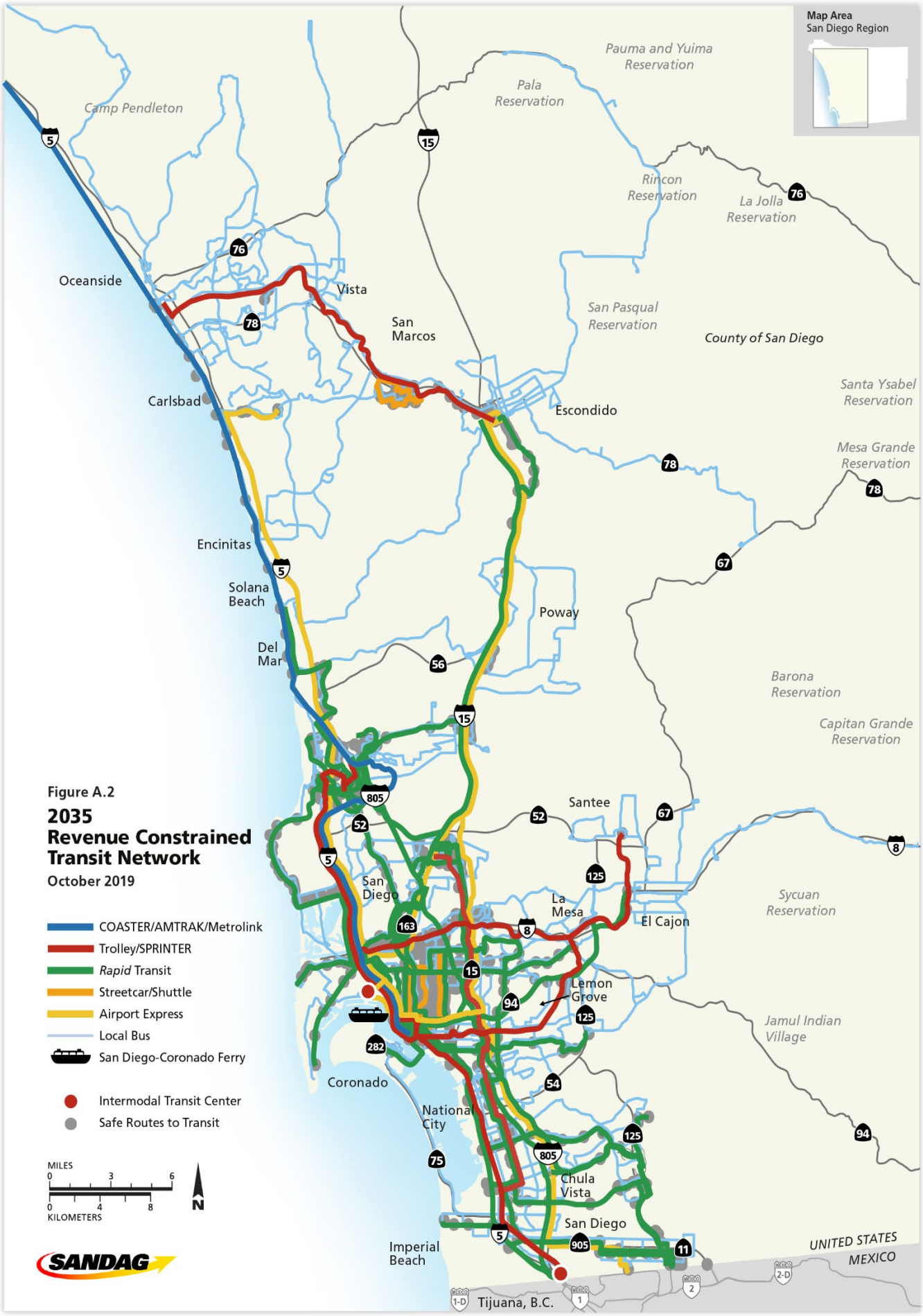
Segment	From	To	Improvement	Note
I-5	Manchester	SR 78	+2ML	Design/Construction
SR 11 (Phase I)	SR 125	Enrico Fermi Dr	+4T	In Service
SR 11/Otay Mesa East POE	Enrico Fermi Dr	Mexico	+4T+POE	Under Construction
SR 11/ SR 905	SR 11/ SR 905	SR 125	SB 125 to SB SR 905, SB SR 125 to EB SR 11, SB SR 125 to SB SR 905	Design/Construction
SR 11/ SR 905	SR 11/ SR 905	SR 125	EB SR 905 and WB SR 11 to NB SR 125, NB SR 905 to NB SR 125	In Service
SR 15	I-805	I-8	+2TL	In Service
SR 76	Mission Rd	I-15	+2C	In Service
I-805	SR 52	Carroll Canyon Rd	+2ML	In Service

NOTE: "No-Build Projects" are projects that were either open to traffic or in service since the adoption of the 2015 Regional Plan in October 2015 or are projects that are substantially underway.

Tables A.1 - A.6 Legend

BNSF: Burlington Northern Santa Fe Railway
Const: Construction
C: Conventional Highway
DAR: Direct Access Ramp
Eng: Engineering
F: Freeway Lanes
ML: Managed Lanes
POE: Port of Entry
R: Reversible
ROW: Right-of-Way
SDIA: San Diego International Airport
SDIV: San Diego and Imperial Valley Railroad
T: Toll Lanes
TL: Transit Lanes


Map Area
San Diego Region
Pauma and Yuima Reservation
Pala Reservation
Camp Pendleton
Rincon Reservation
La Jolla Reservation
Oceanside
Vista
San Marcos
San Pasqual Reservation
County of San Diego
Carlsbad
Escondido
Santa Ysabel Reservation
Mesa Grande Reservation
Encinitas
Solana Beach
Poway
Del Mar
Barona Reservation
Capitan Grande Reservation
Santee
San Diego
La Mesa
El Cajon
Sycuan Reservation
Lemon Grove
Jamul Indian Village
Coronado
National City
Chula Vista
San Diego
Imperial Beach
UNITED STATES
MEXICO
Tijuana, B.C.
Figure A.1
2025
Revenue Constrained
Transit Network
October 2019
COASTER/AMTRAK/Metrolink
Trolley/SPRINTER
Rapid Transit
Shuttle/Streetcar
Airport Express
Local Bus
San Diego-Coronado Ferry
Intermodal Transit Center
Safe Routes to Transit
MILES
KILOMETERS
N
SANDAG


Map Area
San Diego Region
Pauma and Yuima Reservation
Pala Reservation
Camp Pendleton
Rincon Reservation
La Jolla Reservation
Oceanside
Vista
San Marcos
San Pasqual Reservation
County of San Diego
Carlsbad
Escondido
Santa Ysabel Reservation
Mesa Grande Reservation
Encinitas
Solana Beach
Poway
Del Mar
Barona Reservation
Capitan Grande Reservation
Santee
San Diego
La Mesa
El Cajon
Sycuan Reservation
Lemon Grove
Jamul Indian Village
Coronado
National City
Chula Vista
San Diego
Imperial Beach
UNITED STATES
MEXICO
Tijuana, B.C.
Figure A.2
2035
Revenue Constrained
Transit Network
October 2019
COASTER/AMTRAK/Metrolink
Trolley/SPRINTER
Rapid Transit
Streetcar/Shuttle
Airport Express
Local Bus
San Diego-Coronado Ferry
Intermodal Transit Center
Safe Routes to Transit
MILES
0 3 6
0 4 8
KILOMETERS
N
SANDAG

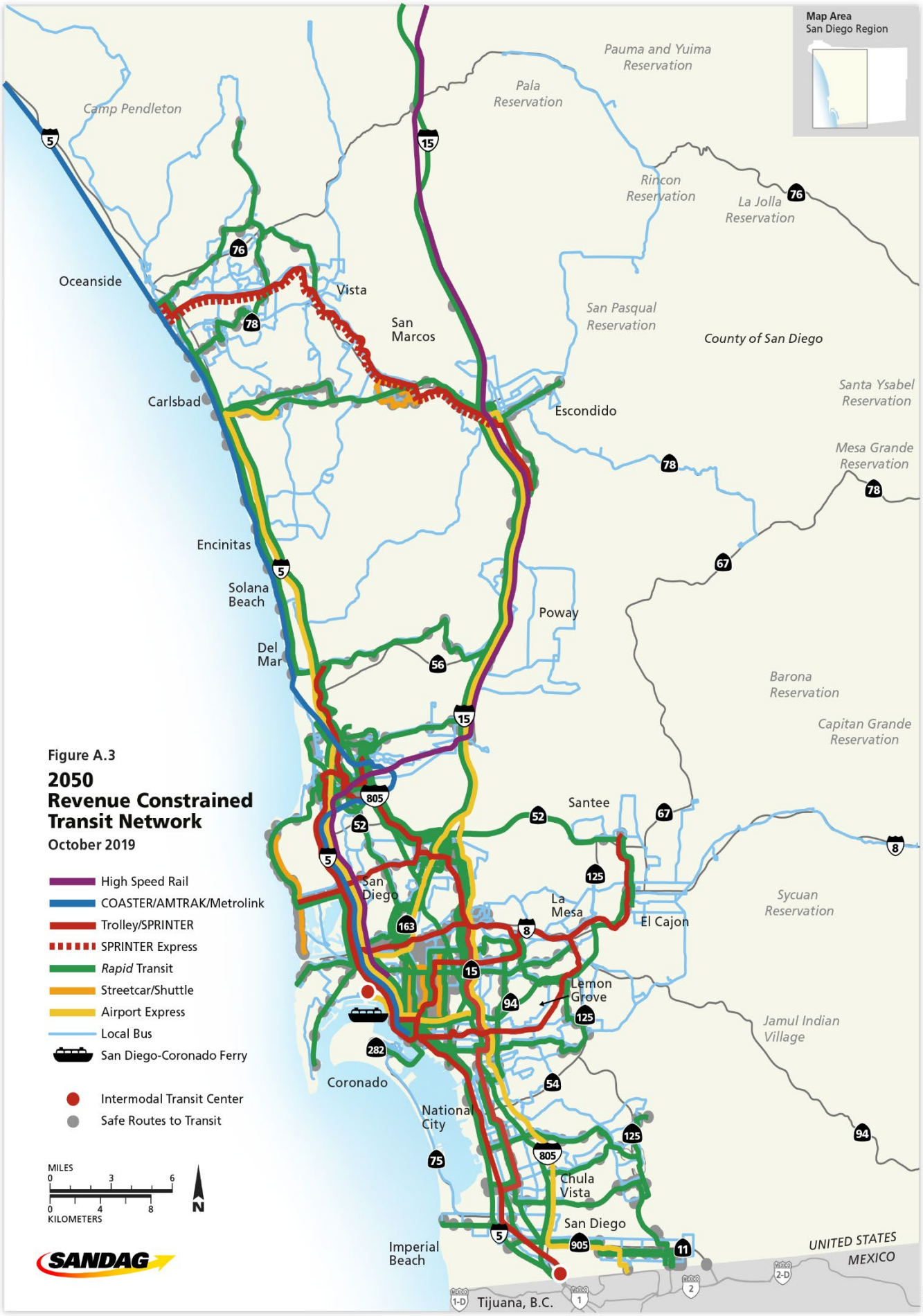


Figure A.3
2050
Revenue Constrained
Transit Network
October 2019
High Speed Rail
COASTER/AMTRAK/Metrolink
Trolley/SPRINTER
SPRINTER Express
Rapid Transit
Streetcar/Shuttle
Airport Express
Local Bus
San Diego-Coronado Ferry
Intermodal Transit Center
Safe Routes to Transit
MILES
0 3 6
0 4 8
KILOMETERS
N
SANDAG
Map Area
San Diego Region
Camp Pendleton
Pauma and Yuima Reservation
Pala Reservation
Rincon Reservation
La Jolla Reservation
San Pasqual Reservation
County of San Diego
Santa Ysabel Reservation
Mesa Grande Reservation
Barona Reservation
Capitan Grande Reservation
Sycuan Reservation
Jamul Indian Village
Oceanside
Vista
San Marcos
Carlsbad
Escondido
Encinitas
Solana Beach
Del Mar
Poway
Santee
La Mesa
El Cajon
Lemon Grove
San Diego
Coronado
National City
Chula Vista
Imperial Beach
Tijuana, B.C.
UNITED STATES
MEXICO


Figure A.4
2025
Revenue Constrained
Managed Lanes and
Highway Network
October 2019
Existing Managed Lanes
Managed Lanes
General Purpose Lanes
Toll Lanes
Existing Facility
Bicycle/Pedestrian Improvements at Freeway Interchanges
Freeway Connectors
Managed Lanes Connectors
C = Conventional Highway
F= Freeway
ML = Managed Lanes
T = Toll Lanes
TL = Transit Lanes
MILES
KILOMETERS
N
SANDAG
Map Area
San Diego Region
Camp Pendleton
Oceanside
Vista
San Marcos
Carlsbad
Encinitas
Solana Beach
Del Mar
Pauma and Yuima Reservation
Pala Reservation
Rincon Reservation
La Jolla Reservation
San Pasqual Reservation
County of San Diego
Santa Ysabel Reservation
Mesa Grande Reservation
Escondido
Poway
Barona Reservation
Capitan Grande Reservation
Santee
Sycuan Reservation
El Cajon
La Mesa
San Diego
Lemon Grove
Jamul Indian Village
Coronado
National City
Chula Vista
Imperial Beach
Tijuana, B.C.
UNITED STATES
MEXICO
8F
4C
8F+2ML
6F
8F+4ML
10F+4ML
4F
2C
8F+2ML
8F/10F
8F+2TL
4T

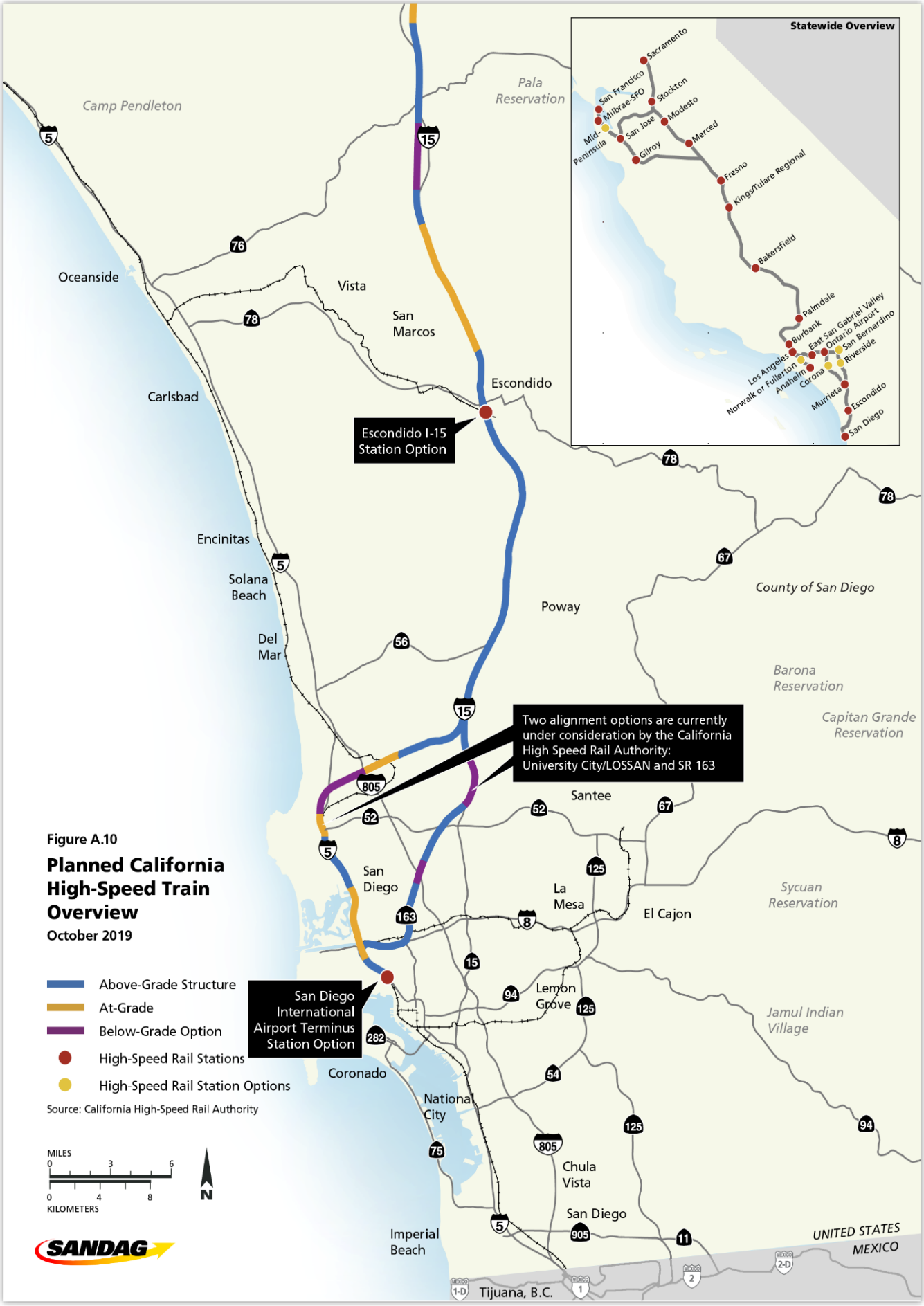

Figure A.5
2035
Revenue Constrained
Managed Lanes and
Highway Network
October 2019
Existing Managed Lanes
Managed Lanes
General Purpose Lanes
Toll Lanes
Existing Facility
Bicycle/Pedestrian Improvements at Freeway Interchanges
Freeway Connectors
Managed Lanes Connectors
Freeway & Managed Lanes Connectors
C = Conventional Highway
F = Freeway
ML = Managed Lanes
T = Toll Road
TL = Transit Lanes
MILES
KILOMETERS
N
SANDAG
Map Area
San Diego Region
Camp Pendleton
Pauma and Yuima Reservation
Pala Reservation
Rincon Reservation
La Jolla Reservation
San Pasqual Reservation
County of San Diego
Santa Ysabel Reservation
Mesa Grande Reservation
Barona Reservation
Capitan Grande Reservation
Sycuan Reservation
Jamul Indian Village
Oceanside
Vista
San Marcos
Carlsbad
Escondido
Encinitas
Solana Beach
Del Mar
Poway
Santee
El Cajon
La Mesa
Lemon Grove
San Diego
Coronado
National City
Chula Vista
Imperial Beach
Tijuana, B.C.
UNITED STATES
MEXICO
8F
4C
2C
8F+2ML
6F+2ML
8F+4ML
10F+4ML
8F/14F+4ML
8F/14F+2ML
6F
8F+2ML
8F/10F
8F+2TL
6F+2ML
8F+2ML
8F+2ML
10F+2ML
8F+4ML
8F+2ML
8F+2ML
8F+2ML
4F
4T


Figure A.6
2050
Revenue Constrained
Managed Lanes and
Highway Network
October 2019
Existing Managed Lanes
Managed Lanes
General Purpose Lanes
Toll Lanes
Operational Improvements
Existing Facility
Freeway Connectors
ML Connectors
Freeway & ML Connectors
Bicycle/Pedestrian Improvements at Freeway Interchanges
C = Conventional Highway
F = Freeway
ML = Managed Lanes
T = Toll Road
R = Reversible Lanes
OPS = Operational Improvements
TL = Transit Lanes
MILES
KILOMETERS
N
SANDAG
Map Area
San Diego Region
Camp Pendleton
Oceanside
Carlsbad
Encinitas
Solana Beach
Del Mar
Vista
San Marcos
Escondido
Pala Reservation
Pauma and Yuima Reservation
Rincon Reservation
La Jolla Reservation
San Pasqual Reservation
County of San Diego
Santa Ysabel Reservation
Mesa Grande Reservation
Barona Reservation
Capitan Grande Reservation
Poway
Santee
San Diego
La Mesa
El Cajon
Lemon Grove
Sycuan Reservation
Jamul Indian Village
Coronado
National City
Chula Vista
Imperial Beach
Tijuana, B.C.
UNITED STATES
MEXICO
8F+4T
4C
4C/6C+OPS
2C
8F+4ML
6F+2ML
10F+4ML
6F
8F/14F +4ML
8F+2ML
6F+2ML(R)
6F+2ML
8F+ 4ML
8F/10F+2ML
8F/10F +OPS
8F+2TL
10F+2ML
8F+OPS
6F+ 2ML
8F+ 2ML
8F/10F +2ML
6F/8F +OPS
6C
4F
8F
4T


Map Area
San Diego Region
Pauma and Yuima Reservation
Pala Reservation
Camp Pendleton
Rincon Reservation
La Jolla Reservation
Oceanside
Vista
San Marcos
San Pasqual Reservation
County of San Diego
Carlsbad
Escondido
Santa Ysabel Reservation
Mesa Grande Reservation
Encinitas
Solana Beach
Del Mar
Poway
Barona Reservation
Capitan Grande Reservation
Santee
Sycuan Reservation
San Diego
La Mesa
El Cajon
Lemon Grove
Jamul Indian Village
Coronado
National City
Chula Vista
Imperial Beach
San Diego
UNITED STATES
MEXICO
Tijuana, B.C.
Figure A.7
2025
Revenue Constrained Regional Bike Network
October 2019
Class I - Bike Path
Cycle Track
Bike Boulevard
Enhanced Class II - Bike Lane
Enhanced Class III - Bike Route
Freeways and Highways
Regional Arterials
MILES
KILOMETERS
N
SANDAG


Map Area
San Diego Region
Pauma and Yuima Reservation
Pala Reservation
Camp Pendleton
Rincon Reservation
La Jolla Reservation
Oceanside
Vista
San Marcos
San Pasqual Reservation
County of San Diego
Carlsbad
Escondido
Santa Ysabel Reservation
Mesa Grande Reservation
Encinitas
Solana Beach
Del Mar
Poway
Barona Reservation
Capitan Grande Reservation
Santee
Sycuan Reservation
San Diego
La Mesa
El Cajon
Lemon Grove
Jamul Indian Village
Coronado
National City
Chula Vista
Imperial Beach
UNITED STATES
MEXICO
Tijuana, B.C.
Figure A.8
2035
Revenue Constrained Regional Bike Network
October 2019
Class I - Bike Path
Cycle Track
Bike Boulevard
Enhanced Class II - Bike Lane
Enhanced Class III - Bike Route
Freeways and Highways
Regional Arterials
MILES
0 3 6
0 4 8
KILOMETERS
N
SANDAG


Map Area
San Diego Region
Camp Pendleton
Pauma and Yuima Reservation
Pala Reservation
Rincon Reservation
La Jolla Reservation
Oceanside
Vista
San Marcos
San Pasqual Reservation
County of San Diego
Carlsbad
Escondido
Santa Ysabel Reservation
Mesa Grande Reservation
Encinitas
Solana Beach
Del Mar
Poway
Barona Reservation
Capitan Grande Reservation
Santee
Sycuan Reservation
San Diego
La Mesa
El Cajon
Lemon Grove
Jamul Indian Village
Coronado
National City
Chula Vista
Imperial Beach
UNITED STATES
MEXICO
Tijuana, B.C.
Figure A.9
2050
Revenue Constrained
Regional Bike
Network
October 2019
Class I - Bike Path
Cycle Track
Bike Boulevard
Enhanced Class II - Bike Lane
Enhanced Class III - Bike Route
Freeways and Highways
Regional Arterials
MILES
0 3 6
0 4 8
KILOMETERS
N
SANDAG


Statewide Overview
Sacramento
San Francisco
Millbrae-SFO
Stockton
Modesto
Mid-Peninsula
San Jose
Merced
Gilroy
Fresno
Kings/Tulare Regional
Bakersfield
Palmdale
Burbank
East San Gabriel Valley
Ontario Airport
San Bernardino
Riverside
Los Angeles
Norwalk or Fullerton
Anaheim
Corona
Murrieta
Escondido
San Diego
Camp Pendleton
Pala Reservation
Oceanside
Vista
San Marcos
Escondido
Carlsbad
Escondido I-15 Station Option
Encinitas
Solana Beach
Del Mar
Poway
County of San Diego
Barona Reservation
Capitan Grande Reservation
Two alignment options are currently under consideration by the California High Speed Rail Authority: University City/LOSSAN and SR 163
Santee
San Diego
La Mesa
El Cajon
Sycuan Reservation
Lemon Grove
Jamul Indian Village
San Diego International Airport Terminus Station Option
Coronado
National City
Chula Vista
San Diego
Imperial Beach
UNITED STATES
MEXICO
Tijuana, B.C.
Figure A.10
Planned California High-Speed Train Overview
October 2019
Above-Grade Structure
At-Grade
Below-Grade Option
High-Speed Rail Stations
High-Speed Rail Station Options
Source: California High-Speed Rail Authority
MILES
KILOMETERS
N
SANDAG


Map Area
San Diego Region
Pauma and Yuima Reservation
Pala Reservation
Camp Pendleton
Rincon Reservation
La Jolla Reservation
Oceanside
Vista
San Marcos
San Pasqual Reservation
County of San Diego
Carlsbad
Escondido
Santa Ysabel Reservation
Mesa Grande Reservation
Encinitas
Solana Beach
Poway
Del Mar
Barona Reservation
Capitan Grande Reservation
Santee
San Diego
La Mesa
El Cajon
Sycuan Reservation
Lemon Grove
Jamul Indian Village
Coronado
National City
Chula Vista
San Diego
Imperial Beach
UNITED STATES
MEXICO
Tijuana, B.C.
Figure A.11
2025 and 2035 High Frequency Local Bus Routes
October 2019
High Frequency Local Bus
by 2025: 15 minutes (peak period)
by 2035: 10 minutes (peak period)
Regional and Corridor Routes
MILES
0 3 6
0 4 8
KILOMETERS
N
SANDAG

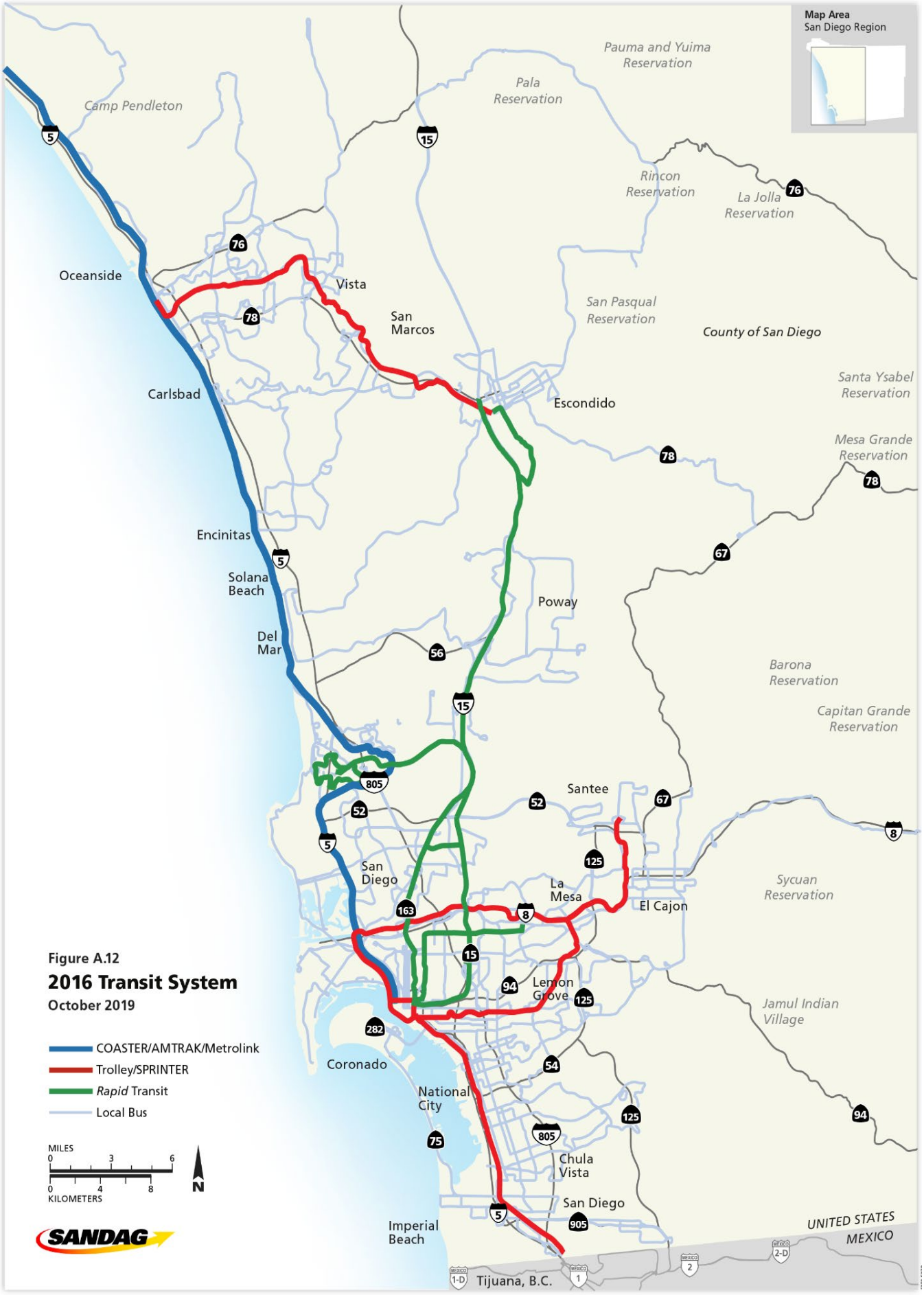

Map Area
San Diego Region
Pauma and Yuima Reservation
Pala Reservation
Camp Pendleton
Rincon Reservation
La Jolla Reservation
Oceanside
Vista
San Marcos
San Pasqual Reservation
County of San Diego
Carlsbad
Escondido
Santa Ysabel Reservation
Mesa Grande Reservation
Encinitas
Solana Beach
Poway
Del Mar
Barona Reservation
Capitan Grande Reservation
Santee
Sycuan Reservation
San Diego
La Mesa
El Cajon
Lemon Grove
Jamul Indian Village
Coronado
National City
Chula Vista
San Diego
Imperial Beach
UNITED STATES
MEXICO
Tijuana, B.C.
Figure A.12
2016 Transit System
October 2019
COASTER/AMTRAK/Metrolink
Trolley/SPRINTER
Rapid Transit
Local Bus
MILES
KILOMETERS
N
SANDAG

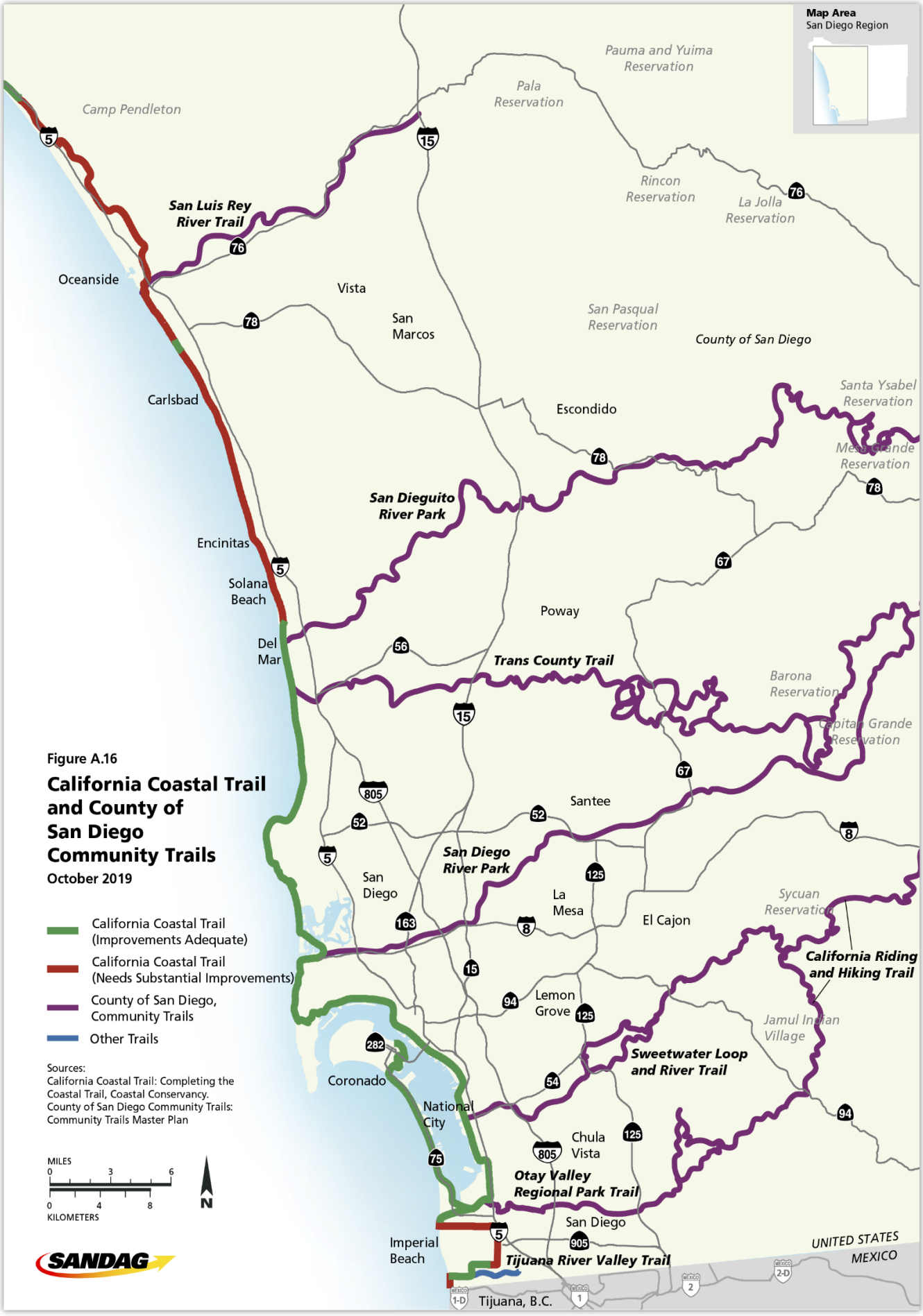
Figure A.13

2016 Managed Lanes and Highway Network

October 2019


Map Area
San Diego Region
Pauma and Yuima Reservation
Pala Reservation
Camp Pendleton
Rincon Reservation
La Jolla Reservation
Oceanside
Vista
San Marcos
San Pasqual Reservation
County of San Diego
Carlsbad
Escondido
Santa Ysabel Reservation
Mesa Grande Reservation
Encinitas
Solana Beach
Poway
Del Mar
Barona Reservation
Capitan Grande Reservation
Santee
Sycuan Reservation
San Diego
La Mesa
El Cajon
Lemon Grove
Jamul Indian Village
Coronado
National City
Chula Vista
San Diego
Imperial Beach
UNITED STATES
MEXICO
Tijuana, B.C.
Figure A.14
2016
Regional Bike Network
October 2019
Bike Network
Freeways and Highways
Regional Arterials
MILES
0 3 6
0 4 8
KILOMETERS
N
SANDAG


Map Area
San Diego Region
Pauma and Yuima Reservation
Pala Reservation
Camp Pendleton
Rincon Reservation
La Jolla Reservation
Oceanside
Vista
San Marcos
San Pasqual Reservation
County of San Diego
Carlsbad
Escondido
Santa Ysabel Reservation
Mesa Grande Reservation
Encinitas
Solana Beach
Poway
Del Mar
Barona Reservation
Capitan Grande Reservation
Santee
Sycuan Reservation
San Diego
La Mesa
El Cajon
Lemon Grove
Jamul Indian Village
Coronado
National City
Chula Vista
San Diego
Imperial Beach
UNITED STATES
MEXICO
Tijuana, B.C.
Figure A.15
Regional Arterial System
October 2019
Freeways and Highways
Regional Arterials
MILES
KILOMETERS
N
SANDAG


Map Area
San Diego Region
Camp Pendleton
Pauma and Yuima Reservation
Pala Reservation
Rincon Reservation
La Jolla Reservation
San Luis Rey River Trail
Oceanside
Vista
San Marcos
San Pasqual Reservation
County of San Diego
Carlsbad
Escondido
Santa Ysabel Reservation
San Dieguito River Park
Encinitas
Solana Beach
Del Mar
Poway
Trans County Trail
Barona Reservation
Santee
San Diego River Park
San Diego
La Mesa
El Cajon
Sycuan Reservation
California Riding and Hiking Trail
Lemon Grove
Jamul Indian Village
Sweetwater Loop and River Trail
Coronado
National City
Chula Vista
Otay Valley Regional Park Trail
Imperial Beach
Tijuana River Valley Trail
UNITED STATES
MEXICO
Tijuana, B.C.
Figure A.16
California Coastal Trail and County of San Diego Community Trails
October 2019
California Coastal Trail (Improvements Adequate)
California Coastal Trail (Needs Substantial Improvements)
County of San Diego, Community Trails
Other Trails
Sources:
California Coastal Trail: Completing the Coastal Trail, Coastal Conservancy.
County of San Diego Community Trails: Community Trails Master Plan
MILES
KILOMETERS
N
SANDAG

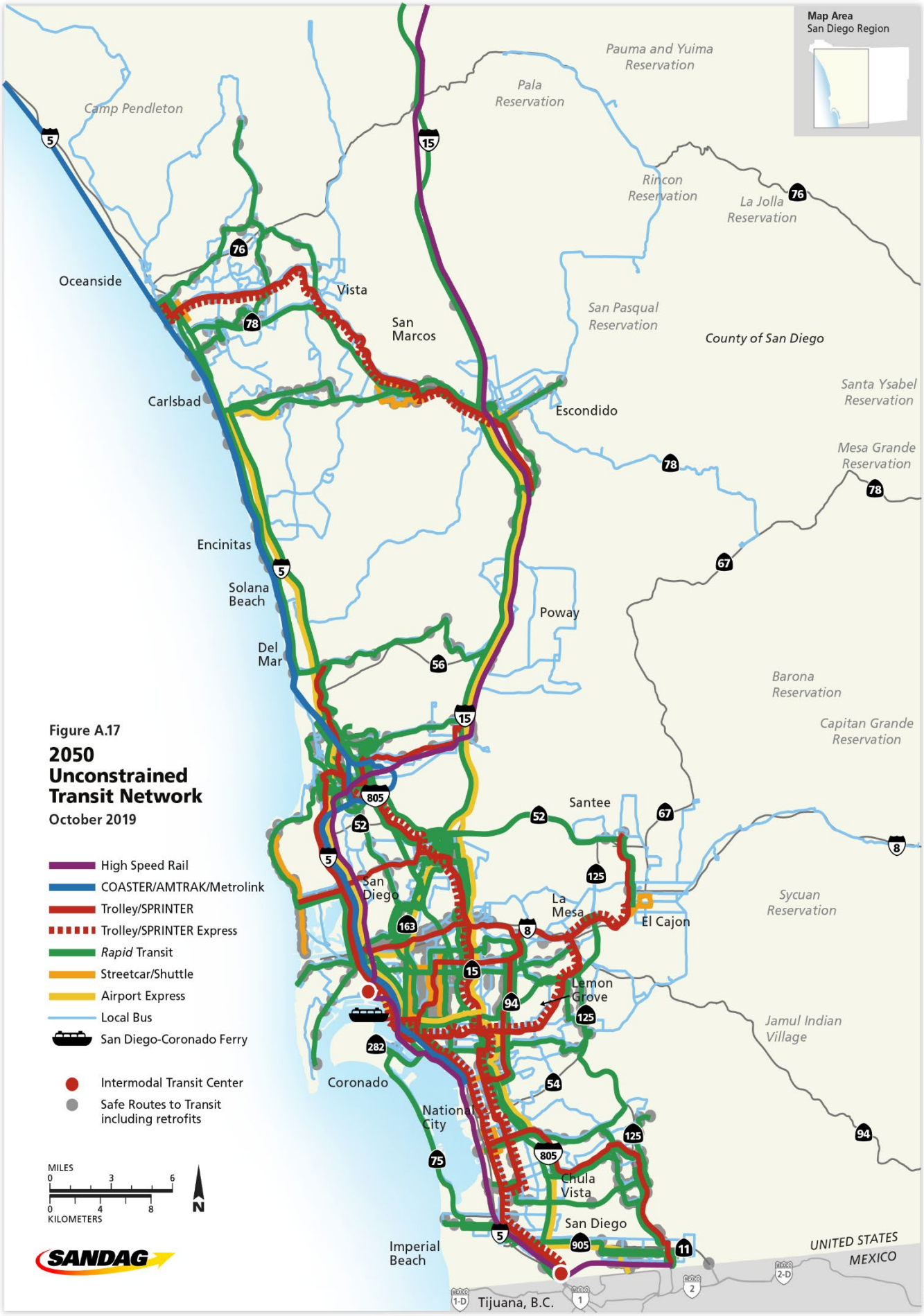


Figure A.17
2050 Unconstrained Transit Network
October 2019
High Speed Rail
COASTER/AMTRAK/Metrolink
Trolley/SPRINTER
Trolley/SPRINTER Express
Rapid Transit
Streetcar/Shuttle
Airport Express
Local Bus
San Diego-Coronado Ferry
Intermodal Transit Center
Safe Routes to Transit including retrofits
MILES
0 3 6
0 4 8
KILOMETERS
N
SANDAG
Map Area
San Diego Region
Camp Pendleton
Oceanside
Vista
San Marcos
Carlsbad
Encinitas
Solana Beach
Del Mar
Pauma and Yuima Reservation
Pala Reservation
Rincon Reservation
La Jolla Reservation
San Pasqual Reservation
County of San Diego
Escondido
Santa Ysabel Reservation
Mesa Grande Reservation
Poway
Barona Reservation
Capitan Grande Reservation
Santee
Sycuan Reservation
El Cajon
La Mesa
Lemon Grove
Jamul Indian Village
San Diego
Coronado
National City
Chula Vista
Imperial Beach
Tijuana, B.C.
UNITED STATES
MEXICO


Figure A.18
2050 Unconstrained Managed Lanes and Highway Network
October 2019
Existing Managed Lanes
Managed Lanes
General Purpose Lanes
Toll Lanes
Operational Improvements
Existing Facility
Freeway Connectors
ML Connectors
Freeway & ML Connectors
Bicycle/Pedestrian Improvements at Freeway Interchanges
C = Conventional Highway
F = Freeway
ML = Managed Lanes
T = Toll Road
R = Reversible Lanes
OPS = Operational Improvements
E = Expressway
MILES
KILOMETERS
N
SANDAG
Map Area
San Diego Region
Camp Pendleton
Oceanside
Carlsbad
Encinitas
Solana Beach
Del Mar
Vista
San Marcos
Escondido
Poway
San Diego
Coronado
National City
Chula Vista
Imperial Beach
La Mesa
El Cajon
Santee
Lemon Grove
Pala Reservation
Pauma and Yuima Reservation
Rincon Reservation
La Jolla Reservation
San Pasqual Reservation
County of San Diego
Santa Ysabel Reservation
Mesa Grande Reservation
Barona Reservation
Capitan Grande Reservation
Sycuan Reservation
Jamul Indian Village
UNITED STATES
MEXICO
Tijuana, B.C.
8F+4T
6E
8F+4ML
6F+2ML
4C
4C/6C+OPS
2C+OPS
10F+4ML
4F
8F/14F+4ML
8F/14F+4ML
6F+3ML(R)
6F+2ML
8F+2ML
8F/10F+2ML
8F/10F+OPS
8F+OPS
6F+2ML
10F+2ML
6F/8F
6F/8F+OPS
6F/8F+2ML
8F+4ML
8F+2ML
6F
6C
2C
4T
8F
5
15
76
78
56
52
67
8
125
163
94
282
54
75
805
905
11

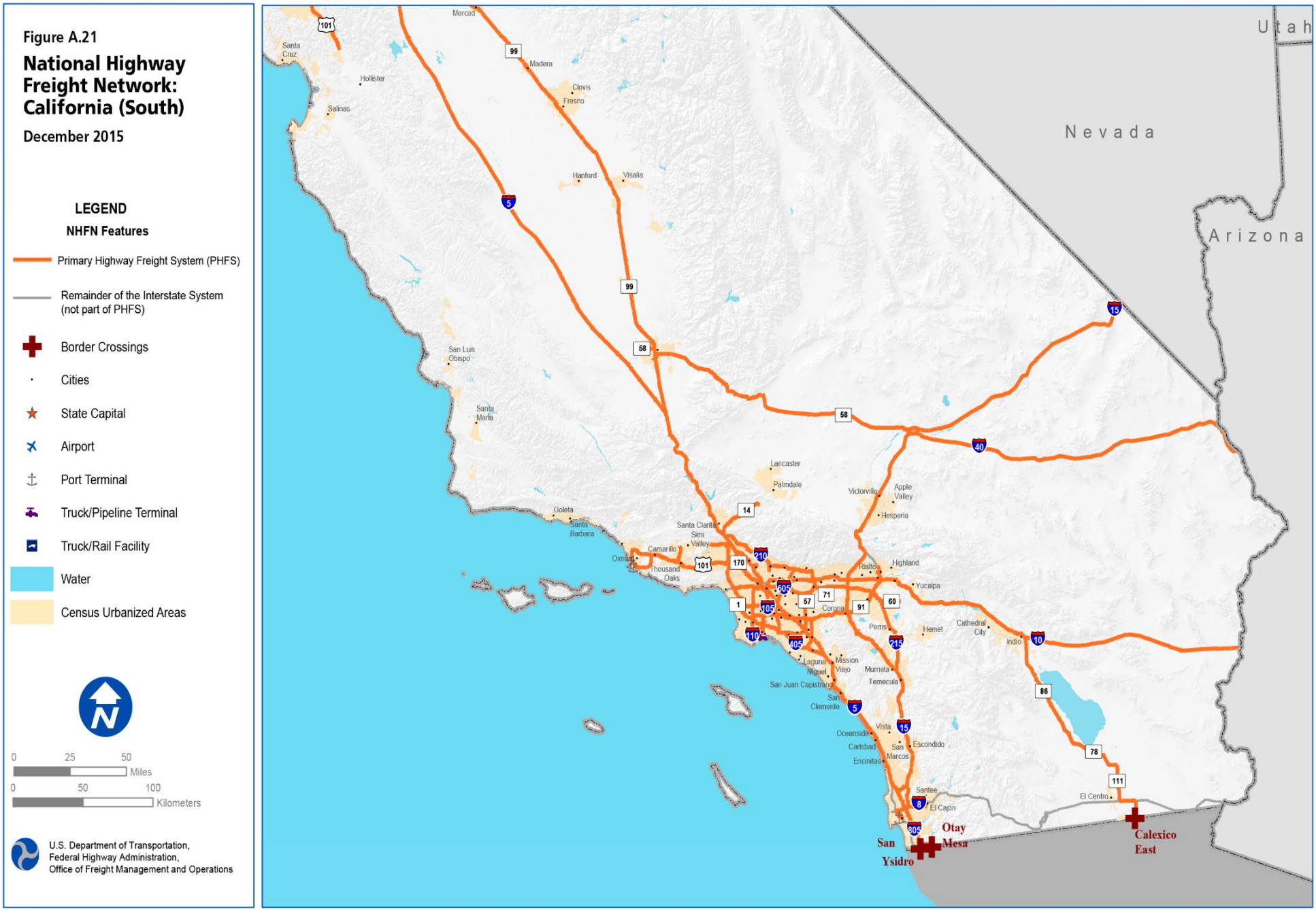

Map Area
San Diego Region
Camp Pendleton
Pauma and Yuima Reservation
Pala Reservation
Rincon Reservation
La Jolla Reservation
Oceanside
Vista
San Marcos
San Pasqual Reservation
County of San Diego
Carlsbad
Escondido
Santa Ysabel Reservation
Mesa Grande Reservation
Encinitas
Solana Beach
Del Mar
Poway
Barona Reservation
Capitan Grande Reservation
Santee
Sycuan Reservation
San Diego
La Mesa
El Cajon
Lemon Grove
Jamul Indian Village
Coronado
National City
Chula Vista
Imperial Beach
UNITED STATES
MEXICO
Tijuana, B.C.
Figure A.19
2050 Unconstrained Regional Bike Network
October 2019
Class I - Bike Path
Cycle Track
Bike Boulevard
Enhanced Class II - Bike Lane
Enhanced Class III - Bike Route
Freeways and Highways
Regional Arterials
MILES
0 3 6
0 4 8
KILOMETERS
N
SANDAG


Figure A.20
Unconstrained Goods Movement Strategy
October 2019
Commercial/Industrial Land Use
2012 San Diego Data and 2013 Baja California Data
Highway/Road/Managed Lanes
Freight Rail
Burlington Northern Santa Fe Railway (BNSF)
shared with COASTER/SPRINTER
San Diego and Imperial Valley Railroad (SDIY)
shared with MTS Trolley
Baja California Railroad, Inc. (BJRR) in Mexico/Desert Line in USA
Air Cargo
Port of San Diego
Land Port of Entry
San Ysidro Rail Port of Entry
Otay Mesa Truck Port of Entry
Tecate Truck Port of Entry
Otay Mesa East Future Truck Port of Entry
Logistics Center/Yard (Concept)
not location-specific
Potential Truck Rest Stops
MILES
KILOMETERS
N
SANDAG
Map Area
San Diego Region
Key Project Locations
Air Cargo
1 San Diego International Airport Access Improvements
Border
2 Southbound Truck Route Improvements
3 SR 11/Future Otay Mesa East Border Truck Crossing
4 SR 125
Maritime
5 Port Terminal and Access Improvements Harbor Drive
Rail
6 LOSSAN/SPRINTER Burlington Northern Santa Fe Railroad (BNSF)
7 Baja California Railroad, Inc. (BJRR) in Mexico/Desert Line in USA
Freeway/Highway
8 I-5
9 I-15
10 I-805
11 SR 94/125, I-8
12 SR 52/54/56/94
13 SR 78
Pechanga Reservation
Camp Pendleton
County of San Diego
Pauma and Yuima Reservation
Pala Reservation
Rincon Reservation
San Pasqual Reservation
Oceanside
Vista
San Marcos
Carlsbad
Escondido
Encinitas
Solana Beach
Del Mar
Poway
Santee
Viejas Reservation
San Diego
La Mesa
El Cajon
Sycuan Reservation
Coronado
National City
Chula Vista
Jamul Indian Village
Imperial Beach
San Diego
Tijuana, B.C.
Tecate
UNITED STATES
MEXICO

Figure A.21

National Highway Freight Network: California (South)

December 2015



Appendix B

Air Quality Planning and Transportation Conformity

Appendix Contents

Air Quality Planning and Transportation Conformity

Executive Summary

The San Diego Association of Governments (SANDAG), as the region's Metropolitan Planning Organization (MPO), must make a transportation air quality conformity determination for regional transportation plans (RTPs) and regional transportation improvement programs (RTIPs). The purpose of transportation conformity is to ensure that federally funded or approved activities are consistent with the State Implementation Plan (SIP). This ensures that no transportation activities will cause or contribute to new air quality violations, worsen existing violations, or delay the attainment of any relevant National Ambient Air Quality Standards (NAAQS). This report documents a demonstration of conformity for the 2008 and 2015 Ozone NAAQS for San Diego Forward: The 2019 Federal Regional Transportation Plan (2019 Federal RTP) and the 2018 Regional Transportation Improvement Program (2018 RTIP), as amended.

Background

The federal Clean Air Act (CAA), which was last amended in 1990, requires the United States Environmental Protection Agency (U.S. EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. California has adopted state air quality standards that are more stringent than the NAAQS. Areas with levels that violate the standard for specified pollutants are designated as nonattainment areas.

The U.S. EPA requires that each state containing nonattainment areas develop plans to attain the NAAQS by a specified attainment deadline. These attainment plans are called State Implementation Plans (SIP). The San Diego County Air Pollution Control District (APCD) prepares the San Diego portion of the California SIP. Once the standards are attained, further plans—called Maintenance Plans—are required to demonstrate continued maintenance of the NAAQS.

The San Diego Association of Governments (SANDAG and the United States Department of Transportation (U.S. DOT) must make a determination that the Regional Transportation Plan (RTP) and the Regional Transportation Improvement Program (RTIP) conform to the SIP for air quality. Conformity to the SIP means that transportation activities will not create new air quality violations, worsen existing violations, or delay the attainment of the national ambient air quality standards. The SANDAG conformity determinations are guided by U.S. EPA's Transportation Conformity rule (40 CFR 93.100 et seq.).

2008 Ozone Standard

On May 21, 2012, the U.S. EPA designated the San Diego air basin as a nonattainment area for the 2008 Eight-Hour Ozone standard and classified it as a marginal area with an attainment date of December 31, 2015. This designation became effective on July 20, 2012. SANDAG demonstrated conformity of the 2011 Regional Plan and 2012 RTIP to the 2008 ozone standard on May 24, 2013, using the applicable model approved by the U.S. EPA to forecast regional emissions (EMFAC2011). The U.S. DOT, in consultation with the U.S. EPA, made its conformity determination on June 28, 2013.

Effective June 3, 2016, the U.S. EPA determined that 11 areas, including the San Diego air basin, failed to attain the 2008 ozone NAAQS by the applicable attainment date of July 20, 2015, and thus were reclassified by operation of law as Moderate for the 2008 ozone NAAQS (81 FR 26697). States containing these new Moderate areas were required to submit SIP revisions that met the statutory and regulatory requirements that apply to 2008 ozone nonattainment areas classified as Moderate by January 1, 2017. The APCD submitted a SIP revision addressing

Moderate area requirements to the Air Resources Board (ARB) on December 27, 2016. Effective December 4, 2017, the U.S. EPA found the motor vehicle emissions budgets for the Reasonable Further Progress milestone year of 2017 from the *2008 Eight-Hour Ozone Attainment Plan for San Diego County* adequate for transportation conformity purposes for the 2008 ozone NAAQS.

On August 23, 2019, U.S. EPA published a final rule in the Federal Register reclassifying the San Diego air basin by operation of law from a Moderate nonattainment area for the 2008 ozone NAAQS to Serious effective September 23, 2019 (84 FR 44238). This rulemaking changes the 2008 ozone NAAQS attainment deadline to July 20, 2021, with an attainment year of 2020.

2015 Ozone Standard

On October 26, 2015, the U.S. EPA announced a revised ozone standard, referred to as the 2015 Ozone standard (80 FR 65292). The new standard revised the allowable ozone level to 0.070 parts per million (ppm). The 2015 ozone standard became effective on December 28, 2015. On June 4, 2018, U.S. EPA published a final rule that designated the San Diego air basin as nonattainment, with a classification of Moderate, for the 2015 ozone NAAQS with an attainment deadline of August 3, 2024, and an attainment year of 2023 (83 FR 25776, effective August 3, 2018).

On May 24, 2019, the SANDAG Board of Directors (Board) adopted the 2015 Ozone National Ambient Air Quality Standard Conformity Demonstration for San Diego Forward: The Regional Plan (2015 Regional Plan) and the 2018 RTIP. The conformity demonstration found the 2015 Regional Plan and 2018 RTIP, as amended, in conformity with the requirements of the federal Clean Air Act and applicable SIP. The U.S. DOT, in consultation with U.S. EPA, made its conformity determination on June 21, 2019, indicating that all air quality conformity requirements have been met, including those for the 2015 ozone standard.

Carbon Monoxide Standard

The San Diego region had been designated by the U.S. EPA as a federal maintenance area for the Carbon Monoxide (CO) standard. On November 8, 2004, ARB submitted the 2004 revision to the California SIP for CO to the U.S. EPA, which extended the maintenance plan demonstration to 2018. Effective January 30, 2006, the U.S. EPA approved this maintenance plan as a SIP revision. On March 21, 2018, the U.S. EPA documented in a letter that transportation conformity requirements for CO would cease to apply after June 1, 2018. Therefore, this appendix does not include a CO conformity analysis.

Conformity Determinations for 2015 Regional Plan, 2014 RTIP, and 2018 RTIP

On October 9, 2015, SANDAG made a conformity demonstration for the 2015 Regional Plan, which serves as the RTP. The U.S. DOT issued its conformity finding for the 2015 Regional Plan and the 2014 RTIP through Amendment No. 8 on December 2, 2015. On September 28, 2018, the Board adopted the Final 2018 RTIP and its conformity demonstration and redemonstration of conformity of the 2015 Regional Plan. The U.S. DOT, in consultation with the U.S. EPA, made its conformity determination for the 2018 RTIP on December 17, 2018. Conformity of the 2015 Regional Plan expires on December 2, 2019.

Transportation Conformity: Modeling Procedures

Growth Forecasts

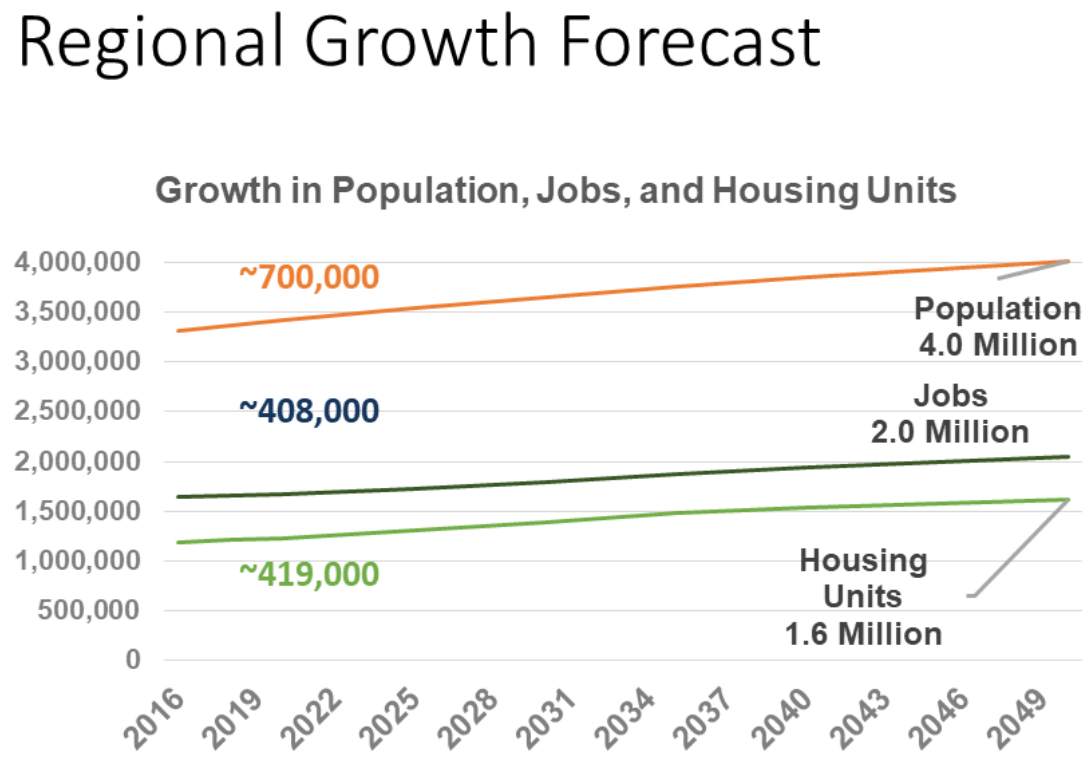
Every three to five years, SANDAG produces a long-range forecast of population, housing, and employment growth for the San Diego region. On May 25, 2018, the Board approved the assumptions for the Series 14, 2050 Regional Growth Forecast, which were used in development of the 2019 Federal RTP.

The forecast process relies upon an integrated forecasting model. The first element is the San Diego Demographic and Economic model (SanDE), which provides a detailed socioeconomic forecast for the region. Next, the regionwide data are allocated to the parcel level based upon the current plans and policies of the jurisdictions. The parcel-level forecast data can be aggregated up to larger sub-regional areas of interest.

On April 3, 2019, SANDAG consulted with the San Diego Region Conformity Working Group (CWG) on the use of the Series 14, 2050 Regional Growth Forecast for the air quality conformity analysis of the 2019 Federal RTP and 2018 RTIP, as amended. Previously, both the U.S. DOT and the U.S. EPA concurred that approved plans should be used as input in the air quality conformity process. Figure B.1 and Table B.1 show the regional population, jobs, and housing growth forecast for the San Diego region through 2050.

Figure B.1

San Diego Regional Population, Jobs, and Housing Forecast



Source: Series 14 Version 17, 2050 Regional Growth Forecast, SANDAG

Table B.1
San Diego Regional Population and Employment Forecast

Year	Population	Employment
2016	3,316,187	1,643,741
2025	3,545,073	1,723,744
2035	3,753,630	1,870,403
2050	4,011,145	2,051,357

Source: Series 14 Version 17, 2050 Regional Growth Forecast, SANDAG

The Series 14, 2050 Regional Growth Forecast is based largely upon the adopted general plans and community plans and policies of the 18 cities and the County. Because many of the local general plans have horizon years of 2030 – 20 years before the 2050 Growth Forecast horizon year – the later part of the forecast was developed in collaboration with each of the local jurisdictions through an iterative process that allowed each city to provide their projections for land uses in those later years. The Series 14 forecast thus represents in compliance with 40 CFR 93.110(a), the "latest planning assumptions" in force at the time this conformity analysis began.

Transportation Modeling

SANDAG uses an updated activity-based model (ABM) that incorporates the latest planning assumptions at the time the conformity analysis began per 40 CFR 93.110 to support the development of the RTP1F[1] and its conformity demonstration. An ABM simulates individual and household transportation decisions that comprise their daily travel itinerary. It predicts whether, where, when, and how people travel outside their home for activities such as work, school, shopping, healthcare, and recreation.

The powerful analytic capabilities of an ABM are particularly helpful in evaluating social equity, carpooling, transit access, parking conditions, tolling, and pricing. Because an ABM tracks the characteristics of each person, the model can be used to analyze the travel patterns of a wide range of socioeconomic groups. For example, a household with many members may be more likely to carpool, own multiple vehicles, and share shopping responsibilities.

ABM outputs are used as inputs for regional emissions forecasts. The estimates of regional transportation-related emissions analyses conducted for the 2019 Federal RTP and 2018 RTIP, as amended, conformity analysis meet the requirements established in the Transportation Conformity Regulation (40 CFR §93.122[b] and §93.122[c]). These requirements relate to the procedures to determine regional transportation-related emissions, including the use of network-based travel models, methods to estimate traffic speeds and delays, and the estimation of vehicle miles traveled (VMT).

The regionally significant projects and the timing for when they are expected to be open to traffic in each analysis year are documented in Tables B.11 through B.13. The design concept and scope of projects allow adequate model representation to determine interactions with regionally significant facilities, route options, travel times, transit ridership, and land use.

Since the 2015 Regional Plan, SANDAG has enhanced the ABM to address the following aspects. The ABM has been updated based on 2016/2017 household travel survey data and 2015 transit on-board survey data, and the base-year of the model was updated to 2016. Several changes and enhancements were also made to the travel model system, including:

- Conversion of the commercial transportation modeling package from TransCAD to EMME2F[2]
- Implementation of a new model that explicitly models "partially joint" travel episodes, specifically the drop-off and pick-up of children at school by parents
- Incorporation of recently completed work to implement Strategic Highway Research Program recommendations regarding improving the sensitivity of travel models to pricing and reliability3F[3]
- Update of the algorithm used to find transit paths
- Update of volume-delay function parameters based upon an analysis of INRIX travel-time data
- Replacement of an asserted, aggregate commercial vehicle model with a disaggregate commercial vehicle model developed several years ago but not previously integrated with the San Diego travel model system4F[4]
- Update of the heavy truck model, which models internal–external truck flows, to incorporate the latest Freight Analysis Framework (FAF4) data and projections
- Implementation of an airport ground access model for the Cross-Border Express (CBX) facility serving Tijuana International Airport
- Update of models to better match "big data" for special travel destinations including beaches, parks, hospitals, and shopping malls
- Incorporation of a new population synthesizer developed by SANDAG

The new model system is referred to as ABM2. The document uses ABM2 to refer to the latest model used for the 2019 Federal RTP.

This appendix describes the key modeling units, ABM2 model flow, the San Diego residents travel module, highway, transit and active transportation networks, data sources, and emissions modeling.

Key Modeling Units

An ABM simulates individual and household travel decisions through tours—that is, a journey that begins and ends at home. A tour includes a chain of trips (segments of travel with a given origin and destination). The advantage of modeling tours and trips hierarchy is to ensure spatial, temporal, and modal consistency and integrity across trips within a tour.

To simulate trips and tours made by individuals and households, the SANDAG ABM2 includes a total of eight person-types (shown in Table B.2). The person-types are mutually exclusive with respect to age, work status, and school status.

Table B.2
Person Types

Number	Person-Type	Age	Work Status	School Status
1	Full-time worker[5]	18+	Full-time	None
2	Part-time worker	18+	Part-time	None
3	College student	18+	Any	College+
4	Non-working adult	18 – 64	Unemployed	None
5	Non-working senior	65+	Unemployed	None
6	Driving-age student	16 – 17	Any	Pre-college
7	Non-driving student	6 – 15	None	Pre-college
8	Pre-schooler	0 – 5	None	None

Further, workers are stratified by their occupation to take full advantage of information provided by the land use and demographic models. Table B.3 outlines the worker categories. These models are used to segment destination choice attractiveness for work location choice based on the occupation of the worker.

Table B.3
Occupation Types

Number	Description
1	Management, Business, Science, and Arts
2	Services
3	Sales and Office
4	Natural Resources, Construction, and Maintenance
5	Production, Transportation, and Material Moving
6	Military

The SANDAG ABM2 assigns one of the activity types to each out-of-home location that a person travels to in the simulation (shown in Table B.4). The activity types are grouped according to whether the activity is mandatory, maintenance, or discretionary. The classification scheme of activities into the three categories helps differentiate the importance of the activities. Mandatory includes work and school activities. Maintenance includes household-related activity such as drop-off and pick-up of children, shopping, and medical appointments. Discretionary includes social and recreational activities. To determine which person-types can be used for generating each activity type, the model assigns eligibility requirements. For example, a full-time worker will generate mandatory work activities, while a non-working adult or senior is eligible for non-mandatory activities. The classification scheme of each activity type reflects the relative importance or natural hierarchy of the activity, where work and school activities are typically the most inflexible in the person's daily travel itinerary.

Table B.4
Activity Types

Type	Purpose	Description	Classification	Eligibility
1	Work	Working at regular workplace or work-related activities outside the home	Mandatory	Workers and students
2	University	College+	Mandatory	Age 18+
3	High School	Grades 9-12	Mandatory	Age 14-17
4	Grade School	Grades K-8	Mandatory	Age 5-13
5	Escorting	Pick-up/drop-off passengers	Maintenance	Age 16+
6	Shopping	(auto trips only)	Maintenance	5+ (if joint travel, all persons)
7	Other Maintenance	Shopping away from home	Maintenance	5+ (if joint travel, all persons)
8	Social/ Recreational	Personal business/services and medical appointments	Discretionary	5+ (if joint travel, all persons)
9	Eat Out	Recreation, visiting friends/family	Discretionary	5+ (if joint travel, all persons)
10	Other Discretionary	Eating outside of home	Discretionary	5+ (if joint travel, all persons)

The SANDAG ABM2 models a full travel day of activity broken into half-hour intervals. These half-hour increments begin at 3 a.m. and end at 3 a.m. the next day, though the hours between 1 a.m. and 5 a.m. are aggregated to reduce computational burden. The ABM2 ensures temporal integrity so that no activities are scheduled with conflicting time windows, with the exception of short activities/tours that are completed within a half-hour increment. The ABM2 assigns auto and transit traffic at five discrete time-of-day periods aggregated from the half-hour intervals shown in Table B.5.

Table B.5
Time Periods for Level of Service Skims and Assignment

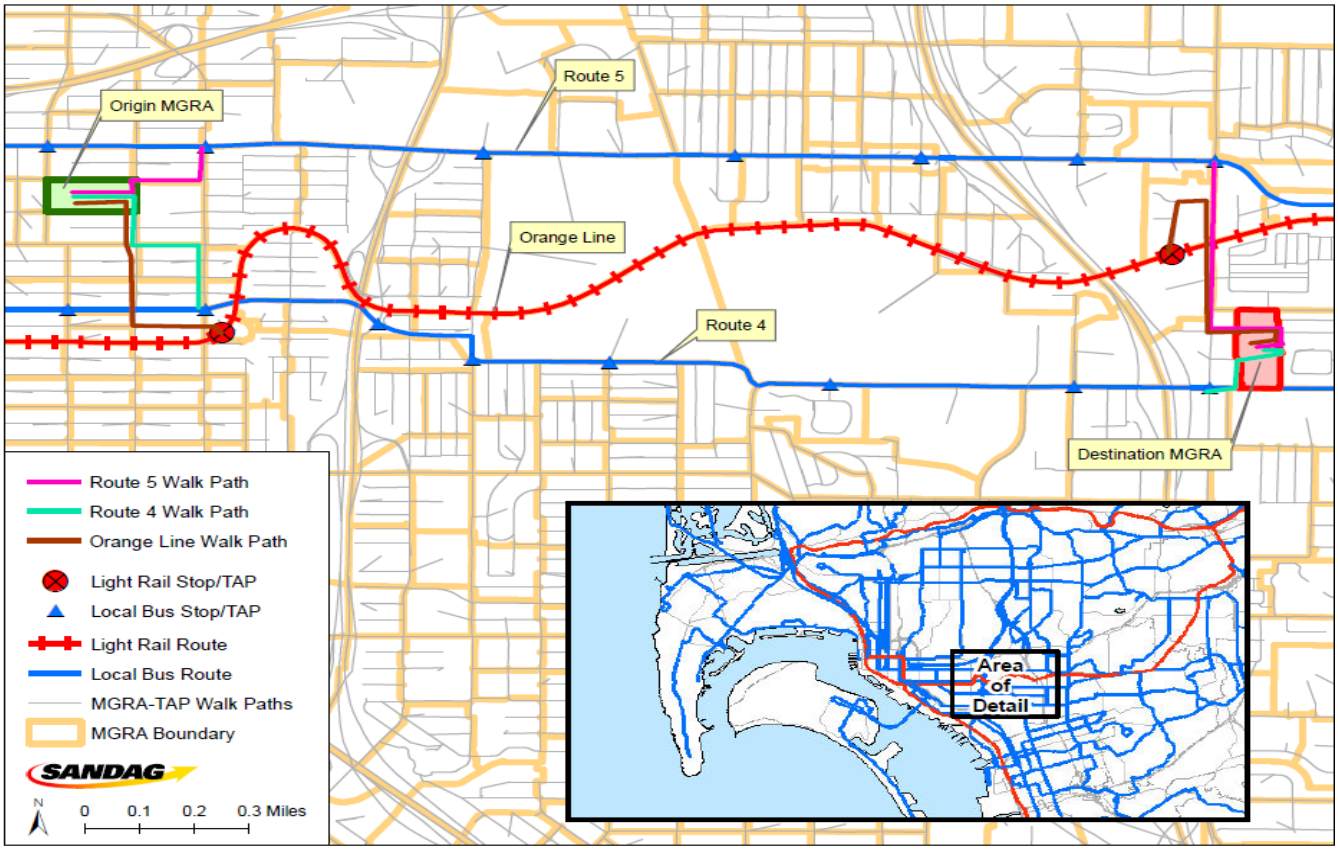
Number	Description	Begin Time	End Time
1	Early	3 a.m.	5:59 a.m.
2	A.M. Peak	6 a.m.	8:59 a.m.
3	Midday	9 a.m.	3:29 p.m.
4	P.M. Peak	3:30 p.m.	6:59 p.m.
5	Evening	7 p.m.	2:59 a.m.

The SANDAG ABM2 uses three-tier zone systems, as shown in Table B.6. The Master-Geographic Reference Area (MGRA) zone system is used for transit access, calculations, and location choice models; the Traffic Analysis Zone (TAZ) system is used for highway path building and assignment; and the pseudo-TAZ called Transit Access Point (TAP) is used for transit path building and assignment. The 23,000 MGRAs are roughly equivalent to census block groups. The ABM2 uses generalized transit stops as TAPs and relies on the traffic assignment software to generate TAP–TAP Level of Service (LOS) matrices (also known as "skims") such as in-vehicle time, first wait, transfer wait, and fare for transit calculation at the MGRA level. A custom-built software calculates walk access time from MGRA to TAP through paths from an all-street active transportation network including bike paths and walkways for non-motorized travel, and build paths following the Origin MGRA – Boarding TAP – Alighting TAP – Destination MGRA patterns. Figure B.2 shows a graphical depiction of MGRA – TAP transit paths. It displays potential walk paths from an origin MGRA through three potential boarding TAPs (two of which are local bus, and one of which is rail) with three potential alighting TAPs at the destination end.

Table B.6
Zone System

Zone System	Description	Number of Zones
MGRA	Master-Geographic Reference Area	23,000
TAZ	Traffic Analysis Zone	4,996
TAP	Transit Access Point	2,500

Figure B.2
Example Master-Geographic Reference Area – Transit Access Point Transit Accessibility



The ABM2 includes 18 modes available to residents, including auto by occupancy, toll/non-toll choice, walk and bike modes, and walk and drive access to local, premium, or local and premium transit modes. Pay modes are those that involve paying a choice or "value" toll. Table B.7 lists the trip modes defined in the SANDAG ABM2.

To model transit flow, the ABM2 uses five transit line-haul modes: (1) Commuter Rail (COASTER); (2) Light Rail Transit (LRT) (including Trolley, SPRINTER, and Streetcar); (3) Bus *Rapid* Transit (*Rapid)/Rapid* Bus; (4) Express Bus; and (5) Local Bus. The first four modes are premium transit modes. The mode of access to transit includes walk, Park & Ride (PNR), and kiss & ride (KNR or drop-off).

Table B.7
Trip Modes

Number	Mode
1	Drive Alone (Non-Toll)
2	Drive Alone (Toll Eligible)
3	Share Ride 2 Person (Non-Toll)
4	Share Ride 2 Person (Toll Eligible)
5	Share Ride 3+ Person (Non-Toll)
6	Share Ride 3+ Person (Toll Eligible)
7	Walk – Local Bus Only
8	Walk – Premium Transit Only
9	Walk – Local Bus and Premium Transit
10	PNR – Local Bus Only
11	PNR – Premium Transit Only
12	PNR – Local Bus and Premium Transit
13	KNR – Local Bus Only
14	KNR – Premium Transit Only
15	KNR – Local Bus and Premium Transit
16	Walk
17	Bike
18	School Bus (only available for school purpose)

ABM2 Model Flow

To simulate how San Diego residents, non-residents, and freight travel, the SANDAG ABM 2 includes several models and steps.

Figure B.3 outlines the overall flow of the SANDAG ABM2. It starts with building highway and transit networks in the traffic assignment software, followed by traffic assignment to create congested highway and transit travel times. A parallel step is to create a year-specific active transportation network and generate walking accessibility measures between MGRAs, between MGRA and TAP, and bike accessibility measures between MGRAs and between TAZs. The congested highway and transit skims, and the walking and biking accessibility measures, are inputs to the simulated models. The congested highway skims are also inputs to the aggregate models. Once the simulated and aggregated models generate trips by residents or various travelers, the ABM2 aggregates the vehicle trips from MGRA to TAZ to TAZ matrices by time of day, by toll and non-toll, and by vehicle class, and assigns the vehicle trips to the highway network. The traffic assignment generates the congested networks by time of day. The ABM then skims the congested networks to provide accessibility for the next iteration of the simulated and aggregated models. The process iterates three feedback loops. The last iteration assigns both highway and transit trips and creates skims for land use models. The outputs from the final step are used to generate input for EMFAC emissions modeling.

At the heart of the SANDAG ABM2 is the San Diego County residents' travel module. It simulates San Diegans' daily travel choices. In addition to the residents' travel, there are trips made by visitors, commercial vehicles, and freight transportation. A number of special travel models (commercial vehicle model, truck model, air passenger model, external trip model, visitor model, and cross-border model) account for these other sources of transportation demand. The models are run in parallel with the residents' travel module. Trips generated from the simulated and aggregate models are summed up to an auto trip matrix and transit trip matrix by time of day by mode and assigned to highway and transit networks.

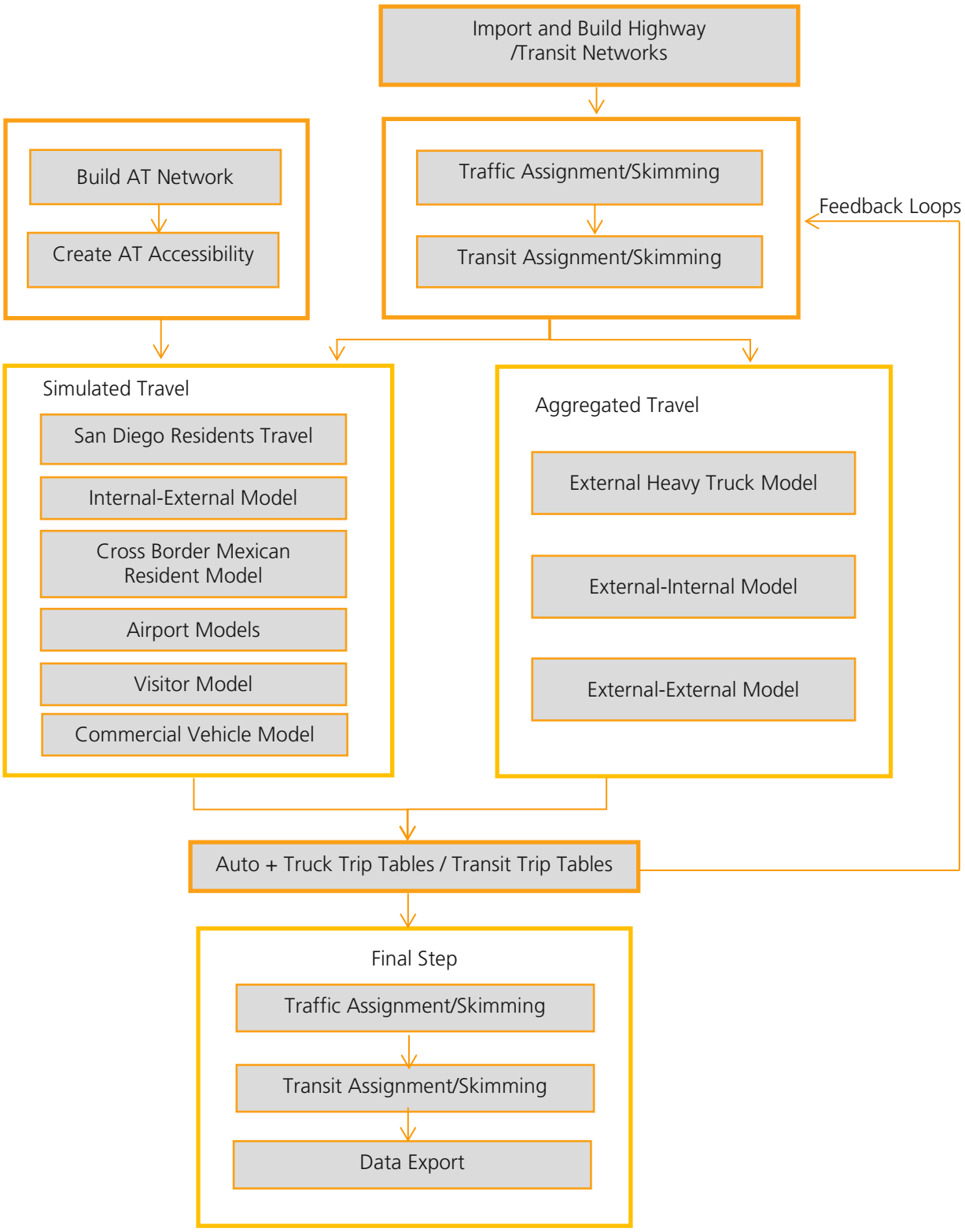
After network assignment, the EMFAC model is used to generate emissions summaries based on the inputs generated by the post-processing of traffic assignment outputs.

San Diego Residents Travel Module

The San Diego residents' travel module comprises numerous interacting components called "sub-modules." It starts with generating a representative population for the San Diego region. Once a representative population is created, the model predicts long-term and medium-term decisions such as a choice of work or school location and a household's choice of number of cars to own. Next, each person's day is scheduled, taking into account the priority of various activities and interaction among the household members. Once all journeys to and from home have been scheduled, the model predicts specific travel details such as mode, the number of stops to make, where to stop, and when to depart from each stop to continue the tour. The final step of the ABM2 is traffic assignment where trips are summarized by traffic analysis zones and assigned to the transportation network.

Figure B.3

SANDAG ABM2 Flow Chart



The following section discusses the sub-modules in the order that each sub-module is taken within the San Diego residents' travel module.

Step 1: Population synthesis (build a representative population that looks like San Diego)

The first step is to create a "synthetic" population of San Diego County. A synthetic population is a table that has a record for every individual and household with the individual's and the household's characteristics. For example, if there are 41,000 18-year-old males in the region in 2050, there would be approximately 41,000 records in the table for males age 18, with each record also having other characteristics such as school enrollment and labor force participation status. Taken as a whole, this synthetic population represents the decision-makers whose travel choices the model will simulate in later steps. For each simulation year, a full population is synthesized to match the forecasted socioeconomic and housing characteristics of each part of the region at the zonal level. These forecasts, a key ABM2 input, come from the land use model. Synthesis works by replicating a sample of census records (each containing complete household and individual characteristics) and placing them around the region in such a way that the forecasted characteristics of each zone are matched.

Step 2: Work and school location (assign a work location to workers and a school location to students)

The second step predicts where each individual will go to work or school, if applicable. The work and school location sub-module simulates each worker's choice of work location, taking into account many factors, including ease-of-travel and the number of employees by occupation type in each location. The sub-module also simulates each student's choice of school, taking into account factors that include the distance from home to school, school enrollment, and district boundaries. The results from this step affect later travel choices significantly because of the prominent role that workplace and school usually play in the itinerary of workers and students.

Step 3: Determine certain mobility characteristics of individuals and households

This step predicts the number of automobiles each household owns, whether each household owns a toll transponder, and whether worker parking costs are employer-reimbursed. The sub-module assigns each household zero cars, one car, two cars, three cars, or four or more cars, taking into account a number of criteria, including household size, income, number of drivers, and how easy it is to reach destinations from the household's place of residence. This step sets certain mobility characteristics that influence how people travel.

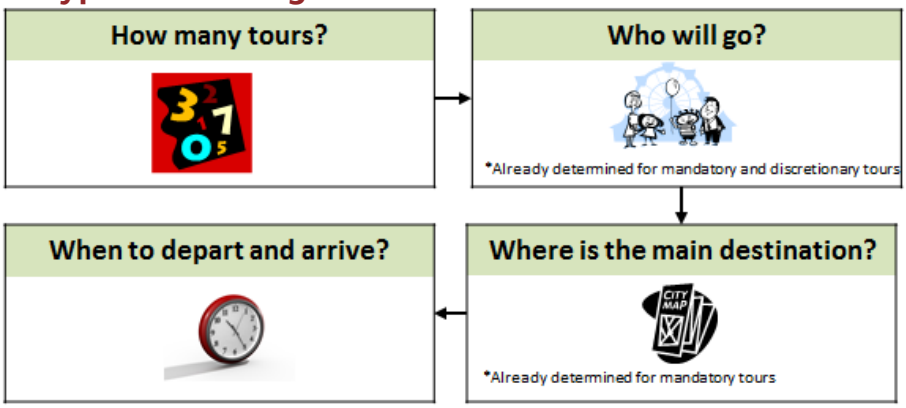
Step 4: Schedule the day

The fourth step begins by predicting a "daily activity" pattern for each individual. A daily activity pattern is a theme that dictates an individual's schedule. A "mandatory" pattern means that an individual travels to work and/or school, and then schedules other activities around work/school. An "at-home" pattern means that an individual's daily schedule involves no travel in the region. A "non-mandatory" pattern means that an individual's daily schedule involves traveling, but only to destinations other than work or school. The pattern type of other household members influences an individual's daily pattern type. For example, if a child stays home from school, a working parent might be more likely to stay home from work as well.

Once the sub-module selects an individual's daily activity pattern, it schedules the tours that he or she will take. Recall that a tour is a journey that begins and ends at home, and it can include stops at other destinations on the way to or from the primary destination. The ABM2 deals with three main categories of tours: (1) mandatory tours; (2) joint tours; and (3) non-mandatory tours. Mandatory tours have work or school as the primary destination. Joint tours involve out-of-home activities that multiple members of a household partake in together. Non-mandatory tours involve purposes other than work or school that an individual undertakes independent of other members of his or her household. The sub-module schedules each tour type by predicting how many tours of that type there are, who will participate in the tour, where the main destination is, and when to depart and arrive (see Figure B.4).

Figure B.4

Predicting Tour Type Scheduling Details

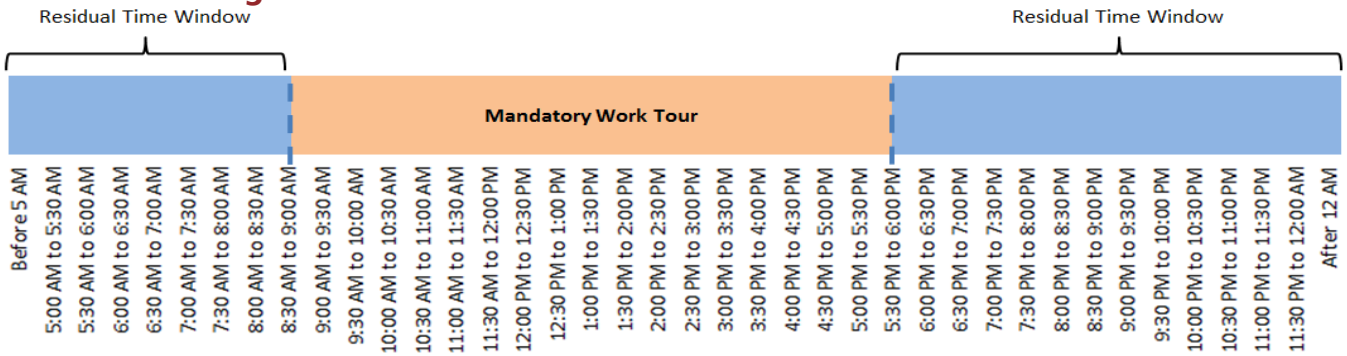


For individuals assigned a "mandatory" activity pattern, the sub-module first assigns the number of work tours and/or school tours they will make. After the number of these mandatory tours has been determined, the sub-module selects the time of departure from and arrival back home for each tour.

After scheduling the mandatory tours, the sub-module calculates time remaining for other tours. Remaining intervals of time are called "residual time windows," and other tours can only be scheduled in these open slots (see Figure B.5 for an example) to guarantee temporal consistency.

Figure B.5

Tour Scheduling Windows



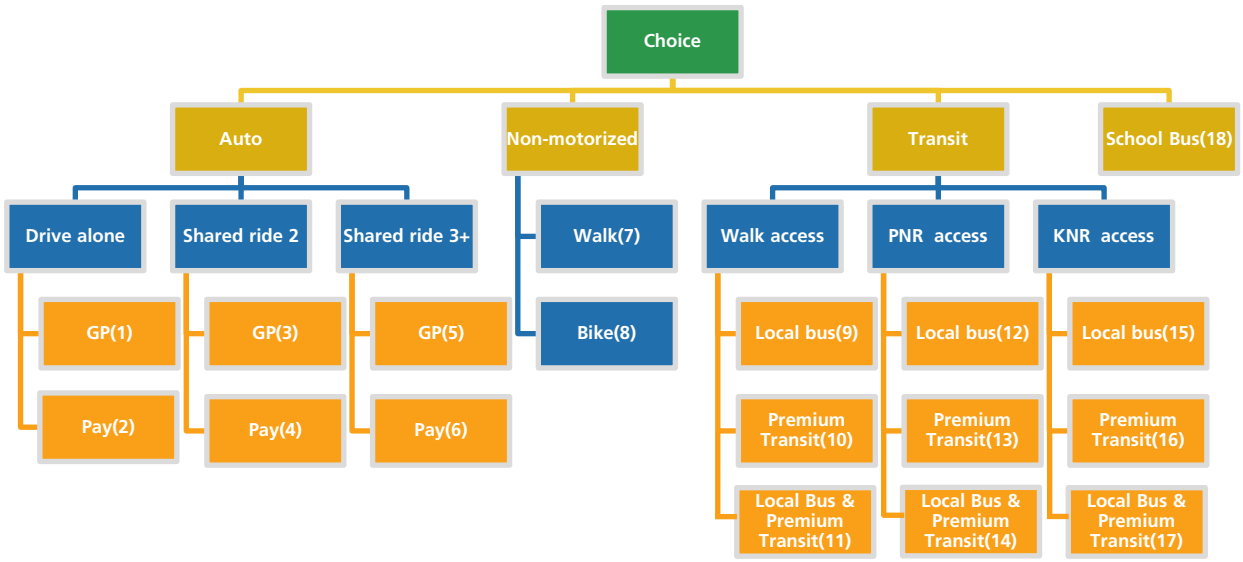
In time remaining after mandatory tours are scheduled, the sub-module determines the number of joint tours to be made for each household. It only schedules joint tours in the time windows that overlap between individuals after it accounts for mandatory activities. After the number and purpose of these joint tours has been determined, the sub-module decides which household members will participate in each joint tour and whether the joint tour must involve a combination of children and adults. The sub-module then chooses a specific destination for the tour and the specific times when tour participants will depart from and arrive back home together. Next, "non-mandatory" tours are scheduled. For each household, the sub-module decides what other tours need to be made for the purpose of household "maintenance" activities such as shopping. These tours are assigned to specific household members to carry out individually. For the person who is assigned each maintenance tour, the model selects a specific destination and schedules the tour to take place in a time window that mandatory tours and joint tours have left open. Finally, in what time remains, the model decides whether each individual will take non-mandatory "discretionary" tours. These low-priority tours involve activities related to recreation, eating out, and social functions. Discretionary tours can only take place in time windows that remain after all other tours have been scheduled. The sub-module chooses a specific destination and departure/arrival combination for each discretionary tour a person makes.

Step 5: Make tour and trip-level decisions

The ABM2 then selects more detailed characteristics of each tour for every traveler. This step fills in travel details after the major aspects of the day have been scheduled. Tour characteristics that need to be determined include: primary mode of the tour, how many times to stop, where to stop, and when to depart from each stop to continue the tour. Figure B.6 includes the available modes and mode hierarchy. After tour characteristics are set, the sub-module determines the mode of each trip (conditional upon tour mode). Recall that trips are segments of tours that have a given origin and destination. If the trip mode involves an automobile and the destination is a parking-constrained area, then the model chooses a parking location for the traveler at the trip destination.

Figure B.6

Tour and Trip Modes



Step 6: Aggregating and Assigning Auto and Transit Trips

The previous step provided travel details for each person down to the trip level. In this final step, the model sums all trips taken by individuals in San Diego County along with trips generated by other models that represent special categories of travel within the region that are not covered by the ABM2. The model aggregates auto trips in TAZ to TAZ matrices by time of day and assigns trips to the highway network, and aggregates transit trips in TAP to TAP matrices by time of day and assigns to the transit network.

SANDAG loads traffic using the Multimodal Multiclass Assignment function of the traffic assignment software. Multiclass assignment allows SANDAG to assign the six vehicle modes (drive alone non-toll; drive alone toll eligible; share ride 2 non-toll; share ride 2 toll eligible; share ride 3+ non-toll; and share ride 3+ toll eligible) plus the six-truck toll, and non-toll by truck class modes (light-heavy duty non-toll/toll; medium-heavy duty non-toll/toll; and heavy-heavy duty non-toll/toll) from truck model and commercial vehicle model in one combined procedure.

The traffic assignment model works by finding roads that provide the shortest travel impedance between each zone pair. Trips between zone pairs are then accumulated on road segments making up minimum paths. Highway impedances consider posted speed limits, signal delays, congestion delays, and costs. The model computes congestion delays for each segment based on the ratio of the traffic volume to roadway capacity. Motorists may choose different paths during peak hours, when congestion can be heavy, and off-peak hours, when roadways are typically free-flowing. For this reason, traffic is assigned separately for five time periods (as defined in the Key Modeling Units section). Vehicle trip tables for each scenario reflect increased trip-making due to population growth and variations in travel patterns due to the alternative transportation facilities/networks proposed. Customized programs process outputs from traffic assignment and generate total VMTs by vehicle class, and percentage of VMTs by speed bin and by vehicle class. This information is input to the EMFAC program to generate emissions summaries.

For transit assignment, traffic assignment software assigns TAP to TAP transit trips to the network. Altogether, 45 separate transit assignments are produced for five time periods: (1) walk; (2) Park & Ride; (3) kiss & ride; and (4) three transit modes. These individual assignments are summed to obtain total transit ridership forecasts.

Model Inputs

The SANDAG ABM2 utilizes a variety of data as inputs. Besides the growth forecast inputs (used to provide existing and planned land use and demographic characteristics) there are three major inputs: (1) highway networks used to describe existing and planned roadway facilities; (2) transit networks used to describe existing and planned public transit service; and (3) an active transportation network used to describe non-motorized bicycle and pedestrian facilities.

The regionally significant projects and the years they are expected to open to traffic for each analysis year are documented in Tables B.11 through B.13. The design concept and scope of projects allow adequate model representation to determine intersections with regionally significant facilities, route options, travel times, transit ridership, and land use. The VMT for non-regionally significant federal projects is also accounted for in the regional emissions analysis.

Highway Networks

The regional highway networks in the 2019 Federal RTP include all roads classified by local jurisdictions in their general plan circulation elements. These roads include freeways, expressways, and the Regional Arterial System (RAS). The RAS consists of all conventional state highways, prime arterials, and selected major streets. In addition, some local streets are included in the networks for connectivity between TAZs.

The route improvements and additions in the 2019 Federal RTP and 2018 RTIP, as amended, are developed to provide adequate travel service that is compatible with adopted regional policies for land use and population growth. All regionally significant projects are included in the quantitative emissions analysis. These include all state highways, all proposed national highway system routes, all regionally significant arterials, and all "other principal arterials" functionally classified by the Federal Highway Administration. These include both federal and non-federal regionally significant projects.

The networks also account for programs intended to improve the operation of the highway system, including HOV lanes, Managed Lanes, and ramp metering. Existing and proposed toll facilities also are modeled to reflect time, cost, and capacity effects of these facilities. State Route (SR) 125 South, SR 11, additional lanes on Interstate 15 (I-15) north of SR 78, and additional lanes on I-5 north of Vandegrift Boulevard are modeled toll facilities included in the Revenue Constrained Plan for the San Diego region.

In addition, several Managed/High Occupancy Vehicle (HOV) lanes are included in the Revenue Constrained 2019 Federal RTP (Table B.11, located at the end of this appendix). Facilities with proposed Managed Lanes include Interstate 5 (I-5), I-15, I-805, SR 52, SR 54, SR 78, SR 94, and SR 125. Managed Lanes are defined as reversible HOV routes and HOV routes with two or more lanes in the peak direction. Additionally, one-lane HOV facilities that operate as two-person carpool lanes in the earlier years of the 2019 Federal RTP transition to Managed Lanes by 2035. It is assumed that the excess capacity not utilized by carpools and transit on these facilities would be managed so that single-occupant vehicles could use these lanes under a pricing mechanism. Traffic flows would be managed so that the facility would operate at LOS D or better.

SANDAG maintains a master transportation network from which a specific year network, between the years 2010 and 2050, can be built. For air quality conformity analyses of the 2019 Federal RTP and 2018 RTIP, as amended, SANDAG built and verified five highway networks (2020, 2023, 2030, 2040, and 2050) from the master transportation network.

A list of the major highway and near-term regional arterial projects included in the conformity analysis, along with information on phasing for their implementation, are included in Tables B.11 and B.13. Locally funded, regionally significant projects have also been or are included in the air quality conformity analysis. These projects are funded with *TransNet* Extension funds—a 40-year, half-cent local sales tax extension approved by voters in 2004 that expires in 2048—and other local revenue sources.

Transit Networks

SANDAG also maintains transit network datasets for existing and proposed transit systems. Most transit routes run over the same streets, freeways, HOV lanes, and ramps used in the highway networks. The only additional facilities that are added to the master transportation network for transit modeling purposes are:

- Rail lines used by commuter rail, Trolleys, and streetcars
- Streets used by buses that are not part of local general plan circulation elements

Rapid service has stop spacing similar to commuter rail stations and operating characteristics midway between rail and bus service. *Rapid* service is provided by advanced design buses operating on HOV lanes or Managed Lanes, some grade-separated transit ways, and surface streets with priority transit systems.

Bus speeds assumed in the transit networks are derived from modeled highway speeds and reflect the effects of congestion. Higher bus speeds may result for transit vehicles operating on highways with HOV lanes and HOV bypass lanes at ramp meters, compared to those routes that operate on highways where these facilities do not exist.

In addition to transit travel times, transit fares are required as input to the mode choice model. A customized procedure using the traffic assignment software replicates the San Diego region's fare policies for riders (seniors, disabled, students), which differ among:

- Local Buses, which collect a flat fare of between $1.75 for NCTD and $2.25 MTS (COASTER Connection buses are free and some future shuttle routes charge $1)
- Trolleys, which charge $2.50 for all trips
- SPRINTER, which charges $2
- Commuter rail (COASTER), which has a zone-based fare of between $4 and $5.50
- Proposed regional *Rapid* routes, which are assumed to charge $2.50 ($5 for Express Freeway *Rapids*)
- Proposed *Rapid* Bus routes, which are assumed to charge $2.25

Transit fares reflect ridership costs at the time the transportation model was developed. Fares are expressed in 2010 dollars and are held constant in inflation-adjusted dollars over the forecast period.

Near-term transit route changes are drawn from the Coordinated Plan, which was produced in cooperation with the region's transit agencies. Longer-range improvements are proposed as a part of the 2019 Federal RTP development and other transit corridor studies. In addition to federal- and state-funded projects, locally funded transit projects that are regionally significant have been included in the air quality conformity analysis of the 2019 Federal RTP and the 2018 RTIP, as amended. Once network coding is completed, the ABM2 is run for the applicable scenarios (2020, 2023, 2030, 2040, and 2050).

Active Transportation Networks

SANDAG maintains an all-street active transportation network including existing and planned bike projects to support bike project evaluation and impact analysis. Based on the proposed bike projects in the regional bikeway system developed through *Riding to 2050 – San Diego Regional Bike Plan*, SANDAG generates year-specific active transportation networks and uses these networks to create accessibility measures from MGRA to MGRA for walking and biking and from TAZ to TAZ for biking modes. These active transportation accessibility measures are inputs to the SANDAG ABM2 to simulate people's choice of travel mode and choice of bike routes.

The active transportation networks include five classification types for bike facilities in the regional bikeway system: (1) class I – bike path; (2) class II – bike lanes; (3) class III – bike routes; (4) class IV – bike boulevard; and (5) class V – cycle track.

Data Sources

Besides network inputs, SANDAG relies on several survey data to estimate and calibrate the model parameters. The most important survey data is household travel survey data. The latest household travel survey conducted for SANDAG was the 2016–2017 Household Travel Behavior Survey (HTS2016) with smartphone-based travel diaries as the primary means of travel data collection. Since 1966, consistent with the state of the practice for the California Household Travel Survey and National Household Travel Survey, SANDAG and Caltrans conduct a comprehensive travel survey of San Diego county every ten years. HTS2016 surveyed 6,139 households in San Diego County. The survey asked all household with smartphones to participate using the smartphone-based GPS travel diary and survey app (rMove) for one week and accommodated participating households without smartphones by allowing them to complete their one-day travel diary online or by calling the study call center.

Additional data needed for the mode choice components of the ABM2 come from a transit on-board survey. The most recent SANDAG survey of this kind is the 2015 Transit On-Board Survey (OBS2015). OBS2015 collected data on transit trip purpose, origin and destination address, access and egress mode to and from transit stops, the on/off stop for surveyed transit routes, number of transit routes used, and demographic information.

Population synthesis requires two types of data: (1) individual household and person census records from San Diego County; and (2) aggregate data pertaining to the socio-demographic characteristics of each zone in the region. The first type of data is available from the Public Use Micro-data Sample (PUMS), a representative sample of complete household and person records that is released with the Census and American Communities Survey. The second type of data is from the census for the base year and from land use forecasts for future years.

Table B.8 lists data sources mentioned above along with other necessary sources of data. Modeling parking location choice and employer-reimbursement of parking cost depends on parking survey data collected from 2010 into early 2011 as well as a parking supply inventory. The transponder ownership sub-model requires data on transponder users. Data needed for model validation and calibration include traffic counts, transit-boarding data, Census Transportation Planning Package (CTPP) data, and Caltrans Performance Measurement System (PeMS) and Highway Performance Monitoring System (HPMS) data.

Table B.8
ABM2 Input Data

SANDAG Surveys	Outside Data Sources

• Household Travel Behavior Survey (2016)
• Transit On-Board Survey (2015)
• Parking Inventory Survey (2010)
• Parking Behavior Survey (2010)
• Border Crossing Survey (2011)
• Visitor Survey (2011)
• Special Events Survey (2011)
• Commercial Vehicles Survey (2011)
	• San Diego International Airport Air Passenger Survey
	• Traffic and Bicycle counts
	• Census data
	  ○ Census Transportation Planning Package (CTPP)
	  ○ Public Use Micro-data Sample (PUMS)
	• American Communities Survey (ACS)
	  ○ Census Transportation Planning Package (CTPP)
	  ○ Public Use Micro-data Sample (PUMS)
	• Transponder ownership data
	• Caltrans' Performance Measurement System (PeMS)
	• Caltrans' Highway Performance Monitoring System (HPMS)

Motor Vehicle Emissions Modeling

Emissions Model

On March 1, 2018, ARB released EMFAC2017 v1.0.2 to the public. On August 15, 2019, the U.S. EPA approved EMFAC2017 for use in conformity determinations and allowed for a two-year grace period (84 FR 41717).

Consistent with 40 CFR 93.111, EMFAC2017 v1.0.2, as the latest emissions model was used to project the regional emissions for the 2019 Federal RTP conformity determination and 2018 RTIP, as amended, conformity redetermination.

Projections of daily regional emissions were prepared for reactive organic gases (ROG) and nitrogen oxides (NOx).

The following process emissions are generated for each pollutant:

- All Pollutants – Running Exhaust, Idling Exhaust, Starting Exhaust, Total Exhaust
- ROG and total organic gasses – Diurnal Losses, Hot-Soak Losses, Running Losses, Resting Losses, Total Losses

EMFAC2017 models multiple vehicle categories, including the following:

- Passenger cars
- Motor homes
- Medium-duty trucks
- Medium-heavy-duty trucks
- School buses
- Motor coaches
- Motorcycles
- Light-duty trucks
- Light-heavy-duty trucks
- Heavy-heavy-duty trucks
- Urban buses
- Other bus types

EMFAC2017 includes updated motor vehicle fleet information from the California Department of Motor Vehicles for 2013–2016 and a new module which improves the characterization of activity and emissions from transit buses. Additionally, EMFAC2017 allows users to estimate emissions of natural gas-powered vehicles in addition to gasoline- and diesel-powered vehicles.

Regional Emissions Forecasts

Regional transportation forecasts were initiated in June 2019. Output from the ABM2 was then reformatted and adjusted to be useful for emissions modeling. Beginning in June 2019, SANDAG prepared countywide forecasts of average weekday ROG and NOx emissions for 2020, 2023, 2030, 2040, and 2050 using the EMFAC2017 v1.0.2 model. ROG and NOx emissions are based upon the summer season.

2008 Eight-Hour Ozone Standard

Effective December 4, 2017, the U.S. EPA found the motor vehicle emissions budgets for the Reasonable Further Progress milestone year of 2017 from the 2008 Eight-Hour Ozone Attainment Plan for San Diego County adequate for transportation conformity purposes for the 2008 ozone NAAQS (82 FR 54339).

The analysis years were selected to comply with 40 CFR 93.106(a)(1) and 93.118(a). According to these sections of the Conformity Rule, the first horizon year (2020) must be within ten years from the base year used to validate the regional transportation model (2016), the last horizon year must be the last year of the transportation plan's forecast period (2050), and the horizon years may be no more than ten years apart (2030 and 2040). The 2020 analysis year is also used to demonstration conformity to the 2008 ozone standard attainment year.

2015 Eight-Hour Ozone Standard

The SANDAG region was designated as a nonattainment area for the 2015 Eight-Hour Ozone standard with a classification of moderate, effective August 3, 2018 (83 FR 25776). Nonattainment areas with a moderate classification have an attainment date of August 3, 2024. The nearest complete ozone season (January–December) to the attainment year must be included in the analysis years (see implementation requirements for 2015 ozone standard, 83 FR 62998).

The analysis years were selected to comply with 40 CFR 93.106(a)(1), 93.118(a), and 93.119(g). According to these sections of the Conformity Rule, the first horizon year (2020) must be within ten years from the base year used to validate the regional transportation model (2016), the last horizon year must be the last year of the transportation plan's forecast period (2050), and the horizon years may be no more than ten years apart (2030 and 2040). In addition, the first analysis year must be no more than five years beyond the year in which the conformity determination is being made (2020, 2023). The year 2023 was included in the emissions analysis to demonstrate conformity to the 2015 ozone NAAQS attainment year.

This conformity determination precedes the development of a SIP for the 2015 ozone standard, which would establish new emission budgets. U.S. EPA has published the Transportation Conformity Guidance for 2015 Ozone NAAQS Nonattainment Areas, which details procedures needed to demonstrate conformity without a 2015 Ozone SIP. The conformity analysis was conducted in accordance with the above guidance and 40 CFR 93.109(c)(2).

SANDAG meets the two criteria established by the EPA guidance needed to allow for the "budget test" procedure (i.e., using emissions budgets for the 2008 ozone standard) to demonstrate conformity. The qualification criteria for the budget test are:

1. The region has approved budgets for a previous (2008 eight-hour) ozone NAAQS.
2. The non-attainment areas for the previous ozone NAAQS and 2015 ozone NAAQS are identical.

Emissions Modeling Results

An emissions budget is the part of the SIP that identifies emissions levels necessary for meeting emissions reduction milestones, attainment, or maintenance demonstrations.

To determine conformity of the 2019 Federal RTP and redetermine conformity of the 2018 RTIP, as amended, the emission analysis described in the Regional Emissions Forecast section was used. Table B.9 shows that the projected ROG and NOx emissions from the 2019 Federal RTP and 2018 RTIP, as amended, are below the applicable ROG and NOx budgets for both the 2008 and 2015 ozone standards.

Table B.9

2019 Federal Regional Transportation Plan and 2018 RTIP, as amended Conformity Analysis for the 2008 and 2015 Eight-Hour Ozone Standards (EMFAC2017)

			ROG		NOx	
Year	Average Weekday Vehicle Starts (1,000s)	Average Weekday Vehicle Miles (1,000s)	SIP Emissions Budget Tons/Day	ROG Emissions Tons/Day	SIP Emissions Budget Tons/Day	NOx Emissions Tons/Day
2020	10,807	83,650	23	17	42	25
2023	11,183	84,716	23	14	42	17
2030	12,565	90,457	23	11	42	14
2040	14,006	95,639	23	9	42	12
2050	15,225	100,040	23	8	42	13

Note: Emissions budgets from the *2008 Eight-Hour Ozone Attainment Plan for San Diego County (December 2016)*, which were found adequate for transportation conformity purposes by the U.S. EPA effective December 4, 2017, are used for all analysis years.

Exempt Projects

40 CFR Section 93.126 exempts certain highway and transit projects from the requirement to determine conformity. The categories of exempt projects include safety, mass transit, air quality (ridesharing and bicycle and pedestrian facilities), and other (such as planning studies).

Table B.10 illustrates the exempt projects considered in the Revenue Constrained 2019 Federal RTP and 2018 RTIP, as amended. This table shows short-term exempt projects. Additional unidentified projects could be funded with revenues expected to be available from the continuation of existing state and federal programs.

Table B.10
Exempt Projects

Project/Program Description	Project/Program Description
Bikeway, Rail Trail, and Pedestrian Projects	
Bayshore Bikeway	Kearny Mesa – Beaches Bicycle Corridor
Bay-to-Ranch Bikeway	Kensington – Balboa Park Bicycle Corridor
Border Access Bicycle Corridor	Mid-County Bikeway
Camp Pendleton Trail	Mira Mesa Bicycle Corridor
Carlsbad – San Marcos Bicycle Corridor	Mission Valley – Chula Vista Bicycle Corridor
Central Coast Bicycle Corridor	National City – Highland Avenue Community Corridor
Chula Vista Greenbelt	North Park – Centre City Bicycle Corridor
City Heights – Old Town Bicycle Corridor	Oceanside – Bicycle Master Plan
Clairemont – Centre City Bicycle Corridor	Otay Mesa Port of Entry Pedestrian/Bicycle Facilities
Coastal Rail Trail	Park Boulevard Bicycle Connector
East County Northern Bicycle Loop	Poway Bicycle Loop
East County Southern Bicycle Loop	San Diego Regional Bicycle Plan
El Camino Real Bicycle Corridor	San Diego River Multi-Use Bicycle and Pedestrian Path
Encinitas – San Marcos Bicycle Corridor	San Luis Rey River Trail
Escondido Creek Bike Path Bridge and Bikeway	Santee – El Cajon Bicycle Corridor
Gilman Bicycle Connector	SR 15 Bikeway
Hillcrest – El Cajon Bicycle Corridor	SR 52 Bikeway
Imperial Beach Bicycle Connector	SR 125 Bicycle Corridor
Inland Rail Trail	SR 905 Bicycle Corridor
Interstate 8 Bicycle Corridor	Tecate International Border Crossing Pedestrian Facilities
Interstate 805 Bicycle Corridor	Vista Way Bicycle Connector

Table B.10 (continued)
Exempt Projects

Project/Program Description	Project/Program Description
Safety Improvement Program	*Transportation Systems Management*
Bridge Rehabilitation/Preservation/Retrofit	Traveler Information System
Collision Reduction	Bus on Shoulder Service
Emergency Response	Compass Card
Hazard Elimination/Safe Routes to School	*FasTrak®*
Highway Maintenance	Freeway Service Patrol
Safety Improvement Program	Vehicle Automation
Roadway/Roadside Preservation	Regional Vanpool Program
Smart Growth Incentive Program	Multimodal Integration and Performance-Based Management
Safe Routes to Transit	Intelligent Transportation System for Transit
Safe Routes to School	ITS Operations
Transit Terminals	*Joint Transportation Operations Center*
Airport Intermodal Transit Center/Terminal	Trolley Fiber Communication Network
San Ysidro Intermodal Transit Center/Terminal	Electronic Payment Systems and Universal Transportation Account
	Various Traffic Signal Optimization/Prioritization
	Transit Infrastructure Electrification
	Employer Services and Outreach
	Commuter Services and Bike Program
	Mobility Hubs
	Active Traffic and Demand Management
	Shared Mobility Services

Implementation of Transportation Control Measures

There are four federally approved Transportation Control Measures (TCMs) that must be implemented in San Diego, which the SIP refers to as transportation tactics. They include: (1) ridesharing; (2) transit improvements; (3) traffic flow improvements; and (4) bicycle facilities and programs.

These TCMs were established in the 1982 SIP, which identified general objectives and implementing actions for each tactic. The TCMs have been fully implemented[6]. Ridesharing, transit, bicycling, and traffic flow improvements continue to be funded, although the level of implementation established in the SIP has been surpassed.

Interagency Consultation Process and Public Input

The consultation process followed to prepare the Air Quality Conformity Analysis for the 2019 Federal RTP, and 2018 RTIP, as amended, complies with the San Diego Transportation Conformity Procedures adopted in July 1998. In turn, these procedures comply with federal requirements under 40 CFR Part 93. Interagency consultation involves SANDAG (as the MPO for San Diego County), the APCD, Caltrans, CARB, U.S. DOT, and U.S. EPA.

Consultation is a three-tier process that:

1. Formulates and reviews drafts through a conformity working group.
2. Provides local agencies and the public with opportunities for input through existing regional advisory committees and workshops.
3. Seeks comments from affected federal and state agencies through participation in the development of draft documents and circulation of supporting materials prior to formal adoption.

SANDAG consulted on the development of the Air Quality Conformity Analysis of the 2019 Federal RTP and 2018 RTIP, as amended, at meetings of the San Diego Region CWG, as follows:

- On March 6, 2019, SANDAG staff presented the action plan approved by the Board on February 22, 2019, for the development of the 2019 Federal RTP.
- On April 3, 2019, SANDAG staff presented information about the criteria and procedures to be followed for its conformity analysis. Staff presented information on the 2050 Regional Growth Forecast, Travel Demand Model, Transportation Control Measures, Revenue Constrained financial assumptions, latest emissions model and emissions budgets, and public involvement and outreach.
- On June 5, 2019, SANDAG staff presented additional information on the 2019 Federal RTP schedule, travel demand modeling, and updated revenue-constrained financial assumptions.
- On July 22, 2019, through August 21, 2019, public comment was sought on the proposed draft transportation network for the 2019 Federal RTP.
- On July 26, 2019, SANDAG staff presented the 2019 Federal RTP proposed draft transportation network to the Board.
- On August 2, 2019, SANDAG staff distributed the 2019 Federal RTP proposed draft transportation network to the CWG. The project lists were discussed at the August 7, 2019, CWG meeting.
- On September 20, 2019, SANDAG staff distributed the draft conformity analysis for the 2019 Federal RTP and 2018 RTIP, as amended to the CWG for interagency consultation.
- The CWG discussed the conformity analysis for the 2019 Federal RTP conformity demonstration and a redemonstration of conformity for the 2018 RTP, as amended, at its October 2, 2019, meeting.
- On October 25, 2019, the SANDAG Board of Directors adopted Resolution No. 2019-12, adopting the air quality conformity determination, finding that the Revenue Constrained Plan is in conformance with the State Implementation Plan for air quality; adopting the 2019 Federal Regional Transportation Plan and its supporting analyses, and; adopting findings in support of a Notice of Exemption under the California Environmental Quality Act.

Members of the public were welcomed to provide comments at meetings of the CWG, the *TransNet* Independent Taxpayer Oversight Committee, the Transportation Committee, and the Board.

Table B.11

Phased Highway Projects – 2019 Federal Regional Transportation Plan

Conformity Analysis Year	Freeway	From	To	Existing	With Improvements	Capital Cost ($2019); millions	Capital Cost ($YOE); millions
Managed Lanes / Toll Lanes							
2023	SR 11/ Otay Mesa East Port of Entry (POE)	SR 125	Mexico	--	4T + POE	$472	$472
2023	I-5	Manchester Ave	SR 78	8F	8F+2ML	$51	$51
2030	I-5	SR 905	SR 54	8F	8F +2ML	$542	$627
2030	I-5	SR 54	SR 15	8F	10F+2ML	$467	$540
2030	I-5	La Jolla Village Dr I-5/I-805 Merge	I-5/805 Merge SR 56	8F/14F 8F/14F+ 2ML	8F/14F+2ML 8F/14F+4ML	$422	$513
2030	I-5	SR 78	Vandegrift Blvd	8F	8F+2ML	$116	$131
2030	I-15	I-8	SR 163	8F	8F+2ML	$64	$72
2030	I-805	SR 94	SR 15	8F	8F+2ML	$234	$264
2030	I-805	SR 52	Carroll Canyon Rd	8F+2ML	8F+4ML	$778	$996
2040	I-5	SR 56	SR 78	8F+2ML	8F+4ML	$2,082	$3,019
2040	SR 15	SR 94	I-805	6F	6F+2ML	$41	$59
2040	SR 78	I-5	I-15	6F	6F+2ML	$1,621	$2,127
2040	SR 94	I-5	I-805	8F	8F+2ML	$728	$955
2040	I-805	SR 905	Palomar St	8F	8F+2ML	$235	$316
2040	I-805	SR 54	SR 94	8F +2ML	8F+4ML	$742	$998
2040	I-805	SR 163	SR 52	8F	8F+2ML	$195	$269
2050	I-5	I-8	La Jolla Village Dr	8F/10F	8F/10F+2ML	$978	$2,067
2050	I-5	SR 78	Vandegrift Blvd	8F+2ML	8F+4ML	$632	$1,336

Table B.11 (continued)

Phased Highway Projects – 2019 Federal Regional Transportation Plan

Conformity Analysis Year	Freeway	From	To	Existing	With Improvements	Capital Cost ($2019); millions	Capital Cost ($YOE); millions
Managed Lanes / Toll Lanes							
2050	I-5	Vandegrift Blvd	Orange County	8F	8F+4T	$3,165	$6,687
2050	I-15	Viaduct		8F	8F+2ML	$1,040	$2,197
2050	I-15	SR 78	Riverside County	8F	8F+4T	$1,744	$3,684
2050	SR 15	I-5	SR 94	6F	8F+2ML	$185	$391
2050	SR 52	I-805	I-15	6F	6F+2ML	$238	$503
2050	SR 52	I-15	SR 125	4F/6F	4F/6F+2ML (R)	$405	$856
2050	SR 54	I-5	SR 125	6F	6F+2ML	$151	$319
2050	SR 94	I-805	SR 125	8F	8F+2ML	$501	$1,057
2050	SR 125	SR 54	I-8	6F/8F	6F/10F+2ML	$690	$1,457
2050	I-805	SR 94	SR 15	8F+2ML	8F+4ML	$83	$175
2050	I-805	SR 15	SR 163	8F/10F	8F/10F+4ML	$1,567	$3,310
2050	I-805	SR 163	SR 52	8F+2ML	8F+4ML	$438	$925
Highway Projects							
2030	SR 67	Mapleview St	Gold Bar Ln	2C	4C	$82	$92
2040	SR 52	Mast Blvd	SR 125	4F	6F	$103	$147
2050	I-8	2nd St	Los Coches	4F/6F	6F	$44	$94
2050	SR 52	I-5	I-805	4F	6F	$151	$319
2050	SR 56	I-5	I-15	4F	6F	$192	$405
2050	SR 67	Gold Bar Ln	Dye Rd	2C/4C	4C	$591	$1,248
2050	SR 94	Avocado Blvd	Jamacha	4C	6C	$124	$261
2050	SR 94	Jamacha	Steele Canyon Rd	2C/4C	4C	$54	$115
2050	SR 94	SR 125	Avocado Blvd	4F	6F	$190	$401
2050	SR 125	San Miguel Rd	SR 54	4F	8F	$241	$509
2050	SR 125	SR 905	San Miguel Rd	4T	8F	$439	$741

Table B.11 (continued)

Phased Highway Projects – 2019 Federal Regional Transportation Plan

Conformity Analysis Year	Freeway	From	To	Existing	With Improvements	Capital Cost ($2019); millions	Capital Cost ($YOE); millions
Operational Projects							
2050	I-5	SR 15	I-8	8F	8F+ Operational	$1,985	$4,194
2050	I-8	I-5	SR 125	8F/10F	8F/10F+ Operational	$907	$1,917
2050	I-8	SR 125	2nd St	6F/8F	6F/8F+ Operational	$227	$480
2050	SR 76	I-15	Couser Canyon	2C/4C	4C/6C+ Operational	$178	$376
Managed Lanes Connectors							
2030	I-5	I-805	North to North & South to South			*	*
2030	I-15	SR 78	East to South & North to West			$144	$171
2030	SR 15	I-805	North to North & South to South			$110	$124
2040	I-5	SR 78	South to East & West to North, North to East & West to South			$344	$451
2040	SR 15	SR 94	South to West & East to North			$97	$127
2040	I-805	SR 52	West to North & South to East			*	*
2040	I-805	SR 94	North to West & East to South			$137	$180
2050	I-15	SR 52	West to North & South to East			$177	$374
Freeway Connectors							
2030	SR 94	SR 125	South to East			$94	$106
2030	SR 94	SR 125	West to North			$110	$134
2040	I-5	SR 56	West to North & South to East			$371	$487
2040	I-5	SR 78	South to East & West to South			$371	$487
2050	I-15	SR 56	North to West			$104	$219

* Project cost included in associated Managed Lane project

Table B.12

Phased Transit Services – 2019 Federal Regional Transportation Plan

Conformity Analysis Year	Service	Route	Description	Capital Cost ($2019); millions	Capital Cost ($YOE); millions
2023	Trolley	510	Mid-Coast Trolley Extension	$919	$919
2030	Airport Express	--	Airport Express Routes [A]	$71	$82
2030	COASTER	398	Phase I: Double tracking (20-minute peak frequencies and 120-minute off-peak frequencies) Phase II: Double tracking (20-minute peak frequencies and 60-minute off-peak frequencies, grade separations at Leucadia Boulevard, stations/platforms at Convention Center/Gaslamp Quarter, and extension to Camp Pendleton)	$609 $1,224	$693 $1,488
2030	*Rapid*	2	North Park to Downtown San Diego via 30th St	$54	$62
2030	*Rapid*	10	La Mesa to Ocean Beach via Mid-City, Hillcrest, Old Town	$57	$65
2030	*Rapid*	11	Spring Valley to SDSU via Southeast San Diego, Downtown, Hillcrest, Mid-City	$154	$199
2030	*Rapid*	28	Point Loma to Kearny Mesa via Old Town, Linda Vista	$67	$80
2030	*Rapid*	30	Old Town to Sorrento Mesa via Pacific Beach, La Jolla, UTC	$143	$172
2030	*Rapid*	41	Fashion Valley to UTC/UC San Diego via Linda Vista and Clairemont	$75	$90
2030	*Rapid*	90	El Cajon Transit Center to San Diego International Airport ITC via SR 94, City College (peak only)	$27	$32
2030	*Rapid*	120	Kearny Mesa to Downtown via Mission Valley	$127	$145
2030	*Rapid*	SR 163 DARs	Kearny Mesa to Downtown via SR 163. Stations at Sharp/Children's Hospital, University Ave, and Fashion Valley Transit Center	$204	$215
2030	*Rapid*	473	Phase I – Solana Beach to UTC/UC San Diego via Highway 101 Coastal Communities, Carmel Valley	$58	$70
2030	*Rapid*	550	SDSU to Palomar Station via East San Diego, Southeast San Diego, National City	$112	$126
2030	*Rapid*	635	Eastlake to Palomar Trolley via Main St Corridor	$105	$126
2030	*Rapid*	638	Iris Trolley Station to Otay Mesa via Otay, Airway Dr, SR 905 Corridor	$52	$67

Table B.12 (continued)

Phased Transit Services – 2019 Federal Regional Transportation Plan

Conformity Analysis Year	Service	Route	Description	Capital Cost ($2019); millions	Capital Cost ($YOE); millions
2030	*Rapid*	640A/ 640B	Route 640A: I-5 – San Ysidro to Old Town Transit Center via City College 640B: I-5 Iris Trolley/Palomar to Kearny Mesa via Chula Vista, National City and City College	$208	$229
2030	*Rapid*	688/689/ 690	Route 688: San Ysidro to Sorrento Mesa via I 805/ I-15/ SR 52 Corridors (Peak Only) Route 689: Otay Mesa Port of Entry (POE) to UTC/Torrey Pines via Otay Ranch/ Millennia, I-805 Corridor (Peak Only) Route 690: Mid-City to Sorrento Mesa via I-805 Corridor (Peak Only)	$623	$757
2030	*Rapid*	709	H St Trolley Station to Millennia via H St Corridor, Southwestern College	$89	$101
2030	*Rapid*	950	Extension of Iris Trolley Station to Otay Mesa Port of Entry (POE) route with new service to Imperial Beach (formerly route 905)	$3	$3
2030	*Rapid*	910	Coronado to Downtown via Coronado Bridge	$54	$65
2030	Shuttle	448/449	San Marcos Shuttle [B]	$0	$0
2030	SPRINTER	399	SPRINTER efficiency improvements (20-minute frequencies by 2025); double tracking Oceanside to Escondido for 10-minute frequencies and six rail grade separations at El Camino Real, Melrose Dr, Vista Village Drive / Main St, North Dr, Civic Center, Auto Pkwy and Mission Avenue	$1,287	$1,564
2030	Streetcar	553	Downtown San Diego: Little Italy to East Village [C]	$15	$20
2030	Streetcar	554	Hillcrest/Balboa Park/Downtown San Diego Loop [C]	$39	$45
2030	Streetcar	555	30th Street to Downtown San Diego via North Park/Golden Hill[1]	$23	$29
2030	Trolley	510	Phase I – Blue Line Frequency Enhancements and rail grade separations at 28th Street, 32nd Street, E Street, H Street, Palomar Street, and Blue/ Orange Track Connection at 12th & Imperial	$279	$339
2030	Trolley	520	Orange Line Frequency Enhancements and four rail grade separations at Euclid Avenue, Broadway/ Lemon Grove Avenue, Allison Avenue/ University Avenue, Severin Drive	$363	$453
2030	Trolley	561	UTC to COASTER Connection (extension of Route 510)	$467	$581

Table B.12 (continued)

Phased Transit Services – 2019 Federal Regional Transportation Plan

Conformity Analysis Year	Service	Route	Description	Capital Cost ($2019); millions	Capital Cost ($YOE); millions
2030			Local Bus Routes – 15 minutes in key corridors	--	--
2040	*Rapid*	103	Solana Beach to Sabre Springs *Rapid* station via Carmel Valley	$91	$152
2040	*Rapid*	235	Temecula (peak only) Extension of Escondido to Downtown *Rapid* (formerly Route 610)	$133	$222
2040	*Rapid*	440	Carlsbad to Escondido Transit Center via Palomar Airport Road	$140	$234
2040	*Rapid*	473	Phase II – Oceanside to Solana Beach via Hwy 101 Coastal Communities	$118	$197
2040	*Rapid*	477	Camp Pendleton to Carlsbad Village via College Boulevard, Plaza Camino Real	$109	$181
2040	*Rapid*	636	SDSU to Spring Valley via East San Diego, Lemon Grove, Skyline	$53	$88
2040	*Rapid*	637	North Park to 32nd St Trolley Station via Golden Hill	$60	$101
2040	*Rapid*	650	Chula Vista to Palomar Airport Road Business Park via I-805/I-5 (peak only)	$112	$186
2040	*Rapid*	653	Mid-City to Palomar Airport Road via Kearny Mesa/I-805/I-5	$14	$22
2040	SPRINTER	588	SPRINTER Express	$332	$545
2040	Streetcar	565	Mission Beach to La Jolla via Pacific Beach	$34	$57
2040	Trolley	510	Phase II – Blue Line rail grade separations at Taylor Street and Ash Street	$307	$505
2040	Trolley	562	Phase I – San Ysidro to Kearny Mesa via Chula Vista via Highland Avenue/4th Avenue, National City, Southeast San Diego, Mid-City, and Mission Valley	$4,575	$6,290
2040			Local Bus Routes – 10 minutes in key corridors	--	--
2050	COASTER	398	COASTER double tracking (completes double tracking; includes Del Mar Tunnel) and grade separations	$3,921	$8,258
2050	*Rapid*	471	Downtown Escondido to East Escondido	$46	$94
2050	*Rapid*	474	Oceanside to Vista via Mission Avenue/ Santa Fe Road Corridor	$99	$202
2050	*Rapid*	870	El Cajon to UTC via Santee, SR 52, I-805	$100	$190
2050	*Rapid*	890	El Cajon to Sorrento Mesa via SR 52, Kearny Mesa	$16	$31

Table B.12 (continued)

Phased Transit Services – 2019 Federal Regional Transportation Plan

Conformity Analysis Year	Service	Route	Description	Capital Cost ($2019); millions	Capital Cost ($YOE); millions
2050	SPRINTER	399	Branch Extension to Westfield North County	$239	$479
2050	Trolley	520	Orange Line Frequency Enhancements	$0	$0
2050	Trolley	530	Green Line Frequency Enhancements	$0	$0
2050	Trolley	560	SDSU to Downtown via El Cajon Boulevard/ Mid-City (transition of Mid-City *Rapid* to Trolley)	$3,251	$6,676
2050	Trolley	562	Phase II – Kearny Mesa to Carmel Valley	$2,191	$4,389
2050	Trolley	563	Pacific Beach to El Cajon Transit Center	$1,579	$3,024

Notes:
A. Implementation of these services is dependent upon funding from aviation and other private sources.
B. Capital cost to be funded by the City of San Marcos.
C. Streetcar cost is representative of 10 percent of the total capital cost.

Table B.13

Phased Arterial Projects – 2019 Federal Regional Transportation Plan

Conformity Analysis Year	SANDAG ID	Lead Agency	Project Title	Project Description
2020	CB04B	Carlsbad	El Camino Real and Cannon Road	In Carlsbad, along the eastside of El Camino Real just south of Cannon Road, widen to prime arterial standards with three through lanes, a right turn lane, and a sidewalk approaching the intersection
2020	CB13	Carlsbad	Poinsettia Lane Reach E – Cassia Drive to Skimmer Court	In Carlsbad, from Cassia Drive to Skimmer Court, construct a new 4-lane roadway with median, bike lanes, and sidewalks/trails to major arterial standards
2020	CB34	Carlsbad	Palomar Airport Road – Palomar Airport Road to Paseo Del Norte	In Carlsbad, widening along eastbound Palomar Airport Road to provide a dedicated right turn lane to southbound Paseo Del Norte
2020	CB35	Carlsbad	Palomar Airport Road – Palomar Airport Road to Paseo Del Norte	In Carlsbad, lengthen the left turn pocket along eastbound Palomar Airport Road to northbound Paseo Del Norte
2020	CHV08	Chula Vista	Willow Street Bridge Project – Bonita Road to Sweetwater Road	Replace 2-lane bridge with 4-lane bridge (Phase II)
2020	ESC02A	Escondido	East Valley/Valley Center	Widen roadway from 4 to 6 lanes with raised medians and left turn pockets; modify signal at Lake Wohlford and Valley Center Road; widen bridge over Escondido Creek
2020	ESC06	Escondido	El Norte Parkway Bridge at Escondido Creek – Kaile Lane to Key Lime Way	Construct missing 2-lane bridge at Escondido Creek
2020	ESC24	Escondido	Centre City Parkway	Mission Road to SR 78, widen 4 lanes to 6 lanes with intersection improvements

Table B.13 (continued)

Phased Arterial Projects – 2019 Federal Regional Transportation Plan

Conformity Analysis Year	SANDAG ID	Lead Agency	Project Title	Project Description
2020	NC01	National City	Plaza Boulevard Widening	Phase II of Plaza Boulevard from Highland Avenue to N Avenue, widen from 2 to 3 lanes, including a new traffic lane in each direction, new sidewalks, sidewalk widening, traffic signal upgrades, and interconnection at Plaza Boulevard
2020	SD83	San Diego	SR 163/Friars Road Interchange Modification	Widen and improve Friars Road and overcrossing; reconstruct interchange including improvements to ramp intersections (Phase 1); construct new connector roadways and structures (Phase 2); construct auxiliary lanes along northbound and southbound SR163 (Phase 3) (CIP Legacy#52-455.0,WBS# S-00851)
2020	SD102A	San Diego	Otay Truck Route Widening	Phase I (from La Media Rd to Drucker Lane) of Otay Truck Route in San Diego from Drucker Lane to La Media, add 1 lane (total 3 lanes) for trucks; from Britannia to La Media, add 1 lane for trucks and one lane for emergency vehicles (border patrol/fire department access); add one lane for trucks along Britannia from Britannia Court to the Otay Truck Route.
2020	SM22	San Marcos	South Santa Fe – Bosstick to Smilax	From Bosstick to Smilax, realign and signalize the South Santa Fe/Smilax intersection (Phase I)
2020	SM31	San Marcos	Discovery Street Improvements	From Via Vera Cruz to Bent Avenue/Craven Road, widen roadway to 4-lane secondary arterial
2020	SM48	San Marcos	Creekside Drive	Construct approximately 3,000 feet of a 2-lane collector road from Via Vera Cruz to Grand Avenue in the City of San Marcos. The road will include two 12-foot lanes, diagonal parking on the north side, and parallel parking on the south side. In addition, the project also will include a 10-foot bike trail meandering along the south side
2020	V15	Various	I-5/Gilman Drive Bridge	In San Diego, construct new overcrossing over I-5 between Gilman Drive and Medical Center Drive

Table B.13 (continued)

Phased Arterial Projects – 2019 Federal Regional Transportation Plan

Conformity Analysis Year	SANDAG ID	Lead Agency	Project Title	Project Description
2023	CB12	Carlsbad	College Blvd Reach A – Badger Lane to Cannon Road	In Carlsbad, from Badger Lane to Cannon Road, construct a new segment of College Boulevard to provide 4-lane roadway with raised median, bike lanes, and sidewalks/trails in accordance with major arterial standards
2023	CB22	Carlsbad	Avenida Encinas – widen from Palomar Airport Road to EWPCF	In Carlsbad, Avenida Encinas from Palomar Airport Road southerly to existing improvements adjacent to Embarcadero Lane, roadway widening to secondary arterial standards
2023	CB32	Carlsbad	El Camino Real Widening – Cassia to Camino Vida Roble	In Carlsbad, widen El Camino Real from 900 feet north of Cassia Road to Camino Vida Roble, along the northbound side of the roadway to provide three travel lanes and a bike lane in accordance with prime arterial standards
2023	CHV69	Chula Vista	Heritage Road Bridge	Heritage Road from Main Street/Nirvana Avenue to Entertainment Circle, widen and lengthen bridge over Otay River from 4-lane to 6-lane bridge that accommodates shoulders, sidewalk, and median; project is on Heritage Road from the intersection of Main Street and Nirvana Avenue to Entertainment Circle
2023	CNTY21	San Diego County	Bradley Ave Overpass at SR 67	Widen Bradley Avenue from Magnolia Avenue to Mollison Avenue; widen from 2 lanes to 4 lanes plus sidewalks. Replace 2-lane bridge over SR 67 with a 6-lane bridge which accommodates turn pockets
2023	CNTY24	San Diego County	Cole Grade Road	Cole Grade Road from north of Horse Creek Trail to south of Pauma Heights Road, widen to accommodate 14-foot traffic lane in both directions, 12-foot center 2-way left turn, 6-foot bike lane and 10-foot pathway

Table B.13 (continued)

Phased Arterial Projects – 2019 Federal Regional Transportation Plan

Conformity Analysis Year	SANDAG ID	Lead Agency	Project Title	Project Description
2023	CNTY88	San Diego County	Ashwood Street Corridor Improvements – Mapleview to Willow	Ashwood Street/Wildcat Canyon Road from Mapleview Street to 1100 feet north of Willow Road in Lakeside- traffic signal improvements at Mapleview and Ashwood; traffic signal installation at Willow and Ashwood/Wildcat Canyon; and the addition of turn lanes, addition of a passing lane in a non-urbanized area, bike lanes, and pedestrian facilities
2023	ESC04	Escondido	Citracado Parkway II	West Valley to Harmony Grove, widen from 2 to 4 lanes with raised medians; construct bridge over Escondido Creek
2023	ESC08	Escondido	Felicita Ave./Juniper St. – from Escondido Blvd to Juniper St. and from Juniper St. to Chestnut St.	Widen from 2 to 4 lanes with left turn pockets, raised medians on Felicita; new traffic signals at Juniper and Chestnut, Juniper, and 13th Avenue, Juniper and 15th Avenue; modify traffic signal at Juniper and Felicita
2023	NC01	National City	Plaza Boulevard Widening	Phase III of Plaza Boulevard from I-805 to Euclid Avenue, widen from 2 to 3 lanes, including a new traffic lane in each direction, new sidewalks, sidewalk widening, traffic signal upgrades, and interconnection at Plaza Boulevard
2023	O22	Oceanside	College Boulevard – Avenida de la Plate to Waring Road	In Oceanside, widen from the existing 4 lanes to 6 lanes with bike lanes and raised median
2023	SD70	San Diego	West Mission Bay Drive Bridge	In San Diego, replace bridge and increase from 4- to 6-lane bridge including Class II bike lane (52-643/S00871)
2023	SD247	San Diego	Camino del Sur and Carmel Mountain Road	On Camino del Sur from Carmel Mountain Road to Dormouse Road, and on Camino del Sur from Torrey Santa Fe to Carmel Mountain Rd, construction of Camino del Sur as a 2-lane interim roadway (S00872 and RD15000). Project also includes construction of Carmel Mountain Road, from Sundance Avenue to Camino del Sur as a 4-lane major street with Class II bicycle lanes.

Table B.13 (continued)

Phased Arterial Projects – 2019 Federal Regional Transportation Plan

Conformity Analysis Year	SANDAG ID	Lead Agency	Project Title	Project Description
2023	SM19	San Marcos	Grand Avenue Bridge and Street Improvements	From Discovery Street to San Marcos Boulevard, construct 4-lane arterial bridge and a 6-lane arterial street from Craven to Grand Avenue
2023	SM32	San Marcos	Via Vera Cruz Bridge and Street Improvements	From San Marcos Boulevard to Discovery Street, widen to 4-lane secondary arterial and construct a bridge at San Marcos Creek
2023	SM42	San Marcos	Street Improvements: Discovery Street – Craven Road to West of Twin Oaks Valley Road	In the City of San Marcos, on Discovery Street from Craven Road to west of Twin Oaks Valley Road, construct approximately 5,100 lineal feet of a new 6-lane roadway
2023	V18	Various	I-5/Voigt Drive Improvements	In San Diego, on Interstate 5, construction of the realignment of both Campus Point and Voigt Drive between I-5 and Genesee Avenue
2030	CB31	Carlsbad	El Camino Real – La Costa Avenue to Arenal Road	In Carlsbad, along El Camino Real from 700 feet north of La Costa Avenue to Arenal Road, widening along the southbound side of the roadway to provide three travel lanes and a bike lane in accordance with prime arterial standards
2030	CNTY14A	San Diego County	South Santa Fe Avenue South	South Santa Fe from 700 feet south of Woodland Drive to Smilax Road, widening of South Santa Fe Avenue to a 5-lane major road with a center left turn lane, curb, gutter, sidewalk, bike lanes, and drainage improvements from 700 feet south of Woodland Drive to Smilax Road
2030	CNTY34	San Diego County	Dye Road Extension	Dye Road to San Vicente Road – in Ramona, study, design, and construct a 2-lane community collector road with intermittent turn lanes, bike lanes, curb, gutter, and pathway/walkway
2030	CNTY35	San Diego County	Ramona Street Extension	From Boundary Avenue to Warnock Drive – in the community of Ramona, construct new road extension, 2 lanes with intermittent turn lanes, bike lanes, and walkway/pathway

Table B.13 (continued)

Phased Arterial Projects – 2019 Federal Regional Transportation Plan

Conformity Analysis Year	SANDAG ID	Lead Agency	Project Title	Project Description
2030	SD34	San Diego	El Camino Real	In San Diego on El Camino Real from San Dieguito Road to Via de la Valle, reconstruct and widen from 2 to 4 lanes and extend transition lane and additional grading to avoid biological impacts (CIP 52-479.0)
2030	SD102A	San Diego	Otay Truck Route Widening	Phase II (from Britannia to La Media Rd) of Otay Truck Route in San Diego from Drucker Lane to La Media, add 1 lane (total 3 lanes) for trucks; from Britannia to La Media, add 1 lane for trucks and one lane for emergency vehicles (border patrol/fire department access); add one lane for trucks along Britannia from Britannia Court to the Otay Truck Route
2030	SD190	San Diego	Palm Avenue/I-805 Interchange	Improvements to the Palm Avenue Bridge over I-805, including repairs to the bridge approaches; a new Project Study Report and Preliminary Environmental Assessment Report. Phase II of the project will include widening of the bridge, realignment of existing ramps, possible addition of northbound looping entrance ramp, restriping of traffic lanes, and signal modifications. Phase III will provide the ultimate build-out of the project which will incorporate improvements of Phase II plus the northbound and southbound entrance ramps (CIP 52-640.0)
2030	SM10	San Marcos	SR 78/Smilax	Construct new interchange at Smilax Road interchange and SR 78 improvements
2030	SM24	San Marcos	Woodland Parkway Interchange Improvements	From La Moree Road to Rancheros Drive, modify existing ramps at Woodland Parkway and Barham Drive; widen and realign SR 78 undercrossing and associated work
2040	SD81	San Diego	Genesee Avenue – Nobel Drive to SR 52	In San Diego, future widening to 6-lane major street north of Decoro Street and to a 6-lane primary arterial south of Decoro Street and included Class II bicycle lanes (CIP 52-458.0)

Endnotes

[1] San Diego Forward: The Regional Plan Appendix T: SANDAG Travel Demand Model and Forecasting Documentation includes additional detail regarding the overall model structure.

[2] For documentation regarding the model conversion project, see SANDAG Travel Model in Emme User Guide, INRO consultants, 2017.

[3] For documentation regarding the SHRP2 C04 model enhancements, see Pricing and Travel Time Reliability Enhancements in the SANDAG Activity-Based Travel Model: Final Report, Prepared for San Diego Association of Governments by RSG, June 30, 2016.

[4] For documentation regarding the disaggregate commercial vehicle model, see Final CVM Model Development and Calibration Project Deliverable: M.9B by HBA Specto Incorporated, July 2014.

[5] Full-time employment is defined in the SANDAG 2006 household survey as at least 30 hours/week. Part-time is less than 30 hours/week on a regular basis.

[6] 2008 Eight-Hour Ozone Attainment Plan for San Diego County, San Diego County Air Pollution Control District, December 2016