Independent Taxpayer Oversight Committee

TransNet Triennial Performance Audit - 2018

Task 8:

Final Report

June 2018

SJOBERG EVASHENK CONSULTING, INC

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Table of Contents

Table of Contents i

EXECUTIVE SUMMARY 1

Summary of Recommendations 7

Glossary of Terms 13

Introduction and Background 15

Scope and Methodology 19

Chapter 1: *TransNet* Financing 21

Chapter 2: Performance Framework 45

Chapter 3: Major Corridor Capital Construction 57

Chapter 4: Local Street and Road 73

Chapter 5: Transit Services 79

Chapter 6: Bike and Pedestrian Modes of Transportation 93

Chapter 7 : Environmental Mitigation Program 99

Chapter 8: Information and Transparency 109

Chapter 9: Conclusions and Summary of Agency Response to Recommendations 117

Appendix A: *TransNet* Project Status 127

Appendix B: Detailed Audit Methodology 135

Appendix C: CMGC Project Delivery Leading Practices 141

Appendix D: Systemwide Transit Performance Metrics 145

Appendix E: Status of Prior Performance Audit Recommendations 153

Appendix F: Assessment of ITOC's Performance 155

Appendix G: List of Auditees and Stakeholder Interviewers 157

Appendix H: Auditee Response 161

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EXECUTIVE SUMMARY

In June 2017, the Independent Taxpayer Oversight Committee (ITOC) selected Sjoberg Evashenk Consulting, Inc. (SEC), to conduct the required triennial performance audit of the *TransNet* Program for the three-year period between Fiscal Years 2015 and 2017. Because the audit was conducted simultaneously with the *TransNet* 10-Year Look-Back Review required by the *TransNet* Extension Ordinance and Expenditure Plan, relevant data since the start of the *TransNet* was incorporated, as appropriate.

Mostly, we found that the San Diego Association of Governments (SANDAG) and its *TransNet* partners were on track towards meeting the primary goals of *TransNet* as outlined for voters at the 10-year mark of the 40-year program—with the exception of mixed results for relieving congestion and improving safety. Since the start of the *TransNet* Extension Ordinance 61 percent of major corridor projects were either completed or in-process and significant progress was made toward many of the *TransNet* goals.

PROGRESS TOWARDS MEETING ORDINANCE GOALS, 2005 TO 2016 [1]

	TransNet Goal	Progress To Date	Goal Met?
1	**Relieve Congestion**	• Commutes of less than 30 minutes decreased from 67% percent to 64%. • Highway pavement condition improved, although local roadway pavement condition declined. • Also, use of alternate modes as a percent of total commute decreased from 18% to 17%.	Mixed Results Thus Far
2	**Improve Safety**	• Highway and Roadways injuries decreased by 9% and fatalities decreased by 19%. • However, Bike and Pedestrian injuries and fatalities increased by 21% and 18%, respectively.	Mixed Results Thus Far
3	**Match State and Federal Funds**	• Major corridor funds was leveraged at $1.89 to $1.00. • Local Street and Road planned leveraging was $1.10 to $1.00. [1]	Yes
4	**Expand Freeways**	• Expanded freeways; for example, projects were completed on the I-15, I-805, SR 52, and SR 76. • 61% of capital construction projects were completed or in-progress.	Yes
5	**Maintain and Improve Roads**	• At least 136 projects completed and approximately $714 million dedicated for local streets and roads.	Yes
6	**Increase Transit for Seniors and Persons with Disabilities**	• Ridership for seniors and persons with disabilities appeared to have increased by 7% since the start of the *TransNet* Extension Ordinance.	Yes
7	**Expand Commuter Express Bus, Trolley, and COASTER**	• Expanded transit services; for example, 3 new *Rapid* Bus Services Routes were put into service. • 94 vehicles (including 65 light-rail trolley vehicles) were purchased.	Yes

Notes: [1] For years where data was available. [2] Local Street and Road leveraging was based on project funding planned per the Regional Transportation Improvement Program data and not actual local funds expended.

Like other entities across the nation, SANDAG faces continued challenges funding the *TransNet* Program and balancing less than expected sales tax revenues with often increasing project costs. We found the assumptions and strategies used in the latest *TransNet* Plan of Finance aligned with others and incorporated leading practices including increased transparency over the uncertainty of revenue sources. Yet, if needed funds do not materialize to cover major capital construction, SANDAG may need to assess options and make critical decisions such as delaying projects, reducing scope, or eliminating projects.

Further, while solid practices were in place over areas such as capital construction projects, Environmental Mitigation Program activities, and transit service, we noted areas where SANDAG and its *TransNet* partners could further strengthen and improve efficiency and effectiveness of *TransNet* Program oversight and delivery. This includes continuous rigorous monitoring of economic conditions that may impact sales tax revenues and project costs in addition to the development of a formal performance framework to analyze *TransNet* progress against Ordinance goals among other enhancements that can be made.

Finance

$$ Many of the fiscal challenges since the start of *TransNet* were also experienced at other similar organizations such as lower than forecasted sales tax collections and balancing project costs with reduced revenues. Yet, we found financing practices were reasonable, given the process changes made to recent revenue estimation processes, and aligned with industry practices including leveraging of sales tax funds and the use of debt. However, because construction costs increased at a faster pace than *TransNet* revenues, it may become more difficult to complete major corridor projects within the 2048 horizon year without historic leveraged rates of additional funding sources.

Financing Strategy

- Use of Plan of Finance followed leading practices and met *TransNet* leveraging goals.
- Revised Plan of Finance used leading practices and funds were leveraged as intended.
- Recent Plan of Finance reflected SANDAG's efforts to increase transparency of revenue uncertainty.
- Funds leveraged met intent of *TransNet* with SANDAG securing $1.89 in state and federal funds for every $1 of *TransNet* funds.

Revenues

- *TransNet* collections were lower than forecasted, but not unlike similar organizations.
- Updated forecasts show a decline in future revenues that could potentially impact future projects.
- Positive changes were made to help reduce any future revenue forecasting errors.

Costs

- Initial project cost assumptions were reasonable, but transparency of cost updates could be improved.
- Initial cost estimate assumptions were conservative and reasonable.
- Construction costs since 2005 increased at a faster rate than revenues.
- Regular updates and better communication of reasons for project cost changes are needed.

Debt Service

- While debt financing was reasonable, transition to pay-as-you-go could impact pace of project completion.
- Debt financing allowed SANDAG to accelerate early action program projects.
- SANDAG's use of debt versus pay-as-you-go financing compared with similar agencies' practices.
- Major corridor debt service and related revenue growth must be closely monitored to assess impact on other *TransNet* areas.
- Annual *TransNet* revenues are projected to exceed debt service, but periods of higher risk exist.

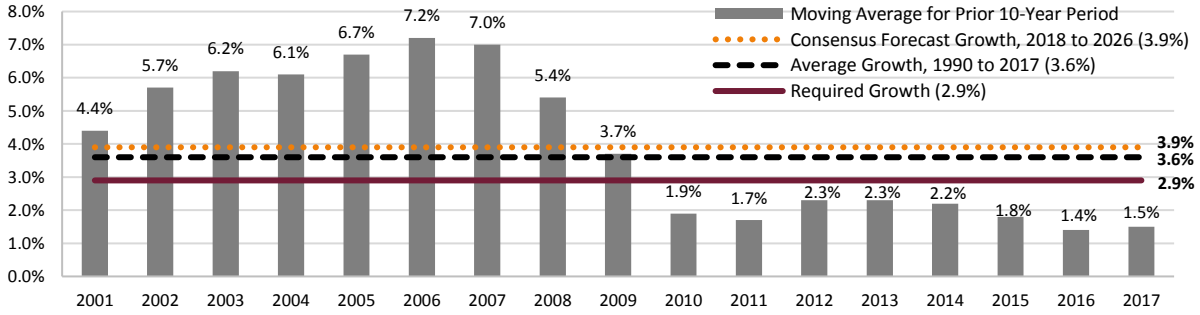
Capacity for Future

- Capacity for future projects must be closely managed to complete major corridor projects.
- Given current revenue projections, SANDAG needs to effectively leverage other funds to deliver major corridor projects by 2048.
- Future mix of projects needed may change and affect funding needs.

TransNet Transit Operations Plan

- As additional *Rapid* routes begin service, changes to the *TransNet* Transit Operations Plan may be needed.
- Assumptions used in Transit Operations Plan were generally reasonable, but future shortfalls exist.

"Annual *TransNet* revenue growth needs to be approximately 2.9%, on average, to cover increased debt service by FY 2026."



Performance

Key elements of a performance framework were not established at the start of the Ordinance to measure output and performance against the goals of *TransNet*. Even though certain performance data was available through a variety of sources, it was not consistently summarized and reported regionally at the SANDAG level.

- While *TransNet* established goals, performance targets were not established; yet, government best practices recommend using targets as part of a comprehensive performance plan.
- Performance not measured for all *TransNet* areas, and additional data is needed to assess performance in certain modes.
- Significant performance data is still needed for Local Street and Road Program.
- Detailed performance analysis and more reporting are needed.
- Story map tracked some outputs and accomplishments, although more is needed.

ELEMENTS OF A PERFORMANCE FRAMEWORK

Major Corridor Capital Construction

Like others in the nation, highways continue to be congested and injuries and fatalities have recently increased after a declining trend since the start of *TransNet*. However, since the beginning of *TransNet*, 61 percent of projects were completed or started. Solid project management practices were in place, including innovative project delivery methods that appear to be realizing benefits and cost savings.

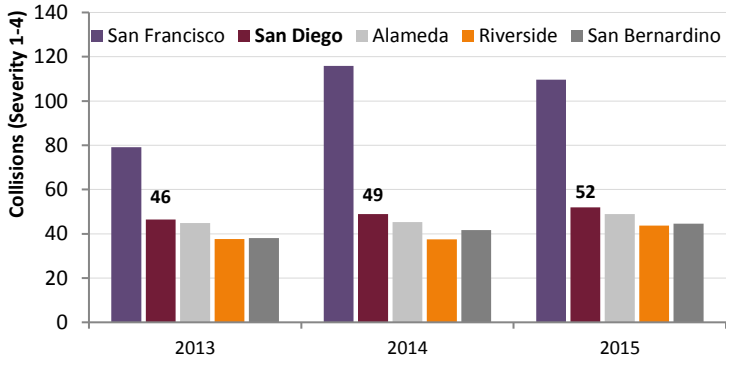
CONGESTION

- Vehicle miles of travel (VMT) slightly increased as has commute time less than 30 minutes.
- Hours of delay per capita increased.

SAFETY

- Injuries and fatalities on highways and roadways recently increased after a declining trend over the last decade.

TOTAL COLLISIONS PER 100 MILLION VMT



PAVEMENT AND BRIDGE CONDITION

- Highway pavement quality increased, and fewer bridges were in distressed condition.

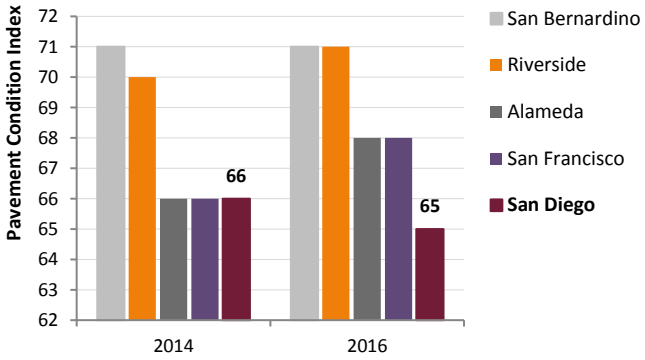
INNOVATIVE CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CMGC) PROJECT DELIVERY METHOD REPORTS ADVANTAGES

- CMGC relatively new to transportation industry.
- Caltrans considered CMGC leading practices and developed a framework to measure success.
- Although premature to fully assess, I-5 North Coast Corridor (Build NCC) partners already report synergies from CMGC.
- Mid-Coast Corridor partners also reports early benefits of CMGC although data to capture performance of CMGC is not yet available.

Local Street and Road

Absent performance outcome data, resulting performance of local street and road improvements was limited to pavement condition as a measure of road quality. Additionally, both the Ordinance and SANDAG Board of Directors (Board) policy requirements pertaining to local jurisdictions' 70/30 fund split for congestion relief and maintenance compliance and compliance with bicycle (bike) and pedestrian accommodations need to be reevaluated.

- Pavement condition declined, but recent efforts may reverse trend as survey results show improving conditions.
- 70/30 congestion relief and maintenance project split needs revisiting to provide more flexibility for locals to meet infrastructure needs.
- Continued effort is needed to demonstrate compliance with bike and pedestrian accommodations under SANDAG Board Policy No. 031, Rule 21.

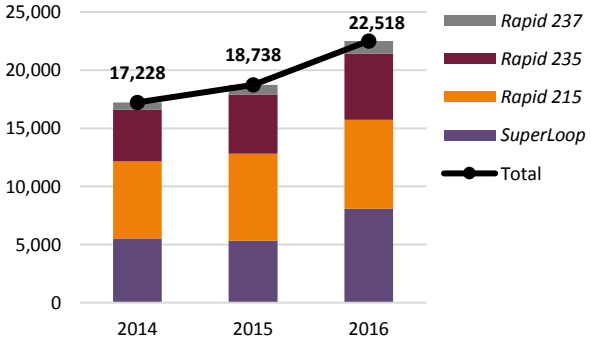


Transit Services

With $344 million allocated to transit operators since the start of *TransNet*, the Metropolitan Transit System and North County Transit District served over 100 million riders annually—an increase since the start of *TransNet*, although ridership has recently declined. Systemwide, the transit network generally demonstrated strong performance as compared to peers with results mostly meeting targets. *TransNet*-only funded *Rapid* services also showed positive performance.

- Ridership declined 3 percent, but *Rapid* route ridership funded solely by *TransNet* grew 31 percent.

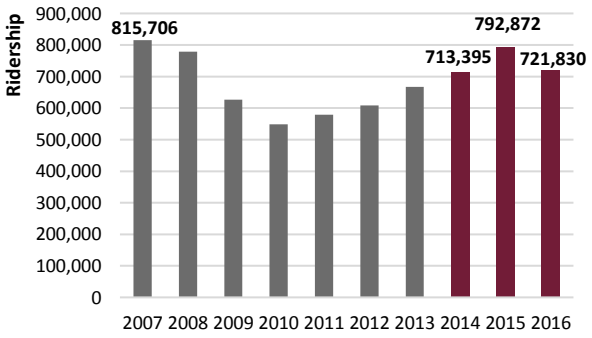
RAPID TRANSIT WEEKDAY BOARDINGS BY ROUTE



- On-time performance fluctuated by mode, but *Rapid* on-time performance was consistently higher than 82 percent.
- *Rapid* passengers per hour increased 7 percent, and farebox recovery increased as well.

- *TransNet* goal of increased services for seniors and those with disabilities was met with increases of 1.7 million riders and 7 percent since 2007.

SAN DIEGO SYSTEMWIDE PARATRANSIT RIDERSHIP

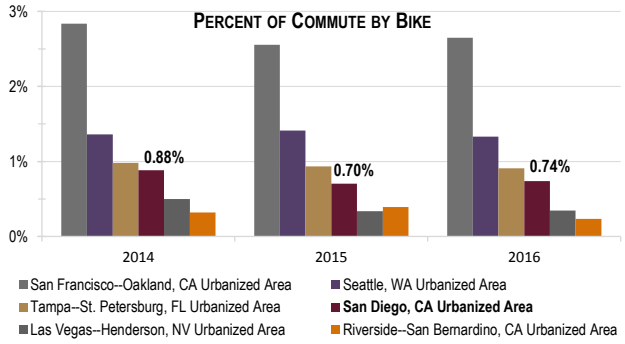


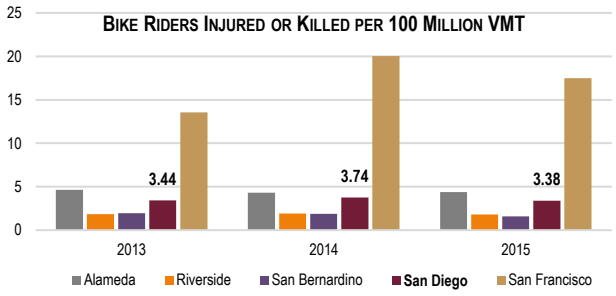
- Transit pass subsidy disparity may impact funds available for other transit services.
- *TransNet* limitations on operating cost increases may be too restrictive.

Bicycle and Pedestrian

Bicycle (bike) and pedestrian modes of transportation increased since the start of *TransNet,* but have fluctuated over the past three years with a downward trend between 2014 and 2016 for both bike ridership and bike commute share.

- Bike ridership and its share of commute increased since the start of *TransNet*, but decreased from 2014 to 2016.
- Total commutes increased 4 percent across all modes, yet bike ridership decreased 13 percent. This is not unlike trends observed across the nation. In contrast, average annual bike commuters increased by 35 percent since the start of *TransNet*.
- Limited data exists to establish ridership baselines for bike and pedestrian performance.
- Bike and pedestrian safety was better over last three years, but worse since start of *TransNet.*
- Regional bike early action program project management methods align with leading practices.
- EAP activities recently ramped up, but some projects showed delays.





Environmental Mitigation

With nearly $222 million spent to-date on *TransNet's* Environmental Mitigation Program (EMP), much has been accomplished—more than half of the mitigation projects outlined in the Ordinance have mitigation activities underway or are being restored. However, more work needs to be done to communicate performance toward environmental goals.

- EMP processes and agreements were successful and significant progress was made—although much work remains as efforts shift towards restoration efforts.
- Restoration costs are expected to exceed estimates mostly because the program is restoring more wetlands that were acquired as agreed by the California Coastal Commission for the North Coast Corridor.
- Funds collected and land acquired for local street and road mitigation were underutilized by local entities.
- Habitat conservation performance structure was in place, but communicating complex results to the public remains a challenge.
- Too early in program lifecycle for significant land management activities.

Information and Transparency

While *TransNet* represents a significant portion of the region's transportation improvements, progress toward *TransNet* goals was not tracked. To increase visibility of the *TransNet* Program and its contribution for the region, more can be accomplished through SANDAG and its *TransNet* partners' websites and social media features.

- SANDAG did not specifically track or report progress against Ordinance goals such as congestion relief, safety, and increased services to seniors and persons with disabilities.
- Public surveys reveal mixed results on transportation services.
- *TransNet* Program promotion could be strengthened.
- Visibility of *TransNet* for the public could be enhanced.
- Dashboard is innovative tool, but projects were not always easily linked with Ordinance, and initial budgets were not included to allow public to get full snapshot of activities.
- Decision makers and public would benefit from succinct summarized insights from SANDAG staff to navigate voluminous information presented.

EXAMPLE STAFF SUMMARY REPORT FOR AGENDA ITEM

PROS & CONS:
PROS: Notification can lead to action to forestall development activity in freeway c
minimize costs as well as ensure eventual completion of the facility.

CONS: By utilizing funds for advance purchase of right-of-way, these funds are not a
uses such as design and construction.

TECHNICAL & POLICY IMPLICATIONS:
TECHNICAL: Unless precluded early in the process, development within freeway alig
in increased right-of-way costs in the future.

POLICY: With the passage of Proposition 400 on November 2, 2004, the RTP inc
right-of-way acquisition as part of the funding for individual highway projects. This f
over the four phases of the Plan. Funding for advance acquisitions may be made ava
by-case basis.

Summary of Recommendations

To improve efficiency, effectiveness, and accountability to the taxpayers of the San Diego region, ITOC should request that the SANDAG Board direct its staff and *TransNet* partners to consider and implement recommendations summarized in the table that follows. Priority classifications and significance of recommendations were categorized into 4 rankings based on the impact on *TransNet* Program goals and functions, SANDAG's responsibilities, and critical path activities. Priority categories are:

- Critical Priority: Substantial risk to achievement of *TransNet* goals or is fundamental to *TransNet's* success and critical path activities. Immediate attention is warranted.
- High Priority: Significant risk to achievement of *TransNet* goals or is fundamental to *TransNet's* success or program activities. Prompt attention is warranted.
- Medium Priority: Some risk to achievement of *TransNet* goals or is important to *TransNet's* success or program activities. Moderate attention is warranted.
- Low Priority: Opportunity for improvement, but not vital to *TransNet's* success or program activities. Routine attention is warranted.

Three recommendations classified as **"Critical Priority"** are highlighted below, with the full set of recommendations presented in the table beginning on page 8 of this report.

1. Ensure the "Plan of Excellence" and its 7-point Data Accuracy and Modeling Work Plan are implemented to reduce the potential for data errors and develop formal procedures covering version control, periodic archival of dynamic or continuously updated data and documents, data validation and accuracy, and release and reporting of data. The status of the implementation of the 7-point plan and new procedures for data authentication should be documented and reported back to decision makers.
   – *Chapter 1, Recommendation No. 2, Report pages 27-28.*

2. Establish a comprehensive performance framework by implementing the following:
   - Setting targets to measure *TransNet* performance against the *TransNet* Extension Ordinance goals in-line with federally mandated deadlines or at a faster pace. At a minimum, some narrative could accompany performance reporting to help others understand whether data and results were favorable or unfavorable.
   - Capturing performance outcome data related to safety metrics, pavement condition, and bridge condition for highways, local roadways, and bicycle (bike) and pedestrian modes.

   – *Chapter 2, Recommendation No. 5, Report pages 46-50.*

3. Modify staff reports for SANDAG Board and other oversight committees to summarize elements related to public input, pros and cons on recommended actions, and implications or impacts of those recommended actions. Ensure that staff reports are summarized to one or two pages.
   – *Chapter 8, Recommendation No. 24, Report pages 111-112.*

FULL AUDIT RECOMMENDATION MATRIX

	Audit Recommendation	Report Page	Priority
Chapter 1: *TransNet* Financing			
1.	Enhance the Plan of Finance (POF) process and information provided to decision makers by implementing the following: a. Leveraging historical data and previous POFs to provide additional information regarding estimates of future revenue sources, by comparing projections against historical data as well as comparing estimates from previous POFs against actual funding secured.	21 – 24	High
	b. Continuing efforts to increase the transparency of sales tax revenue forecasts by showing a range of possible values based on a true confidence interval. SANDAG staff should work with the Independent Taxpayer Oversight Committee (ITOC) and the SANDAG Board to select a confidence level or levels that best communicates the range of possible values projected by the forecast including best case, worse case, or reasonably expected scenarios.	29 – 33	High
	c. Developing a process or policy for more frequent reporting—such as quarterly—to oversight committees on cost increases and include factors used to estimate costs, project stage or milestone used as basis for cost, and reasons for cost increase such as inflation, materials spike, or scope changes using Dashboard data and other reliable data sources.	29 – 33	High
2.	Ensure the "Plan of Excellence" and its 7-point Data Accuracy and Modeling Work Plan are implemented to reduce the potential for data errors and develop formal procedures covering version control, periodic archival of dynamic or continuously updated data and documents, data validation and accuracy, and release and reporting of data. The status of the implementation of the 7-point plan and new procedures for data authentication should be documented and reported back to decision makers.	27 – 28	**Critical**
3.	Regularly track and report on the *TransNet* Program's financial capacity to complete projects and programs by implementing the following: a. Establishing a formal structured protocol to review funding sources and uses occurring in the last 10 to 20 years of the *TransNet* Extension Program to identify potential capacity and revenue constraints that would impact the ability to complete the major corridor projects by 2048 and assess options such as delaying projects, eliminating projects, or reducing scope as warranted. This capacity assessment should be formally revisited on a regular basis, so that decision makers are aware of periods in which the agency may have to consider delaying projects or reducing project scope as needed.	35 – 36	High
	b. Monitoring *TransNet* revenues and debt service obligations against needed growth projections to better ensure that revenues are sufficient to meet debt service, as well as regularly reporting on results and options to oversight committees that could include restructuring, refinancing, or retiring existing debt or delaying the transition to a pay-as-you-go approach for financing capital projects.	37 – 40	High
	c. Identifying methods to assess options, if needed, to delay, eliminate, or reduce scope of projects and whether the method would follow the same priority process used in the San Diego Forward: The Regional Plan or a different process would be used.	40 – 41	High
	d. Monitoring and reporting on the impacts of changing transportation technologies on the transportation network and future *TransNet* projects as part of long-term planning to avoid building expensive infrastructure that could be rendered obsolete.	40 – 41	Medium
4.	Continue to work closely with the Metropolitan Transportation System (MTS) and North County Transit District (NCTD) to monitor the *TransNet* Transit Operations Plan by comparing actual *TransNet* revenues and operating costs against the *TransNet* Transit Operations Plan projections as additional services begin operations to highlight and mitigate the impact to the local operators,	41 – 43	High

	Audit Recommendation	Report Page	Priority
	how to absorb any discrepancies through other funding sources, or potential scenarios for reductions in service if warranted. Communicate status, recommended actions, and any mitigation activities.		
Chapter 2: Performance Framework			
5.	Establish a comprehensive performance framework by implementing the following: a. Setting targets to measure TransNet performance against the TransNet Extension Ordinance goals in-line with federally mandated deadlines or at a faster pace. At a minimum, some narrative could accompany performance reporting to help others understand whether data and results were favorable or unfavorable.	46 – 50	**Critical**
	b. Capturing performance outcome data related to safety metrics, pavement condition, and bridge condition for highways, local roadways, and bicycle (bike) and pedestrian modes. 1. Use the California Highway Patrols' Statewide Integrated Traffic Records System (SWITRS) to measure and monitor safety statistics—both for motorized and non-motorized fatalities and serious injuries—especially against the new safety targets developed by Caltrans and adopted by SANDAG. 2. Track and report highway pavement and bridge condition available from Caltrans on the SANDAG website or provide a hyperlink to where that information is available for taxpayers. Additionally, work with Caltrans to determine if bridge and pavement data can be isolated for San Diego County from the Imperial County data contained within the Caltrans District 11 reported data. 3. Track and report on local jurisdiction pavement condition by requiring local jurisdictions to provide pavement condition index data as soon as pavement condition surveys are performed and results become available. 4. Obtain and use private sector data to analyze congestion and delay on local streets and roads or evaluate status of Caltrans' Performance Measurement System (PeMS) to capture road performance including level of coverage of detection.	51 – 53	**Critical**
	c. Conducting more robust analysis of cause and effect for all performance metrics to provide meaning to results or help determine if different strategies or projects should be employed to get a better result. For instance, consider using heat maps to identify where the majority or significant severity accidents occur and work with Caltrans and local jurisdictions to inform solutions and future projects.	51 – 53	High
	d. Providing regular performance monitoring reports that consider past performance in relation to *TransNet* goals through quarterly updates to the SANDAG Board and committees, annual public reports on the status of *TransNet*, and website postings.	51 – 53	High
	e. Considering allocating funding for additional performance monitoring activities given that SANDAG will likely require more data sources, tools, and resources to track, validate, analyze, ensure quality, and report performance.	51 – 53	High
6.	Explore and study public-private partnerships with entities such as Google, Waze, Scoop, TomTom, or others to integrate and summarize performance results as well as provide information on a real-time basis to travelers identifying different commute times and options.	51 – 53	Medium
7.	Enhance the Story Map tool, *TransNet* project status listing (shown in Appendix A), or develop a different tool to capture project output details and track *TransNet* accomplishments over time by implementing the following: a. Developing a comprehensive universe of *TransNet* projects completed, underway, and planned. Reconcile universe back to *TransNet* Extension Ordinance and what was expected to be delivered. Once universe is reconciled for historic projects, update universe as new	53 – 54	High

	Audit Recommendation	Report Page	Priority
	projects are started and continue reconciliation of those new projects to the *TransNet* Extension Ordinance. b. Building upon planned output data currently captured through the Regional Transportation Improvement Program's automated ProjectTrak database and reported in the Annual Output and Outcome report by reconciling those planned outputs with actual accomplishments. Consider requiring local jurisdictions to provide a closeout report with updated, actual data as projects are completed.		
Chapter 3: Major Corridor Capital Construction			
8.	Update and refine the project listing started in the 10-Year Look-Back Review to ensure all major corridor projects are tracked back to those in the *TransNet* Extension Ordinance. Regularly report on project and financial status using the project listing developed in 10-Year Look-Back Review as a foundation or develop an alternate tool to accomplish the goal of tracking against the *TransNet* Extension Ordinance.	58 – 64	Medium
9.	Begin gathering data on whether the Construction Manager/General Contractor (CMGC) method used on the Mid-Coast Corridor Transit project is delivering on expectations for cost savings, efficiencies, better quality, or collaboration to solve problems rather than using a typical silo-approach between design, construction, contractors, and owners by implementing the following: a. Comparing SANDAG's proposed metrics for assessing Mid-Coast Corridor project performance to the performance metrics and practices used by Caltrans' to determine whether there are any additional practices SANDAG may want to include or adopt, such as the Caltrans innovations log, to help formally track benefits, successes, and challenges. b. Addressing recent survey comments related to possible schedule impacts from project activities in addition to the perceived higher value of change orders.	65 – 71	Medium
10.	Gather and store documents to support "benefit" statistics tracked for the North Coast Corridor and the Mid-Coast Corridor whether using the innovations log utilized by Caltrans or another method used by SANDAG. Maintain supporting documentation, such as cost comparisons, in a centralized repository that is linked or reconciled with the log or summary statistics.	69 – 71	Medium
Chapter 4: Local Street and Road			
11.	Revisit the *TransNet* Extension Ordinance congestion relief and maintenance split to be more relevant with local needs as the *TransNet* lifecycle matures by considering elimination of the 70/30 split, change to the percentage limitations, or modification of the categorical definitions within the *TransNet* Extension Ordinance limitations.	75 – 76	Medium
12.	Continue to monitor compliance with SANDAG Board Policy No. 031, Rule 21, until otherwise amended, by implementing the following: a. Following-up on the results from the SANDAG Board Policy No. 031, Rule 21 evaluation conducted by SANDAG in 2014: 1. Use results from SANDAG Board Policy No. 031, local Rule 21 review to make identified changes to the Ordinance definitions and follow-up on areas of noncompliance noted during the review. 2. Work with locals to determine a method to demonstrate compliance with SANDAG Board Policy No. 031, Rule 21. 3. Amend or establish a SANDAG Board Policy to require local jurisdictions to track and report on the number of bike and pedestrian facilities implemented using *TransNet* funds.	78 – 79	High
	b. Conducting another review of local projects and considering whether any adjustments are warranted in light of SANDAG's Complete Streets Policy.	78 – 79	High

	Audit Recommendation	Report Page	Priority
Chapter 5: Transit Services			
13.	Continue to analyze major transit commute routes and services and report on whether commute times have improved or should be improved.	87 – 88	Low
14.	Regularly track and report on *TransNet* goals to increase services to seniors and persons with disabilities.	88 – 89	High
15.	Work together with the region's transit operators to analyze options offsetting the impact subsidy disparities have on available funds for expanding transit services, such as funding the pass subsidy disparity for seniors and persons with disabilities from other *TransNet* areas—as allowed by the *TransNet* Extension Ordinance—adjusting the discount offered for senior/disabled and youth riders, determining whether disparities can be funded through other sources, or maintaining existing funding and process.	89 – 91	Medium
16.	Collaborate with the operators to revisit the operating cost ceiling tied to changes in the Consumer Price Index as specified in the *TransNet* Extension Ordinance so that operators have some flexibility with reasonable cost increases while still maintaining the intent of *TransNet* to provide some assurance of the reasonableness of those cost increases. This could include allowing for a wider variance in cost increases, setting a threshold for a not-to-exceed limit, expanding the target by a specified percent in years when changes to the Consumer Price Index decline, or allowing cost exclusions that can be supported, or modify *TransNet* Extension Ordinance language to apply the cost thresholds at the operator level rather than by individual mode.	91 - 92	Medium
Chapter 6: Bike and Pedestrian Modes of Transportation			
17.	Continue efforts to establish baseline data for bike and pedestrian volume to identify trends and set targets.	95 – 96	Medium
18.	Improve project management practices and project delivery for the Bike Early Action Program projects by implementing the following: a. Finalizing and implementing the in-progress Regional Bikeway Program Management Plan.	96 – 98	Medium
	b. Using Dashboard data that currently tracks frequent causes of delays during the design and environmental phases of bike projects, to summarize lessons learned, identify and mitigate future preventable occurrences, and improve scheduled delivery of the remaining projects.	97 – 98	High
Chapter 7: Environmental Mitigation Program			
19.	Continue efforts to establish a new Memorandum of Agreement with Caltrans, California Department of Fish and Game, and the U.S. Fish and Wildlife Service to replace current one expiring before funding expires in June 2018.	100	High
20.	Enhance the financing and use of *TransNet* funding for the Environmental Mitigation Program (EMP) by implementing the following: a. Reviewing and updating EMP cost estimates in light of higher costs than anticipated associated with restoring coastal wetlands.	102 – 103	High
	b. Considering the most efficient use of available funding and possible adjustments, as allowed by the *TransNet* Extension Ordinance, to focus on higher priority activities and projects such as restoring coastal wetlands, given updated revenue forecast information and cost estimates.	100 – 102	High
	c. Revisiting the established economic benefit methodology to ensure the calculation accurately represents the cost savings that have been achieved.	103 – 104	High
21.	Make changes, as appropriate, to marketing efforts for the local streets and road mitigation bank funding available for local projects, consider revising eligibility criteria for public entities, or	104	High

	Audit Recommendation	Report Page	Priority
	consider whether those monies could be better utilized within other EMP priority actions, as allowed under the *TransNet* Extension Ordinance.		
22.	Measure progress in meeting specific and detailed EMP goals, objectives, and action items for regional monitoring and management under the Management Strategic Plan. Specifically, develop metrics using the abundance of data to holistically understand the status and trend of the overall health of the preserve against the baselines established in regional conservation plans and formalize a system to communicate complex performance results to the public.	105	Medium
Chapter 8: Information and Transparency			
23.	Regularly report on implementation of *TransNet* Extension Ordinance goals by annually publishing progress on SANDAG's website, annual report, or other easily visible reporting tool.	110	High
24.	Modify staff reports for SANDAG Board and other oversight committees to summarize elements related to public input, pros and cons on recommended actions, and implications or impacts of those recommended actions. Ensure that staff reports are summarized to one or two pages.	111 – 112	**Critical**
25.	Better link *TransNet* funding to project and program activities for general public awareness by implementing the following: a. More prominently featuring the *TransNet* logo on SANDAG and *TransNet* partner websites as well as through other media such as Facebook and Twitter.	113 – 114	Low
	b. Revamping SANDAG website to capture documents pertinent to *TransNet* in a centralized area for each *TransNet* Extension Ordinance component. This includes linking Dashboard projects with those listed in the *TransNet* Extension Ordinance.	114 – 115	Low
26.	Ensure data on completed projects is maintained in the Dashboard—even if under an archived location still accessible to the public—and separate past and future expenditures between the original *TransNet* amounts and the *TransNet* Extension Ordinance amounts.	115 – 116	Medium

Glossary of Terms

Caltrans	Caltrans is the statewide transportation department responsible by statutes for highway capital project planning, construction, and maintenance.
CMGC	Construction Manager/General Contractor is a relatively new project delivery model where the contractor is involved at each stage of the project acting as consultant to the owner in the development and design phases and as a general contractor during the construction phase. This differs from traditional approaches where separate consultants and contractors are used for design and construction phases.
Environmental Mitigation	Building new freeways or expanding existing roadways may impact natural habitats in close proximity to those improvements. Environmental mitigation efforts include activities such as purchasing land and restoring it for habitats disrupted by transportation improvement projects.
Farebox Recovery Ratio	Farebox recovery ratio is a standard transit performance metric. It represents the percent of operating expenses covered by fare revenue. A higher farebox recovery ratio indicates a greater percent of the operating costs are covered by fare revenue.
ITOC	Independent Taxpayer Oversight Committee established by the Ordinance and tasked with representing taxpayer interests and monitoring of *TransNet* financial integrity and performance.
MAP-21 and FAST Act	The Moving Ahead for Progress in the 21st Century (MAP-21) Act of 2012 as continued under the Fixing America's Surface Transportation (FAST) Act of 2015 provide long-term federal funding for surface transportation, but also established national performance goal areas and required target setting to be incorporated into performance-based transportation planning.
MTS	Metropolitan Transit System is responsible for service planning, scheduling, and performance monitoring of transit operations across San Diego County.
NCTD	The North County Transit District is responsible for service planning, scheduling, and performance monitoring of transportation in Northern San Diego County.
Nominal and Real Dollars	Nominal dollars include the effects of inflation over time, while real dollars remove the effect of inflation to provide a comparison across two points in time.
Performance Outcome and Output	Measured against progress towards meeting a program's goals, performance outcomes and outputs represent the impact made possible through government actions. Examples of performance **outcomes** include longer/shorter commute times, more/fewer crashes, or better/worse pavement conditions. Examples of performance **outputs** include number of projects completed, number of grants awarded, or number of rides provided to seniors.
POF	The Plan of Finance is a SANDAG Board adopted, continually updated financial planning tool, used to project revenues and expenditures over the 40-year life of *TransNet* with a particular focus on funding sources and uses over the next 5 to 7 years. It illustrates SANDAG's financing strategies and cash flow considerations to deliver the projects approved by voters.
Revenue Miles	Revenue miles is a standard transit performance metric. It represents service effectiveness in terms of transit service miles traveled when in service and available to carry passengers.
SANDAG	The San Diego Association of Governments is the Metropolitan Planning Organization and the regional decision-making body consisting of 18 cities and the county. In its role as the San Diego County Regional Transportation Commission, it is charged with administering, planning, implementing, and funding regional transportation programs funded by *TransNet*.
VMT	Vehicle miles of travel is a widely-known industry measure of the number of miles traveled by vehicles in a region over a period of time. VMT is determined by either actual odometer readings or by estimated modeling calculations.

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Introduction and Background

To provide congestion relief, improve safety, and expand highways, streets, and transit in the San Diego region, voters passed Proposition A in November 2004 calling for a continuation of an existing *TransNet* half-cent sales tax for an additional 40-year period from 2008 through 2048. This proposition paved the way for dedicated local funds to be leveraged through state and federal matching dollars for improving regional systems as part of the *TransNet* Extension Ordinance and Expenditure Plan (*TransNet* Extension Ordinance) as approved by the San Diego Association of Governments (SANDAG) Board of Directors (Board). SANDAG is ultimately responsible for administering the *TransNet* Program and projects funded through the *TransNet* Extension Ordinance in coordination with several *TransNet* partner entities.

TransNet Extension Ordinance and Expenditure Plan

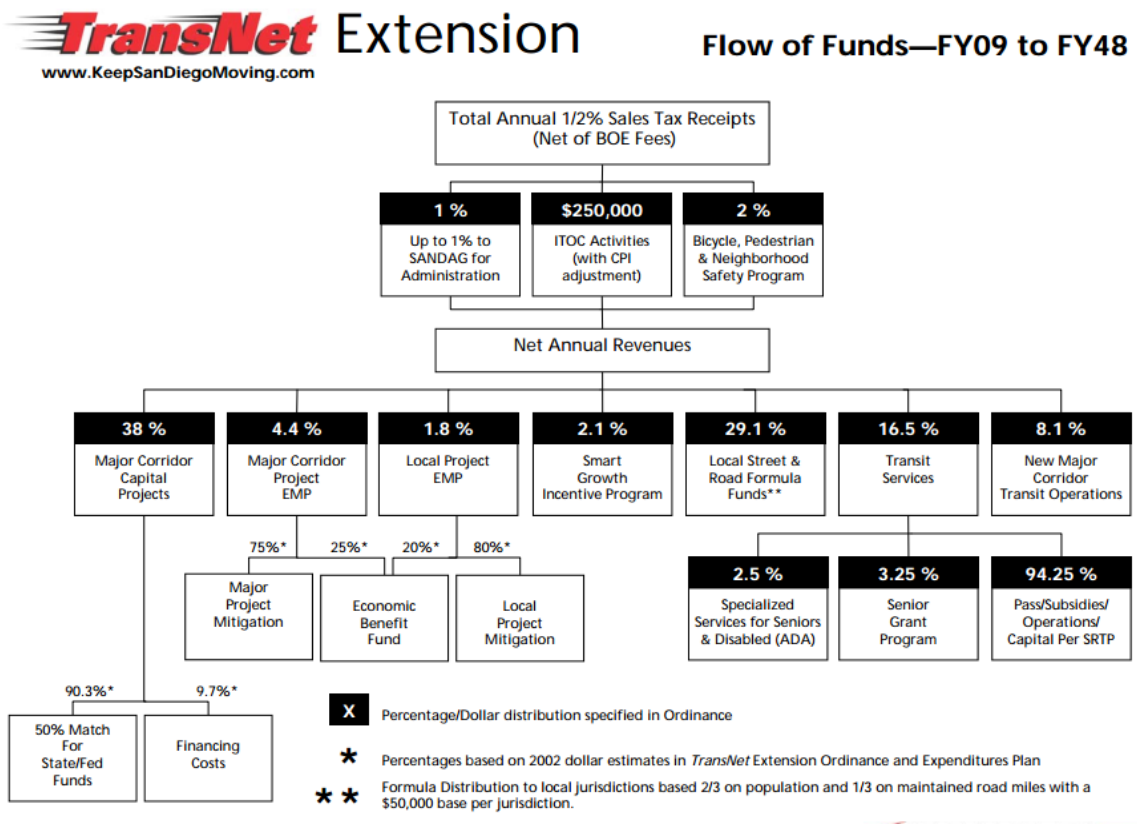
Recognizing the continued need for transportation improvement projects in the region and the importance of minimizing their environmental impacts, the SANDAG Board prepared and authorized the *TransNet* Extension Ordinance to expand upon the foundation and projects completed under the original *TransNet* Program approved by voters. In 2004, San Diego County voters approved the extension of the existing *TransNet* half-cent sales tax for an additional 40-year period from 2008 through 2048. The SANDAG Board, as the San Diego County Regional Transportation Commission, has the responsibility to implement the tax measure through the *TransNet* Extension Ordinance through transportation improvements that were anticipated to do the following:

- Relieve congestion
- Improve safety
- Match state and federal funds
- Expand freeways
- Maintain and improve roads
- Increase transit for seniors and persons with disabilities
- Expand commuter express bus, Trolley, and COASTER services

Under provisions of the *TransNet* Extension Ordinance, funds generated must be allocated to each *TransNet* Program area using a specified percentage or amount, as shown in Exhibit 1, to improve transportation facilities and services countywide in a manner consistent with the Regional Comprehensive Plan, Regional Transportation Plan, and the Regional Transportation Improvement Program.[1] Nearly 83 percent of *TransNet* funds are dedicated to major corridor capital projects for highway and transit in addition to an Environmental Mitigation Program (EMP) and local street and road projects. The remaining 17 percent is allocated specifically for alternate modes of transportation such as transit operations, bike and pedestrian projects, neighborhood safety projects, and grants for specialized transportation activities.

[1] At its May 25, 2012, meeting, the SANDAG Board of Directors approved the integration of the Regional Comprehensive Plan update with the development of the Regional Transportation Plan/Sustainable Communities Strategy. The integrated plan (San Diego Forward: The Regional Plan) was adopted October 9, 2015.

EXHIBIT 1. *TRANSNET* FOCUS AREAS AND REQUIRED PERCENT OF ALLOCATION



Source: SANDAG and the 2004 *TransNet* Extension Ordinance and Expenditure Plan.

TransNet Projects

To relieve traffic congestion and improve safety, the *TransNet* Extension Ordinance identified 48 specific capital projects along 15 major highway and transit corridors scheduled for completion by 2048. In addition to these highway and transit capital projects, there are approximately 40 proposed bike construction projects and hundreds of local street and road capital projects identified on a biennial basis as part of each local jurisdiction's transportation improvement plans. Other *TransNet* Program areas scheduled individual projects on an annual basis through environmental mitigation needs, transit service analysis, or SANDAG grants targeted for activities surrounding active transportation, Smart Growth, and services to seniors.

TransNet Funding

From the beginning, *TransNet* was envisioned to be only one of several funding mechanisms used to pay for the projects identified in the *TransNet* Extension Ordinance n. In fact, *TransNet* monies were leveraged with a variety of state, federal, and local funds—such as state Transportation Development Act funding, local street funding, Federal Highway Administration and Federal Transit Administration funding. To date, as shown in Exhibit 2, *TransNet* disbursed $4.24 billion to various entities and programs and helped implement numerous transportation improvement projects as envisioned by the Ordinance.

EXHIBIT 2. *TRANSNET* COLLECTIONS AND EXPENDITURES BY CATEGORY, AS OF JUNE 30, 2017

TransNet Area	Funds Expected Per Ordinance (2002 dollars) [1]	Funds Received and Allocated to Date (nominal dollars) [2]	Funds Disbursed (year of expenditure dollars) [3]
SANDAG Admin	$140M	$22M	$22M
ITOC	$10M	$2M	$2M
Bike and Ped	$280M	$48M	$46M
Major Corridor	$5,150M	$752M	$2,721M [4]
EMP-Major Corridor	$600M	$112M	$356M [4]
EMP-Local Project	$250M	$40M	$8M
Smart Growth	$280M	$46M	$20M
Local Street and Road	$3,950M	$714M	$667M
Transit Services [5]	$2,167M	$344M	$343M
Transit Senior Mini-Grant	$73M	$12M	$11M
New Major Corridor Transit Operations	$1,100M	$180M	$46M [6]
Total:	**$14 Billion**	**$2.27 Billion**	**$4.24 Billion**

Source: *TransNet* Extension Quarterly Report to ITOC, October 2017; *TransNet* 2004 Extension Ordinance and Expenditure Plan.
Note: [1] Funds Anticipated are over the 40-year term of the 2004 *TransNet* Extension Ordinance. [2] Funds Received and Allocated are from program inception through June 30, 2017 (unaudited). [3] Funds Disbursed are inclusive of debt service payments. [4] Funds Disbursed are higher due to debt financing of major corridor projects including EMP. [5] Transit Services amount is inclusive of specialized services for seniors and disabled persons (2.5% of total) and transit pass subsidies and operations (94.25% of total). [6] Funds Disbursed are lower because funds are reserved for future *Rapid* and Light Rail transit services to operate on planned transit construction corridors.

TransNet Early Action Program

Although collections from the *TransNet* Extension Ordinance did not start until 2008, the SANDAG Board made a strategic decision in 2005 to launch an "Early Action Program" (EAP) that accelerated 19 major corridor capital construction project segments through long-term bonding activity based on future tax revenues and shorter-term commercial paper to leverage state and federal funds. Specifically, the SANDAG Board intended to jump-start these segments "to help minimize disruption to the traveling public and give full utility to the corridor within a condensed timeframe, as opposed to phasing the improvements in smaller stages over a greater number of years."[2] Another critical factor considered to better ensure success of the EAP was advancement of the EMP. From the early stages, the intent was to advance project mitigation packages to facilitate and expedite EAP project delivery. This involved discussions, collaboration, and agreements with external resource agencies and permit holders. Since 2005, the SANDAG Board approved additional project segments consistent with the *TransNet* Extension Ordinance for a total of 78 budgeted EAP project segments as shown in Appendix A.

In addition to the EAP major corridor project segments, the SANDAG Board also launched a Regional Bike Plan EAP in 2013—a $200 million initiative to expand the bike network countywide and finish high-priority

[2] SANDAG Board Agenda, December 2004 and January 2005. Board approved an initial list of 22 project segments, but three segments were subsequently merged into other project segments for a total of 19 EAP project segments.

projects within a decade. This initiative involved approximately 40 projects totaling 77 miles of new bikeways.

Roles of Key *TransNet* Partners

While SANDAG is the primary entity responsible for the *TransNet* Program, other entities cooperatively share responsibilities for managing and implementing projects and programs funded through *TransNet*. As shown in Exhibit 3, key *TransNet* partners include Caltrans, Metropolitan Transit System (MTS), North County Transit District (NCTD), and 19 local jurisdictions—although there are a multitude of grantees, non-profits, conservancy groups, and other federal and state agencies that assist the *TransNet* Program.

EXHIBIT 3. ROLES AND RESPONSIBILITIES OF KEY *TRANSNET* PARTNERS

TransNet Independent Taxpayer Oversight Committee (ITOC)

- Independent committee established by the *TransNet* Extension Ordinance representing taxpayer interests which monitors the financial integrity and performance of the *TransNet* Program.

San Diego Association of Governments (SANDAG)

- Regional decision-making body consisting of 18 cities and the county government.
- Charged with administering, planning, implementing, and funding regional transportation programs funded by *TransNet.*
- Responsible for *TransNet* transit capital construction, active transportation, environmental mitigation, and grant programs.

Caltrans

- Statewide government department overseen by a State Transportation Agency and organized into 12 Districts.
- District 11 encompasses the San Diego region and Imperial County.
- Responsible by statutes for highway capital project planning, construction, and maintenance--including *TransNet* projects.

Local City Jurisdictions

- Governed by individual city councils, the local jurisdictions are responsible for overseeing and delivering transportation improvement projects to city residents.
- 18 cities involved with *TransNet* include: Carlsbad, Chula Vista, Coronado, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, La Mesa, Lemon Grove, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Solana Beach, and Vista.

County of San Diego

- Governed by a Board of Supervisors, the County oversees and provides transportation improvement projects to residents outside of city incorporated areas.

Metropolitan Transit System (MTS)

- Responsible for service planning, scheduling, and performance monitoring of transit operations.
- MTS is represented by the cities of Chula Vista, Coronado, El Cajon, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, San Diego, and Santee as well as the County of San Diego.

North County Transit District (NCTD)

- Responsible for service planning, scheduling, and performance monitoring of transportation in Northern San Diego County.
- NCTD is represented by Carlsbad, Del Mar, Encinitas, Escondido, Oceanside, San Marcos, Solana Beach, and Vista as well as the County of San Diego.

Source: Agency websites, fact sheets, and prior Triennial *TransNet* Performance Audits.

Scope and Methodology

In accordance with the *TransNet* Extension Ordinance (Ordinance), the Independent Taxpayer Oversight Committee (ITOC) has the responsibility for conducting triennial performance audits of the agencies involved in the implementation of *TransNet*-funded projects and programs.

Audit Scope

Sjoberg Evashenk Consulting Inc. (Sjoberg Evashenk), was contracted by ITOC to conduct the fourth performance audit for the three-year period covering Fiscal Years 2015 through 2017. Because the audit was conducted simultaneously with the *TransNet* 10-Year Look-Back Review required by the Ordinance, relevant data and performance since the start of the *TransNet* was incorporated, as appropriate.

Specifically, ITOC asked Sjoberg Evashenk to examine the performance of SANDAG, Caltrans, Metropolitan Transit System, North County Transit District, the City of San Diego, the County of San Diego, and a representative sample of the other cities of the region that have been involved in *TransNet*-funded projects. This included, but was not limited to, a review of the degree to which the projects completed achieved the goals set out in the Ordinance, financial management, project delivery, oversight, and monitoring as well as the efficiency and effectiveness of *TransNet* projects and program areas.

Audit Objectives

The primary objectives identified for this performance audit were as follows:

1. Review of goals consistent with *TransNet* Extension Ordinance Section 4. Expenditure Plan Purposes
2. Identify key metrics to which outcomes will be measured consistent with the Regional Plan
3. Identify outcomes achieved in the implementation of facilities and services under *TransNet*
4. Evaluate the status of implementation of recommendations from the third triennial performance audit and effectiveness of these prior recommendations
5. Determine whether the organizational structure and operational process continue to allow for effective and efficient project delivery, cost control, and schedule adherence
6. Identify process changes in contracting, construction, permitting, and other procedures that could improve the efficiency and effectiveness of the *TransNet* Program
7. Evaluate the efficiency and effectiveness of ITOC, including adherence to its bylaws
8. Identify and evaluate any potential barriers to and opportunities for proposed changes

Audit Methodology

To fulfill these objectives, we conducted a series of audit tasks involving data mining and analysis, documentary examinations, peer comparisons, source data verification, and interviews. Appendix B provides the detailed methodology employed on this audit. We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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Chapter 1: *TransNet* Financing

Funding a 40-year regional capital improvement program is a complex activity involving many factors that cannot be foreseen with certainty. To assist with and define planning efforts, SANDAG developed and regularly updated a Plan of Finance (POF) document that evaluated economic conditions that may impact sales tax collections and the program's ability to deliver projects promised to voters.

KEY RESULTS

Many of the fiscal challenges since the start of *TransNet* were also experienced at other similar organizations such as lower than forecasted sales tax collections and balancing project costs with reduced revenues.

Nonetheless, in-line with *TransNet* Extension Ordinance goals, SANDAG leveraged *TransNet* dollars with state and federal funds at a rate of 1.89:1—meaning that for every $1 of *TransNet* funds spent on major corridor projects, SANDAG secured $1.89 in funding from other sources. This leverage rate was more than the 1:1 leveraging expected in the Ordinance.

- SANDAG increased transparency surrounding the presentation of revenue estimates with its 2016-2017 Plan of Finance which categorized estimated revenues available by level of certainty.
- Actual sales tax collections to date averaged 22 percent less than forecasts presented to voters, with that variance continuing to be significant over the last three years. Recent forecasts showed this decline in total expected sales tax revenue over the life of the Ordinance from $36 billion to $19.2 billion (in nominal dollars).
- While cost assumptions were reasonable, construction costs since 2005 increased at a faster rate than *TransNet* revenues. In fact, costs grew between 34.6 and 43.5 percent depending on which cost index was used, while revenues only grew by 20.5 percent.
- By using debt, SANDAG took advantage of a favorable cost environment during the Great Recession to accelerate projects. These financing practices and use of debt align with similar organizations, but the transition to pay-go financing may impact the pace of project completion.
- While annual *TransNet* revenues are projected to cover debt service, major corridor projects and other *TransNet* areas could be negatively affected if revenue growth is lower than expected. We calculated that annual *TransNet* revenue growth would need to be approximately 2.93 percent, on average, to cover increased debt service by FY 2026.

RECOMMENDATION HIGHLIGHTS

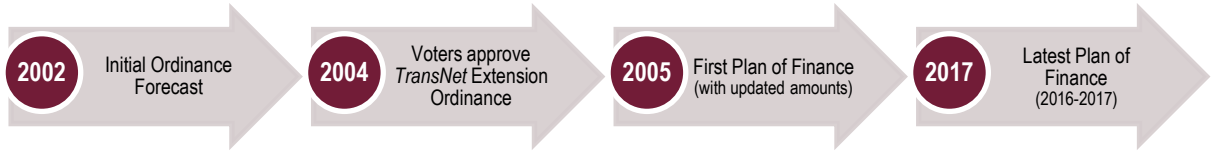
- Leverage historical data and previous POFs to provide additional information regarding estimates of future revenue sources, by comparing projections against historical data as well as comparing estimates from previous POFs against actual funding secured.
- Continue efforts to increase the transparency of sales tax revenue forecasts by showing a range of possible values based on a true confidence interval. SANDAG staff should work with the Independent Taxpayers Oversight Committee (ITOC) and the SANDAG Board to select a confidence level or levels that best communicates the range of possible values projected by the forecast including best case, worse case, or reasonably expected scenarios.
- Develop a process or policy for more frequent reporting—such as quarterly—to oversight committees on cost increases and include factors used to estimate costs, project stage or milestone used as basis for cost, and reasons for cost increase such as inflation, materials spike, or scope changes using Dashboard data and other reliable data sources.
- Ensure the "Plan of Excellence" and its 7-point modeling plan are implemented to reduce the potential for data errors and develop formal procedures covering version control, periodic archival of dynamic or continuously updated data and documents, data validation and accuracy, and release and reporting of data.
- Establish a formal structured protocol to review funding sources and uses occurring in the last 10 to 20 years of the *TransNet* Extension Program to identify potential capacity and revenue constraints that would impact the ability to complete the major corridor projects by 2048 and assess options such as delaying projects, eliminating projects, or reducing scope as warranted.
- Identify methods to assess options, if needed, to delay, eliminate, or reduce scope of projects and whether the method would follow the same priority process used in the San Diego Forward: The Regional Plan or a different process would be used.

Chapter Introduction

Funding a long-term regional capital improvement program is a much different and more complex activity than funding an annual operating need or even a short-term capital project as cradle to grave project development and implementation phases may stretch from 5 to more than 20 years for corridor capital improvement projects.[3] As the San Diego region continues to evolve and change, the San Diego Association of Governments (SANDAG) is challenged to ensure that capital projects both meet current needs and also achieve the vision outlined in the *TransNet* Extension Ordinance. As such, SANDAG, as well as those in the industry, must leverage a variety of funding sources to maximize the number of projects possible for its capital project portfolio.

To support the *TransNet* capital improvement program, SANDAG regularly adopts a Plan of Finance (POF)—a continually updated document focused primarily on the next 5 to 7 years, although it includes revenue and cost assumptions through the end of the current *TransNet* Extension Ordinance in 2048. Initially established by the SANDAG Board of Directors (Board) in December 2005, the POF was regularly updated since the start of *TransNet*, with the last update presented in October 2017 to reflect the most current cash flow, budget, and revenue assumptions for the program as shown in Exhibit 4. The POF is an evolving, living plan that is continuously monitored and reviewed to balance costs and revenues and leverage sales tax revenues over the 40-year span of the program.

EXHIBIT 4. TIMELINE OF *TRANSNET* RELATED FINANCIAL EVENTS



Source: Auditor-generated based on 2004 *TransNet* Extension Ordinance and various Plans of Finance.

Revised Plan of Finance Used Leading Practices, and Funds Were Leveraged as Intended

SANDAG's primary financial planning tool is the POF, which projects revenues and expenditures over the entire 40-year life of *TransNet* with a particular focus on funding sources and uses for the next 5 to 7 years. The plan illustrates SANDAG's financing strategies and cash flow considerations as the organization works with its *TransNet* partners to deliver the projects approved by voters. The strategies and assumptions were similar to those used by others in industry and actual fund leveraging was at higher levels than expected in the initial 2002 Ordinance forecast. We found SANDAG's POF to be an effective short-range planning tool for managing financial capacity for projects. At the same time, we recommend that SANDAG begin to place additional focus on the last 10 to 20 years of *TransNet* financing, between FYs 2028 and 2048—as the agency moves towards a pay-as-you-go (pay-go) approach for capital projects.

[3] Project timeline from cradle to grave provided by SANDAG.

Recent POF reflected SANDAG's efforts to increase transparency of revenue uncertainty

While financing long-term capital construction programs is inherently uncertain, SANDAG followed leading practices by regularly updating its *TransNet* Program projections. During the audit period, SANDAG issued one POF update for 2016-2017. In the 2016-2017 update, SANDAG added more clarity and transparency by using ranges to communicate revenue and cost estimates rather than single point estimates—as aligned with leading economic practices. SANDAG also implemented positive changes using a color-coding scheme to classify potential funding sources by level of certainty in an effort to increase transparency in the planning and forecasting process. Exhibit 5 shows the estimated revenues available to SANDAG, color-coded by the agency's level of certainty over receiving the funding.

EXHIBIT 5. 2016-2017 POF SANDAG PROJECTED FUNDING SOURCES

REVENUES	2015 POF	2016 POF Estimate	2016-2017 POF
1. *TransNet* Funds (2018-2048) ($5.9B to $6.5B)	$7.5B	$6.3B	$6.2B
2. Programmed Grants, State and Federal Formula Funds; Anticipated Debt Financing Proceeds; TIFIA Loan ($3.5B to $3.7B)	$4.1B	$4.0B	$3.6B
3. Additional funds from **formula funds**, including RSTP, CMAQ, STIP ($4.2B to $5.2B)	$10.4B	$17.5B	$4.7B
4. Additional funds from **competitive sources** including SB1 Congested Corridors, SB1 Trade Programs, Federal INFRA and others ($4.3B to $6.5B)*			$5.4B
5. Additional funds from **future legislation** similar to Road Repair and Accountability Act in 2017 ($3.3B to $5.0B)*			$4.2B
6. Additional funds from **future legislation** to address changes in technology, and other initiatives ($3.0B to $4.6B)*			$3.8B
Additional Revenues Subtotal ($14.8B to $21.3B)			$18.1B
Total Revenues ($24.2B to $31.5B)	$22B	$27.8B	$27.9B
Level of Certainty  Lower Higher			

Source: Plan of Finances for 2015, 2016, and 2016-2017.

Explanations for certainty levels of revenue assumptions were as follows:

- ***TransNet***: Amount of collections are uncertain, but sales tax collections are certain to occur through 2048.
- **Programmed Grants:** Reasonably certain because grants have already been secured.
- **Formula Funds:** Slightly less certain because total funding amounts available from grantor vary from year to year—although SANDAG's allocations can be reasonably estimated in the near term and were provided to the region for many past decades.
- **Competitive Funds:** Far less certain, given the requirements of specific grants, applications submitted by SANDAG, and number and nature of competitors. For instance, in the recent past,

SANDAG successfully competed for federal Transportation Investment Generating Economic Recovery (TIGER) funding worth $34.2 million.

- **Future Legislative Funds:** Most uncertain because no legislation has yet been introduced or passed—although, historically, such legislation was enacted that provided additional transportation funds.

While future legislative funds are most uncertain, it is reasonable that SANDAG could receive revenues from a future funding source similar in size and scope to prior legislation based on historic activity over the years from sources such as the Passenger Rail and Clean Air Bond Act (Proposition 108) of 1990; the Traffic Congestion Relief Act (Proposition 42) of 2000; the Highway Safety, Traffic Reduction, Air Quality and Port Security Bond Act (Proposition 1B) of 2006; the California High-Speed Rail Act (Proposition 1A) of 2008; the American Recovery and Reinvestment Act of 2009; the Road Repair and Accountability Act of 2017 (SB1); and various other programs such as state Cap-and-Trade and federal Transportation Investment Generating Economic Recovery (TIGER) grants.

While the color-coding of revenues by level of certainty and showing ranges rather than point estimates were positive steps towards increased transparency, the POF process continued to be solely forward-looking and did not involve comparisons of projected revenues from prior plans to actual revenues. SANDAG could improve its process by also considering its historical performance in securing past revenues. Given the initial *TransNet* Program began in 1987, SANDAG now has more than 30 years of historical data to draw on when estimating future revenues. Thus, SANDAG should compare its past accuracy between expected and actual funding sources and amounts and communicate this historical data to help decision makers better understand the levels of certainty in receiving the future funds and evaluate the financing of *TransNet*.

On the expense side, staff estimated costs for projects not yet started in two ways in the most recent 2016-2017 POF —first, cost estimates from the 2004 Ordinance were escalated to the year of construction. Second, estimates were taken from 2015 San Diego Forward: The Regional Plan and escalated to the year of construction. SANDAG then took the higher of the two estimates to conservatively identify the maximum amount of funding capacity needed to complete the major corridor projects. In the 2016-2017 POF, SANDAG staff also noted for the first time how costs changed in response to anticipated long-term construction cost inflation which rose from 2.69 percent to 2.77 percent per year. Despite this relatively small change, estimated costs increased between $400 and $500 million dollars based on inflation growth.

Funds leveraged met intent of *TransNet*

One of the key goals of *TransNet* was to leverage state and federal funds. As shown in Exhibit 6, when comparing funding sources as identified in the 2005 POF to actual major corridor expenditures through the end of 2017, we found the initial 2005 POF estimated 61.5 percent of funding would come from *TransNet* revenues and proceeds for financing activities and the remaining 38.5 percent of funds would derive from a mix of federal, state, and other local sources. However actual leveraging results were reversed—with *TransNet* revenues and proceeds from financing accounting for 34.6 percent of major corridor expenditures to date and federal, state, and other sources accounting for 65.4 percent.

EXHIBIT 6. COMPARISON OF PLANNED FUNDING SOURCES WITH ACTUAL SOURCES EXPENDED THROUGH 6/30/2017

Source	2005 POF Expected Funding Source Mix		Actual Expenditures by Funding Source	
***TransNet* and Financing Proceeds**	**$3,169,019,566**	**61.5%**	**$1,517,731,839**	**34.6%**
TransNet Revenues	$1,601,751,560	31.1%		
Bond Proceeds	$1,031,210,445	20.0%		
Commercial Paper Proceeds	$492,350,041	9.6%		
Other Financing Proceeds	$43,707,520	0.8%		
Other Revenues	**$1,984,506,033**	**38.5%**	**$2,872,939,120**	**65.4%**
Federal Capital Funds	$947,929,959	18.4%	$983,664,476	22.4%
State Capital Funds	$287,617,000	5.6%	$1,613,315,828	36.7%
Other Local	$50,156,000	1.0%	$275,958,816	6.3%
Other Potential Revenues (STP, CMAQ, etc.) [4]	$668,557,285	13.0%	-	-
Interest / Fund Proceeds	$30,245,789	0.6%	-	-
Total	**$5,153,525,599**	**100.0%**	**$4,390,670,959**	**100.0%**

Source: 2005 Plan of Finance and *TransNet* Dashboard.

In fact, *TransNet* funds expended on major corridors were leveraged at a rate of 1.89:1—meaning that for every $1 dollar of *TransNet* funds expended on major corridor projects, SANDAG secured $1.89 in additional funding from federal, state, and other local sources. While the ratio is higher than what was envisioned in the initial 2005 POF, it still may not be sufficient to complete the major corridor projects given reduced *TransNet* revenues and rapidly rising costs as discussed later in this Chapter.

TransNet Collections were Lower than Forecasted, but not Unlike Similar Organizations

While revenue can be reasonably forecasted over the short term, forecasting models cannot completely capture the complicated changes in macroeconomics and consumer behavior that occur over long time periods. As a result, the accuracy of a forecast decreases the farther it is extrapolated from actual data. When forecasting 40 years into the future, even relatively small changes to models produce large variations in forecasts during the final years.

Actual *TransNet* collections were significantly less than Ordinance forecasts

Before the *TransNet* Ordinance passed, SANDAG estimated it would generate $14 billion in sales tax revenue over its 40-year life as measured in 2002 dollars—or approximately $36 billion in nominal (year of collection) dollars. Over the first eight years of the *TransNet* Program, actual collections were significantly lower than the Ordinance forecast presented to voters. Exhibit 7 shows actual collections through 2016 compared against estimates presented to voters and found a 22.6 percent variance.

[4] Other potential revenues will be categorized as federal or state fund sources once received and available to spend.

EXHIBIT 7. ACTUAL AND FORECASTED *TRANSNET* COLLECTIONS, 2009 TO 2016 (IN NOMINAL DOLLARS)

Fiscal Year	Ordinance Forecast	Actual Collections	Difference	Percent Difference
2009	$258,770,831	$221,991,360	($36,779,471)	-14.2%
2010	$273,052,156	$204,191,747	($68,860,409)	-25.2%
2011	$282,676,207	$221,304,015	($61,372,192)	-21.7%
2012	$299,446,544	$236,947,112	($62,499,432)	-20.9%
2013	$316,569,168	$247,221,161	($69,348,007)	-21.9%
2014	$336,031,020	$260,114,931	($75,916,089)	-22.6%
2015	$356,769,930	$268,840,550	($87,929,380)	-24.6%
2016	$379,187,588	$275,500,023	($103,687,565)	-27.3%
Total	**$2,502,503,443**	**$1,936,110,899**	**($566,392,544)**	**-22.6%**

Source: Forecast data obtained from SANDAG's 2002 Preliminary Series 10 model. Collections obtained from *TransNet* Quarterly Reports.
Note: Sales tax revenues projections have been regularly updated since the initial figures presented to voters.

Updated forecasts show a decline in future revenues potentially impacting future projects

In 2016, a significant data aggregation error was discovered in SANDAG's forecasting process that had caused several *TransNet* revenue forecasts to be overstated.[5] Specifically, an external investigation conducted on behalf of the SANDAG Board of Directors in response to public inquiries found that SANDAG staff had made a data aggregation error in 2004 and, as a result, subsequent forecasts for *TransNet* revenues were overstated. [6]

After the error was discovered, SANDAG produced a new forecast based on data from leading financial firms including Moody's, Woods and Poole, and IHS Markit. The 2016 consensus forecast produced by SANDAG in the aftermath of the forecasting error projected that *TransNet* would collect $19.2 billion in year of collection dollars, or $8.9 billion in real 2002 dollars.[7] These figures represented a $16.8 billion decline from the initial forecast in year of collection dollars, or $5 billion in real 2002 dollars.[8] While previous year forecasts suggested *TransNet* might collect less than initially forecasted, those forecasts included the data aggregation error and may still have understated the funding difference. Exhibit 8 compares the initial *TransNet* Extension Ordinance forecast made in 2002 to the most recent 2016 forecast produced by SANDAG.

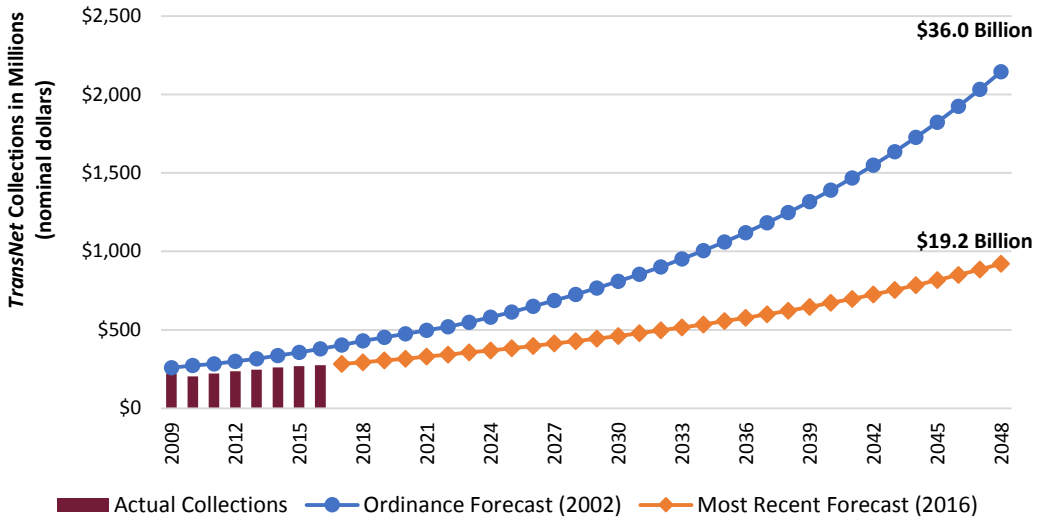
[5] The initial forecasts were based on projections of taxable retail sales and income from SANDAG's Demographic and Economic Forecasting Model (DEFM), a forecasting program the agency used from the late 1970s until 2016. A data aggregation error on one of the forecasting spreadsheets resulted in growth forecasts for one industry cluster to be significantly overstated.

[6] The error was not present in the *TransNet* Extension Ordinance forecast placed before voters in 2004, but it did impact forecasts made between 2005 and 2016. The 2016 consensus forecast did not rely on the mis-aggregated data.

[7] Sales tax revenue figures for the 2016 consensus forecast include actual collections from FY 2009 through FY 2016.

[8] Nominal dollars include the effects of inflation over time, while real dollars remove the effect of inflation to provide a comparison across two points in time.

EXHIBIT 8. ESTIMATED AND ACTUAL *TRANSNET* REVENUES (**IN NOMINAL DOLLARS**)



Source: Forecast data provided by SANDAG.

Proportionally, most of the difference between the initial and most recent 2016 forecast occurred in the final 20 years of the *TransNet* Program where the impact of reduced revenues could affect the remaining projects unless other revenue sources are realized.

Positive changes were made to help reduce any future revenue forecasting errors

While the forecast errors and decline in sales tax revenues raised concerns for SANDAG, oversight committees, and stakeholders, it resulted in positive changes to the revenue projection model. For instance, in response to the forecasting error, SANDAG developed a "Plan of Excellence" that included a seven-point plan to strengthen its modeling practices and ensure similar errors are not made in the future. If fully implemented, the plan would provide additional controls that would reduce, but not necessarily eliminate, the possibility of a similar error in the future. Some of the steps that follow were already implemented by SANDAG:

1. **Conduct Detailed Review** of the error in SANDAG's Demographic and Economic Forecasting Model (DEFM) which produced the input data used to estimate sales tax revenues, including the root cause.
2. **Conduct Dependency Analysis** to identify key SANDAG reports and deliverables that used data from SANDAG's forecasting models—especially those used to forecast *TransNet* sales tax collections—to evaluate the significance of the impacts from any potential forecasting errors in addition to the potential effects on findings and policy recommendations.
3. **Map Modeling Process Flow** for future forecasts from source data through databases, models, and outputs to provide transparency and identify areas for improved quality assurance processes.
4. **Improve Data Governance** between SANDAG staff and the SANDAG Technical Services Department to develop a data warehouse, standardize data extraction routines, and ensure consistency of data.

5. **Review and Provide Oversight** to validate the new SANDAG population, housing, and economic forecasting model using an independent expert review committee, including convening a panel of experts in economics, demographics, and land use to review the methods, data sources, and assumptions of the new SANDAG forecasting model.
6. **Enhance Transparency** by developing methods to ensure data and analytic transparency, including establishing checking points where full disclosure and analysis are provided to ensure that others can see how models were developed, how data was processed, and what assumptions were made along the way.
7. **Develop and Formalize Processes** to understand how staff roles, work flows, and technology contribute to producing key agency deliverables. This information will be used to realign the Technical Services Department, as well as add professional quality assurance staff and a dedicated database administrator.

Previously, SANDAG chose to provide a single point estimate for *TransNet* revenue projections. Given that forecasting revenues for a 40-year program is inherently difficult, SANDAG realized that providing a single point estimate for a 40-year forecast did not adequately communicate the underlying uncertainty and could overstate predictions. In the 2016 consensus forecast and the 2016-2017 POF, SANDAG showed a range of possible values with that range constructed by adding or subtracting 5 percent to the midpoint forecast. While these changes were positive, we recommend SANDAG enhances its model by using confidence intervals to better calculate the range of possible or likely values and communicate the uncertainty associated with forecasted revenues. Also, we encountered certain challenges with version control and data consistency in relation to supporting data available for the initial forecast of *TransNet* sales tax revenue. Given the volume of data generated by SANDAG, it is important that the agency establishes and procedures governing the storage, reporting, and release of data.

Reduced sales tax forecasts were similar to others

SANDAG's experience with sales tax forecast reductions was like those of the other transportation agencies we reviewed, although SANDAG was the only agency with a 40-year sales tax measure. As depicted in Exhibit 9, we compared SANDAG to three other transportation agencies that (1) had a similar half-cent sales tax measures used to fund transportation, (2) enacted or renewed a sales tax measure between 2003 and 2005, (3) forecasted sales tax revenue before collections began, and (4) revised revenue forecasts between 2013 and 2016.

Over the first 20 years of *TransNet*, the difference between the initial and most recent forecast was 32.3 percent, which was similar to the decreases observed in the 20-year forecasts for the Maricopa Association of Governments (39.9 percent) and Pima Association of Governments/Regional Transportation Authority (32 percent). Similarly, when looking at the first 30 years of *TransNet* collections, the decrease between SANDAG's forecasts was 39.7 percent, less than the 41.6 percent reduction between forecasts made by the Orange County Transportation Authority for its 30-year sales tax collections.

EXHIBIT 9. SALES TAX FORECAST COMPARISONS, SANDAG AND OTHER COMPARABLE AGENCIES

Organization	Sales Tax Collection Period	Initial Forecast Year	Forecast Updated	Initial Forecast (YOE $)	Current Forecast (YOE $) [1]	Variance
SANDAG (20-year) [2]	2009 - 2028 (20 Years)	2003	2016	$9.1 Billion	$6.2 Billion	-32.3%
Maricopa Association of Governments	2006-2026 (20 Years)	2004	2014	$14.3 Billion	$8.6 Billion	-39.9%
Pima Association of Governments/Regional Transportation Authority	2007-2026 (20 Years)	2005	2013	$2.5 Billion	$1.7 Billion	-32.0%
SANDAG (30-Year) [2]	2010 - 2038 (30 Years)	2003	2016	19.0 Billion	$11.4 billion	-39.7%
Orange County Transportation Authority	2011-2041 (30 Years)	2005	2016	$24.3 Billion	$14.2 Billion	-41.6%
SANDAG (40-year)	2009 - 2048 (40 Years)	2003	2016	$39.0 Billion	$19.2 Billion	-46.7%

Source: Data provided by SANDAG, Maricopa Association of Governments, and Pima Association of Governments/Regional Transportation Authority, and Orange County Transportation Authority.
Note: [1] Current forecasts include actual collections through the year in which the forecast was updated.
[2] Auditors examined SANDAG forecasts over the first 20 and 30 years, respectively, of the 40-year *TransNet* Extension Ordinance to provide comparisons to the 20 and 30-year collection periods for peer agencies shown in the table.

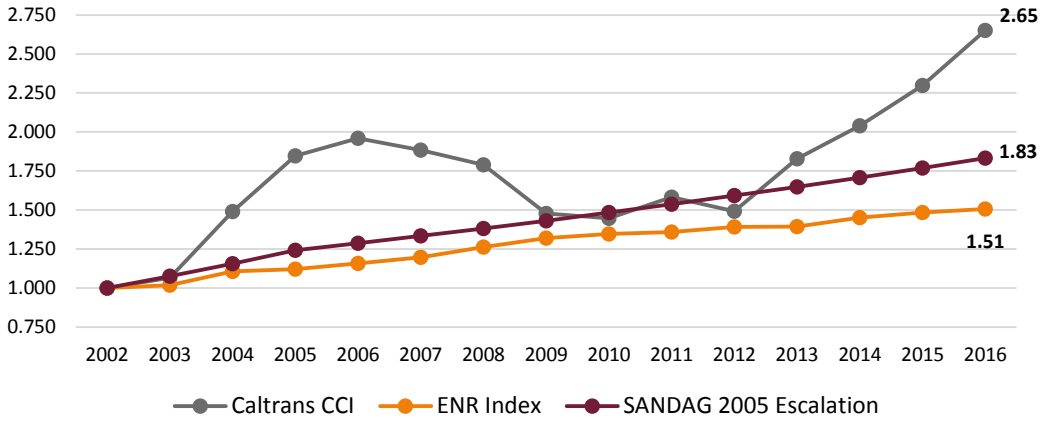
Initial Project Cost Assumptions were Reasonable, but Transparency of Cost Updates Could be Improved

Estimating the cost of large-scale capital construction projects, many of which will not begin construction for several years, is a challenge for all entities. At SANDAG, initial *TransNet* cost estimates were made before all project scopes had been defined, but were escalated to future year dollars based on assumptions about inflation in construction costs. As projects moved from initiation to final design, assumptions made during the initial estimate were refined and adjusted in subsequent POFs.

Initial cost estimate assumptions were conservative and reasonable

As part of the 2005 POF, SANDAG commissioned a study to determine the appropriate rate to escalate current construction cost estimates to year of expenditure dollars and found that SANDAG should adopt a cost escalation rate for planning purposes of 7.25 percent over three years and 3.6 percent long-term thereafter. The SANDAG cost escalation methodology was reasonable and compared favorably to actual construction cost increases, as captured by the Caltrans Construction Cost Index (CCI) and the Engineering News Record Index (ENR). As shown in Exhibit 10, SANDAG's cost assumptions fell in between the actual cumulative cost increases since 2002 captured by the two indices—SANDAG was higher than the ENR index, but much lower than the Caltrans index that saw significant increases over the past three to four years.

EXHIBIT 10. COMPARISON OF SANDAG COST ESCALATION AND CUMULATIVE CONSTRUCTION COST INCREASES, 2002 TO 2016



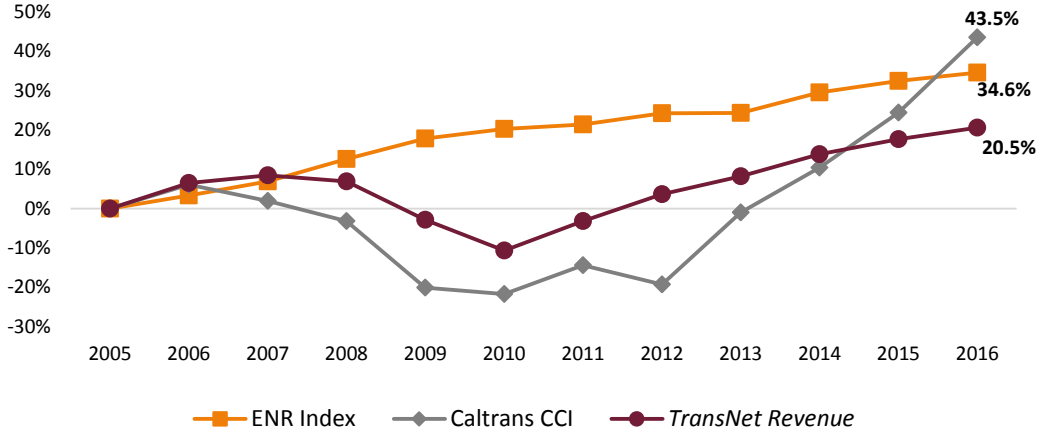
Source: 2005 Plan of Finance and data provided by SANDAG.

Further, SANDAG took a conservative approach in its initial 2005 POF and 2016-2017 POF update where project costs were estimated in two ways—first, by escalating the original cost estimates to year-of-expenditure dollars and, second, by estimating project costs based on expected scope. SANDAG used the higher of the two estimates for planning purposes.

Construction costs since 2005 increased at a faster rate than revenues

While SANDAG's cost assumptions were reasonable, recent trends show that construction costs increased at a faster rate than *TransNet* revenues as shown in Exhibit 11. Specifically, construction cost indices grew between 34.6 and 43.4 percent. At the same time, *TransNet* revenues grew by only 20.5 percent. *TransNet* project cost increases were both the result of increases in actual construction costs and the result of more refined cost estimates as projects moved from preliminary design and engineering phases into construction. Initial cost estimates were based on project scopes that were approximated with the limited information known at the time. As a result, project costs may continue to escalate as project scopes continue to be more refined. As costs grow faster than revenues, SANDAG is challenged with identifying additional funding sources to cover the gap. Should this trend continue, it may become increasingly difficult to complete the portfolio of major corridor highway and transit projects within the 2048 horizon year without historic leveraged rates of additional funding sources.

EXHIBIT 11. CUMULATIVE CHANGE IN CONSTRUCTION COSTS AND *TRANSNET* REVENUES, 2005 TO 2016



Source: Revenue and cost data provided by SANDAG.

Regular updates and better communication of reasons for project cost changes are needed

While SANDAG and its *TransNet* partners regularly updated and managed costs on their capital projects, communication of that information to oversight bodies did not always differentiate between cost increases due to scope changes and cost increases resulting from changes in construction costs—making it difficult to understand why the cost to complete the major corridor projects continued to rise. However, in its 2016-2017 POF, SANDAG provided more clarity about cost changes by noting changes in the ten-year moving average of construction costs. At that time, staff also asked the SANDAG Board for guidance through a cost estimation policy that would establish specific project milestones where estimates would be updated and communicated to the SANDAG Board.

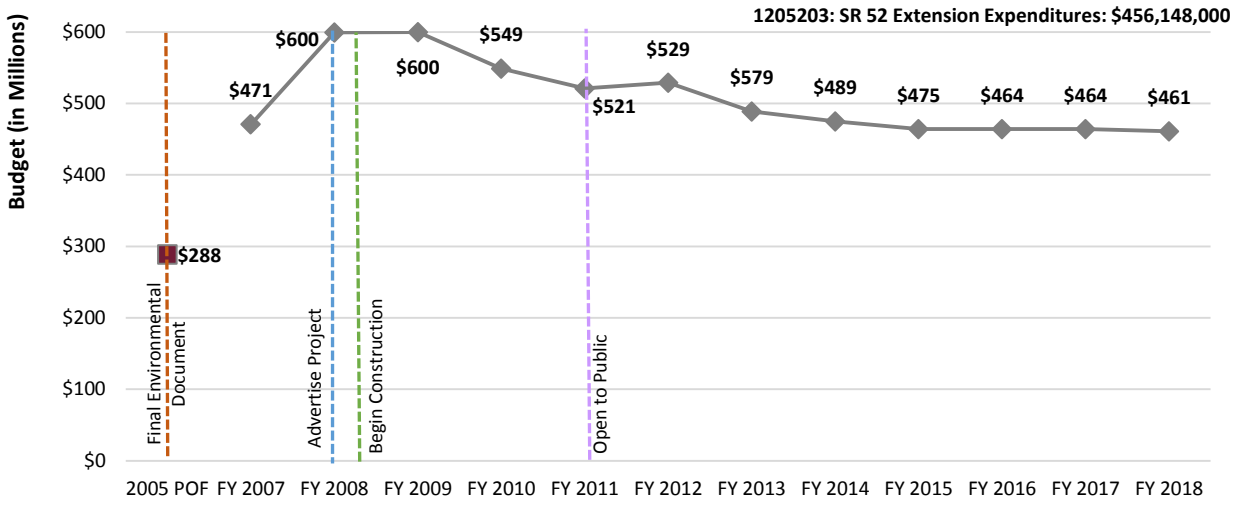
To understand how project costs changed over time, we selected five major corridor projects for review.[9] When costs were initially estimated at the start of *TransNet* in the 2005 POF, these projects were in various stages of development—three of the five projects had completed the final environmental impact document, while the remaining two projects had not yet started the preliminary environmental stage. For most projects, budgets and costs increased during the design and environmental stages but decreased during construction. However, the five projects reviewed began construction around the time of the Great Recession of 2008 when a favorable competitive bid environment led to lower costs than engineer's estimates suggested just a year or two prior to construction.

For example, when costs for the SR 52 Extension project were estimated in the 2005 Plan of Finance, the project had completed the final environmental document and remaining costs were estimated at approximately $288 million (in 2005 dollars) as shown in Exhibit 12. In FY 2007, the $288 million in project costs were updated to $471 million (in year of expenditure dollars). As the project was designed and began construction in FY 2008, the budget increased to $600 million. By the time the SR 52 extension opened to the public in March 2011, the budget was reduced from $600 million to $521 million—largely due to construction costs being lower than the final engineer's estimate. The project is expected to close-out in

[9] Projects selected for review were 1201503 (I-15 Express Lanes North Segment), 1201504 (I-15 FasTrak®), 1205203 (SR 52 Extension), 1207602 (SR 76 Middle), and 1207606 (SR 76 East).

FY 2019 with a current budget of $461 million and actual expenditures through FY 2017 of $456 million.

EXHIBIT 12. PROJECT COST HISTORY FOR THE SR 52 EXTENSION



Source: Project Budget and Expenditure History from *TransNet* Dashboard.

The exhibit example shows that project budgets fluctuate as projects move from the initial design and environmental impact phases into construction.

While SANDAG staff provided regular project cost updates to the SANDAG Board, previous reporting did not help decision makers understand the reasons behind cost fluctuations such as by identifying changes due to scope modifications from those changes related to construction cost factors or other factors. Practices also did not connect incremental cost changes at the project level to the total cost to complete the major corridors projects.

With project costs and concerns increasing, a more comprehensive cost update process must be developed to increase transparency and provide decision makers with meaningful information. Specifically, a new cost update policy and practice should be implemented that accomplishes the following:

- Updates project costs at particular project milestones;
- Establishes thresholds at which project cost updates, including explanations for changes, are presented to the SANDAG Board and ITOC;
- Differentiates cost increases due to changes in project scopes from cost increases due to changes in the cost of construction inputs;
- Connects changes in individual project costs to the overall cost to complete for major corridor projects; and
- Develops a consistent reporting template that connects individual project cost changes to the overall cost to complete allowing for a cleaner comparison of costs over the life of *TransNet*. The project listing shown in Appendix A could be used as a guide in developing this reporting template.

Implementing these recommendations would both help decision makers better understand the reasons behind project cost changes and provide more regular cost updates to help manage awareness and expectations.

While Debt Financing was Reasonable, Transition to Pay-Go could Impact Pace of Project Completion

Prior to the start of sales tax collections under the *TransNet* Extension Ordinance, SANDAG was faced with a decision—either use debt-financing to provide immediate funding for major corridor capital projects or adopt a pay-as-you-go (pay-go) approach saving sales tax revenues to spend on large capital projects. While both approaches have advantages and benefits over the other method as shown in Exhibit 13, SANDAG made the choice to use debt-financing for the first 10 years of the *TransNet* Program.

EXHIBIT 13. BENEFITS OF TWO PRIMARY METHODS USED TO FINANCE CAPITAL TRANSPORTATION PROJECTS

Debt Financing	Pay-Go
• Greater control over cash-flow • Repayment in "cheaper" dollars • Shorter lead time and projects completed as needed • Intergeneration equity [10]	• Avoids cost of funds associated with borrowing (debt service) • No excessive debt burden or risk of default due to economic downturns • Increased flexibility in future years due to no long-term debt service

Source: Industry research and financing practices.

Studies show that debt is a sound practice for financing infrastructure, because larger infrastructure projects entail significant upfront project costs.[11] Borrowing enables acceleration of projects and the spreading out of costs—both to current taxpayers who can see the benefit sooner and future taxpayers who will continue to use a transportation improvement and help pay for it. In this way, debt-financing is considered more equitable than using current and available funds with projects taking longer and current residents who may not enjoy the future improvement. SANDAG's bonded debt payback period ran from 31 years for bonds issued in 2017 to 40 years for bonds issued in 2008—all less than the typical useful life of capital construction projects of 45 years.[12] Ultimately, SANDAG issued debt to advance projects, although it expects to transition to a pay-go approach by 2022 to limit the amount of accumulated debt.

Debt financing allowed SANDAG to accelerate early action program projects

In 2005, the SANDAG Board authorized the use of debt financing to accelerate the start of 19 major corridor capital construction project segments through design and environmental permit stages. This use of debt financing allowed SANDAG to raise significant capital funds while maintaining a reasonable debt service schedule that appeared to be consistent with sound financial management practices. In fact,

[10] Capital transportation projects typically have a useful life of approximately 45 years; while future residents will enjoy the benefits of these projects, they would not have contributed to their completion under a pay-go system. Under debt financing, debt is repaid over a time period that is close to the useful life of the asset. As such, those who benefit from the project also pay the cost.

[11] The Municipal Research and Services Center, *Financing Public Infrastructure: Generational Equity and Municipal Debt* by Jenifer C. Merkel, September 1, 2012 and the Center on Budget and Policy Priorities, *It's Time for States to Invest in Infrastructure* by Elizabeth McNichol, August 10, 2017.

[12] According to U.S. Bureau of Economic Analysis, highway assets should be depreciated over a useful life of 45 years.

SANDAG used a variety of debt financing mechanisms, including bonds, commercial paper, and interest rate swap agreements to fund *TransNet* and its major corridors in particular.

As of the end of 2017, five variable and fixed-rate bond series were issued generating more than $2.2 billion over the last decade—$1.8 billion of which provided cash flow to capital projects—and a Transportation Infrastructure Finance and Innovation Act (TIFIA) loan totaling $537 million was secured for future use on the Mid-Coast project. This debt structure was reviewed by external consultants who provided advice related to decreasing risk through other financing vehicles or activities as necessary. Also, SANDAG staff regularly monitored debt service costs to keep debt service at a manageable level without jeopardizing the long-term health of program. Debt service coverage ratios were and are projected to remain above the 2.0 ratio required by SANDAG Board policy—although coverage ratios decreased over time as SANDAG's increased debt grew closer to its capacity limit. Further, the SANDAG Board and ITOC receive quarterly updates on SANDAG's debt service obligations and investment strategies.

Moreover, accelerating these projects likely helped SANDAG take advantage of unexpected funding streams and a favorable cost environment that emerged throughout the past decade such as state Proposition 1B in 2006 and the federal American Recovery and Reinvestment Act in 2009 because projects were in a "shovel ready" state when funding became available. Recent forecasts suggested SANDAG should be able to meet its existing debt obligations without sacrificing the ability to allocate *TransNet* dollars to capital projects.

SANDAG's use of debt compared with others

Peer transportation agencies with similar sales tax measures—including Orange County Transportation Authority in California, the Pima County Regional Transportation Authority in Pima County, Arizona, and Valley Metro in Phoenix, Arizona—all issued debt to fund similar transportation projects. The Pima County Regional Transportation Authority, for example, issued $267 million in bonds under their current ordinance, with current sales tax collections of roughly $75 million and annual debt service obligations of $28 million.[13] SANDAG, by comparison, issued more than $2.2 billion in bonds, with current sales tax collections of $290 million and annual debt service of $105 million.[14] Although the agencies differed significantly in size and scope, both have annual debt service obligations equal to roughly one-third of current sales tax collections.

Transition to pay-go financing may impact pace of project completion

To ensure debt service remains manageable as the *TransNet* Program reaches the end of its debt-financing strategy, SANDAG is expected to transition to a pay-go approach to fund major corridor capital construction projects by 2022. Specifically, SANDAG is nearing its near-term debt capacity level, and the move will limit repayment to the end of the current *TransNet* Extension in 2048.

[13] Sales tax collections were for 2016 and were provided by the Pima Association of Governments/Regional Transportation Authority. Debt service and bond amounts were taken from the most recent bond issuance notice from May 2014.

[14] A portion of funds from recent bond issuances have been used to refund prior bond issuances. The $2.2 billion figure represents gross bond funds issued. SANDAG amounts are for fiscal year 2015-2016.

While pay-go has benefits such as the advantage of avoiding the costs of debt financing as discussed earlier in Exhibit 13, changes to project scopes and cost increases could have a greater impact on SANDAG's ability to complete the major corridor capital construction projects by 2048. Under pay-go, SANDAG will have to "save up" funding from *TransNet* sales tax collections while securing federal, state, and local grant and matching funds before expending the funds on capital projects.

However, the pay-go approach could require stretching out projects over a longer time until adequate funding is saved or separating projects into manageable segments to complete as funding becomes available. According to SANDAG, this might involve a "staggered, or accordion approach, where work is accelerated or slowed down depending on funding availability." While debt financing may be unavailable, there would still be regular formula funds coming into the region from state and federal sources to augment the *TransNet* collections. Moreover, there will still be options to advance projects through short-term financing mechanisms, like grant anticipation notes and bond anticipation notes, to stay competitive for future opportunities for money from state or federal programs that may be developed in the future.

Major Corridor Debt Service and Related Revenue Growth must be Closely Monitored to Assess Impact on *TransNet* Program Allocations

Under the *TransNet* Extension Ordinance, 38 percent of net *TransNet* collections are allocated to major corridor capital projects. However, the various bond series and the TIFIA loan were secured against all *TransNet* revenues. Thus, if debt service were to exceed *TransNet* collections allocated for the major corridor projects, *TransNet* funds that were designated for other *TransNet* programs might instead be used to meet SANDAG's debt service obligations. If *TransNet* revenue growth is lower than expected or needed to complete projects, major corridor projects could be delayed or other *TransNet* Program areas outside of the major corridor projects could be affected. To assess the potential impact, we evaluated SANDAG's ability to meet debt service obligations (1) while still maintaining a positive cash flow for major corridor projects and (2) without having to use *TransNet* funds destined for other *TransNet* programs. Results are discussed in the sections that follow.

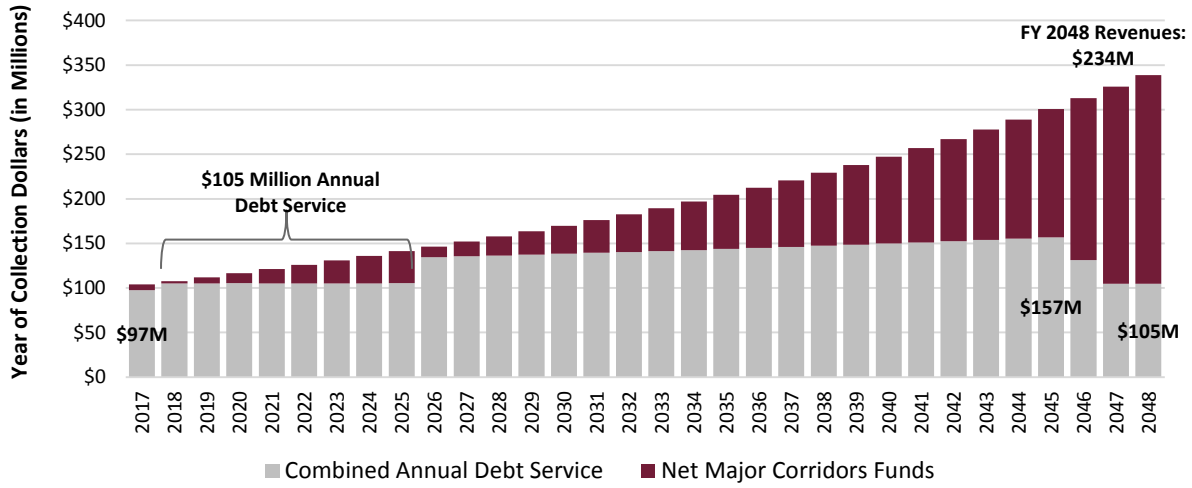
Annual *TransNet* revenues are projected to exceed debt service, but periods of higher risk exist

The 2016 consensus forecast produced by SANDAG estimated total *TransNet* collections of $17.3 billion (in year of collection dollars) from 2018 until the end of the current *TransNet* extension in FY 2048—with 38 percent of these net collections allocated to major corridors totaling $6.4 billion in *TransNet* sales tax funds. Current debt obligations for the major corridors projects total $4.2 billion (including the TIFIA loan which is not expected to be drawn until 2021). Given the current forecast, SANDAG will cumulatively accumulate $2.2 billion in *TransNet* funds for major corridor projects after debt obligations are met.

While current *TransNet* allocations for major corridors are cumulatively projected to be greater than debt service, there are periods where nearly all *TransNet* revenues will be used to pay debt service as illustrated in Exhibit 14. For instance, in FY 2017, *TransNet* collections for major corridors was $104.1 million and debt service was approximately $97 million—leaving approximately $7 million for major corridor projects. Similarly, in FY 2018, that debt service will rise to roughly $105 million per year and remain at that level

through 2025. Despite the anticipated revenue growth, nearly all major corridors funds will go to pay debt service between FY 2017 and FY 2020.

EXHIBIT 14. *TRANSNET* FORECASTED COLLECTIONS, DEBT SERVICE, AND NET FUNDS AVAILABLE FOR MAJOR CORRIDOR CAPITAL PROJECTS, FY 2017 TO FY 2048



Source: SANDAG Quarterly Financial Reports and 2016 Consensus Forecast.

Yet, while forecasted major corridor sales tax allocations are greater than debt service obligations each year through 2048, there is another period where the amount of estimated revenues will be very similar to the amount debt service. Specifically, in FY 2026, debt service spikes to $135 million and slowly increases each year through 2045—at which point, debt service will be $157 million.

Lower than expected *TransNet* revenue growth could impact other *TransNet* Program Areas

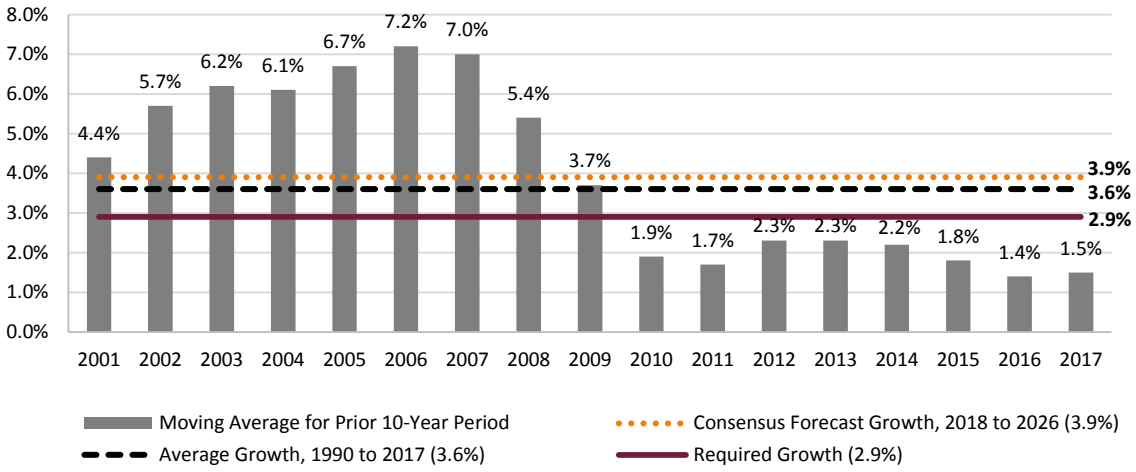
Since debt is backed by all *TransNet* revenues, any debt shortfall in the major corridor projects would impact other *TransNet* areas. Thus, revenue growth has to meet projections or those impacts could be realized.

We conducted a sensitivity analysis using actual *TransNet* revenues between 1990 and 2017, the 2016 consensus forecast, and current debt service obligations to determine the rate of growth in sales tax revenues needed to meet major corridor project debt service obligations—while still maintaining a positive annual cash flow between FY 2018 through FY 2026. To cover the increased debt service by FY 2026, *TransNet* revenues would need to grow 29.4 percent, or roughly 2.93 percent annually. The most recent 2016 forecast predicted revenues will increase 3.9 percent annually between FY 2017 and FY 2026—suggesting the revenue growth will be sufficient to meet debt service. Moreover, *TransNet* revenues have historically grown 3.6 percent, on average, between FY 1990 and FY 2017, lending additional support that the expected revenue growth should be sufficient to cover debt service when obligations increase in FY 2026.

However, when compared to a 10-year moving average, the results were not as clear. Specifically, using actual collection data between FY 1990 and FY 2017, we calculated the historic 10-year moving average for *TransNet* sales tax revenue growth to compare against the reasonableness of future revenue growth

expectations and ability to cover debt service.[15] Results showed the historic 10-year moving average for *TransNet* exceeded the 2.93 growth rate forecasted in the consensus forecast each year between FY 2001 and FY 2009, but fell below that rate between FY 2010 and FY 2017 as shown in Exhibit 15.

EXHIBIT 15. *TRANSNET* REVENUES 10-YEAR MOVING AVERAGE GROWTH RATES, 2001 TO 2017



Source: SANDAG Quarterly Financial Reports, 2016 consensus forecast, and historical sales tax data.
Note: The 2016 consensus forecast growth rate is shown for illustrative purpose only.

If there were to be another period of significant economic recession or stagnation, revenues could fail to grow at a rate which would allow SANDAG to meet debt obligations for the major corridors while maintaining a positive annual cash flow. Therefore, SANDAG staff must closely and frequently monitor *TransNet* revenues and debt service obligations over the next 10 years to ensure that major corridor project revenues are sufficient to meet debt service obligations and allow SANDAG to transition to a pay-go approach without delaying major corridor projects. If revenues stagnate over the next triennial audit period, SANDAG and ITOC should explore options including restructuring, refinancing, in addition to other solutions for allocating funds for these projects.

Capacity for Future Projects must be closely Managed to complete Major Corridor Projects

While much was accomplished with the *TransNet* Program since 2005, the program is still in the early phases of its lifecycle with another 30 years of tax collections and transportation improvements planned. Knowing with certainty whether sufficient resources will be available over the next 30 years is a challenging endeavor as many unknowns exist and the industry will change in ways that are difficult to predict at this stage in the *TransNet* Program life cycle. Capital financiers must continuously refine capital costs, program delivery, revenue and borrowing assumptions, and explore opportunities to obtain additional federal and state funding. As such, long-term transportation planning must be focused on reasonable expectations to deliver intended results.

[15] The ten-year moving average provides a comparison between the growth rate in *TransNet* revenues required to meet debt service over the next 10 years of *TransNet* and the actual growth rates observed over historic ten-year periods.

Over the past three years, SANDAG was faced with three factors that complicated completing the *TransNet* Program—first, *TransNet* revenues were lower than expected between 2014 and 2016 and future revenue projections were revised downward. Second, construction costs continued to increase. Finally, as SANDAG transitions to a pay-go approach for financing capital projects, the ability to efficiently save and spend could be significantly impacted if revenue growth stagnates. Together, these factors present challenges to completing the major corridor projects by the 2048 horizon year of the *TransNet* Program.

Given current revenue projections, SANDAG needs to effectively leverage other funds to deliver major corridor projects by 2048

With *TransNet* sales tax revenues for major corridor projects estimated to be $6.2 billion, the 2016-2017 Plan of Finance noted that SANDAG would need to leverage each *TransNet* dollar with an additional $3.40 from other funding sources. Although SANDAG historically had a program-wide leveraging ratio of more than $3 to $1, the leveraging ratio for major corridor projects since the start of the accelerated *TransNet* Extension Ordinance in 2005 was only $1.89 to $1—below the ratio need to complete the major corridor projects without additional funding.

Specifically, the 2016-2017 Plan of Finance estimated $23.1 billion would be needed to complete the major corridor projects. As of June 30, 2017, there were 30 project segments in-progress as shown in Exhibit 16. Based on SANDAG *TransNet* Dashboard data, the current 30 project segments in-progress have a remaining budget of approximately $2.75 billion and are scheduled to be completed by 2027.

EXHIBIT 16. *TRANSNET* EXTENSION ORDINANCE PROJECTS IN-PROGRESS, AS OF 6/30/2017 [1]

#	Ordinance #	CIP #	Project Name	Remaining Budget [2]
1	45	1201507	SR 15 BRT: Mid-City Centerline Stations	$29,629,000
2	7, 45	1201514	Downtown Multiuse and Bus Stopover Facility	$44,411,000
3	7, 8	1201518	I-15 Mira Mesa Transit Station Parking Structure	$14,202,000
4	14	1280504	South Bay BRT	$85,733,400
5	5, 6	1280508	SR 94 Express Lanes I-805 to Downtown (Environmental)	$1,369,000
6	14	1280513	I-805/SR 94 Bus on Shoulder Demonstration Project	$30,398,885
7	3, 16	1280514	I-805/SR 15 Interchange	$1,466,394
8	9	1280515	I-805 South Soundwalls	$25,890,000
9	21	1200506	I-5/Genesee Interchange and Widening	$48,514,061
10	21	1200507	I-5/Voigt Drive Improvements	$8,337,000
11	21	1200508	I-5/Gilman Drive Bridge	$20,451,196
12	23	1257001	Mid-Coast Light Rail Transit (LRT)	$1,584,723,719
13	29	1200503	I-5/SR 56 Interchange	$6,510,396
14	26, 27	1200504	I-5 HOV Birmingham to Palomar	$377,793,000
15	31	1239803	Oceanside Station Pass-Through Track	$22,806,570
16	31	1239805	Poinsettia Station Improvements	$25,459,283

#	Ordinance #	CIP #	Project Name	Remaining Budget [2]
17	31	1239806	San Elijo Lagoon Double Track	$61,511,000
18	31	1239809	Eastbrook to Shell Double Track (Design)	$1,079,185
19	31	1239810	Carlsbad Village Double Track (Design)	$1,195,291
20	31	1239811	Elvira to Morena Double Track	$146,030,043
21	31	1239812	Sorrento to Miramar Phase 2 (Design)	$3,606,319
22	31	1239813	San Dieguito Lagoon Double Track and Platform (Design)	$1,744,931
23	31	1239814	COASTER Preliminary Engineering (Design)	$179,554
24	31	1239815	San Diego River Bridge	$82,046,427
25	31	1239816	Batiquitos Lagoon Double Track	$47,135,406
26	31	1239817	Chesterfield Drive Crossing Improvements	$6,129,047
27	32	1205201	SR 52 2ML: I-15 to SR 125 (Environmental)	$5,122,000
28	34	1212501	SR 94/SR 125 South to East Connector (Design)	$972,000
29	39	-	SR 67 Intersection Improvements at Dye Rd	Not applicable. [3]
30	47, 48	1390505	SR 905/125/11 Southbound Connectors	$67,927,644
			30 Projects, Total:	**$2,752,373,751**

Source: *TransNet* Dashboard (*TransNet*trip.com) and SANDAG data.

Note: [1] Segment in-progress could be at different project phases such as environmental, design, or construction and is part of a larger corridor. [2] Budget is in 2017 dollars. [3] Project did not use *TransNet* major corridor funds; rather $14 million of County of San Diego *TransNet* funds and $2 million of State Highway Operation and Protection Program funds were programmed for this project.

Moreover, an additional $17.6 billion in projects outlined in the Ordinance have not yet started as shown in Exhibit 17. Those projects are planned to be completed by 2048 or within the current timeframe of the San Diego Forward: The Regional Plan.[16] Additionally, another $2.7 billion relates to future efforts on the major corridors that have not yet been allocated to specific project segments. With debt service obligations of $4.8 billion, the total price tag for major corridor projects would be approximately $28 billion.

EXHIBIT 17. *TRANSNET* EXTENSION ORDINANCE PROJECTS NOT YET STARTED, AS OF 6/30/2017

Summary Description	Ordinance #	Estimated Cost to Complete [1]
I-805 Corridor		**$7,473M**
I-805: Mission Valley Viaduct	11	
SR 52: I-15 to I-805	17	
HOV Connector: I-805 / SR 52 Interchange	18	
I-5 South Corridor		**$4,236M**
I-5: SR 905 to SR 54	19	
I-5: SR 54 to I-8	20	

[16] While the 2015 San Diego Forward: The Regional Plan listed these projects as scheduled for completion by 2050, the *TransNet* Extension Ordinance sunsets by 2048.

Summary Description	Ordinance #	Estimated Cost to Complete [1]
I-5 North Corridor		**$3,273M**
HOV Connector: I-5 / I-805 Interchange	28	
FWY Connector: I-5 / SR 78 Interchange	30	
SR 94 / SR 125		**$1,873M**
SR 94: SR 125 to Steele Canyon Rd	35	
SR 94 / SR 125: I-805 to I-8	36	
SR 54 / SR 125		**$383M**
SR 54 / SR 125: I-805 to SR 94	38	
I-8 Corridor		**$80M**
I-8: Second St to Los Coches Rd	40	
SR 56		**$273M**
SR 56: I-5 to I-15	44	
Coronado Tunnel		**Not applicable**
SR 75 / SR 282 (Coronado Tunnel): Glorietta Blvd to Alameda Blvd [2]	46	Not applicable
Total Estimated Cost to Complete:		**$17,591M**

Source: *TransNet* Dashboard (*TransNet*trip.com) and the 2015 San Diego Forward: The Regional Plan.
Note: [1] Estimated Cost is in 2017 dollars. [2] Coronado residents voted against the Coronado Tunnel project in June 2010. The project is no longer in the San Diego Forward: The Regional Plan.

If revenues are insufficient to deliver the major corridor projects by 2048, SANDAG may have to reexamine project priorities and make decisions on whether to delay projects beyond 2048, reduce project scope, or eliminate projects. SANDAG has detailed project funding criteria on which they can draw and expand; however, SANDAG should consider supplementing that criteria with historic performance data collected since the beginning of *TransNet*. In addition to the existing funding criteria, performance data would help inform the prioritization process, allowing SANDAG to focus on projects that best address congestion relief or other *TransNet* goals while delaying or cutting scope for others.

Moreover, a structure should be developed to analyze funding sources and uses needed for the final 10 to 20 years of *TransNet* to identify potential capacity and revenue constraints that would impact the agency's ability to complete the major corridor projects by 2048 and consider options such as delaying projects, eliminating projects, or reducing scope. This type of capacity assessment should be formally revisited on a regular basis—such as during regional plan updates—so decision makers are aware of periods in which the agency may have to make critical project decisions.

Future mix of projects needed may change and affect funding needs

Given how technology changed the transportation landscape over the last decade, SANDAG must continually reevaluate whether the portfolio of projects remaining to be completed are the best mix for achieving congestion relief and other goals of the *TransNet* Program. For instance, different types of projects may be needed to retrofit existing infrastructure to support technological advancements such as

designated lanes to accommodate autonomous vehicles or charging stations for electric vehicles. With 30 years remaining in the *TransNet* measure, the mix of projects needed could change as identified through various regional planning cycles and should be formally considered more frequently than just at the 10-year review milestones outlined in the *TransNet* Ordinance.

For instance, over the most recent five years, there were extensive studies, research, and information concerning autonomous vehicles and how transportation planning agencies should react. Benefits cited include reduced traffic, parking needs, accidents, and emissions in addition to calling for a potential change in the mix and usage of public transportation.[17] However, there is still great uncertainty and wide ranges of probability on how soon these vehicles will become commonplace and how they affect roadway design and construction and public transit demand. Some predict a tiered roll-out of autonomous vehicles, while others predict that autonomous vehicles will not become mainstream until 2040 or later.

Thus, SANDAG must continue to vigilantly monitor and report on this trend as part of long-term planning to understand impacts to the transportation network and be diligent in its *TransNet* decisions to avoid building expensive infrastructure that could be rendered obsolete.

As Additional *Rapid* Routes begin Service, Changes to the Transit Operations Plan may be Needed

In addition to a Plan of Finance (POF) for major corridor projects, SANDAG worked with the local transit operators to develop a Transit Operations Plan for operating transit services on the new capital construction transit projects. Transit operations costs and revenues were recently discussed with the SANDAG Transportation Committee as well. While *TransNet* allocates 8.1 percent of sales tax revenues to fund these operations, the latest Transit Operations Plan showed some cash flow deficits with the first annual shortfall in 2022 and the cumulative shortfall starting in 2043. Thus, SANDAG must work closely with the Metropolitan Transit System (MTD) and North County Transit District (NCTD) to mitigate the impact to the local operators who would have to assume any losses through other funding sources or reductions in service.

Only *Rapid* transit services are funded through the Operations Plan

Although MTS and NCTD operate a combined fleet of transit vehicles, revenue and cost projections in the Transit Operations Plan were solely *TransNet*-focused on financing the new *Rapid* routes in operation over the last three years as well as planned funding for future routes on Mid-Coast, Blue Line, SPRINTER, and COASTER operations. Specifically, new major corridor transit services supported by *TransNet* are shown in Exhibit 18.

EXHIBIT 18. NEW MAJOR CORRIDOR TRANSIT SERVICES

No.	Service	Service Status
1.	*SuperLoop Rapid*	In-Service (2009)
2.	Mid-City *Rapid* 215	In-Service (2014)

[17] Deloitte Insights: The Future of Mobility, 9/24/2015.

No.	Service	Service Status
3.	I-15 *Rapid* 235	In-Service (2014)
4.	I-15 *Rapid* 237	In-Service (2014)
5.	South Bay *Rapid*	Committed (Opens in 2019)
6.	Mid-Coast Trolley	Committed (Opens in 2021)
7.	South Bay *Rapid* Express	Planned (Opens by 2035)
8.	Blue Line Trolley	Planned (Service Increased by 2035)
9.	COASTER	Planned (Service increased by 2020 and 2035)
10.	SPRINTER	Planned (Service increased by 2020 and 2035)

Source: 2016 Transit Operations Plan.
Note: In its December 2017 presentation to the SANDAG Transportation Committee, the COASTER was presented as "committed" since a number of dollars was spent on double-tracking this corridor to facilitate the service increases.

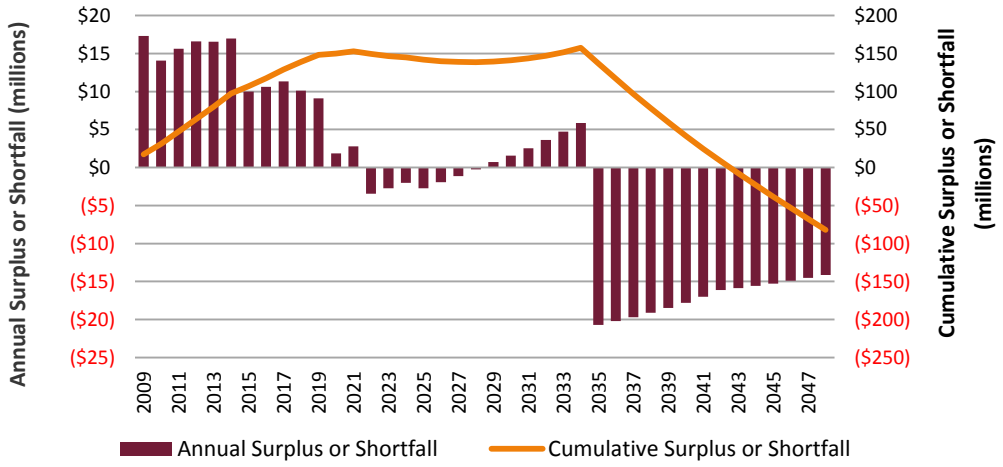
Assumptions used in the *TransNet* Transit Operations Plan were generally reasonable, although future shortfalls exist

In general, the assumptions regarding ridership, farebox recovery, and operating costs were consistent with actual Transit performance data for MTS and NCTD operated transit services. On the revenue side, SANDAG used reasonable methods to estimate fare revenues by multiplying the average fare for each service type by the estimated number of riders. An activity-based model forecasted transportation demand by modeling how and where people travel on a daily basis. For existing services, actual ridership figures were also used to project the fare revenues.

On the cost side, the *TransNet* Transit Operations Plan model calculated the net cost (total operating and maintenance costs less fare revenue) of each service through 2048 in year of expenditure dollars. Costs were reasonably estimated in two ways—for existing *Rapid* routes (Routes 215, 235, and 237 and *SuperLoop*), costs were known from negotiated rates as part of a memorandum of understanding with MTS. For future planned services, SANDAG used costs for similar services and routes and escalated those amounts for future years to account for inflation. Operations and maintenance costs were included in the rates charged by MTS and NCTD, but SANDAG also included estimates of additional costs for items such as parking structures. These practices align with other similar entities.

While the model factors were reasonable and aligned with industry practices, the 2016 *TransNet* Transit Operations Plan showed a cumulative shortfall of $82 million over the remaining 30-year life of the plan. Of particular note, two periods show annual shortfalls—one running from FY 2022 through FY 2028 and the second spanning FY 2035 through FY 2048 as shown in Exhibit 19. Cumulatively, transit operations estimates showed a surplus from FY 2009 through FY 2042, before cash flow goes negative in FY 2043. In fact, total costs are estimated at $3.2 billion (year of expenditure) for operating these services with *TransNet* revenue estimated at $1.7 billion and fare revenues estimated at roughly $1.4 billion. Farebox recovery—the amount of total costs covered by fare revenues—totals 43 percent. System wide, farebox recovery ranged between 33 percent and 37 percent over the past three fiscal years, while farebox recovery in FY 2016 for existing *Rapid* routes ranged from 16 percent to 35 percent. Given this historic farebox recovery performance, the farebox recovery rate included in the *TransNet* Transit Operations Plan appears overly optimistic. Overall, the plan estimated that revenues will be 4.6 percent lower than net operating costs.

EXHIBIT 19. *TRANSNET* TRANSIT OPERATIONS PLAN SURPLUS OR SHORTFALL, FY 2009 THROUGH FY 2048



Source: 2016 Transit Operations Plan.

While the funding shortfall raises some concern, the gap between projected revenues and costs was relatively small at less than 5 percent. Yet, SANDAG and the operators should closely monitor the *TransNet* Transit Operations Plan over the next three years by comparing actual *TransNet* revenues and operating costs against the *TransNet* Transit Operations Plan projections as two additional *Rapid* services are slated to begin operations (South Bay *Rapid* and Mid-Coast Trolley). Although the program appears to have sufficient funding through 2042, that may change as new services are implemented. Decision makers will want to act ahead of any cash flow and funding challenges, especially to prevent service reductions if revenues cannot keep pace with costs for new services as well as existing services. SANDAG is also currently conducting a fare study—if fares are adjusted, this could also affect projected shortfalls. Moreover, SANDAG informed us it is working on a revised methodology to monitor the *TransNet* Transit Operations Plan funding after identifying challenges with the model used to develop the projected surplus and shortfall.

Recommendations:

To better ensure plans of finance are reasonable to guide decision makers in completing the long-range projects in the *TransNet* Program, the ITOC should request the SANDAG Board to direct staff to perform the following:

1. Enhance the POF process and information provided to decision makers by implementing the following:
    a. Leveraging historical data and previous POFs to provide additional information regarding estimates of future revenue sources, by comparing projections against historical data as well as comparing estimates from previous POFs against actual funding secured.
    b. Continuing efforts to increase the transparency of sales tax revenue forecasts by showing a range of possible values based on a true confidence interval. SANDAG staff should work with the Independent Taxpayer Oversight Committee (ITOC) and the SANDAG Board to select a

confidence level or levels that best communicates the range of possible values projected by the forecast including best case, worse case, or reasonably expected scenarios.

c. Developing a process or policy for more frequent reporting—such as quarterly—to oversight committees on cost increases and include factors used to estimate costs, project stage or milestone used as basis for cost, and reasons for cost increase such as inflation, materials spike, or scope changes using Dashboard data and other reliable data sources.

2. Ensure the "Plan of Excellence" and its 7-point Data Accuracy and Modeling Work Plan are implemented to reduce the potential for data errors and develop formal procedures covering version control, periodic archival of dynamic or continuously updated data and documents, data validation and accuracy, and release and reporting of data. The status of the implementation of the 7-point plan and new procedures for data authentication should be documented and reported back to decision makers.

3. Regularly track and report on the *TransNet* Program's financial capacity to complete projects and programs by implementing the following:

   a. Establishing a formal structured protocol to review funding sources and uses occurring in the last 10 to 20 years of the *TransNet* Extension Program to identify potential capacity and revenue constraints that would impact the ability to complete the major corridor projects by 2048 and assess options such as delaying projects, eliminating projects, or reducing scope as warranted. This capacity assessment should be formally revisited on a regular basis, so that decision makers are aware of periods in which the agency may have to consider delaying projects or reducing project scope as needed.

   b. Monitoring *TransNet* revenues and debt service obligations against needed growth projections to better ensure that revenues are sufficient to meet debt service, as well as regularly reporting on results and options to oversight committees that could include restructuring, refinancing, or retiring existing debt or delaying the transition to a pay-as-you-go approach for financing capital projects.

   c. Identifying methods to assess options, if needed, to delay, eliminate, or reduce scope of projects and whether the method would follow the same priority process used in the San Diego Forward: The Regional Plan or a different process would be used.

   d. Monitoring and reporting on the impacts of changing transportation technologies on the transportation network and future *TransNet* projects as part of long-term planning to avoid building expensive infrastructure that could be rendered obsolete.

4. Continue to work closely with the Metropolitan Transportation System (MTS) and North County Transit District (NCTD) to monitor the *TransNet* Transit Operations Plan by comparing actual *TransNet* revenues and operating costs against the *TransNet* Transit Operations Plan projections as additional services begin operations to highlight and mitigate the impact to the local operators, how to absorb any discrepancies through other funding sources, or potential scenarios for reductions in service if warranted. Communicate status, recommended actions, and any mitigation activities.

Chapter 2: Performance Framework

The 2004 *TransNet* Extension Ordinance envisioned goals for sales tax revenues to fund transportation improvements in the San Diego region that would:

- ✓ Relieve congestion and improve safety
- ✓ Expand freeways
- ✓ Match state and federal funds
- ✓ Maintain or improve local streets and roads
- ✓ Increase transit for seniors and persons with disabilities
- ✓ Expand commuter express bus, trolley, and COASTER services

KEY RESULTS

Key elements of a performance framework were not established at the start of the Ordinance to measure output and performance against the goals of *TransNet*.

- Goals were established in the *TransNet* Extension Ordinance, but targets were not set and data was not collected to measure progress towards *TransNet* goals.
- Only limited analysis was performed to look-back on actual results for highway commutes and transit services. Existing performance reporting emphasized modeling results and analysis as part of regional long-term planning and future efforts.
- Performance data was available through a variety of sources, but was not consistently summarized and reported regionally at the SANDAG level.

RECOMMENDATION HIGHLIGHTS

- Set targets for a more meaningful review of progress of the various *TransNet* funded programs and measure performance against *TransNet* Ordinance goals.
- Capture performance outcome data related to:
  - Safety for both motorized and non-motorized fatalities and serious injuries using data available from the California Highway Patrol's Statewide Traffic Integrated Records System.
  - Pavement condition for highways, bridges, and local roadways using Caltrans data or other reliable sources.
  - Commute times on local roadways using data available through Caltrans or private entities that provide transportation analytics.
- Conduct more robust analysis of cause and effect for all performance metrics to provide meaning to results or help determine if different strategies or projects should be employed to get a better result.
- Provide regular performance monitoring reports that consider past performance in relation to *TransNet* goals.
- Consider allocating funding for additional performance monitoring activities given that SANDAG will likely require more data sources, tools, and resources to track, validate, analyze, ensure quality, and report performance.
- Expand on and bolster existing output tracking tools (Story Map, Dashboard, ProjectTrak) by solidifying data inputs and reconcile results against *TransNet* Extension Ordinance expectations, especially for the Local Street and Road Program.

A meaningful performance framework should consider elements that allow for the determination of how outcomes and outputs support progress towards a program's goals and how decisions made based on data and results can improve performance.

Framework begins with the establishment of goals and setting of targets to attain the goals. Once targets are set, output and outcome data needs to be collected and measured against targets. To ensure accuracy of collected data, data sets should be validated and analyzed before results are synthesized and reported to the public. As available results are presented and vetted in a public forum, goals and targets may need to be adjusted to address changing conditions and needs.

ELEMENTS OF A PERFORMANCE FRAMEWORK

Chapter Introduction

Outcomes are one of the most important measures of what government entities provide. They compare the results or outputs of program activities—such as completed construction projects or new transit service stops—to a program's intended purpose to determine progress toward meeting goals. Simply put, outcomes are the impact or result made possible through government actions such as quicker or safer commutes.

To measure outcomes, a structured performance framework should be in place and include the steps shown in Exhibit 20. As noted by the Federal Highway Administration, the ultimate purpose of performance measurement "is not just reporting the performance of the system, but the development of actions that improve performance."[18] Over the last several years, transportation agencies and the federal government have been evolving toward stronger performance measurement in terms of performance priorities, goals target setting, and data collection methods. Legislation passed in 2012 and subsequent guidance have progressively elevated target setting and performance measurement, and transportation agencies across the nation have reacted to these mandates.

EXHIBIT 20. ELEMENTS OF A PERFORMANCE FRAMEWORK

Source: Auditor-generated based on industry performance literature and research.

Performance Targets were Not Established, Although Government Best Practices Recommend as part of a Comprehensive Performance Plan

As part of the ballot language for the extension of *TransNet* sales taxes in 2004, SANDAG developed goals related to congestion relief, safety, and increased transit services among other areas. According to SANDAG, the Board's direction in 2004 was to complete as many projects as possible under the premise that those efforts would address *TransNet* goals., While SANDAG developed goals as part of the *TransNet* Extension Ordinance and set certain performance indicators as part of its San Diego Forward: The

[18] Federal Highway Administration Publication #FHWA-HOP-12-018, May 2012, "Operations Performance Measures: The Foundation for Performance-Based Management of Transportation Operations Programs.

Regional Plan, it did not define targets at the outset of the *TransNet* Program or as part of the regional plan updates. To enable a more meaningful review of progress of the various *TransNet* projects, targets are needed.[19]

For decades, best practices recommended using targets or standards as part of any entity's performance plan.[20] More recently, the federal government mandated performance-based planning and development of certain performance indicators. Specifically, the Moving Ahead for Progress in the 21st Century (MAP-21) Act of 2012 as continued under the Fixing America's Surface Transportation (FAST) Act of 2015 required performance targets in certain areas—safety; pavement and bridge condition; system, freight, and congestion mitigation and air quality; and asset management. However, the federal government set long timeframes for implementation and required metropolitan planning organizations such as SANDAG to coordinate with its state department of transportation (Caltrans) on target-setting—efforts which are currently underway for target-setting and data collection. Thus far, targets were required only for safety indicators, with congestion and asset management performance targets required to be implemented later in 2018.

Similar to others in industry, SANDAG and Caltrans followed federal timelines and guidance for setting targets and evolving to a stronger performance measurement system. Although it is understandable that SANDAG may choose to set targets according to the federal schedule, certain other entities around the nation have regularly tracked and reported against targets as described in the bullets that follow. Depending on the length of time expected to create targets, gather data, and begin to analyze and report on that data, SANDAG may want to implement some type of interim goals or targets for the *TransNet* Program on a more accelerated timeframe.

- **San Francisco, California**

  The Metropolitan Transportation Commission for the San Francisco Bay Area and its sister agency, the Association of Bay Area Governments, used performance targets in its Plan Bay Area 2040 regional plan to measure and report on its transportation network conditions including:

  - ✓ Increase share of jobs accessible within 30 minutes by auto by 20 percent; and
  - ✓ Increase non-auto mode share by 10 percent.

- **Chicago, Illinois**

  In its long-range transportation plan titled Go to 2040, the Chicago Metropolitan Agency for Planning established specific targets such as:

  - ✓ Increase arterials with acceptable ride quality to 90 percent and bridges "not deficient" to 80 percent; and
  - ✓ Increase transit ridership's share to 13.5 percent of trips each weekday.

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[19] Prior triennial *TransNet* Performance Audits have raised issues regarding setting performance goals and targets as well as measuring performance against those goals. Refer to *TransNet* Performance Audit for Fiscal Year (FY) 2009 pages 46-48, 49, 50, and 97; FY 2012 pages 19, 20, 22, 31-34, 42-45, 48-49, 67-69, 71, 74-77,84, 90, and 97-101; and FY 2015 pages 2-3, 12-14, 31-34, 43-45, 55-57, 64-65, and 71-74.

[20] The Government Performance and Results Act of 1993 set forth provisions to improve performance by setting goals and reporting progress. Additionally, the U.S. General Accounting Office Publication GAO/GGD-10.1.20. An Evaluator's Guide to Assessing Agency Annual Performance Plans, April 1998, provided direction on using targets to assess progress towards goals. Moreover, the Transportation Research Board cited targets as a characteristic of an effective performance-measurement system to enhance public transparency and accountability.

Even without targets, SANDAG could report useful information on whether performance trends are favorable or unfavorable. This trend information is important when presenting performance data because a measure with a decrease could indicate a favorable or unfavorable direction. For certain measures, the direction is obvious, such as for safety which a downward trend (towards zero crashes) is always favorable. However, for other measures, the goals of the region can affect whether a specific measure going down is favorable or not. For example, a region may choose a target to increase vehicle miles of travel as part of its goal of a stronger economy, while another region may set a target to decrease vehicle miles of travel as part of its goal to promote alternative transportation to relieve congestion, enhance the environment, and sustain healthier communities. Because an unfavorable trend might still be aligned with regional goals, such as keeping congestion below certain thresholds where projections indicate congestion will rise with regional population growth, it is important to include narrative explaining trend results.

Performance Not Measured for all *TransNet* Areas, and Additional Data is Needed

In terms of *TransNet* goals such as congestion relief and safety, SANDAG tracked and reported data for its major corridor highways through its State of the Commute report and data related to transit through the Transit Coordinated Plan. These reports were published annually and biennially, respectively, and provide information such as highway travel time, commute delay, transit boardings, and transit passenger miles. While SANDAG used data from external databases to capture and report on commutes on highway corridors and transit routes, there were limited performance metrics available in other *TransNet* areas.

Because SANDAG is the regional entity responsible for *TransNet*, it makes sense that SANDAG should be the entity to summarize and report on performance efforts or fill in any performance gaps in areas not covered by other *TransNet* partners. Thus, SANDAG's performance measurement system should be strengthened to measure other outcomes related to highway safety and infrastructure; local street and road congestion relief, safety, and infrastructure; and habitat conservation to ensure it can assess progress towards meeting *TransNet* goals.

According to the Federal Highway Administration, establishing a performance measurement program improves the effectiveness of any program since significant effort goes into planning and implementing projects, but little effort goes into looking back on how they performed. The Federal Highway Administration offers four key benefits as follows:

- Provide transparency to public and accountability to public officials
- Understand where problems are
- Direct the best mix of investments
- Evaluate how well past investments worked

Thus, if the SANDAG Board wants to better capture, track, analyze, and report more fully on the taxpayer's return on investment from all areas within the *TransNet* initiative, more staff time and/or monetary resources are likely needed and should be allocated for this function. Specifically, extra resources may be needed to gather and track data, analyze what the data means, correlate the results with other factors, and determine how the data influences future planning and project activities.

Additional data is needed to assess performance in certain modes

To capture performance results, different systems and databases were available for certain modes of transportation—although limited information existed for other modes. In the bullets that follow, we describe data available, tracked, and needed for each *TransNet* area. The Local Street and Road Program is covered in a separate section that follows.

- **Highway Performance**
  Among all *TransNet* programs and transportation modes, travel time and congestion outcome data on highways is typically the most prevalently available. Caltrans and UC Berkeley have been collaborating since the late 1990s to maintain a Freeway Performance Management System (PeMS) that synthesizes elements such as speed and travel time. Using the PeMS data and private sector data, SANDAG published annual State of Commute reports summarizing results for the corridors and commutes in the region. Other performance indicators for highways were available through systems managed by other entities—although SANDAG did not track performance through these other systems. For instance, for safety crashes and injuries, data can be mined from the California Highway Patrol's Statewide Integrated Traffic Records System (SWITRS) as well as through collision data on every route maintained by Caltrans.[21] Additionally, pavement and bridge condition on highways was tracked by Caltrans' Headquarters Office—allowing for a comparison of the San Diego region against other regions in the State. Thus, SANDAG could summarize and report on data from these external sources or provide a link on its website to the Caltrans' data.

- **Transit Performance**
  Unlike the other modes, there was a robust performance monitoring system in place for transit operations. In fact, transit operators provided SANDAG with a large amount of performance data on a quarterly basis at the system level by operator, mode level by operator, and route level by operator for compilation into the biennial Transit Coordinated Plan. Some of the performance data related to routes and lines funded by many sources, while other data was specific to those routes and lines fully funded solely through *TransNet*—namely, the *Rapid* services made possible through the new major corridor transit operations funds. For each of the transit performance indicator categories, established guidelines existed and actual performance was tracked and reported. Transit performance information was also reported to the Federal Transit Administration's National Transit Database.

- **Bike and Pedestrian Mode Performance**
  According to SANDAG, they had not yet set modal percentage of commute goals, but were working on gathering data to set ridership targets using before and after data from an automated network of bike (and pedestrian) counters to supplement manual counts collected on an annual basis. The goal was to gather real-time data, 24-hours a day and 7-days a week—but, there were challenges paying for maintenance and operation of the counters. Like other modes, safety and crash data was also available from the CHP's SWITRS database, but SANDAG did not analyze or report on this data.

[21] California Vehicle Code requires local governments to submit their police collision reports based on severity levels to the CHP for consolidation into the Statewide Integrated Traffic Records Systems (SWITRS) database. A Severity 1 injury is a fatality; Severity 2 injuries includes broken bones, severe lacerations, and extended unconsciousness; Severity 3 is coded for other visible injuries; and Severity 4 indicates complaint of pain, but no visible injury, which can include limping or recovering from brief unconsciousness.

- **Environmental Mitigation Program Performance**
  Over the last three years, SANDAG's contracted entity—the San Diego Management and Monitoring Program—and the United States Geological Services continued work on an on-line portal that allowed significant amounts of habitat management and monitoring data and results to be stored, tracked, shared, and analyzed between local land managers. While the portal exists for land managers and research scientists to track and analyze large complex volumes of habitat monitoring data, it would require significant effort and the assistance of experts to synthesize the data and present it in a scientifically valid, yet simplified, way for taxpayers to gauge the overall health of the preserved areas. Thus, SANDAG needs to develop methods to translate the actual data into meaningful results for the public.

- **Competitive Grants Performance**
  As part of *TransNet*, SANDAG allocated millions of dollars in local, state, and federal funds through several competitive grant programs. Grants awarded ranged from bike and pedestrian infrastructure projects to habitat management and monitoring efforts to specialized transportation services for senior and disabled populations—all working together to fulfill the goals of *TransNet*. For these grants, goals were tracked for individual grant contracts through progress reports, but there was limited program outcome data available in most instances as described as follows.

  - **Senior Mini-Grants:** The Senior Mini-Grant Program funded transportation services for seniors whose special needs cannot be met by conventional transit or paratransit services. Beginning in calendar year 2013, Senior Mini-Grant recipients reported the number of trips/services provided and cost per trip/service provided on a quarterly basis. However, there were no other specific performance outcomes compiled at the program level.

  - **Active Transportation Grants**: The goal of the Active Transportation Grant Program is to encourage local jurisdictions to plan and build facilities that promote multiple travel choices for residents—in particular bicycling and walking—and connectivity to transit, schools, retail centers, parks, work, and other community gathering places. However, performance outputs or outcomes were not tracked or measured for these grants and projects.

  - **Smart Growth Incentive Grants**: The Smart Growth Incentive Grant Program provided funding for transportation-related infrastructure improvements and planning efforts that support mixed-use development focused around public transit and increased housing and transportation choices. SANDAG was still in process of capturing how well the Smart Growth Incentive Grant Program goals have been met. In particular, grantees were provided funding to capture "before" data to establish a baseline and SANDAG staff anticipated capturing "after" counts to evaluate performance. This plan was in place during the prior audit, but data still has not been captured or analyzed in this area. Thus, performance outputs or outcomes were not tracked or measured for these grants and projects.

Significant Performance Data is still Needed for Local Street and Road Program

Performance data was particularly limited in the Local Street and Road Program for travel time, safety, and infrastructure results. In fact, SANDAG continued to be challenged in demonstrating accomplishments or measuring performance outcomes achieved through the allocation of *TransNet* funds for this program. This issue was first raised during the 2012 *TransNet* Triennial Performance Audit, where the lack of local traffic detectors and inconsistent availability of before-and-after studies on measuring traffic volumes, travel time, or speed represented a major barrier in assessing the impact of *TransNet* dollars at the local level. Such data limitations were partly due to the challenges of mining data from the 19 local jurisdictions—some of which may not have mechanisms in place to capture performance data. While SANDAG, over the last three years, worked with the local jurisdictions to establish alternative methods for capturing certain performance data—the data is still heavily focused on outputs, not outcomes such as level of delay and commute times on local roadways. Specifically, there were two types of performance reports that SANDAG used for the Local Street and Road Program as described as follows.

1. The "Annual Status Report" prepared by local jurisdictions is a narrative style report that lists projects completed and underway for the reporting period as well as allows locals to highlight select projects. In most instances, there was little to no indication of performance outputs captured on these reports such as number of potholes repaired or road miles paved—nor any evaluation of performance outcomes such as congestion relief, safety, or pavement condition improved from at-risk status to good condition as a result of pothole repairs or street resurfacing efforts.
2. The "Output and Outcome Report" is a new tool SANDAG developed in July 2016 to capture the performance data not available via the "Annual Status Report" such as the total number of projects, funding sources, miles of roadway, feet of sidewalk, total traffic calming measures, lights installed, or bulbs replaced. However, these statistics are based on planned activities reported by the local jurisdictions as part of the biennial update to the Regional Transportation Improvement Program and do not represent actual outputs or outcomes achieved. Thus, this new report could be enhanced by circling back with the jurisdictions at the end of the period to identify whether actual results align with those planned.

Yet, based on interviews at the larger local jurisdictions, there was more performance output information and pavement condition data available at the local level that could be used by SANDAG to encapsulate what the taxpayers are getting for their sales tax investment. For instance, most jurisdictions were able to provide the auditors with current pavement condition data.[22] If SANDAG began collecting this data along with other data available from local jurisdictions, it could create a "report card" type format so the Local Street and Road Program achievements could be summarized, more transparent, and understandable for ITOC and the general public. For example, as suggested in prior audits, a report card could be as simple as the format shown in Exhibit 21.

[22] Local jurisdictions that did not provide data include Del Mar, Escondido, Imperial Beach, National City, and Solana Beach.

EXHIBIT 21. EXAMPLE OF A SUMMARY REPORT CARD FOR LOCAL STREET AND ROAD PROGRAM

Summarized Local Street & Road Performance Report Card						
	City 1		**City 2**		**Regionwide**	
Total *TransNet* $ Received	$2M		$8		$10M	
Total *TransNet* $ Spent	$1.8M		$7		$8.8M	
Total Local Street and Road Network (miles)	185		250		800	
Pavement Rehab & Repair	**Amt**	**Cost**	**Amt**	**Cost**	**Amt**	**Cost**
1) Miles Paved	10	$500	0	$ -	10	$ 500
2) No. Potholes Repaired	250	$100	300	$150	550	$ 250
3) PCI – (indicate year measured)	66		70		68	
Pedestrian Improvements	**Amt**	**Cost**	**Amt**	**Cost**	**Amt**	**Cost**
1) Feet of Sidewalk Installed/Repaired	500	$ 50	600	$ 70	1100	$ 120
2) No. of Pedestrian Ramp Upgrades	0	$ -	25	$200	25	$ 200
Traffic Operations	**Amt**	**Cost**	**Amt**	**Cost**	**Amt**	**Cost**
1) No. of New Traffic Signals	30	$ 10	80	$ 30	110	$ 40
2) No. of New Light Bulbs	50	$ 2	120	$ 5	170	$ 7

Source: Auditor-generated.

In terms of measuring performance outcomes of the Local Street and Road Program related to *TransNet* goals of congestion relief and safety, and pavement condition, SANDAG must establish a stronger framework with data available at the regional level so taxpayers know what they are getting for the local investment. To capture the performance data, SANDAG has several options. For instance, SANDAG could require that the local jurisdictions provide this information as part of a modified Annual Status Report. Most of the local jurisdictions have information readily available related to pavement condition ratings, at a minimum, that could easily be provided to SANDAG. While safety data may be more challenging for the locals to gather and summarize, SANDAG could use data available from the CHP's SWITRS database to analyze from a regional perspective, identify where hot-spots and accidents are occurring, and work with local jurisdictions to mitigate the situations.

Additionally, private sector data sources and improved analytic tools provide opportunities for SANDAG to track and analyze street and road performance if resources and funding are available for this effort. Private sector information is based on global positioning system data, and has enabled other agencies to analyze travel time reliability and congestion. When using this data, SANDAG would also need to conduct verification and validation steps on the data before using the information. During our audit period, SANDAG received some private sector data from a well-known industry provider at no cost through the Federal Highway Administration; however, more effort would be needed to determine how the data could be used to measure congestion on the local roadways. Additionally, there are other private sites that track and report on congestion or travel times such as Google Maps, Waze, or TomTom Traffic Index that could possibly be leveraged to assist SANDAG with data. Yet, there can be a high cost to this private sector data and having staff resources to validate and integrate such data sources with existing tools to determine appropriateness for use in a comprehensive performance framework. Resources would also be needed to ultimately analyze and summarize the performance data into a format that is easily understandable for the public.

Detailed Performance Analysis and More Reporting are Needed

Once additional performance data is captured, analysis against baselines and targets is needed to understand results and communicate to the public. Yet, SANDAG was faced with several challenges related to performance analysis. Without targets and an analysis of cause and effect, it is difficult to assess the impact that *TransNet* funds had in achieving regional goals. Additionally, gathering and validating data can take substantial resources—as can analyzing other factors that might be influencing or impacting a particular metric such as injury crashes. However, without deeper analysis and evaluation, it is difficult to identify the implications for future planning and decisions regarding future project mix and strategies.

Moreover, with all the effort that goes into performance analysis, it is important that results are formally communicated and reported to the public for transparency and to decision makers allowing them to quickly assess existing systems and monitor trends over time. Analyses should be summarized and regularly communicated or made available in an understandable way for the public and decision makers to use as part of monitoring and adjusting the *TransNet* Program.

Story Map Tracked Some Outputs and Accomplishments, Although More is Needed

When the *TransNet* Extension Ordinance was passed in 2004, a tracking structure was not established to capture and summarize a comprehensive list of project outputs and accomplishments such as quantity of new lane miles added, potholes filled, new bike paths, and transit stop improvements—although we believe that SANDAG should begin tracking this data using reliable sources as another indication of results for taxpayer sales tax investments.

In an effort to capture information on completed *TransNet* projects, SANDAG created a *TransNet* "Story Map" using a web-platform that visually presented highlights and accomplishments of the program to-date. As shown in Exhibit 22, much has been accomplished—although many more outputs were likely realized, they were not captured because a dedicated framework to track information was not in place at the beginning of the Ordinance.

EXHIBIT 22. HIGHLIGHTS OF SOME ACCOMPLISHMENTS BY *TRANSNET* AREA

TransNet Area	Output/Accomplishments
Highways-Major Corridors (Includes Managed Lanes)	✓ 23 segments completed; 12 in progress ✓ 44.8 managed lane miles added or improved ✓ 39.6 general purpose miles added or improved 21 new lanes ✓ 9 highway interchanges/connectors and direct access ramps ✓ 1 *FasTrak* facility
Transit-Major Corridors	✓ 25 projects completed; 18 in progress ✓ 101 transit revenue miles added ✓ 35 upgraded stations and 47 enhanced transit stops ✓ 94 new vehicles (includes 65 light rail vehicles) ✓ 5 transit stations and 1 park & ride ✓ 1,047 parking spots and 20 bus bays ✓ 1 expanded bus maintenance facility

TransNet Area	Output/Accomplishments
	✓ 16.6 railway miles and 3 railway bridges
Transit Service	✓ Approximately $344 million dedicated to improving transit services
Local Street and Road	✓ More than 136 projects completed
Environmental Mitigation Program	✓ More than 8,900 acres of land acquired
Grants – Senior Mini	✓ Nearly 1.5 million one-way rides provided ✓ Trained 9,300 seniors on using transit services ✓ 69 grants awarded
Grants – Smart Growth	✓ 43 grants awarded
Grants – Active Transportation	✓ 77 grants awarded
Bike Early Action Program (EAP)	✓ 2.7 bikeway miles open to traffic since Bike EAP approved in 2013 ✓ 64 miles in progress

Source: *TransNet* Story Map, grant status and update reports, *TransNet* Quarterly Financial Reports, *TransNet* Dashboard, fact sheets, and internal SANDAG tracking spreadsheets.

While SANDAG captured certain outputs and accomplishments in the Story Map, SANDAG should expand on this foundation and capture additional statistics to better demonstrate how *TransNet* funds were spent and what taxpayers got for their investment. For instance, additional items that could be tracked include the following bulleted items.

- Highway—miles, lanes, high-occupancy vehicle lanes, or ramps
- Local Roadways—miles resurfaced, potholes filled, interchanges widened, sidewalks or bike lanes added
- Bike—paths, miles, lockers, or striping added
- Transit—new bus stops, added shelters, miles of track, vehicles purchased, or new routes
- EMP Grants—access barriers installed, reseeded areas, removal of non-native plants, or pounds of trash removal, weeding cycles, cactus planted, or dethatched areas
- Senior Mini-Grants—riders served or vans purchased
- Active Transportation Grants—miles added, bike lockers built, sidewalks fixed, or lighting replaced
- Smart Growth Grants—proximity of housing developments to transit within Smart Growth areas

Much of this data likely already exists for the highway projects, EMP activities, and grant programs—although SANDAG efforts would be needed to mine that data from project and grant files. However, other items would require SANDAG to request detailed information from the local jurisdictions for street, road, bike, and pedestrian areas or from the transit operators for those transit-related areas.

Recommendations

To better measure how transportation improvements meet *TransNet* Program goals and what has been accomplished with the taxpayer's investment, the ITOC should request the SANDAG Board to direct staff to perform the following:

5. Establish a comprehensive performance framework by implementing the following:
    a. Setting targets to measure *TransNet* performance against the *TransNet* Extension Ordinance goals in-line with federally mandated deadlines or at a faster pace. At a minimum, some narrative could accompany performance reporting to help others understand whether data and results were favorable or unfavorable.
    b. Capturing performance outcome data related to safety metrics, pavement condition, and bridge condition for highways, local roadways, and bicycle (bike) and pedestrian modes.
        1. Use the California Highway Patrols' Statewide Integrated Traffic Records System (SWITRS) to measure and monitor safety statistics—both for motorized and non-motorized fatalities and serious injuries—especially against the new safety targets developed by Caltrans and adopted by SANDAG.
        2. Track and report highway pavement and bridge condition available from Caltrans on the SANDAG website or provide a hyperlink to where that information is available for taxpayers. Additionally, work with Caltrans to determine if bridge and pavement data can be isolated for San Diego County from the Imperial County data contained within the Caltrans District 11 reported data.
        3. Track and report on local jurisdiction pavement condition by requiring local jurisdictions to provide pavement condition index data as soon as pavement condition surveys are performed and results become available.
        4. Obtain and use private sector data to analyze congestion and delay on local streets and roads or evaluate status of Caltrans' Performance Measurement System (PeMS) to capture road performance including level of coverage of detection.
    c. Conducting more robust analysis of cause and effect for all performance metrics to provide meaning to results or help determine if different strategies or projects should be employed to get a better result. For instance, consider using heat maps to identify where the majority or significant severity accidents occur and work with Caltrans and local jurisdictions to inform solutions and future projects.
    d. Providing regular performance monitoring reports that consider past performance in relation to *TransNet* goals through quarterly updates to the SANDAG Board and committees, annual public reports on the status of *TransNet*, and website postings.
    e. Considering allocating funding for additional performance monitoring activities given that SANDAG will likely require more data sources, tools, and resources to track, validate, analyze, ensure quality, and report performance.

6. Explore and study public-private partnerships with entities such as Google, Waze, Scoop, TomTom, or others to integrate and summarize performance results as well as provide information on a real-time basis to travelers identifying different commute times and options.
7. Enhance the Story Map tool, *TransNet* project status listing (shown in Appendix A) or develop a different tool to capture project output details and track *TransNet* accomplishments over time by implementing the following.
    a. Developing a comprehensive universe of *TransNet* projects completed, underway, and planned. Reconcile universe back to *TransNet* Extension Ordinance and what was expected to be delivered. Once universe is reconciled for historic projects, update universe as new projects are started and continue reconciliation of those new projects to the *TransNet* Extension Ordinance.
    b. Building upon planned output data currently captured through the Regional Transportation Improvement Program's automated ProjectTrak database and reported in the Annual Output and Outcome report by reconciling those planned outputs with actual accomplishments. Consider requiring local jurisdictions to provide a closeout report with updated, actual data as projects are completed.

Chapter 3: Major Corridor Capital Construction

The 2004 *TransNet* Extension Ordinance set aside 38 percent of total annual *TransNet* sales tax revenues, or approximately $5.15 billion over the life of the program to help leverage state and federal funds and pay for financing costs on capital construction projects with the intent to relieve congestion and improve safety by expanding the following local freeways and highways: I-5, I-8, I-15, SR 52, SR 54, SR 56, SR 67, SR 76, SR 78, SR 94, SR 125, and I-805.

KEY RESULTS

A key goal the *TransNet* major capital corridor construction program is to relieve congestion on the region's freeways by increasing capacity and improving safety for vehicular travel. Factors that can affect congestion and safety include population, gas prices, and employment. For the San Diego region, population increased 10 percent, employment is higher, and gas prices are now lower than when the Ordinance passed—although gas prices fluctuated.

- 61 percent of major corridor projects were either completed or in progress.
- Like comparison areas, the San Diego region's highways continue to be congested:
  - Vehicle miles of travel slightly increased between 2013 and 2015.
  - Commuters took longer to get work in 2016 than in 2014, but their commute times were still among the lowest among comparison areas. This trend was observed since the start of *TransNet* with lower commute times experienced only during the Great Recession.
- Although fatalities and injury collisions increased between 2013 and 2015, collisions resulting in fatalities for the region are the second lowest among comparison areas and were lower than when *TransNet* started.
- Highway pavement quality increased and is better than comparison Caltrans districts and the statewide average. Similarly, the percent of bridges in structurally deficient condition was lowest among comparison areas.
- The construction manager/general contractor (CMGC) project delivery method employed on two large *TransNet* projects—I-5 North Coast Corridor and Mid-Coast Corridor—reported initial CMGC benefits such as time and cost savings over more traditional methods. Yet, while Caltrans has developed a framework to measure CMGC success, SANDAG has not yet formalized its framework.

RECOMMENDATION HIGHLIGHTS

- Update and refine the project listing started in the 10-Year Look-Back Review to ensure all major corridor projects are tracked back to those in the *TransNet* Extension Ordinance. Regularly report on project and financial status using the project listing developed in 10-Year Look-Back Review as a foundation or develop an alternate tool to accomplish the goal of tracking against the *TransNet* Extension Ordinance.
- Begin gathering data on whether the Construction Manager/General Contractor (CMGC) method used on the Mid-Coast Corridor Transit project is delivering on expectations for cost savings, efficiencies, better quality, or collaboration to solve problems rather than using a typical silo-approach between design, construction, contractors, and owners.
- Compare SANDAG's proposed metrics for assessing MCC project performance to the performance metrics and practices used by Caltrans' to determine whether there are any additional practices SANDAG may want to include or adopt, such as the Caltrans innovations log, to help formally track benefits, successes, and challenges.
- Gather and store documents to support "benefit" statistics tracked for the North Coast Corridor and the Mid-Coast Corridor whether using the innovations log utilized by Caltrans or another method used by SANDAG. Maintain supporting documentation, such as cost comparisons, in a centralized repository that is linked or reconciled with the log or summary statistics.

Chapter Introduction

A region's highway capital construction performance is affected by many internal factors such as how agencies operated a service, constructed a project, or made policies related to the various modes of transportation.

Since the start of the *TransNet* Extension Ordinance in 2004, there were also several changes in the transportation environment that affect performance related to gas prices, economy, population, and technology. For instance, the regional population in the San Diego area grew by approximately 10 percent to approximately 3.3 million in 2016 and was impacted by the unprecedented Great Recession of 2008 with jobs lost, unemployment higher, and fewer people on the roads. Gas prices have a direct correlation with vehicle travel—the lower the price, the more commuters choose to drive; when prices are too steep, some commuters turn to alternate modes of transportation. Although prices rose again through 2013, they declined between 2014 and 2016. Additionally, changes in the way people commute have also changed. When commuting, many use technology to navigate traffic, avoid delays, or find rideshare services. Moreover, attitudes about transportation changed and trends emerged with people choosing to walk or bike along with growing concerns about the environment.

Highways Continued to be Congested

One of the goals of *TransNet* is to provide congestion relief which can be measured through reduced travel time and less delay.[23] To capture performance indicators related to highways, Sjoberg Evashenk compared San Diego's performance over the last three years with other comparable areas as well as against trends over the past decade—although there were limitations in the conclusions that could be drawn from the data because there were no targets in place as described in Chapter 2. Further, because transportation projects leverage *TransNet* funds with other federal, state, and local funds, performance outcomes could not be isolated to *TransNet* alone.

Specifically, we used U.S. Census American Community Survey data to identify similarly populated Urbanized Zone Areas (Urbanized Areas)—which are U.S. Census-designated land areas consisting of a central core and adjacent to densely settled territory that together contain at least 50,000 residents. Comparison areas to San Diego were selected based on population and other factors such as proximity, coastal environment, and tourism destinations.[24]

Vehicle miles of travel slightly increased

As part of the analysis, we normalized raw data to account for changes in the number of vehicles on the road by calculating performance rates per 100 million vehicle miles of travel (VMT).[25] As shown in Exhibit 23, annual VMT in the San Diego Urbanized Area increased slightly more than 1 percent from 28.12 million

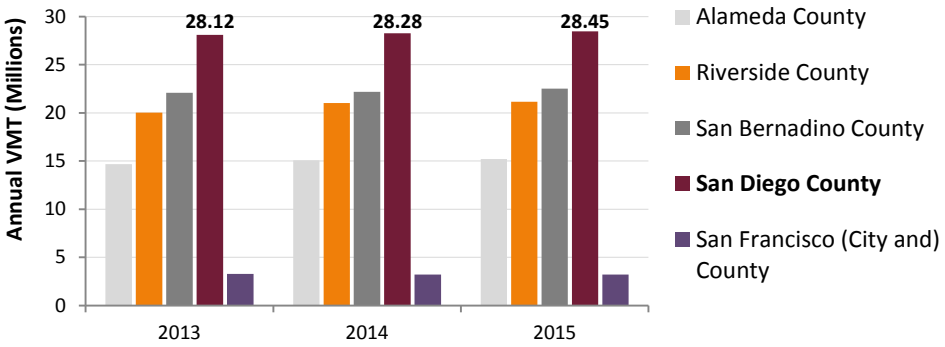
[23] San Diego Forward: The Regional Plan also noted measurements of improving mobility such as travel time, safety, commute mode share, and annual transit boardings—these indicators are discussed and analyzed in other chapters in this report.

[24] Peers selected included Las Vegas-Henderson, Nevada; Riverside-San Bernardino, California; San Francisco-Oakland; California, Seattle, Washington; and Tampa-St. Petersburg, Florida.

[25] Vehicle miles of travel (VMT) is a widely-known industry measure of the number of miles traveled by vehicles in a region over a period of time. VMT is determined by either actual odometer readings or by estimated modeling calculations.

vehicle miles of travel in 2013 to 28.45 million in 2015. This rate of growth was consistent with other comparison areas.

EXHIBIT 23. AVERAGE DAILY VEHICLE MILES OF TRAVEL, 2013 TO 2015

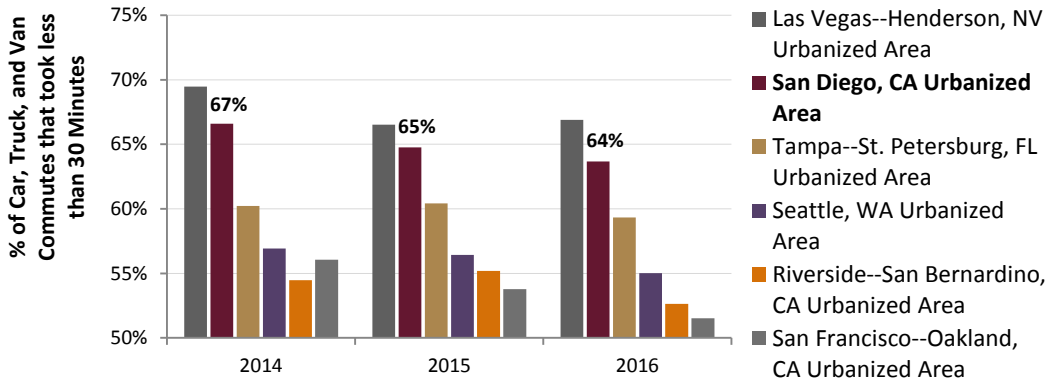


Source: Auditor generated based on U.S. Census American Community Survey data estimates.

Commute time less than 30 minutes slightly increased

Data produced by the U.S. Census American Community Survey estimated commute times for cars, trucks, and vans in each of the urbanized areas. Over the last three years, San Diego's percent of commute time that took less than 30 minutes decreased from 67 percent in 2014 to 64 percent in 2016—meaning that it took more people longer to commute to work in 2016 as shown in Exhibit 24. Yet, in comparison to other areas, the San Diego Urbanized Area has a larger share of commute times under 30 minutes, meaning that San Diego's commute times were among the lowest. When compared to trends over the last decade, San Diego's performance showed a general rise in commute times from 2005 through 2011, then trending down by 2016. In 2009, when the economy was in recession, the shorter commute times were likely due to fewer drivers on the road during commute hours. It should be noted that statistics from the U.S. Census American Community Survey are not detailed by time of day or by route.[26]

EXHIBIT 24. COMMUTE SHARE THAT TOOK LESS THAN 30 MINUTES IN COMPARISON AREAS, 2014 TO 2016



Source: Auditor generated based on U.S. Census American Community Survey data estimates.

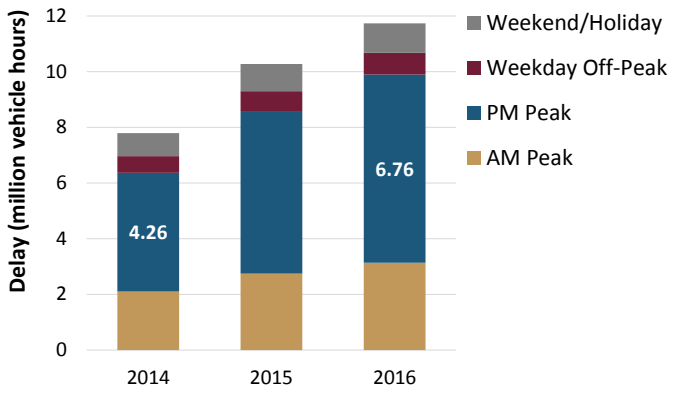
[26] SANDAG's annual State of the Commute reports provide details on specific commute corridors using data collected from Caltrans' Performance Management System (PeMS) relying on freeway detectors to calculate estimates of travel speeds, travel time, and delay for general-purpose lanes only, not high-occupancy vehicle or express lanes. Morning (AM) and evening (PM) travel times are based on the assumption that the commuter enters the freeway at 8 a.m. and 5 p.m., respectively.

Hours of delay per capita increased

According to the 2015 Urban Mobility Scorecard produced by the Texas A&M Transportation Institute, improvements in the national economy seen in recent years unfortunately came with worsening congestion—a trend seen in most urban areas of all sizes. The most recent 2015 report compiled travel time over the year and then divided this data by the number of people commuting in private vehicles in each urbanized area to arrive at an average delay per auto commuter. Results showed the San Diego Urbanized Area ranked the lowest or near the lowest out of the comparison areas in 2015—meaning that San Diego had one of the lowest delays per vehicle commuter compared to the other regions which is consistent with the larger share of commutes that took less than 30 minutes.

However, looking at data from Caltrans' Performance Measurement System, trends in San Diego showed that delays in the morning commute increased although the evening commute peak delay contributed the most to the annual freeway delay as shown in Exhibit 25. In fact, evening peak delay increased by approximately 59 percent from 4.26 million vehicle hours in 2014 to 6.76 million vehicle hours in 2016. Further, while annual delay dropped significantly between 2008 and 2012 during the Great Recession and beyond, there has been an increasing trend since that time surpassing 2006 levels to their highest point of delay in 2016.

EXHIBIT 25. TOTAL ANNUAL FREEWAY DELAY, 2014 TO 2016



Source: 2015-2016 State of the Commute Report as generated by SANDAG using Caltrans' Performance Measurement System (PeMS).

Injuries and Fatalities on Highways and Roadways Recently Increased after a Declining Trend over the last Decade

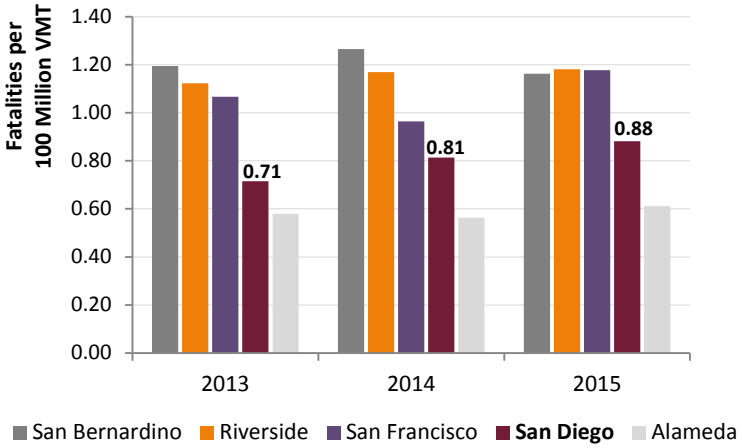
Another important goal of both *TransNet* and San Diego Forward: The Regional Plan relates to safety in the region. Not only are collisions most important from a life perspective, but also these events disrupt mobility on the regional roadways. When comparing the raw data on fatalities and injuries, we normalized the data based on vehicle miles of travel to account for the assumption that more miles of travel result in more chances for collisions.

Fatalities were slowly rising over the last three years

Fatalities are a commonly used measure of roadway safety, and we found San Diego's fatality rate was among the lowest of the five comparison regions based on the California Highway Patrol's Statewide Integrated Traffic Records System data. Yet, the general trend in San Diego County reflected an increase over the last three years in fatalities per 100 million vehicle miles of travel. Specifically, the fatality rate per 100 million vehicle miles of travel increased 24 percent from 0.71 in 2013 to 0.88 in 2015 as shown in Exhibit 26.[27]

This trend is different than experienced over the last decade where there was a general decline in fatalities over the entire period—most dramatically around the time of the recession between 2008 and 2010, with rates slowly increasing between 2011 and 2015.

EXHIBIT 26. RATE OF FATALITIES FOR CALIFORNIAN COMPARISON COUNTIES, 2013 TO 2015



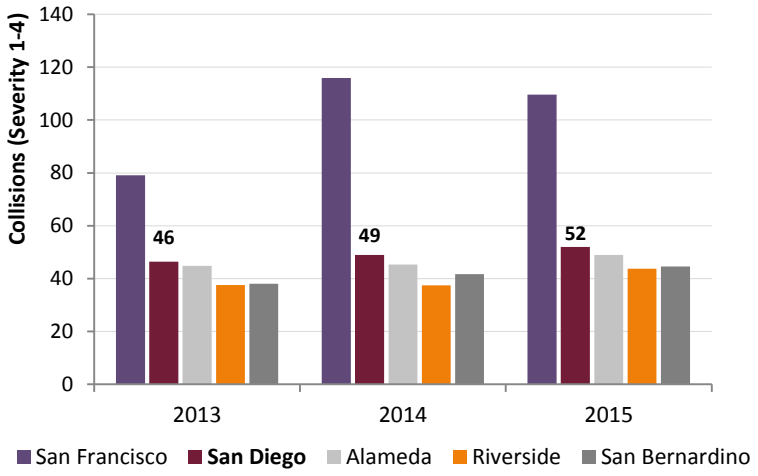
Source: Caltrans Public Road Data reports 2012-2015 and California Highway Patrol (CHP)'s Statewide Integrated Traffic Records System (SWITRS).

[27] This statistic is used to "normalize" data with the assumption that more miles of travel results in more changes for collisions. Normalizing also allows for better comparisons with other regions. For instance, in 2015, San Diego reported 251 fatalities that appear worse than the 38 fatalities reported by San Francisco. Yet, when data is normalized, the result shows fatalities were fewer per 100 million miles of travel in San Diego at 0.88 versus San Francisco at 1.18.

Injury collisions were also on the rise

Another safety measure considers all collisions that result in injury.[28] When looking between 2013 and 2015 as shown in Exhibit 27, San Diego experienced a 13 percent increase from 46 collisions resulting in injury per 100 million vehicle miles of travel in 2013 to 52 in 2015—similar to increases experienced by the comparison areas. Yet, the increase between 2013 and 2015 was different than the safety trend since 2005 where injuries per 100 million vehicle miles of travel declined.

EXHIBIT 27. Total Collisions per 100 Million VMT for Californian Comparison Counties, 2013 to 2015



Source: California Highway Patrol Statewide Integrated Traffic Records System (SWITRS).
Note: Collison data includes statistics for severity 1 through 4.

Condition of Pavement and Bridge Infrastructure Improved

Another measure of performance through the investment of *TransNet* dollars is the improvement in roadway and bridge condition allowing for safe and free-flow travel to help address congestion.

Highway pavement quality increased

While *TransNet* did not provide funds specifically for rehabilitation on the State Highway System, the new highway improvements funded by *TransNet* impacted the average overall condition. Pavement condition can be assessed using a variety of methods, and Caltrans captured the condition of pavement on California highways for each of its twelve districts in terms of major or minor distress and ride quality in its biennial State of Pavement reports.[29] We compared pavement condition for the combined San Diego County and Imperial County District 11 region with two other Caltrans districts from the two most recent biennial reports issued.

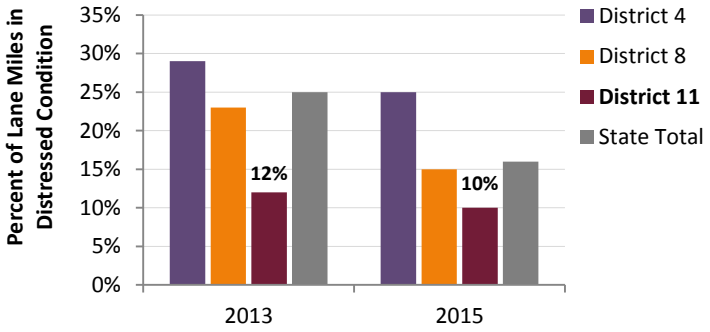
Between 2013 and 2015, the percent of highway pavement in distressed condition for District 11 dropped from 12 percent in 2013 to just less than 10 percent in 2015 as shown in Exhibit 28. Notably, District 11 had

[28] Does not include collisions resulting in property damage only.

[29] Roads are categorize into three main groups—good condition requiring only routine preventative maintenance, fair condition requiring corrective maintenance, and poor or "distressed" condition requiring preventative overlay maintenance or full rehabilitation and replacement.

the lowest percent of distressed miles of the other Caltrans Districts—meaning that the San Diego region's pavement quality was better than the comparison areas over the years measured. Comparisons to other areas outside of California cannot be made since those areas used a different methodology to assess roadway condition than California.

EXHIBIT 28. PAVEMENT CONDITION RESULTS FOR CALIFORNIAN COMPARISON CALTRANS DISTRICTS



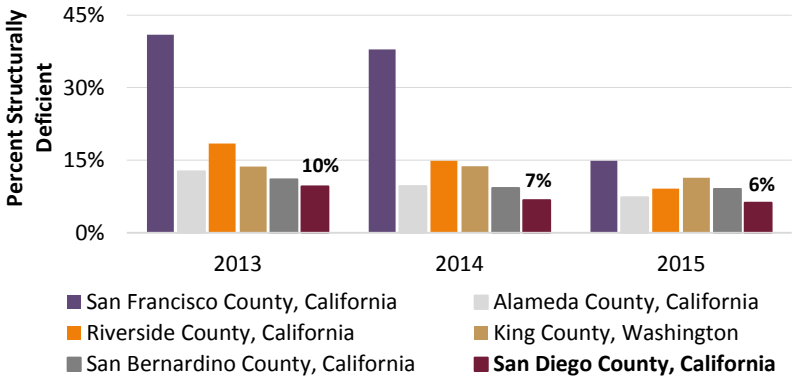
Source: Caltrans State of Pavement reports.
Note: District 4 includes counties Sonoma, Napa, Solano, Marin, Contra Costa, San Francisco, Alameda, San Mateo, and Santa Clara. District 8 includes counties San Bernardino and Riverside. District 11 includes counties San Diego and Imperial.

Fewer bridges were in distressed condition

Multiple entities collected bridge condition data in San Diego County with each entity responsible for assessment of its respective system. This data was reported to the U.S. Department of Transportation's Bureau of Transportation Statistics through the National Bridge Inventory database, and included ratings of deck, superstructure, and substructure conditions in addition to scores for the overall designation of "in good repair" or "structurally deficient."

As shown by the decreasing percent of bridges rated structurally deficient in Exhibit 29, bridge condition improved in all comparison areas between 2013 and 2015. Specifically, in San Diego, the percent of bridges rated structurally deficient decreased 4 percent from 10 percent in 2013 to 6 percent in 2015 across approximately 1,500 bridges. This was similar to the trend over the last decade where bridge condition has improved.

EXHIBIT 29. PERCENT OF STRUCTURALLY DEFICIENT BRIDGE DECK AREA BY COMPARISON AREA, 2013 TO 2015



Source: U.S. Department of Transportation's Bureau of Transportation Statistics National Bridge Inventory database.

Many Capital Construction Projects were Completed or Started

To achieve the goals of congestion relief and improved safety, the *TransNet* Ordinance proposed 48 major corridor capital construction improvements. Those 48 Ordinance projects were split into several project segments. As of June 30, 2017, the SANDAG Board approved for a total of 78 project segments consistent with *TransNet* Extension Ordinance provisions.[30]

Nonetheless, of the 48 specific major corridor projects listed in the Ordinance, 33 percent were completed and 28 percent were in-progress as shown in Appendix A. To date, SANDAG reported program costs of nearly $4.4 billion and estimated approximately $22.7 billion in remaining expenditures to complete all projects planned when voters passed the *TransNet* Ordinance. However, as transportation needs and preferences for the region change over time, those original projects may not all need to be delivered as promised. For instance, the Coronado tunnel project, although listed in the Ordinance, is no longer a *TransNet* project after Coronado residents voted against its construction in June 2010.

Control over Task Order Amendments and Change Orders Seemed Reasonable

While the dollar value of task orders and construction contracts can be significant for most, if not all of the *TransNet* projects, amendments and change orders are standard practice for capital projects when unfolding circumstances require changes to scope, schedule, or cost. These modifications may be caused by unforeseen circumstances, weather, emergencies, inadequate service or quality, or insufficiently defined scope of work. When looking over the past three years under audit, we found the percent of task order amendments and change orders appeared reasonable.

Task order amendments averaged 37% for SANDAG and 20% for Caltrans

During the 3-year period of our review, Caltrans had 34 active contracts with architectural and engineering consulting firms with 375 related task orders and 225 amendments totaling $85.2 million. The average task order amendment as a percent of task orders issued was 20 percent—which is in the mid-range when compared to the average results from the 2009 and 2015 *TransNet* Triennial Performance Audits of 14 percent and 29 percent, respectively.

Similarly, SANDAG had 31 active contracts with architectural and engineering consulting firms with 277 related task orders and 444 amendments totaling $380.8 million. Given the data available, these amendments equate to 37 percent of task orders issued. This rate was slightly higher than the 33 percent from the 2015 *TransNet* Triennial Performance Audit and was primarily due to SANDAG issuing task order amendments for individual project phases (e.g. scoping, preliminary engineering, and final design) on the San Diego Bridge Double-Tracking project.

Change orders averaged 5.5% for SANDAG and 4.3% for Caltrans

Additionally, over the 3-year audit period, SANDAG and Caltrans had 50 active construction contracts for projects worth more than $2.2 billion for *TransNet* projects with a combined $113.1 million in change

[30] See Appendix A for full listing of all project segments.

orders. For these projects, SANDAG's 963 change orders averaged 5.5 percent of the total contract value; while Caltrans' 694 change orders averaged 4.3 percent of the contract value.

In the past, Caltrans generally estimated a 10 percent contingency for roadway construction projects in-line with targets set by peers. Not only did the average change order percentage between FYs 2015 and 2017 meet or outperform the Caltrans standard, but also these results compared favorably with the average of 14 percent noted in the 2009 *TransNet* Triennial Performance Audit and the 16.5 percent average from the 2015 *TransNet* Triennial Performance Audit.

Innovative Construction Manager/General Contractor Project Delivery Method Reports Advantages

Both SANDAG and Caltrans employed an innovative delivery method for two substantial major corridor projects known as the construction manager/general contractor (CMGC) method. This method seeks to bridge the gap of the frequently cited issue of conflicting interests by project owners and contractors—especially public owners often are bound to low bid or best value procurement rules whereas contractors inherently seek to maximize profit by incorporating the highest possible mark-up on bid items or look to change order projects during construction. However, results noted thus far mostly related to anecdotal synergies between contractors and project owners who both commented on an exceptional collaborative environment where issues were openly discussed and resolved as to not negatively affect progress on the project. While the full impact of the CMGC project delivery method will not be fully measurable until the projects are done, Caltrans had a good framework underway to enable future measurement while SANDAG should start developing a tool to track and quantify CMGC benefits.[31]

Specifically, over the last several years, Caltrans and SANDAG managed the delivery of the State's two largest transportation projects using the CMGC delivery method as detailed in Exhibit 30. With a budget of approximately $700 million, the I-5 North Coast Corridor – Phase 1 (Build NCC) project represents the largest Caltrans-lead CMGC investment in California and is part of an even larger $6 billion investment on a 27-mile stretch of the I-5 North Corridor between Oceanside and La Jolla to be completed by 2050. [32] Similarly, the Mid-Coast Corridor (MCC) project is an approximate $2.2 billion transit project lead by SANDAG that extends the San Diego Trolley Blue Line from Santa Fe Depot in downtown San Diego to the University Towne Center Transit Center in University City. In addition to the light rail extension, the project includes construction of nine new transit stations, park-and-ride facilities, and traction power substations as well as the purchase of new light rail vehicles and equipment.

[31] CMGC projects are scheduled for completion by FY 2021.

[32] Build NCC extends 14 miles along I-5 between SR 78 in Carlsbad and Lomas Santa Fe Drive in Solana Beach.

EXHIBIT 30. *TRANSNET* CMGC PROJECTS

	I-5 North Coast Corridor – Phase I (Build NCC) Project	Mid-Coast Corridor (MCC) Project
Investment	Approximately $700 Million [1]	Approximately $2.2 Billion
Scope	• HOV/Carpool Lanes from Lomas Santa Fe Drive in Solana Beach to the SR 78 in Carlsbad; • Double Tracking the Coastal Rail Line over the San Elijo and Batiquitos Lagoons; • Replacing four lagoon bridges; • Constructing the North Coast Bike Trail; • Building Soundwalls; • Enhancing bike and pedestrian facilities; and • Restoring and enhancing the San Elijo lagoon.	• 9 new transit stations; • 10.92 miles of rail double-tracking; • 5 park-and-ride facilities providing 1,170 spaces; • 36 Light Rail Vehicles; • Train control and signals; • Traction power and communication systems; • Fare collection systems and equipment; and • 13 new traction power substations.
Current Status	In Construction	In Construction
Fully Open to Traffic	By 2020	By 2021

Source: Build NCC Fact Sheet, October 2016; Build NCC Project Schedule, September 2017;
Federal Transit Administration Mid-Coast Corridor Project Profile, December 2016.
Note: [1] Amount per Build NCC Fact Sheet, October 2016.

CMGC is still relatively new to the transportation industry

In order for a state department of transportation to utilize the CMGC project delivery method, an enabling state legislation has to be in place. In California, Assembly Bill 2498 (Chapter 752) authorized Caltrans to use CMGC since 2012. With enabling legislation only present in 14 states as of June 2017, CMGC is still considered relatively new to the transportation industry. [33] Of the nine CMGC projects approved by Caltrans to-date, Build NCC has the largest budget and nearly double the budget for the second largest CMGC project adding managed lanes on the US 101 in the San Francisco Bay area. In addition, among large-scale transportation CMGC projects nationwide, Build NCC is one of the largest as shown in Exhibit 31.

EXHIBIT 31. PREVALENCE OF CMGC ACROSS THE NATION

State	CMGC Enabling Legislation Year	No. of CMGC Projects	Largest Project	Largest Project Budget
California	2012	9	I-5 North Coast Corridor Phase I (Build NCC)	$606 million [1]
Minnesota	2012	6	Twin Ports Interchange (replace 33 bridges and reconstruct an interchange)	$204 million
Oregon	2008	1	I-5: Willamette River Bridge (replace 2 bridges)	$156 million

Source: CMGC Homepage from Departments of Transportation shown; Federal Highway Administration CMGC Homepage.
Note: [1] Project Budget per Caltrans District 11 CMGC Application, May 2013.

[33] Federal Highway Administration reported 14 states with CMGC Enabling Legislation as of June 27, 2017: Arizona, California, Connecticut, Colorado, Florida, Idaho, Michigan, Minnesota, Nevada, Rhode Island, Tennessee, Utah, Vermont, and Washington. Further, prior to MAP-21 in 2012, federal approval for CMGC projects was also required as CMGC was considered a Special Experimental Project (SEP-14) by FHWA. State DOTs required project specific FHWA approval prior to choosing CMGC. This is in addition to the requirement for state legislation enabling CMGC.

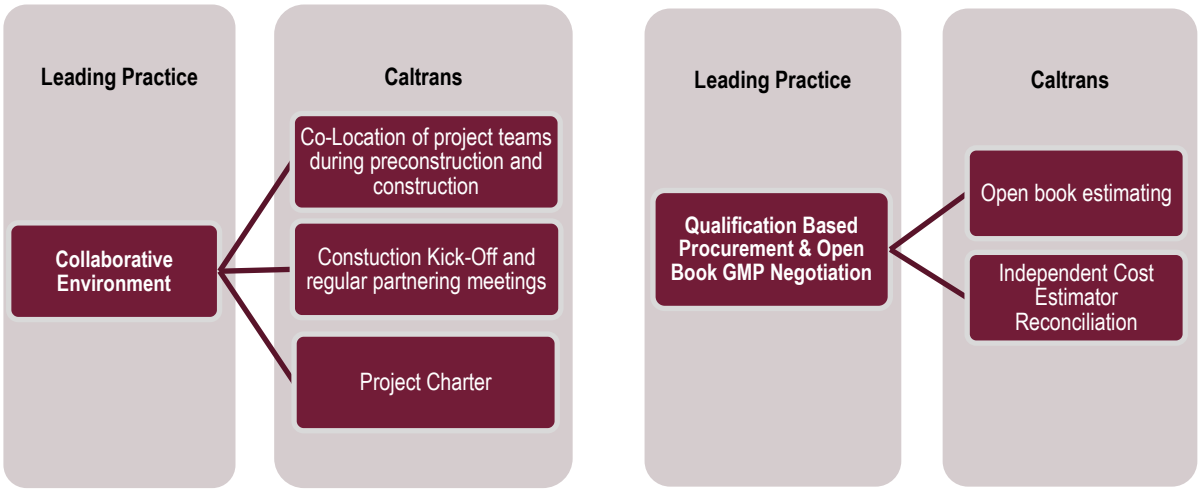
I-5 North Coast Corridor Program

Over the last three years, Caltrans took the I-5 North Coast Corridor (known as Build NCC) project from preliminary design to actual award of the CMGC construction contract in December 2016. Construction is currently underway on various segments along the corridor. According to Caltrans project management staff, the CMGC delivery method has both benefits and challenges—although benefits appear to outweigh challenges thus far. One area Caltrans highlighted was that the CMGC process was an extensive collaborative effort between project owner and contractor in negotiating cost and scope, addressing constructability issues, and communicating with the public and stakeholders. Although the full impact of the CMGC cannot be evaluated until the end of the project, a framework must be established to measure the effectiveness of the project.

Caltrans considered CMGC leading practices and developed a framework to measure success

Over the last three years, Caltrans employed many of the suggested leading practices to minimize the risks associated with the CMGC delivery method and studied factors that led to failures in other projects in the nation. As shown in Exhibit 32, Caltrans followed leading practices such as fostering a collaborative environment by co-locating project teams, holding a construction kick-off meeting that involved all levels from senior management to resident engineers, and continuing open discussions via regularly-held partnering meetings.

Exhibit 32. Caltrans Considered Leading CMGC Practices



Source: Auditor generated based on Associated General Contractors of America & National Association of State Facilities Administrators: CMGC Guidelines for Public Owners (2007 Joint Publication); FHWA CMGC Homepage; 2012 FHWA CMGC Peer Exchange; Caltrans Report on Boston Lessons Learned; Caltrans 6/14/17 presentation to ITOC.

In addition, with the hiring of an external "CMGC Coach" in the spring of 2016, Caltrans began formalizing processes and procedures and developing a framework to capture the benefits and challenges of CMGC. By June 2016, Caltrans had developed a performance measures framework for the Build NCC project related to areas such as safety, cost, schedule, opportunities, and challenges that aligned with statewide goals as well. For example, the Build NCC safety goal targets zero pedestrian and Occupational Safety and Health Administration recordable accidents and highway fatalities, as well as zero Federal Railroad

Administration compliance issues or fines within the rail corridor aligning with statewide goals of "maintaining a safe environment for the traveling public, pedestrians and employees during construction of a project."

Once that framework was finalized, Caltrans developed a spreadsheet to capture data related to those performance measures. Using the safety example, the spreadsheet captured any recordable safety incidents for all segments in construction and calculated the recordable incident rate as well as lost time incident rate. Another important part of the monthly performance reporting captured "issues and opportunities gained." Dubbed the "innovations log" by the project team, its intent was to quantify Build NCC successes to address the statewide goal of "providing information for policy and decision makers concerning the viability and a potential for increased value to the community and region using CMGC as a delivery method and needed improvements if suitable for future use." This innovations log listed opportunities gained from using CMGC and was updated and discussed monthly among the project teams. Innovations were captured in six categories—cost, risk avoided, environmental impact, schedule, traveler impact and early involvement—and were linked to opportunity types such as "innovation, constructability, or integration." Two examples are shown as follows:

- Under Innovation Item No. 13 that considered a single span design for one of the highway lagoon bridges, cost comparison calculations showed an estimated savings of $1.04 million under the single span design versus the existing design.
- Another cost saving example related to using highway export for structural backfill where $937,700 in savings was identified from using one CMGC contractor. Specifically, Caltrans avoided paying one contractor to "remove and dispose of dirt" and paying a different contractor to bring in dirt for required backfills. However, unlike in the bridge example, Caltrans was unable to provide documentation to support the $937,700 amount—although, that data may be available, just embedded in a project team member's file and not yet recorded in a centralized repository of innovation log backup data.

Thus, while the innovation log will allow Caltrans to report on the success of the CMGC as it progresses through construction, it needs to be routinely updated, followed-through, and bolstered with reliable supporting documentation. Caltrans was aware of this shortcoming and is working with its contractor to obtain supporting data on a go-forward basis and research back-up data for previously claimed innovations.

Although premature to fully assess, Build NCC partners already report synergies from CMGC

While the full complement of CMGC "pros and cons" often cannot be fully assessed until a project is complete, Caltrans reported that by bringing all parties to the table and securing buy-in early on, typical issues resulting from a traditional design-bid-build delivery method were minimized. For instance, by involving the contractor when the design was approximately 50 percent complete, the contractor construction expert can raise constructability concerns early on and allow time for redesign rather than having to respond to a final set of plans where modifications can often involve schedule delays and increased costs. Caltrans also believed that the CMGC resulted in better cost containment since the partnership with the contractor allowed for the sharing of risks of project unknowns and unforeseen conditions. For example, through the collaborative information sharing of the CMGC, potential problems

associated with drilling pillars and pouring foundations in those areas were shared upfront and acceptable levels of risks were negotiated and included in the guaranteed maximum price.

In addition, Caltrans construction management indicated that CMGC allowed Caltrans to staff the project with fewer resident engineers as opposed to a design-build project. Over the life of the project, having fewer inspection staff on an on-going basis can result in project cost savings. However, the smaller number of resident engineers did not imply that work was less supervised. Rather, because CMGC placed greater accountability on the contractor and self-assessment of the quality of their work product, Caltrans did not have to continuously monitor the contractor to ensure there were no "corners cut." For example, a common issue where contractors may deviate from contract specifications relates to night road or lane closures that are set between certain hours to minimize impact on traffic. While some contractors would exceed the allotted closure times and not properly cone the construction zone, Caltrans indicated that unannounced night drive-by site visits by inspectors on the Build NCC project found that the contractor had properly coned the construction area and that established lane closure times were observed.

In addition to these anecdotal examples of how CMGC worked well for Caltrans, there was also a tangible measure to support the CMGC method such as the number of unsatisfactory work elements noted by resident engineers. While this statistic can be voluminous when using traditional project delivery methods, Caltrans reported these were not present on the Build NCC project as resident engineers did not report any unsatisfactory work to-date as evidenced by Caltrans payment reports and weekly meeting minutes. In addition, according to both Caltrans and the contractor, there were no claims or disputes over payments to-date.

MID-COAST CORRIDOR PROGRAM

In September 2014, SANDAG awarded one CMGC contract for pre-construction services for certain Mid-Coast Corridor transit double track projects, and subsequently expanded the contract to include pre-construction and construction for a number of projects included in the Mid-Coast Corridor (MCC) project. Although SANDAG is the lead and responsible for overseeing all projects and the CMGC contract, SANDAG worked in close coordination with MTS and NCTD to implement many best practices. These practices include co-location during design and construction, bringing the CMGC on early in the design process, not selecting the CMGC contractor based on cost alone, and developing a project management plan that included project scope, clearly defined roles and responsibilities, and protocols for communication, safety and security, change management, quality management, risk management, and issues resolution. According to SANDAG, there were some challenges in negotiating the guaranteed maximum price; however, SANDAG hired a consultant and independent cost estimator to provide assistance and resolution. According to SANDAG, CMGC is expected to not only result in a fair negotiated price, but also reducing owners risk for design, constructability, and coordination issues as well as ultimately reducing the number and cost of changes.

While MCC noted CMGC benefits to date, there was no data available at this time to validate the cost savings benefit. The MCC project was still in the early stages of construction during our audit and will not realize all potential benefits of the CMGC project delivery method until the project is completed; however, both SANDAG and MTS indicated there were a number of benefits already derived. Specifically, the entities

noted time savings with elements of the project that were able to advance at a faster rate than with traditional design-bid-build in addition to cost savings from economies of scale by having one contractor provide design input, schedule and coordinate construction, consolidate management, and construct the corridor projects together. In a SANDAG project presentation in June 2017, SANDAG indicated that there was a reduction in time from the Full Funding Grant Agreement to construction. Further, both agencies indicated that the collaboration, communication, and coordination on the project was tremendous. According to SANDAG and MTS, the level of public outreach and stakeholder engagement on the project was far greater than on other projects.

While at the time of the audit there was no specific data or measures tracked to quantify or validate cost savings, SANDAG recently proposed metrics that it plans to use for comparing the Mid-Coast project performance to the performance of another transit project, the Mission Valley East project that used a Design,-Bid,-Build project delivery method. Proposed metrics include a comparison of change order costs, construction management cost as a percentage of construction, total change order cost divided by total construction costs, claims pursued by contractors, construction duration, safety incident rates, and several other metrics. While the proposed metrics appear reasonable, only comparing Mid-Coast performance to one other project may not provide a comprehensive assessment of the benefits achieved from using the CMGC project delivery method. Unlike Caltrans, SANDAG may be challenged in comparing project performance to other projects because it has not historically had a process in place to formally track project performance.

Further, SANDAG began collecting data to measure intangibles, such as owner, contractor, and stakeholder satisfaction. Responses from a November 2017 MCC survey showed average scoring of 3.8 out of the highest score of 5 for elements related to project progress and opportunities for improvement. Survey elements assessed included the project's impact on the community, project delivery on-budget, project delivery on-schedule, project delivery meeting or exceeding SANDAG quality standards for design and construction, project safety, use of disadvantaged business enterprises, project character and culture, and project impact on the environment. While respondents generally ranked most elements with higher average scores, the survey also identified concerns related to the budget and schedule. According to survey results, the high costs of changes and late value engineering proposals were drivers for negative feedback received. In addition, some survey responses raised concerns that the change order amounts were higher than expected for the CMGC project delivery method. While there was a consensus among respondents that the project would be delivered on-schedule, concerns were voiced on those schedule impacts from on-going changes, design issues, right-of-way acquisition, and installation of signals and communication systems. As the project moves forward, the project management team should work to address and resolve concerns raised by the project team in the survey responses.

Recommendations

To enhance delivery of the major corridor capital construction program and track highway performance, the ITOC should request the SANDAG Board to direct staff to perform the following:

8. Update and refine the project listing started in the 10-Year Look-Back Review to ensure all major corridor projects are tracked back to those in the *TransNet* Extension Ordinance. Regularly report on project and financial status using the project listing developed in 10-Year Look-Back Review as a foundation or develop an alternate tool to accomplish the goal of tracking against the *TransNet* Extension Ordinance.
9. Begin gathering data on whether the Construction Manager/General Contractor (CMGC) method used on the Mid-Coast Corridor Transit project is delivering on expectations for cost savings, efficiencies, better quality, or collaboration to solve problems rather than using a typical silo-approach between design, construction, contractors, and owners by implementing the following:
    a. Comparing SANDAG's proposed metrics for assessing Mid-Coast Corridor project performance to the performance metrics and practices used by Caltrans' to determine whether there are any additional practices SANDAG may want to include or adopt, such as the Caltrans innovations log, to help formally track benefits, successes, and challenges.
    b. Addressing recent survey comments related to possible schedule impacts from project activities in addition to the perceived higher value of change orders.
10. Gather and store documents to support "benefit" statistics tracked for the North Coast Corridor and the Mid-Coast Corridor whether using the innovations log utilized by Caltrans or another method used by SANDAG. Maintain supporting documentation, such as cost comparisons, in a centralized repository that is linked or reconciled with the log or summary statistics.

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Chapter 4: Local Street and Road

The 2004 *TransNet* Extension Ordinance allocated 29.1 percent of annual sales tax revenues to the 19 local jurisdictions to fund improvements on the local street and road network. With approximately $714 million [1] provided through June 2017, this program is the second largest *TransNet* Program after major corridor capital construction.

KEY RESULTS

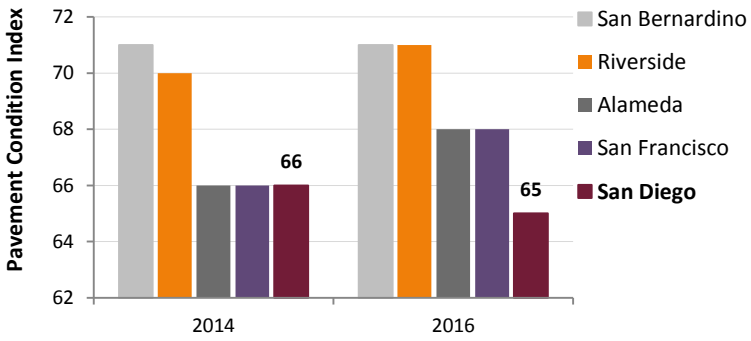
Absent standard performance outcome data, improvements to the local street and road network was limited to the reporting of pavement condition as a measure of road quality. Additionally, both the Ordinance and SANDAG Board policy requirements pertaining to local jurisdictions' compliance with bike and pedestrian accommodations and the applicability of splitting local funding 70/30 for congestion relief and maintenance need to be reevaluated.

- Over the last three years, pavement condition decreased by one percent. This follows the trend since the start of *TransNet* where pavement condition in the San Diego region declined from a good condition to the current at-risk condition rating.
- 70/30 congestion relief and maintenance project split may not allow local jurisdictions sufficient flexibility in linking *TransNet* monies to current individual infrastructure needs at the local level.
- While the SANDAG Board Policy No. 031, Rule 21 requires local jurisdictions to provide appropriate accommodations for bicycle and pedestrian travel when building new or reconstructing existing local streets and roads, compliance with the rule is not regularly monitored by SANDAG—except for a review performed in 2014, that identified continued efforts were required to ensure compliance. Yet, in light of SANDAG's Complete Streets policy emerging at the same time, Rule 21 compliance has since not been further pursued by SANDAG and has been deferred to monitoring efforts as part of the Complete Streets policy implementation.

RECOMMENDATION HIGHLIGHTS

- Revisit the *TransNet* Extension Ordinance congestion relief and maintenance split to be more relevant with local needs as the *TransNet* lifecycle matures by considering elimination of the 70/30 split, change to the percentage limitations, or modification of the categorical definitions within the *TransNet* Extension Ordinance limitations.
- Use results from SANDAG Board Policy No. 031, local Rule 21 review to make identified changes to the Ordinance definitions and follow-up on areas of noncompliance noted during the review.
- Work with locals to determine a method to demonstrate compliance with Board Policy No. 031, Rule 21.
- Amend or establish a SANDAG Board Policy to require local jurisdictions to track and report on the number of bike and pedestrian facilities implemented using *TransNet* funds.
- Conduct another review of local projects and considering whether any adjustments are warranted in light of SANDAG's Complete Streets Policy.

Pavement in the San Diego region is considered in at-risk condition and has declined over recent years. But recent pavement rehabilitation efforts by the City of San Diego will result in improved conditions over the next few years.



Note: [1] Refer to Report Exhibit 2 for *TransNet* allocations of nearly $714 million for Local Street and Road Program.

Chapter Introduction

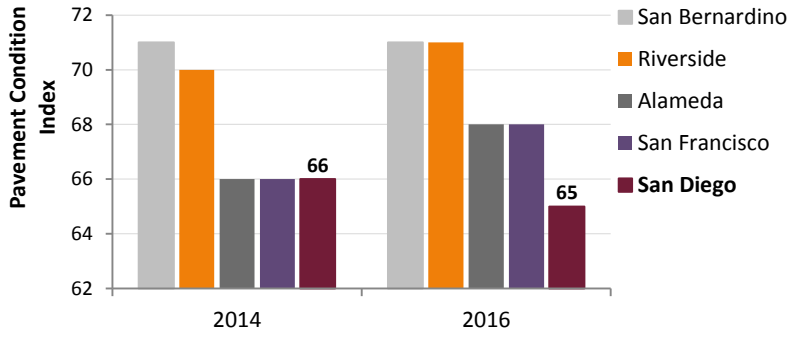
Local streets and roads feed the highway system, provide paths for transit, and provide neighborhood-level transportation access. As such, *TransNet* set aside 29.1 percent of sales tax collections to fund improvements on the region's approximate 7,800 center line miles of local streets and roads. Specifically, *TransNet* stipulated that local jurisdictions propose a variety of congestion relief and maintenance projects through the biennial Regional Transportation Improvement Program for spending *TransNet* money and committing other state, federal, and local funds allocated. To deliver these projects, local jurisdictions followed common public construction project delivery and procurement methods and employed a mix of in-house and consultant staff to plan, design, and oversee projects. Capital construction was still typically outsourced, while routine maintenance of assets was generally performed in-house by designated public works crews. Since 2008, nearly $714 million was provided to local jurisdictions for their streets and roads making it the second largest *TransNet* Program after major corridor capital construction.[34]

Pavement Condition Declined, but Recent Efforts may Reverse Trend

Given the lack of local street and road performance outcome data to demonstrate congestion relief improvements and greater mobility, local street and road performance outcome communication was limited to the reporting of road quality. A typical measure of road quality is the pavement condition index (PCI) initially developed by the U.S. Army Corps of Engineers. This measure rates of pavement distress with scores ranging from 0 (failed) to 100 (perfect). Points are deducted from 100 for distress such as cracking, rutting, and other distortions. Thus, the higher a PCI score, the better average road condition. Typically, an index of 70 to 100 indicates good or excellent condition, 50 to 69 is at-risk condition, and 49 and below is poor to failed condition.

While this data was not tracked or analyzed by SANDAG at the regional level, external reports indicated the average PCI for roads in cities within San Diego County dropped from a PCI rating of 66 to 65 between 2014 and 2016 as shown in Exhibit 33. This is part of an overall declining trend where San Diego pavement condition dropped from a PCI of 74 in 2008, indicating a good condition, when *TransNet* started.[35]

EXHIBIT 33. BIENNIAL PAVEMENT CONDITION INDEX FOR CALIFORNIAN COMPARISON COUNTIES, 2014 AND 2016



Source: League of California Cities Biennial California Statewide Local Street and Road Needs Assessment reports.

[34] Refer to Report Exhibit 2 for *TransNet* allocations of nearly $714 million for Local Street and Road Program.

[35] Based on the League of California Cities biennial California Statewide Local Street and Road Needs Assessment Report showing PCI ratings for all California counties.

Individual local jurisdiction pavement survey results showed improving conditions

To capture most current pavement condition at the local jurisdictional level, we surveyed the 19 local jurisdictions.[36] While not all jurisdictions used *TransNet* funds to maintain their roadways, survey responses from 14 local jurisdictions showed the average current PCI for the San Diego region was 71, which is considered a "good" condition. This number differed from the results presented by the California Statewide Local Street and Road Assessment in its 2016 report perhaps due to timing of the City of San Diego reported data. Recently, the City of San Diego invested significant *TransNet* resources and other funding sources to improve its roadways and reported an increased PCI of 71 in 2017 based on road condition survey results conducted in 2016. Given that streets and roads in the City of San Diego account for approximately 38 percent of the roadways in San Diego County, an increase in PCI for the City of San Diego will likely positively reflect on the overall PCI for San Diego County in future League of California Cities' reports.

Congestion Relief and Maintenance Split May Need to Be Revisited

The *TransNet* Extension Ordinance requires that at least 70 percent of the revenues provided for the Local Street and Road Program be spent on congestion relief projects and no more than 30 percent spent on maintenance projects—commonly known as the "70/30 Split Rule." Examples of each category are shown in Exhibit 34. While SANDAG Board Policy No. 031: *TransNet* Ordinance and Expenditure Plan Rules provided a mechanism for local agencies to request an exemption to the 30 percent maintenance limitation with justification, some local jurisdictions expressed that the process was cumbersome.

EXHIBIT 34. EXAMPLES OF LOCAL STREET AND ROAD 70/30 SPLIT RULE DEFINITIONS

Congestion Relief (70%)	Maintenance (30%)
New or widened roads and bridges	Lane removal for bikes
Pavement overlay **1-inch thick or greater**	Pavement overlay **less than 1-inch**
Bridge retrofit	Bridge replacement for aesthetic purposes
New traffic signals or upgrades	Traffic signal replacement or software
Pedestrian crossings and lighting	Light bulb replacement

Source: *TransNet* Ordinance and Expenditure Plan Implementation Guidelines, June 23, 2006.

In the past, local jurisdictions conveyed that these definitions established in 2006 have restricted their use of *TransNet* funds because the 70/30 Split Rule did not adequately reflect their needs, particularly for pavement rehabilitation projects. Some jurisdictions felt they must wait until a roadway deteriorated to meet eligibility definitions as a 70 percent congestion relief project. Based on interviews conducted during the current and prior performance audits, local jurisdictions have voiced preferences for a more flexible approach on how *TransNet* monies can be spent for local projects. Some jurisdictions were fairly built-out and felt that the 70/30 split prohibits them from using *TransNet* monies on other needed maintenance projects. Even jurisdictions with space for congestion relief projects may welcome a different split allowing

[36] The following local jurisdictions did not respond to the survey— Del Mar, Imperial Beach, National City, and Solana Beach.

for larger allocations towards maintenance as maintenance will become a more significant issue for locals over the next decade as congestion relief improvements begin to deteriorate as well.

Recently passed California Senate Bill 1 legislation is likely to help in this area by providing nearly $1.5 billion statewide to local jurisdictions for maintenance needs. This influx of funds will certainly help rebuild the region's roadway infrastructure, but there could still be areas that have greater maintenance needs while having fewer capital projects that meet the current *TransNet* congestion relief definitions. While there is a mechanism to get approval for changes to the 70/30 split, it appears to be cumbersome and time-consuming. To allow local jurisdictions more flexibility on how to best spend *TransNet* monies on local project needs, the SANDAG Board may want to consider modifying the rule's definitions or changing the 1-inch or thicker requirement for congestion relief-type pavement overlays.

Continued Effort is Needed to Ensure Compliance with Bike and Pedestrian Accommodations

In February 2008, the SANDAG Board added Rule 21 to its Board Policy No. 031: *TransNet* Ordinance and Expenditure Plan Rules requiring local jurisdictions to provide appropriate accommodations for bicycle and pedestrian travel during street and road reconstruction for new projects or major reconstruction projects.[37] The rule also allowed for exceptions where bike and pedestrians are prohibited by law from using the facility or where the costs of including bikeways and walkways would be excessively disproportionate to the need or probable use. Compliance and requested exceptions were tracked through self-certifications made during biennial Regional Transportation Improvement Program updates by selecting a check-box in the electronic ProjectTrak system and written requested exceptions presented to SANDAG's Cities/County Transportation Advisory Committee. SANDAG performed a detailed evaluation of bike and pedestrian accommodations in 2014; yet, continued efforts are needed to ensure compliance with this policy.

Specifically, to determine whether the rule was effectively encouraging a balanced transportation network, SANDAG staff conducted a three-part evaluation in 2014 consisting of surveying local public works staff to collect data on how they implement the requirement, determining which projects included the accommodations, and conducting a field review of those projects to determine compliance with the requirement. Those efforts found that not all street maintenance overlay projects included the minimum bicycle and pedestrian accommodations or project accommodations did not cover the entire length of the projects. However, it was difficult to evaluate the impact of the rule on the bicycle and pedestrian infrastructure since only six local agencies tracked bike facilities funded with *TransNet* and only three agencies tracked pedestrian facilities. From this review, SANDAG identified that additional types of projects should be subject to Rule 21 and should be added to the policy such as median landscape projects and traffic signal installation projects. Additionally, the review determined that a checklist to evaluate projects was needed and learned that local agencies had compliance questions.

While the compliance review was a sound practice employed, it was only completed once in 2014 and has not been regularly performed on an ongoing basis. Moreover, SANDAG did not follow-up on the evaluation's results to revise the Rule 21 definitions, develop the evaluation checklist, or work with the local

[37] Board Policy No, 031: *TransNet* Ordinance and Expenditure Plan Rules, Rule 21: Accommodation of Bicyclists and Pedestrians.

jurisdictions to solve perceived compliance issues. According to SANDAG, it did not make changes because the SANDAG Board approved the Complete Streets Policy at the same time that committed to a process that ensures the needs of people using all modes of travel are considered on every street or network of streets. However, SANDAG's Complete Streets Policy is applicable only to SANDAG infrastructure projects whereas locals are required by the California Complete Streets Act of 2008 to incorporate a balanced, multimodal transportation network that meets the needs of all users of streets, roads, and highway elements into their general plans. Further, SANDAG's Complete Streets Policy stated that SANDAG would periodically evaluate the effectiveness of Rule 21 to ensure compliance with the provision and that the rule reflects current best practices in Complete Streets implementation.

Thus, SANDAG should follow through with the results from the Rule 21 evaluation conducted in 2014 and continue to monitor compliance with the rule, until otherwise amended. Further, SANDAG should require local agencies to track and report on the number of bike and pedestrian facilities implemented using *TransNet* funds.

Recommendations

To better understand whether Local Street and Road Program spending is delivering projects that result in the best performance outcomes and value for taxpayer investment, the ITOC should request the SANDAG Board to direct staff to perform the following:

11. Revisit the Ordinance congestion relief and maintenance split to be more relevant with local needs as the *TransNet* lifecycle matures by considering elimination of the 70/30 split, change to the percentage limitations, or modification of the categorical definitions within Ordinance limitations.
12. Continue to monitor compliance with SANDAG Board Policy No. 031, Rule 21, until otherwise amended, by implementing the following:
    a. Following-up on the results from the SANDAG Board Policy No. 031, Rule 21 evaluation conducted by SANDAG in 2014.
        1. Use results from SANDAG Board Policy No. 031, local Rule 21 review to make identified changes to the Ordinance definitions and follow-up on areas of noncompliance noted during the review.
        2. Work with locals to determine a method to demonstrate compliance with SANDAG Board Policy No. 031, Rule 21.
        3. Amend or establish a SANDAG Board Policy to require local jurisdictions to track and report on the number of bike and pedestrian facilities implemented using *TransNet* funds.
    b. Conducting another review of local projects and considering whether any adjustments are warranted in light of SANDAG's Complete Streets Policy.

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Chapter 5: Transit Services

The 2004 *TransNet* Extension Ordinance set aside 16.5 percent of net annual *TransNet* sales tax revenues, or $2.24 billion over the life of the program to support transit services and identified two key goals transit improvements should achieve:

- ✓ Increase transit for seniors and persons with disabilities; and
- ✓ Expand commuter express bus, trolley, and COASTER services.

KEY RESULTS

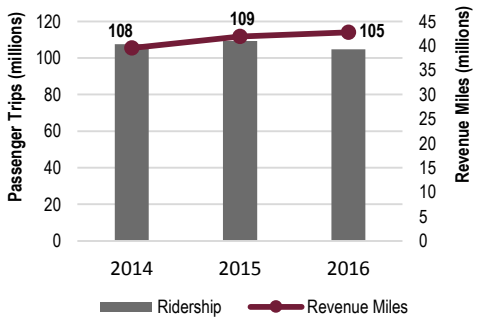
With $344 million allocated to transit operators since the start of *TransNet*, MTS and NCTD are serving over 100 million riders annually. Systemwide, the transit network generally demonstrated strong performance as compared to peers with results mostly meeting targets. *TransNet*-only funded *Rapid* services also showed positive performance.

- The *TransNet* goal of increased services to seniors and persons with disabilities was met with 23.9 million riders in 2016, or 7 percent more than when *TransNet* started. Over the same period, the senior population increased nearly 43 percent.
- Systemwide and *Rapid* transit service performance showed positive results and outperformance of peer agencies.
- In 2015, systemwide transit ridership reached a 10-year high, then subsequently declined.
- Cost of pass subsidy for seniors and persons with disabilities may impact funds available for other transit operations and service improvements.
- *TransNet* limitations on operating costs were restrictive in times of low inflation changes.

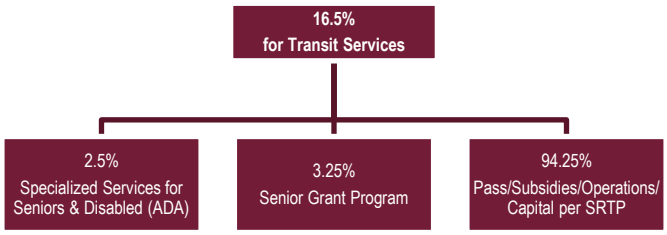
RECOMMENDATION HIGHLIGHTS

- Continue to analyze major transit commute routes and services and report on whether commute times have improved or should be improved.
- Regularly track and report on *TransNet* goals to increase services to seniors and persons with disabilities.
- Work together with the region's transit operators to analyze options offsetting the impact subsidy disparities have on available funds for expanding transit services, such as funding the pass subsidy disparity for seniors and persons with disabilities from other *TransNet* areas—as allowed by the *TransNet* Extension Ordinance—adjusting the discount offered for senior/disabled and youth riders, determining whether disparities can be funded through other sources, or maintaining existing funding and process.
- Collaborate with the operators to revisit the operating cost ceiling tied to changes in the Consumer Price Index as specified in the *TransNet* Extension Ordinance so that operators have some flexibility with reasonable cost increases while still maintaining the intent of *TransNet* to provide some assurance of the reasonableness of those cost increases

SYSTEMWIDE RIDERSHIP AND REVENUE MILES



TRANSNET EXTENSION ORDINANCE ALLOCATION FOR TRANSIT



Chapter Introduction

Since 2008, the *TransNet* Program supported transit alternate modes of transportation by providing 16.5 percent of the net annual sales tax revenue for transit services, with the majority made available to the Metropolitan Transit System (MTS) and the North County Transit District (NCTD) for operations, passes, and subsidies. Some of these funds—2.5 percent—were allocated for paratransit services while another 94.25 percent was set aside for pass subsidies to seniors and persons with disabilities as well as general MTS and NCTD operations. To date, $344 million was allocated to the operators. Throughout the San Diego region, transit services were predominantly influenced by MTS and NCTD's operation of their fleet—although *TransNet* funds comprised less than 13 percent of general transit services funding for both operators. Over the last three years where data was available, the percent of commute by public transit remained relatively flat. Specifically, data showed that approximately 3.2 percent of commuters used public transportation.

Systemwide Performance Showed Positive Results

Results from our evaluation of transit performance found generally positive performance systemwide in San Diego and as compared to peers. While we provide a high-level discussion of seven performance metrics measuring service effectiveness, quality, sustainability, safety, and productivity in the bullets that follow, a detailed presentation of the performance results can be found in Appendix D of this report.

To measure performance, we focused on standard financial and operational performance indicators used in the transit industry and reported by MTS and NCTD in the National Transit Database. When assessing trends and changes in performance, it is important to recognize that the methodologies and tools used to gather transit operations performance data have changed. Over the years, data gathering transitioned from manual data collection to more accurate automated collection with the implementation of automatic vehicle location systems, passenger counters, and fare media equipment. Further, the federal government provided guidance and better defined how metrics should be calculated and reported to the National Transit Database to enhance consistency and provide greater uniformity in data reporting among transit operators. While information reported to the National Transit Database was the best available information, it is important to note that information was self-reported by transit agencies—although the data was subject to audit by the Federal Transit Administration and other entities.

- **Service Effectiveness: ridership declined nearly 3 percent**

  Transit ridership across all modes declined nearly 3 percent from 107.5 million riders in 2014 to 104.7 million riders in 2016. Ridership is expected to further decline in 2017—similar to national trends. As the economy improves, the unemployment rate declines and gas prices or the cost of owning a vehicle remain relatively low; thus, less individuals often ride public transportation.

  In addition, according to NCTD and MTS, the declining ridership can also be attributed to record high automobile sales, increased proliferation of transportation network companies and ride-sharing services, increased vehicle miles, and changed demographics such as gentrification of transit-rich neighborhoods and relocation of affordable housing to more remote communities. MTS polled 29 large and medium-sized transit agencies in California and reported it had found all but four agencies

experienced significant ridership losses in the first three quarters of 2017 when compared to 2016 ridership. As discussed later in this Chapter, both MTS and NCTD recently made system and route improvements based on performance data in an effort to increase ridership and improve service.

- **Quality of Service: on-time performance fluctuated by mode**

  On-time performance is a key indicator of service delivery as it may impact customer satisfaction and decisions to use public transportation. Since 2014, both MTS and NCTD on-time performance fluctuated by mode, with some modes, such as the NCTD COASTER rail and SPRINTER rail, consistently meeting or exceeding established on-time performance guidelines with more than 95 percent on-time arrivals. Conversely, fixed route bus for both operators and the NCTD LIFT paratransit service did not always meet established guidelines. For instance, even though NCTD LIFT paratransit on-time performance did not meet the 94 percent target between 2014 and 2016, performance was still between 0.2 and 2.5 percent of those established guidelines.

- **Sustainability: farebox recovery generally met guidelines**

  The farebox recovery ratio is the percent of operating expenses covered by fare revenue. A higher farebox recovery ratio indicates a greater percent of the operating costs are covered by fare revenue and provides increased financial stability. Higher fares can increase the farebox recovery ratio; however, regional fares in San Diego have not changed since 2008. With the exception of several services provided by NCTD, annual farebox recovery ratios remained above established guidelines for each mode of transit. For instance, over the last three years, MTS consistently exceeded goals with bus and rail farebox recovery ratios ranging from a low of 34 percent to as high as 56 percent—similar to trends observed since *TransNet* was implemented a decade ago.

- **Safety: preventable accidents were low**

  One metric that can be used to measure transit safety is the number of preventable accidents per 100,000 miles by mode. According to MTS, a preventable accident does not indicate that a vehicle code was violated, rather that the driver could have potentially done something different to prevent the accident from occurring. Since 2014, MTS has decreased the number of preventable accidents for fixed route from 2.81 per 100,000 miles in 2014 to 2.47 in 2016—a decline of 12 percent. Similarly, NCTD reported 1.55 per 100,000 miles in preventable accidents or less for each mode from 2015 to 2017.

- **Load Performance: seat utilization factors were within guidelines**

  This indicator relates to seat utilization and tracks the percent of seats occupied. Higher load factors than established guidelines is indicative of overcrowding on buses, trains, and paratransit vans, while a lower load factor than guidelines indicates that seats were available on transit vehicles. Since 2014, both MTS and NCTD fixed route bus load factors have been within the guidelines established by SANDAG each year with utilization remaining constant between years but ranging from 44 percent to a low of 19 percent across different modes of transit. Partly, this metric was impacted by decisions to purchase larger buses and reduce overcrowding to enhance the customers experience that resulted in less full buses.

- **Productivity: passengers per revenue hour guidelines met for rail, but not bus**

  From 2014 to 2016, rail and paratransit services consistently met or exceeded established guidelines for passengers per revenue hour. Conversely, MTS fixed route bus and NCTD BREEZE bus did not always meet established guidelines. For example, MTS fixed route bus had a target of 35 passengers per revenue hour; yet, actual passengers per revenue hour declined from 32 passengers in 2014 to 28 passengers in 2016. Similarly, NCTD BREEZE bus had a target of 20 passengers per hour, but actual passengers per hour declined from 19 passengers in 2014 to 16 passengers in 2016.

- **Headway: rail frequency of service met guidelines, while fixed route bus did not**

  According to the most recent Transit Coordinated Plan, the MTS and NCTD minimum peak service headway goals are 15 minutes for buses, 15 to 30 minutes for light rail, and 40 minutes for commuter rail. While both entities met headway goals for rail, neither MTS nor NCTD met headway goals for fixed route bus. For instance, the average headway for MTS light rail was approximately 11 minutes—well within the 15 to 30-minute goal. Conversely, fixed route bus average headway was 23 minutes, which was higher than the 15-minute goal. Both agencies indicated that funding limitations impact their ability to meet these headway goals.

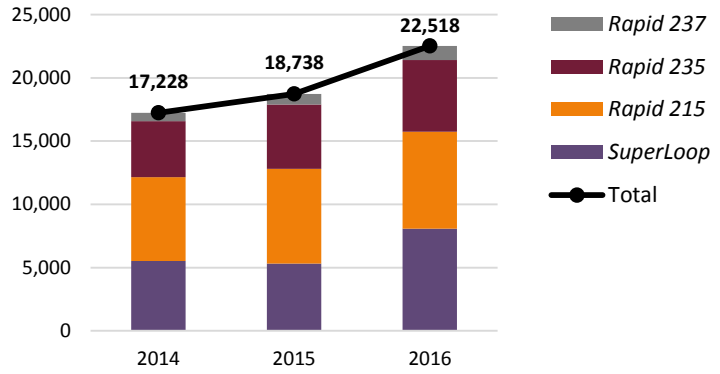
Rapid Transit Performance Results were Positive

An additional 8.1 percent of annual net *TransNet* revenue was reserved for operation of transit as part of new *TransNet*-funded transit construction—currently operated services as known as *Rapid* routes More than $179 million of *TransNet* funds were allocated to support the new *Rapid* transit service that features high-frequency, limited-stop bus service, and upgraded vehicle and station amenities. To date, $46 million was spent with the rest held in reserve for future transit services planned on the Mid-Coast, COASTER, SPRINTER, and Blue Line Trolley. *Rapid* provides faster travel times through the use of transit signal priority, dedicated lanes on certain routes, and limited stops. Three *Rapid* services were implemented—the *SuperLoop Rapid* (Routes 201/202 and 204), Mid-City *Rapid* (Route 215), and I-15 *Rapid* (Routes 235 and 237). An additional South Bay *Rapid* service is planned to launch in 2018.

Transit ridership grew between 2014 and 2016

With the addition of three new *TransNet* funded routes in 2014, *Rapid* Transit weekday boardings increased from 17,228 weekday boardings in 2014 to 22,518 weekday boardings in 2016—an increase of 31 percent. Although the weekday boardings for all MTS fixed-route bus modes declined between 2015 and 2016, ridership for the *TransNet* funded *Rapid* Transit routes continued to grow from 2014 to 2016 as shown in Exhibit 35.

EXHIBIT 35. *RAPID* TRANSIT WEEKDAY BOARDINGS BY ROUTE, 2014 TO 2016



Source: State of the Commute Spreadsheets provided by SANDAG.

Quality of Service: on-time performance was consistently higher than 82 percent

On-time performance for *Rapid* routes remained at more than 82 percent from 2014 to 2016 as shown in Exhibit 36. *SuperLoop Rapid* showed a positive improvement to its weekday average on-time performance from 2014 to 2016, and experienced a 93 percent on-time success rate in 2016. Weekday average on-time performance for the other *Rapid* routes stayed fairly consistent—although the *Rapid* 235 route decreased. According to MTS, on-time performance was impacted by road construction and increased traffic congestion.

EXHIBIT 36. *RAPID* TRANSIT WEEKDAY AVERAGE ON-TIME PERFORMANCE BY ROUTE, 2014 TO 2016

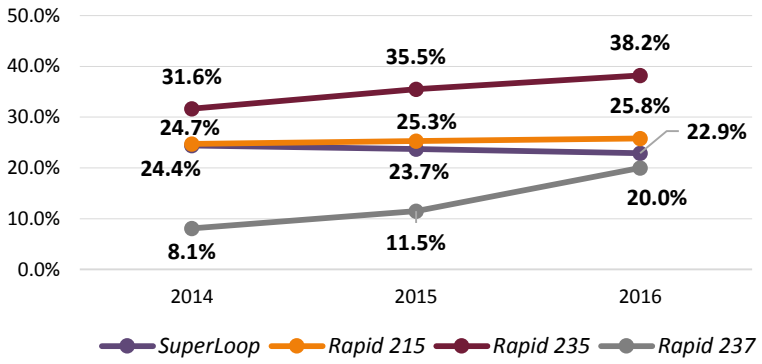
Route	2014	2015	2016	2-Year Percent Change
SuperLoop	87.1%	85.4%	93.4%	7%
Rapid 215	82.4%	82.4%	83.4%	1%
Rapid 235	95.3%	88.8%	82.9%	-13%
Rapid 237	92.1%	87.1%	85.5%	-7%

Source: State of the Commute spreadsheets provided by SANDAG.

Load Performance: seat utilization generally increased

With the exception of the *SuperLoop* service, the weekday average load factor generally increased between 2014 and 2016.[38] For example, *Rapid* 237 weekday average load factor showed a notable improvement, increasing from 8.1 percent in 2014 to 20 percent in 2016—as shown in Exhibit 37. At the same time, the *SuperLoop* weekday average load factor declined from 24.4 percent in 2014 to 22.9 percent in 2016.

EXHIBIT 37. *RAPID* TRANSIT WEEKDAY AVERAGE LOAD FACTOR BY ROUTE, 2014 TO 2016

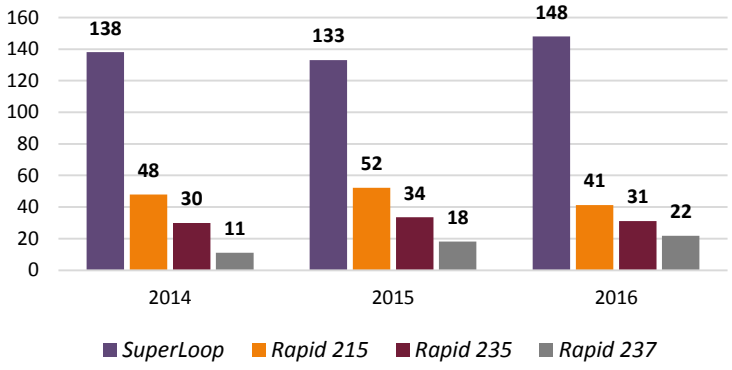


Source: State of the Commute spreadsheets provided by SANDAG.

Productivity: passengers per hour increased by more than 7 percent

As shown in Exhibit 38, the *SuperLoop* service weekday average passengers per hour increased by 7.2 percent over the last three years—yet, individual route performance varied. For instance, for *Rapid* 235, weekday average passengers per hour slightly increased from 30 passengers in 2014 to 31 passengers in 2016.

EXHIBIT 38. *RAPID* TRANSIT WEEKDAY AVERAGE PASSENGERS PER HOUR BY ROUTE, 2014 TO 2016



Source: State of the Commute spreadsheets provided by SANDAG.

Note: *Rapid* Routes 215, 235, and 237 began service in 2014.

[38] According to SANDAG, the drop in seat utilization on the *SuperLoop* service was mostly caused by a switch from regular bus vehicles to articulated bus vehicles that allow more seat capacity and less crowding through a joint mechanism allowing the buses to bend for sharp curves and passengers to walk from end-to-end.

Sustainability: farebox recovery increased between 2015 and 2016

Weekday average farebox recovery ratios for individual *Rapid* services fluctuated between 2015 and 2016 (the years data was available,) but increased for all *Rapid* routes between 3 percent and 66 percent as shown in Exhibit 39. Most of the individual routes remained above the industry standard transit farebox recovery of 20 percent in 2016, yet the *Rapid* 237 route was lower than industry averages for both years. Given that the route was a newer service, the ridership base may be continuing to form.

EXHIBIT 39. *RAPID* TRANSIT WEEKDAY AVERAGE FAREBOX RECOVERY BY ROUTE, 2015 TO 2016

	2015	2016	1-Year Percent Change
SuperLoop	28.9%	35.1%	21%
Rapid 215	30.1%	30.9%	3%
Rapid 235	19.5%	22.7%	16%
Rapid 237	9.9%	16.4%	66%

Source: State of the Commute Spreadsheets provided by SANDAG.

San Diego Outperforms Peers on Most Metrics

To assess San Diego transit performance against peers, we used the peer agencies identified by the Integrated National Transit Database Analysis System based on a variety of service characteristics and urban area characteristics, such as urban population, total vehicle miles, operating budget, population density, and annual delay per traveler. Our review identified 10-peer transit agencies that were used for fixed route peer comparison, although one of the transit agencies did not provide light rail services.[39] As result, we compared light rail to 9 peers.[40] For Hybrid Rail, San Diego is one of only four transit agencies nationwide providing this mode of service.[41]

Generally, San Diego outperformed the combined peer average for each of the three modes reviewed—fixed route bus, light rail, and hybrid rail. For instance, each mode in San Diego reported a higher farebox recovery ratio and passenger trips per revenue mile than the peer averages. Conversely, fixed route bus and light rail modes in San Diego generally experienced a lower number passenger trips per service area capita then peers. This metric measures the number of passenger trips in comparison to the service area population and is a measure of service supply.

Systemwide Fixed route bus outperformed all peer metrics except passenger trips per capita

Overall, San Diego consistently exhibited a higher farebox recovery ratio for fixed route bus then its peers; in 2015, the San Diego systemwide fixed route farebox recovery ratio was 33.3 percent compared to the 18.1 percent 10-peer average as shown in Exhibit 40. This indicates a higher percent of operating costs

[39] Dallas (DART), Denver (RTD), Los Angeles (LACMTA), Minneapolis (Metro Transit), Orange (OCTA), Phoenix (RPTA), Portland (TriMet), Sacramento (RT), Salt Lake (UTA), and Santa Clara (VTA).

[40] Dallas (DART), Denver (RTD), Los Angeles (LACMTA), Minneapolis (Metro Transit), Phoenix (RPTA), Portland (TriMet), Sacramento (RT), Salt Lake (UTA), and Santa Clara (VTA).

[41] Capital Metropolitan Transportation Authority, New Jersey Transit Corporation, and Tri-County Metropolitan Transportation District of Oregon.

were covered by fare revenue in San Diego than in peer regions. Conversely, San Diego systemwide performance related to passenger trips per service area capita was not as strong as peers. For example, the passenger trips per service area capita in 2015 was 9.62 in San Diego, compared to the 14.28 peer average—meaning that service was used less by residents in San Diego than in peer regions.

EXHIBIT 40. SAN DIEGO SYSTEMWIDE FIXED ROUTE BUS PERFORMANCE COMPARED TO 10 NATIONAL PEERS

Year	Agency	Farebox Recovery Ratio	Operating Expense per Revenue Mile	Operating Expense per Passenger Trip	Passenger Trips Per Service Area Capita	Passenger Trips Per Revenue Mile
2013	San Diego	37.1%	$7.55	$3.06	11.40	2.7
	10-Peer Average	20.3%	$9.16	$5.55	14.53	2.0
2014	San Diego	34.9%	$7.45	$3.12	11.40	2.6
	10-Peer Average	18.8%	$9.46	$5.34	14.46	2.0
2015	San Diego	33.3%	$7.40	$3.25	9.62	2.5
	10-Peer Average	18.1%	$9.44	$5.30	14.28	2.0

Source: http://ftis.org/ Urban Integrated National Transit Database.
Key: Green = San Diego performed better than peers; Red = San Diego performance worse than peers.

Light rail comparisons with peers showed similar results

Similarly, the San Diego systemwide light rail generally outperformed the 9-peer average for the metrics reviewed, as shown in Exhibit 41. From 2013 to 2015, San Diego showed improved performance, with light rail farebox recovery ratio increasing from 53.6 percent in 2013 to 56.3 percent in 2015 compared to the 9-peer average that remained fairly constant between 30 and 34 percent. In addition, passenger trips per revenue mile increased from 3.83 in 2013 to 4.66 in 2015, while the 9-peer average declined over the same period from 3.82 in 2013 to 3.71 in 2015. Although, similar to fixed-route bus, the 9-peer average passenger trips per capita performed better than San Diego each year.

EXHIBIT 41. SAN DIEGO SYSTEMWIDE LIGHT RAIL PERFORMANCE COMPARED TO 9 NATIONAL PEERS

Year	Agency	Farebox Recovery Ratio	Operating Expense per Revenue Mile	Operating Expense per Passenger Trip	Passenger Trips Per Service Area Capita	Passenger Trips Per Revenue Mile
2013	San Diego	53.6%	$8.55	$2.23	13.39	3.83
	9-Peer Average	34.6%	$13.12	$3.63	18.83	3.82
2014	San Diego	56.1%	$8.41	$1.80	17.89	4.66
	9-Peer Average	30.5%	$13.74	$3.91	19.20	3.73
2015	San Diego	56.3%	$8.50	$1.82	16.28	4.66
	9-Peer Average	29.9%	$14.06	$4.07	19.48	3.71

Source: http://ftis.org/ Urban Integrated National Transit Database.
Key: Green = San Diego performed better than peers; Red = San Diego performance worse than peers.

NCTD's SPRINTER hybrid rail performance was better than peers for all metrics compared

While the NCTD SPRINTER is one of only four hybrid rail systems in the nation, it outperformed the three-peer average for each metric reviewed as shown in Exhibit 42. Specifically, the NCTD SPRINTER reported a higher number of passenger trips per revenue mile, higher farebox recovery ratio, and lower operating costs per revenue mile and passenger trip. These indicators measure the financial stability, efficiency of service, and service utilization.

EXHIBIT 42. NCTD SPRINTER HYBRID RAIL PERFORMANCE COMPARED TO 3 NATIONAL PEERS

Fiscal Year	Agency	Farebox Recovery Ratio	Operating Expense per Revenue Mile	Operating Expense per Passenger Trip	Passenger Trips Per Service Area Capita	Passenger Trips Per Revenue Mile
2013	San Diego	15.5%	$27.75	$7.36	2.2	3.8
	3-Peer Average	12.8%	$39.92	$14.69	0.4	2.7
2014	San Diego	18.4%	$22.23	$5.89	3.0	3.8
	3-Peer Average	11.7%	$41.64	$15.28	0.4	2.7
2015	San Diego	18.6%	$23.50	$5.83	3.3	4.0
	3-Peer Average	10.4%	$40.12	$14.85	0.4	2.7

Source: http://ftis.org/ Urban Integrated National Transit Database.
Key: Green = San Diego performed better than peers; Red = San Diego performance worse than peers.

Transit Operators Used Route Performance to Identify Opportunities for Improvement and Changes to Routes

In light of declining transit ridership trends, both MTS and NCTD used a combination of public input and transit performance information to assess system productivity, identify opportunities for improvement at the system and route level, and develop strategic plans to improve ridership—actions that were in-line with industry practices.

Specifically, beginning in the fall of 2016, MTS conducted a comprehensive one-year study, called the Transit Optimization Plan, to review market demographics, analyze service trends, and respond to ridership needs and changes. The goal of the study was to identify opportunities for increasing ridership and revenue by reinvesting resources from underutilized services into more productive areas, routes, and segments to retain a high demand. A combination of rider input, system performance data, and ridership patterns were used to develop recommendations presented to decision makers for approval and implementation. Specifically, MTS recently conducted a review of its transit route performance, where routes were ranked based on performance. Under-performing routes were identified and service adjustment recommendations were presented to both the MTS Board and SANDAG for review and approval. On January 28, 2018, the first round of changes were implemented and included a mix of increased service frequency, split routes from one route to two routes, reduced service, changed service routes, and discontinued routes.

Similarly, in FY 2017, NCTD also conducted a review of its routes and made similar recommendations. Specifically, NCTD refined its methodology used to evaluate BREEZE productivity. Rather than using

separate rankings by each category, NCTD now uses a composite score based on the system median of three performance measures and farebox recovery based on the state requirement of 20 percent recovery.[42] Under the new methodology, NCTD identified ten BREEZE routes that performed below standard and five routes that could be modified to improve service efficiency. Proposed changes included discontinuation of certain routes, replacing fixed-routes with FLEX service, eliminating low-performing segments, and enhancing existing service. After approval, service changes were effective in October 2017. Moreover, NCTD is planning a Comprehensive Operations Analysis to analyze current operations aimed at improved connectivity between bus and rail services.

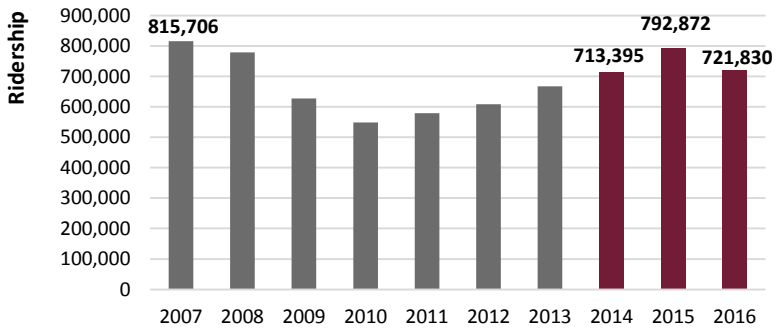
MTS and NCTD's optimization practices were in-line with industry practices identified at other jurisdictions such as Phoenix and Tucson. Both MTS and NCTD should continue efforts to evaluate route performance and identify opportunities to increase ridership and improve service efficiency and quality.

TransNet Goal of Increased Services for Seniors and Persons with Disabilities Was Met as Measured Through Increased Ridership

Another key goal of the *TransNet* Extension Ordinance was to increase transit services for seniors and persons with disabilities. While this goal was not specifically measured by SANDAG or the operators, we found that systemwide paratransit ridership and MTS senior and persons with disabilities non-paratransit ridership grew from approximately 22.2 million riders in 2007 to nearly 23.9 million riders in 2016—an increase of nearly 1.7 million riders or more than 7 percent since *TransNet* began.

Over the past three years, San Diego systemwide paratransit ridership slightly increased from 713,395 riders in 2014 to 721,830 riders in 2016—although ridership peaked in 2015 to 792,872 riders as shown in Exhibit 43. When comparing ridership since 2007 right before *TransNet* started, ridership is down 11.5 percent. Paratransit services have very low farebox recovery and are heavily subsidized from other revenue sources. To ensure only eligible individuals used paratransit services, MTS began in-person eligibility reviews for adherence to the Americans with Disabilities Act guidelines in December 2016. Similarly, NCTD plans to implement a new process that combines online applications, in-person interviews, and evaluations to ensure only eligible individuals are obtaining certifications.

EXHIBIT 43. SAN DIEGO SYSTEMWIDE PARATRANSIT RIDERSHIP, 2007 TO 2016



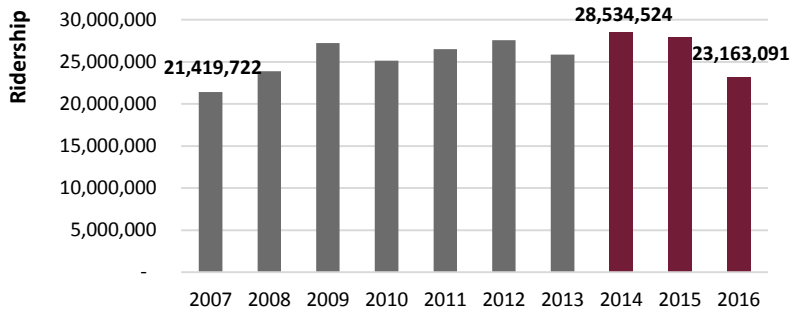
Source: http://ftis.org/ Urban Integrated National Transit Database and MTS and NCTD Performance Reports.

[42] The three performance measures used were passengers per revenue hour, passengers per revenue mile, and cost per passenger.

When just looking at results for non-paratransit seniors and persons with disabilities, we reviewed MTS data because NCTD did not specifically track ridership on COASTER and SPRINTER services in that manner. As shown in Exhibit 44, MTS senior and persons with disabilities ridership decreased over the last three years—although it increased 8 percent since 2007. At the same time, the senior population in San Diego County increased nearly 43 percent between 2007 and 2016 according to U.S. Census Bureau estimates.

According to MTS, as the number of riders using senior/persons with disabilities fare media grew, MTS began enforcing its policy requiring individuals using these passes to show proof of eligibility. Beginning in July 2015, MTS used code compliance officers on board buses to verify a person was using a correctly assigned pass. Further, in an effort to enhance paratransit services, MTS and NCTD are working together to coordinate services and reduce transfers needed between MTS and NCTD's systems in a small geographical area located by the Veterans' Administration in La Jolla. According to NCTD, the coordination's benefits include reduced travel times, cost savings, and lower one-way passenger costs.

EXHIBIT 44. MTS SENIOR AND PERSONS WITH DISABILITIES RIDERSHIP, 2007 TO 2016



Source: Ridership Report provided by MTS and does not include paratransit ridership.

Transit Pass Subsidy for Senior/Disabled Passes May Impact Funds Available for Other Transit Service Improvements and Operations

Part of the 16.5 percent transit funding through *TransNet* is set aside for transit pass subsidies along with funds to support transit operations and improvements—although no specific dollar amount was estimated or budgeted for the pass subsidies.[43] Specifically, the Ordinance stated that remaining funds available—after the 2.5 percent allocated for transportation services for seniors and persons with disabilities and 3.25 percent allocated for the Senior Mini-Grant Program—should be "expended in such sums as necessary to guarantee [...] a monthly regional transit pass for senior (60 years or older) and disabled riders priced at not more than 25 percent of the cost of a regular regional monthly transit pass." Further, the Ordinance requires monthly youth transit passes for students (18 years or under) be priced at half the cost of the regular regional monthly transit pass. The discounts in the *TransNet* ordinance were significantly greater than federal requirements which only require a 50 percent discount for seniors age 65 and older

[43] According to *TransNet* Ordinance Section 4.C.3.

and those with disabilities for off-peak service, not including monthly passes—and does not require youth discounts at all.

According to MTS, it was initially anticipated that *TransNet* would provide MTS with $5.5 million annually to cover the cost of senior/persons with disabilities and youth pass subsidies. Yet, between FY 2007 and FY 2017, the annual fare subsidy amounts reached between $11.6 and $14.4 million—resulting in an additional $6 to $9.4 million of transit operator funding used for these subsidies. As a result, less *TransNet* funds were available to support MTS transit service improvements, including operations and capital improvements.[44]

As shown in Exhibit 45, our review of pass discounts offered by peer transit agencies found that the discounts provided in San Diego for seniors, those with disabilities, and youth monthly passes were generally greater than many offered by peer agencies. Further, most peer agencies classified seniors as ages 65 and older, not ages 60 and older like under *TransNet*.

EXHIBIT 45. SAN DIEGO MONTHLY PASS DISCOUNT COMPARISON WITH 10 PEER AGENCIES

Transit Agency	Senior (Age 65 and Older)/Disabled Monthly Pass Fare Discount	Youth Pass Monthly Fare Discount
San Diego	25% of Full Fare Pass *Seniors classified as Age 60 and Older	50% of Full Fare Pass
Dallas (DART)	50% of Full Fare Pass	50% of Full Fare Pass
Denver (RTD)	50% of Full Fare Pass	50% of Full Fare Pass
Los Angeles (LACMTA)	20-39% of Full Fare Depending on Pass Selected	24% of Full Fare only offered on 30-Day Pass
Minneapolis (Metro Transit) [1]	50% of non-rush hour Single Fare	50% of non-rush hour Single Fare
Orange (OCTA)	32% of Full Fare Pass 86% of Express Fare Pass *Seniors classified as Age 60 and Older	58% of Full Fare Pass
Phoenix (RPTA)	50% of Full Fare Pass	50% of Full Fare Pass
Portland (TriMet)	28% of Full Fare Pass	28% of Full Fare Pass
Sacramento (RT)	50% of Full Fare Pass	No Pass Discount, but Single Fare Discount is 50% of Full Single Fare
Salt Lake (UTA)	50% of Full Fare Pass	75% of Full Fare Pass
Santa Clara (VTA)	38% of Full Fare Pass	38% of Full Fare Pass

Source: Auditor-generated from fares posted on agency websites as of February 9, 2018.

Note: [1] Monthly pass discounts were not posted on website; only single one-way fare discount reported.

Although the Ordinance prioritizes the 16.5 percent of *TransNet* funding allocated for transit services on fare subsidies for seniors and persons with disabilities, the current fare subsidy disparity results in less *TransNet* funds available to expand services—which is another goal of the *TransNet* Ordinance. Thus, SANDAG may want work together with the operators to consider whether to increase *TransNet* transit

[44] NCTD was unable to provide data necessary to assess the impact fare subsidies have on *TransNet* funds available for NCTD operations.

funding to fund the pass subsidy disparity through shifts from other *TransNet* areas—given limitations of the Ordinance; adjust the discount offered to seniors, persons with disabilities, and youth riders; or find alternate funding for the subsidies or transit service expansions.

TransNet Limitations on Operating Cost Increases May Be too Restrictive

To maintain eligibility to receive *TransNet* funds under the Ordinance, MTS and NCTD must "limit the increase in its total operating cost per revenue vehicle hour for bus services and revenue vehicle mile for rail services from one fiscal year to the next to "no more than the increase in the Consumer Price Index for San Diego County over the same period." While the *TransNet* Extension Ordinance also contains provisions for unusual circumstances in any given year to calculate the requirement over a three-year average or to exclude certain cost increases including, but not limited to, related to fuel, insurance, or new legal mandates, the SANDAG Board may want to revisit this section of the Ordinance to be more relevant with the economic realities faced by the operators.

Specifically, over the last few years, changes in the Consumer Price Index (CPI) for San Diego was historically low making it challenging to ensure changes in operating costs remained in alignment with the Ordinance. For instance, between FY 2014 and FY 2015, the CPI *decreased* 6.4 percent and *decreased* another 3.8 percent the following year between FY 2015 and FY 2016—resulting in a zero percent target increase for bus operating cost per revenue vehicle hour and rail operating cost per revenue vehicle mile for both years. Even a modest one-percent increase in MTS rail operating costs was initially considered noncompliant with the Ordinance.

Although MTS met the target for its bus operations in FY 2015 and FY 2016, it did not meet the target for its rail operations. Specifically, rail operating cost per revenue vehicle mile increased by a modest 1.2 percent from FY 2014 to FY 2015 and 2.4 percent from FY 2015 to FY 2016. While these increases were minimal, MTS was initially unable to comply with the *TransNet*-prescribed annual CPI target and the three-year average operating cost calculation for several reasons. First, in 2015, electricity costs increased by $1.7 million (16 percent) when compared to 2014. Then, in 2016, poor performance of the CalPERS pension fund investments where MTS staff retirement funds were held resulted in an increased pension expense of approximately $700,000 between FY 2015 and FY 2016. Finally, there was a swing of $400,000 in non-cash transactions from FY 2015 to FY 2016. When these items were excluded from operating expense, MTS complied with the zero percent target for both years.

Similarly, NCTD was challenged to meet the CPI requirement for its rail operation in FY 2015. Specifically, the operating cost per revenue vehicle mile increased by 4.3 percent between FY 2014 and FY 2015 with NCTD asserting that annual contract escalations guaranteed in the COASTER and SPRINTER rail contracts were the primary driver for the cost increases. To help control rail operating expenses and achieve reasonable price protection, NCTD made a decision to negotiate long-term contracts with service providers. While long-term contracts are beneficial when changes to CPI increase each year, they are counterproductive when the CPI changes remain unusually low or deflation occurs. When the contractual cost increases were excluded, NCTD met the zero percent target.

Thus, while the *TransNet* Extension Ordinance language limits annual service provider operating cost increases separately by bus mode and rail mode, this requirement can be challenging to meet in years of deflation or unusually low inflationary changes. Thus, SANDAG should consider working with transit operators to revise the *TransNet* Extension Ordinance requirement to provide some flexibility when justification for increased operating expenses is required. For instance, SANDAG may want to adjust the *TransNet* Extension Ordinance language to allow for a wider variance in cost increases, set a threshold for a not-to-exceed limit, consider expanding the target by a specified percent in years when CPI has declined, allow cost exclusions that can be supported, or modify *TransNet* Extension Ordinance language to apply the cost thresholds at the operator level rather than by individual mode.

Recommendations

To further enhance transit operations and improve effectiveness of transit service, the ITOC should request the SANDAG Board to direct staff and encourage the transit operators to perform the following:

13. Continue to analyze major transit commute routes and services and report on whether commute times have improved or should be improved.
14. Regularly track and report on *TransNet* goals to increase services to seniors and persons with disabilities.
15. Work together with the region's transit operators to analyze options offsetting the impact subsidy disparities have on available funds for expanding transit services, such as funding the pass subsidy disparity for seniors and persons with disabilities from other *TransNet* areas—as allowed by the *TransNet* Extension Ordinance—adjusting the discount offered for senior/disabled and youth riders, determining whether disparities can be funded through other sources, or maintaining existing funding and process.
16. Collaborate with the operators to revisit the operating cost ceiling tied to changes in the Consumer Price Index as specified in the *TransNet* Extension Ordinance so that operators have some flexibility with reasonable cost increases while still maintaining the intent of *TransNet* to provide some assurance of the reasonableness of those cost increases. This could include allowing for a wider variance in cost increases, setting a threshold for a not-to-exceed limit, expanding the target by a specified percent in years when changes to the Consumer Price Index decline, or allowing cost exclusions that can be supported, or modify *TransNet* Extension Ordinance language to apply the cost thresholds at the operator level rather than by individual mode.

Chapter 6: Bike and Pedestrian Modes of Transportation

The 2004 *TransNet* Extension Ordinance set aside two percent of total annual *TransNet* revenues, with approximately $46 million spent to date, to fund bikeway facilities and connectivity improvements, pedestrian and walkable community projects, bicycle and pedestrian safety projects and programs, and traffic calming projects. In addition to these programs funded on a competitive grant basis, SANDAG created the Bike Early Action Program (EAP) in 2013 and committed $200 million in *TransNet* funds to implement high-priority regional bikeway projects through 2024.

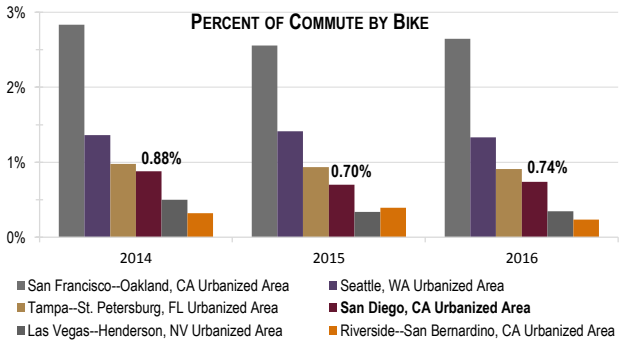
Key Results

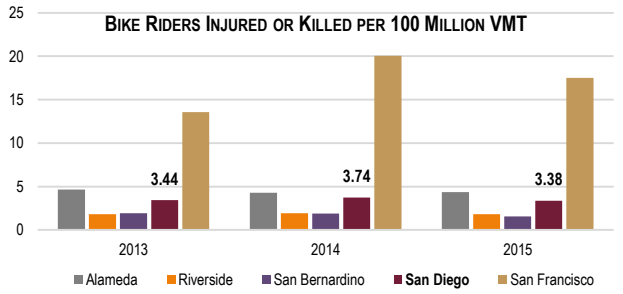
Bike and pedestrian modes of transportation increased since the start of *TransNet,* but have fluctuated over the past three years with a downward trend between 2014 and 2016 for both bike ridership and bike commute share.

- For the past three years, total commutes across all modes increased 4 percent, yet bike ridership decreased 13 percent. This is not unlike trends observed across the nation. In contrast, since the start of *TransNet* in 2008, average annual bike commuters increased by 35 percent from approximately 7,800 riders to more than 10,500 riders in 2016.
- Bike rider injuries and fatalities modestly decreased 2 percent from 2013 to 2015, but increased 21 percent since the start of *TransNet*.
- Pedestrian injuries and fatalities per 100 million vehicle miles of travel have grown 18 percent since the start of *TransNet* and 4 percent from 2013 to 2015.
- Bike EAP activities generally follow leading project management practices and efforts have ramped up recently, but some bike projects show delay.

Recommendation Highlights

- Continue efforts to establish baseline data for bike and pedestrian volume to identify trends and set targets.
- Finalizing and implementing the in-progress Regional Bikeway Program Management Plan.
- Use Dashboard data that currently tracks frequent causes of delays during the design and environmental phases of bike projects, to summarize lessons learned, identify and mitigate future preventable occurrences, and improve scheduled delivery of the remaining projects.





Status of 37 Bike EAP Projects

Chapter Introduction

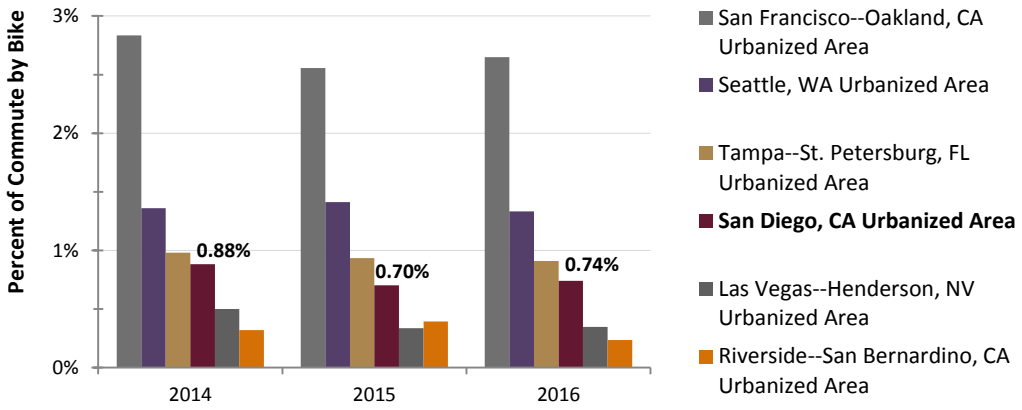
Since 2008, the *TransNet* Program supported alternate modes of transportation through a variety of activities including transit, bike and pedestrian initiatives, and technology support systems as part of specific *TransNet* programs for transit, Local Street and Road, and grant allocations from the Active Transportation, Senior-Mini, and Smart Growth Incentive Programs. For the *TransNet* funding set-aside specifically for bike and pedestrian projects, SANDAG allocated $48 million since the passage of the *TransNet* Extension Ordinance.

Bike Ridership and its Share of Commute Increased since the Start of *TransNet,* but Decreased over past Three Years

Although SANDAG did not track and report on bike ridership statistics, U.S. Census American Community Survey data revealed the overall average of annual bike commuters grew since the start of *TransNet* from approximately 8,000 to 10,500 over the period from 2006 to 2016—an increase of 35 percent. While the percent share of the commute for bike riders slightly increased over that same timeframe, recent results between 2014 and 2016 showed a decrease in bike share of commute.

Specifically, data revealed that the percent share of bike commuters decreased by 0.14 percentage points from 0.88 percent in 2014 to 0.74 percent in 2016 as indicated in Exhibit 46.[45] When comparing the San Diego region with five comparison areas, we found that San Diego was near the lower end in terms of commute percentage.

EXHIBIT 46. PERCENT OF COMMUTE BY BIKE IN COMPARISON AREAS, 2014 TO 2016



Source: Auditor-generated based on U.S. Census American Community Survey estimates.

In terms of number of commuters, there were an estimated 1.4 million total commuters in San Diego in 2016, of which, approximately 10,500 were estimated to be bike commuters. Comparing 2014 to 2016, there was a decrease in bike commuters by about 13 percent, down from a high of approximately 12,000 in 2014.

[45] One limitation of the U.S. Census American Community Survey data source is that it is only collected for commute and, thus, does not provide a full understanding of the importance of bike pathways for other trips such as shopping, visiting friends, and other non-commute related travel.

Limited Data Exists to Establish Ridership Baselines for Bike and Pedestrian Performance

While the U.S. Census American Community Survey data provides a foundation for assessing the region's modal trends, one limitation of the data is that it is only collected for commute and does not provide a full understanding of how important bike pathways are for other trips such as shopping, visiting friends, and other non-commute related travel. Further, the data on commute is limited to primary mode, so biking to transit may be captured as transit or biking one day a week and carpooling four days a week may be captured as carpool.

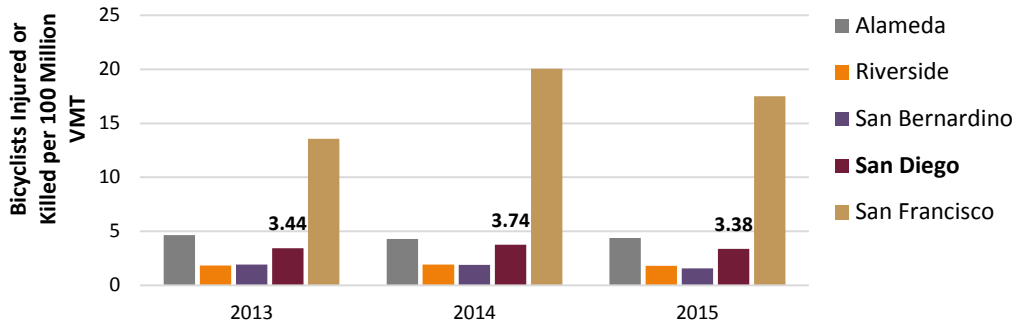
According to SANDAG, it started efforts in 2017 to understand and validate the data from local bike and pedestrian "Eco" counters to establish a volume baseline—although the data cannot yet be relied upon. Part of the validation process is to determine how to gauge the accuracy of the counters, including whether counters are not functioning at time resulting in inconsistent or incomplete data collected. We analyzed counter data between February 2012 and July 2017 and found many fluctuations with counts ranging wildly between months likely due to counter malfunctions. To properly monitor the counters and inspect them when there are suspected malfunctions, resources are needed to quickly response through field checks and maintenance. According to SANDAG staff, it dedicated staff in early 2018 to monitor a specific subset of 12 counters and repairs any issue within week of being identified. As such, SANDAG should continue efforts to establish baseline data for bike and pedestrian volume as an important first step to identify trends and set targets as well as formalize analysis of the data.

Bike and Pedestrian Safety Was Better over last Three Years, but Worse since Start of *TransNet*

Like ridership data, safety performance statistics were also not tracked or reported by SANDAG. Based on data from the California Highway Patrol's (CHP) Statewide Integrated Traffic Records System (SWITRS) database, the rate of collisions involving a bicyclist decreased over the last three years by 1.7 percent. This was different than the trend over the last ten years where collisions resulting in bike rider injuries and fatalities per 100 million vehicle miles of travel increased over the period.

As shown in Exhibit 47, collisions resulting in bike rider injuries and fatalities per 100 million vehicle miles of travel in San Diego slightly decreased by 1.7 percent from a rate of 3.44 in 2013 to 3.38 in 2015. All comparison areas, except for San Francisco, also experienced a decrease over the period. Conversely, between 2005 and 2015, there was an increase of approximately 21 percent in collisions resulting in bike rider injuries and fatalities.

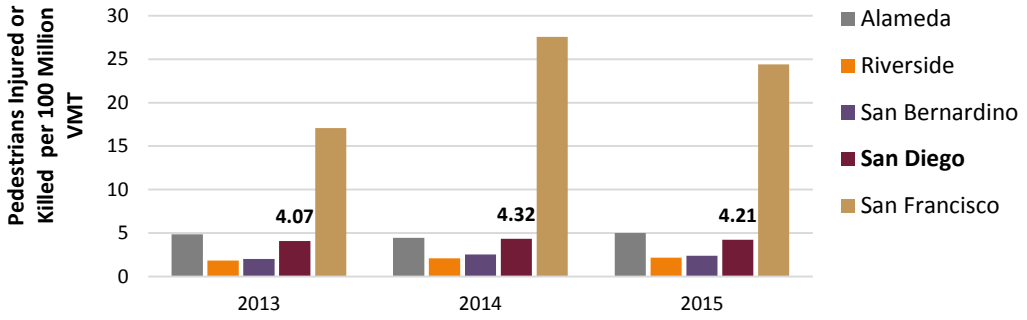
EXHIBIT 47. RATE OF BICYCLISTS INJURED OR KILLED IN CALIFORNIA COMPARISON COUNTIES, 2013 TO 2015



Source: California Highway Patrol Statewide Integrated Traffic Records System (SWITRS).
Note: Severity levels 1 through 4 were included in exhibit—severity 1 = fatality; severity 2 = serious injury; severity 3 = visible injury; and severity 4 = complaint of pain.

By contrast, for pedestrian injuries and fatalities, all comparison areas had an increase from 2013 to 2015. However, San Diego County had one of the smallest increases at 4 percent increasing from a rate of 4.07 injuries or fatalities per 100 million vehicle miles of travel to 4.21, as shown in Exhibit 48.

EXHIBIT 48. RATE OF PEDESTRIANS INJURED OR KILLED IN CALIFORNIA COMPARISON COUNTIES, 2013 TO 2015



Source: California Highway Patrol Statewide Integrated Traffic Records System (SWITRS).
Note: Severity levels 1 through 4 were included in exhibit—severity 1 = fatality; severity 2 = serious injury, Severity 3 = visible injury; and severity 4 = complaint of pain.

Yet, these results were different than the trend since 2005 when *TransNet* began where San Diego County experienced an 18 percent increase in pedestrian injuries and fatalities per 100 million vehicle miles of travel between 2005 and 2015—the largest among comparison areas.

Regional Bike EAP Project Management Methods Aligned with Leading Practices

In 2013, SANDAG implemented an Early Action Program (EAP) for bike projects in conjunction with the Riding to 2050: The San Diego Regional Bike Plan adopted in May 2010. Specifically, the SANDAG Board designated approximately $200 million for specific EAP projects with SANDAG planning to fund projects over a 10-year span *TransNet* revenues and additional amounts from state and local resources. The Bike EAP consisted of 37 projects totaling 77 miles of new bikeways throughout the county.

With a responsibility for implementing the EAP projects from project design through construction, SANDAG seemed to generally follow leading practices for managing the Bike EAP projects consistently and ensuring

appropriate documentation was retained to support key milestones, schedule, budget, and management decisions. Our cursory review of files found typical documentation in place such as independent cost estimates, budgets and schedules, inspections, and project team meeting minutes. Like other EAP projects, the *TransNet* Dashboard tracked schedule, budget, and expenditure information for the Bike EAP against original baselines and budgets. Although SANDAG was developing a formal program monitoring and management plan expected to have been completed by 2015, it is still in draft form as of January 2018. Thus, SANDAG should quickly finish and implement the plan for additional structure around the Bike EAP program.

Bike EAP Activities Recently Ramped up, But Some Projects Showed Delays

With the Bike EAP projects started in late 2013, spending was slow in the first three years with only 4 of the 37 projects open to the public.[46] According to SANDAG, there was a slow start due to the newness of the program and the learning curve for stakeholders to understand the benefit of the projects to gain momentum. However, spending recently ramped up during FY 2017. Additionally, SANDAG reported receiving $38.7 million of state funds to pay for construction of the bike early action program projects. While the pace of spending increased, there were schedule delays that most commonly occurred in the design and environmental phases. This poses a risk to the on-time completion of the remaining projects as the majority of projects (21 out of 37) were still in environmental and design phases.[47]

Bike expenditures ramped up from FY 2014 to FY 2017

Annual bike expenditures have increased each year since the start of the Bike EAP program in FY 2014, as shown in Exhibit 49. If future annual expenditures keep pace with FY 2017 spending, it would take approximately eight years to spend the remaining $167 million allocated. Further, according to the Dashboard, all 28 current capital improvement projects budgets are within 10 percent of actual costs on work completed.

EXHIBIT 49. FUNDS EXPENDED PER FISCAL YEAR ON BIKE EAP PROJECTS

Fiscal Year	FY 2014	FY 2015	FY 2016	FY 2017	Total Expenditures over First Four Years
Expenditure per Year	$4,425,000	$3,547,000	$6,703,000	$19,201,000	**$33,876,000**

Source: SANDAG budgets, FY 2015 to FY 2017.

Many Bike EAP projects were still in the design and environmental phases, but showed delays

Of the 37 Bike EAP projects envisioned, 4 projects were completed—although another 24 projects were in-progress as depicted in Exhibit 50. In the original Bike EAP scenario, there were 17 projects listed as "high-priority urban bikeway." All but one of these priority bikeway projects have been started as of January 2018.

[46] SANDAG's major project milestones include preliminary engineering, environmental, final design, local reviews and approvals, bidding, and construction.

[47] Of the original 38 projects in the $200 million scenario, two were programmed under the same CIP 1223056 (San Ysidro to Imperial Beach – Bayshore Bikeway Connection 13 and 21), so there are currently 37 total projects.

EXHIBIT 50. STATUS OF BIKE EAP PROJECTS, AS OF JANUARY 2018

Source: Dashboard milestones and SANDAG crosswalk of Bike EAP to capital improvement budget.

Of the 24 active projects that have not yet been completed, five projects were within 10 percent of schedule baselines as of 7/30/2017. More importantly, when looking at the Dashboard, most of the projects were showing some delays with 10 projects in a yellow caution status and 9 projects in a red status indicating a schedule variance from the baseline of more than 20 percent. Summary data from the Dashboard showed that most delays were noted in the design phase, followed closely by the environmental phase. Reasons for the delays included redesigns, obtaining permits, right-of-way problems, funding issues, and public involvement challenges. For example, on the Bayshore Bikeway: 8B Main Street to Palomar project, there were challenges establishing a right of entry agreement with an adjacent land owner in order to perform Geotech borings.[48] SANDAG used the Dashboard to identify and understand the causes for project delays, in addition to elevating those issues to executive levels for resolution. Those results should be documented in a formal lesson learned format to be used to mitigate any similar delays on future projects.

Recommendations

To improve Bike EAP project delivery, the ITOC should request the SANDAG Board to direct staff to perform the following:

17. Continue efforts to establish baseline data for bike and pedestrian volume to identify trends and set targets.
18. Improve project management practices and project delivery for the Bike Early Action Program projects by implementing the following:
    a. Finalizing and implementing the in-progress Regional Bikeway Program Management Plan.
    b. Using Dashboard data that currently tracks frequent causes of delays during the design and environmental phases of bike projects, to summarize lessons learned, identify and mitigate future preventable occurrences, and improve scheduled delivery of the remaining projects.

[48] Geotechnical borings help identify the condition of soil and rock to design foundation-type structures.

Chapter 7: Environmental Mitigation Program

The 2004 *TransNet* Extension Ordinance established the $850 million Environmental Mitigation Program to fund:

- ✓ Mitigation of the direct environmental impacts related to *TransNet* capital construction projects, and
- ✓ Regional conservation of habitat and endangered species.

KEY RESULTS

With nearly $222 million spent to-date on *TransNet's* Environmental Mitigation Program (EMP), much has been accomplished—more than half of the mitigation projects outlined in the Ordinance have mitigation activities underway or are being restored.

- EMP processes and agreements were successful and significant progress was made—although much work remains as efforts shift towards restoration efforts.
- Restoration costs are expected to exceed estimates mostly because the program is restoring more wetlands that were acquired as agreed by the California Coastal Commission for the North Coast Corridor.
- $200 million local mitigation bank, set aside by the Ordinance to mitigate environmental impacts of local street and roads projects, has been underutilized due to various factors including reduced local development during the recession, requirements for developers to pay for impact, improvements did not affect biological resources, or lack of awareness of the available funds.
- Habitat conservation performance structure was in place, but communicating complex results to the public remains a challenge.

RECOMMENDATION HIGHLIGHTS

- Continue efforts to establish a new Memorandum of Agreement with Caltrans, California Department of Fish and Game, and the U.S. Fish and Wildlife Service to replace current one expiring before funding expires in June 2018.
- Review and update cost estimates in light of higher cost than anticipated with restoring coastal wetlands.
- Consider the most efficient use of available funding and possible adjustments to focus on higher priority activities and projects given the reduced revenue forecasts and increased cost estimates.
- Make changes to marketing efforts for the local streets and road mitigation bank as well as consider revisions to eligibility criteria or utilize funding for other EMP priorities.
- Measure progress in meeting EMP goals and develop metrics to measure overall health of the preserve against baselines established in regional conservation plans as well as report those performance results to the public.

Ordinance Area	EMP Activity	Original *TransNet* Revenue Estimate (2005)	Updated *TransNet* Revenue Estimate (2017)	Expenses (Through 9/15/2017)
Regional Transportation Project Mitigation	Land Acquisitions	$188.1	$173.2	$102.3
	Habitat Restoration	$225.2	$207.3	$47.8
	Habitat Management	$15.2	$14.0	$2.1
	Administration Support	$21.5	$19.8	$7.0
Local Transportation Project Mitigation		$200.0	$184.1	$12.8
Subtotal		$650.0	$598.4	$172.0
Regional Habitat Conservation		$200.0	$184.1	$49.8
Total		**$850.0**	**$782.5**	**$221.8**

EMP PERFORMANCE REPORTING CYCLE

Chapter Introduction

Part of the *TransNet* Extension Ordinance called for $850 million to fund ***mitigation*** of the direct environmental impacts related to *TransNet* capital construction projects and regional ***conservation*** of habitat and endangered species. In essence, the Environmental Mitigation Program (EMP) focused on land acquisitions, restoration, management, and monitoring. To date, SANDAG spent a total of $222 million on this program—$159.2 million for regional mitigation through the acquisition of land, restoration of that land as needed, and management and monitoring of the habitat on those acquired lands as well as another $12.8 million for local land acquisitions and $49.8 million for regional habitat conservation activities.

EMP Processes were Effective

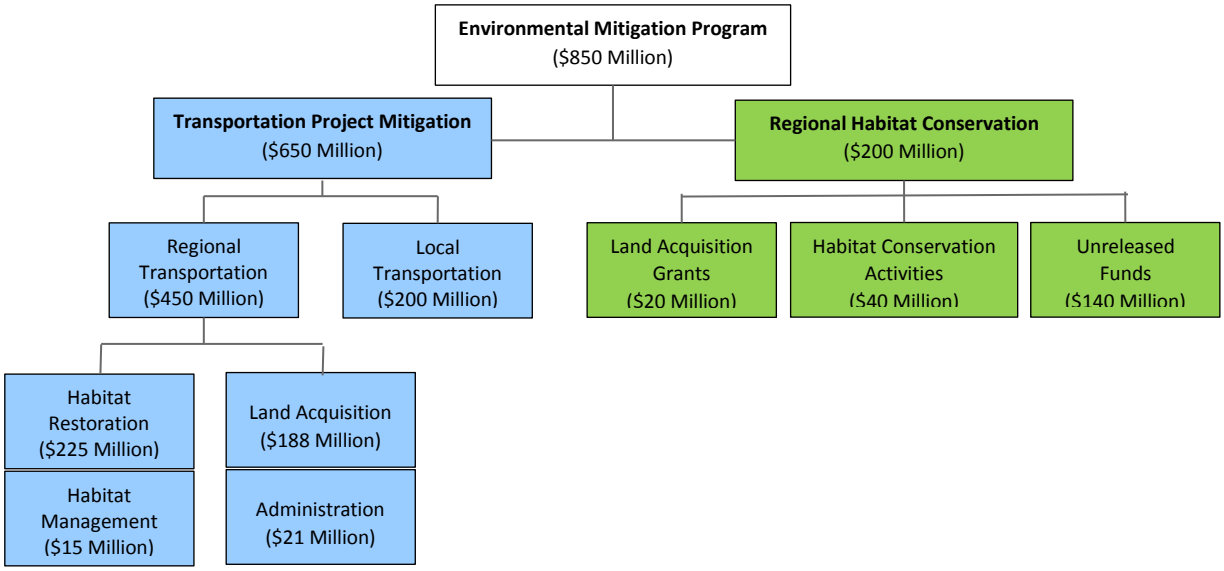
The EMP's program administration realized several accomplishments over the last three years and the last decade in general. For instance, SANDAG worked closely with Caltrans, California Department of Fish and Game, and the U.S. Fish and Wildlife Service to implement a Memorandum of Agreement (MOA) outlining a plan to acquire and mitigate habitats. Through that agreement, the SANDAG Board voted to finance $440 million (of the $650 million estimated revenues for mitigation) over an eleven-year period (2008 through 2018) for direct mitigation of regional and local transportation projects and $44 million (of the $200 million conservation estimate) for regional habitat conservation efforts. This MOA is set to expire in March 2018, and SANDAG is working with its partners to have a new MOA in place before funding associated with the current MOA ends by the end of FY 2018. If a new agreement is not reached and formalized, future funding related to habitat conservation would be disrupted.

To assist with issues involved in implementing both the mitigation and conservation components of the EMP, the SANDAG Board established the Environmental Mitigation Program Working Group with representatives from the City of San Diego, County of San Diego, four SANDAG sub-regions, state and federal wildlife agencies, and several organizations representing various disciplines and interests. Considerable cooperation and coordination is required among SANDAG, Caltrans, U.S. Fish and Wildlife Services, and the California Department of Fish and Game to successfully align the region's mitigation needs with available conservation opportunities. The EMP Working Group continued to meet regularly over the last three years and provided recommendations to the SANDAG Regional Planning Committee on implementation of the EMP.

Significant Progress Was Made, but Much Work Remains as Efforts Shift Towards Restoration Activities

While $850 million was estimated for the entire EMP over the 40-year *TransNet* Program, the first of two major components of the EMP relates to $650 million in funding earmarked for mitigation activities necessary to mitigate the direct impacts caused by transportation improvement projects. As shown in Exhibit 51, these activities are further broken down into regional transportation mitigation ($450 million) and local transportation mitigation ($200 million). Of the $650 million set aside for the 40-year period, the SANDAG Board allocated $440 million over an eleven-year period (2008 through 2018). In 2017, the original estimate of $650 million was revised downward to approximately $598 million in anticipated funding for transportation project mitigation activities.

EXHIBIT 51. ESTIMATED REVENUE IN 2002 DOLLARS FOR KEY EMP ACTIVITIES



Source: 2004 *TransNet* Extension Ordinance.
Note: Figures may not sum to total due to rounding.

In total, $502 million of the original *TransNet* $850 million estimate has been allocated during the first decade of the program—$438 million (of the $650 million mitigation revenue estimate) for direct mitigation and $64 million (of the $200 million conservation revenue estimate) for regional habitat conservation efforts.[49] Approximately $212 million is left for mitigation efforts and $136 million for conservation efforts.

As of September 15, 2017, nearly $222 million of the original $850 million estimate, or 26 percent, was expended during the first ten years of the program to fund key mitigation activities including land acquisition, habitat restoration, and parcel-specific land management activities as well as habitat conservation activities as shown in Exhibit 52. Additionally, of the 44 project mitigation projects envisioned by the Ordinance, more than half of the projects (23) have had mitigation activities commenced, ranging from mitigation sites secured to being fully permitted and restoration underway.

EXHIBIT 52. EMP REVENUE ESTIMATE AND ACTUAL EXPENDITURES, AS OF 9/30/2017

Ordinance Area	EMP Activity	Original *TransNet* Revenue Estimate (2005)	Updated *TransNet* Revenue Estimate (2017)	Expenditures (As of 9/15/2017)
Regional Transportation Project Mitigation	Land Acquisitions	$188.1	$173.2	$102.3
	Habitat Restoration	$225.2	$207.3	$47.8
	Habitat Management	$15.2	$14.0	$2.1
	Administration Support	$21.5	$19.8	$7.0
Local Transportation Project Mitigation		$200.0	$184.1	$12.8
Subtotal		$650.0	$598.4	$172.0
Regional Habitat Conservation		$200.0	$184.1	$49.8
Total		**$850.0**	**$782.5**	**$221.8**

Source: 2004 *TransNet* Extension Ordinance, One Solution financial system extract, and internal EMP spreadsheets.

[49] EMP estimates are in 2002 dollars.

Over the past three years, efforts related to land acquisitions for project mitigation was nearing completion. In fact, only about 7 percent of total acres were acquired in the last three years meaning that most of the activity to acquire 3,500 acres occurred before FY 2015 as shown in Exhibit 53.

EXHIBIT 53. MITIGATION ACRES ACQUIRED

Timeframe	Acres
Total Mitigation Acres Acquired as of 9/17/2017	3,502
Total Mitigation Acres Acquired before FY 2015	3,266
Total Mitigation Acres Acquired in the last three years	236

Source: Internal EMP spreadsheets.

As such, efforts related to transportation project mitigation over the last three years have shifted to restoration activities of wetlands, particularly related lagoon restoration efforts identified in the North Coast Corridor Public Works Plan. In fact, through September 15, 2017, the EMP program spent about $48 million on restoration activities, or about 21 percent of the original restoration estimate of $225 million restoring the properties that require restoration. During the last three years, approximately $37 million has been spent—or 77 percent of the total $48 million was spent showing ramped up restoration activity.

EXHIBIT 54. RESTORATION EXPENSES

Timeframe	Expenses
Total Restoration expenditures as of 9/17/2017	$48 million
Total Restoration expenditures before FY 2015	$11 million
Total Restoration expenditures in the last three years	$37 million

Source: One Solution Financial System Extract and internal EMP spreadsheets.

Financing Needs to Be Revisited as Restoration Costs are expected to Exceed Estimates

In 2017, SANDAG updated its *TransNet* revenue forecast to reflect several billion less in expected revenue over the 40-year program. As of September 2017, the revised estimate for EMP was $782.5 million (2017 dollars), a $67.5 million reduction from the original estimate.

In addition to less revenues anticipated, SANDAG estimated higher restoration costs. While SANDAG has only spent a small percentage so far on restoration activities, restoration costs are anticipated to far exceed the original restoration estimates of $225 million. In fact, in addition to the $48 million spent so far on restoration costs, SANDAG estimates that future restoration costs could be at least an additional $213 million—largely related to North Coast Corridor lagoon restoration expenses. Given the fact that the original *TransNet* revenue estimate was revised downward to $207 million earmarked for restoration activities, it is not clear how the additional restoration activities will be funded. According to SANDAG, cost savings from other parts of the EMP program (such as the saving from coastal wetland acquisitions) could

make up the difference, but details are not yet available until the restoration is completed and true cost is known.

The increase in restoration costs was mostly attributed to the fact that although many fewer acres of coastal wetlands were acquired than anticipated, the program is restoring additional wetland acres beyond those that were actually acquired—67 acres were acquired with EMP funds, but more than 400 acres of coastal wetlands are required to be restored. The increase in the number of acres to restore is a result of the additional efforts required by the coastal wetland mitigation agreement with the California Coastal Commission. A significant component of restoration activities and funding involves the North Coast Corridor Public Works Plan/Transportation Resource Enhancement Program that was jointly developed by SANDAG and Caltrans. This plan included a package of highway, rail, transit, bike/pedestrian, environmental and coastal access improvements along San Diego's North Coast Corridor—a 27-mile stretch from La Jolla to Oceanside.[50]

With less revenues projected and habitat restoration costs more than expected, the EMP may not have sufficient money for mitigation planned under the EMP. Thus, EMP cost estimates should be reevaluated as the first decade of the program concludes. For example, during the first ten years of mitigation efforts, far more upland acres were acquired than anticipated and many fewer (more expensive) wetland acres, resulting in acquisition cost savings. Additional acquisition cost savings resulted from purchasing land at lower prices due to the recession. However, anticipated costs associated with restoring the acquired land is expected to be much higher than original restoration estimates (based on 2002 dollars) largely due to the fact that the cost to restore coastal wetlands is much higher than originally envisioned. According to SANDAG, there is an effort underway to review and update the original EMP estimates and determine whether cost savings realized through the acquisition process could be leveraged to provide additional funding for restoration efforts.

Economic Benefit Methodology Approved, But Revisions May Impact Future Activities

To release, or allocate, funding related to the $200 million set aside for regional habitat conservation, cost savings—known as "economic benefit"—must be achieved on the regional and local transportation improvement projects. To release some of the $200 million during the first ten years of the program, SANDAG developed a methodology to estimate how much cost savings had already been achieved via the regional transportation improvement projects. Based on the calculation methodology, the SANDAG Board approved $64 million in economic benefit to be allocated for habitat conservation efforts as follows:

- $44 million ($4 million per year from FY 2008 through FY 2018) for habitat conservation activities[51]
- $20 million for specific land acquisition grant

[50] Corridor projects include lagoon enhancements, habitat restoration, and coastal access improvements at the San Elijo Lagoon and/or Buena Vista Lagoon, San Dieguito Lagoon, Laser, Dean Family Trust, Batiquitos Bluffs and La Costa, Hallmark, and Deer Canyon.

[51] These efforts are accomplished through a competitive Land Management Grant Program funding regional biological monitoring efforts and directly assisting land managers with the necessary tools and resources to aid in their efforts.

SANDAG administered these activities through direct contracts as well as through individual competitive land management and acquisition grants. Currently, SANDAG is conducting a review to quantify how much economic benefit was actually achieved compared against what was released and identify funding deficits or surpluses. As SANDAG revisits its *TransNet* revenue forecast, SANDAG is also reviewing the previously approved methodology, adopted by the SANDAG Board in 2013, to calculate economic benefit to ensure the calculation accurately represents the cost savings that have been achieved.

Local Project Mitigation Bank was Underutilized

In addition to regional mitigation efforts, *TransNet* set aside an estimated $200 million for local mitigation activities related to local transportation improvement projects—which, per the Ordinance, was not budgeted at a specific project level. Rather, the Ordinance simply directed that funding be utilized for direct mitigation costs of local transportation projects consistent with the Regional Transportation Plan as part of the Environmental Mitigation Program. As of September 15, 2017, portions of seven properties (approximately 370 acres in total) were purchased for $12.8 million and set aside in a local transportation mitigation bank—of which 56 acres have been assigned to the following projects:

- 11.7 acres—San Marcos Redevelopment area
- 2.1 acres—San Diego Friars Road/SR-163
- 17.4 acres—Merge 56
- 3.8 acres—Otay Truck Route IV
- 21 acres—El Camino Real Widening

Yet, there was little utilization of these funds over the past three years or since the start of *TransNet*. According to SANDAG, there has not been much interest or demand for these local mitigation funds because local entities have not focused on projects due to the following factors:

- Local jurisdictions have not pursued new streets and roads development due to the economic recession.
- New local street and road projects that impact biological resources are rare.
- Local street and road mitigation is typically the responsibility of the developer as a condition of new development and/or paid for by developer impacts fees.
- Local jurisdictions may not be aware that these funds are available for local mitigation.

SANDAG stated that they pursued an increased marketing effort, including reaching out to public works and planning directors in the region via SANDAG's monthly working group meetings to educate and encourage the local jurisdictions to take advantage of this available funding source. While SANDAG should continue these efforts, it could also look to repurposing these funds for other local mitigation needs—as allowed under the Ordinance.

Solid Habitat Conservation Performance Structure was in Place, But Need to Synthesize and Report on Results

In addition to the conservation and restoration of land for mitigation, the EMP provides funding for regional monitoring to assure that the region's habitats and species do not decline and become included on endangered lists. While $49.8 million was spent on these efforts, no easily understood metrics of success have yet been established.

However, there was a Management Strategic Plan (MSP) implemented for habitat conservation activities, including linkages to the funding, goals, objectives, and actions. Nearly all stakeholders interviewed remarked at the success of the plan. The purpose of the MSP managed by the San Diego Management and Monitoring Program contracted by SANDAG is to gain an understanding of the health of the regional preserve system and make strategic funding decisions while protecting the acquisition investment. During the first 10 years of the program, SANDAG worked towards developing an information cycle that identifies conservation priorities, implements conservation goals, and tracks progress and links to funding processes, as shown in Exhibit 55.

EXHIBIT 55. EMP PERFORMANCE REPORTING CYCLE

Source: SANDAG and San Diego Management and Monitoring Program (SDMMP).
Note: MSP is the Management Strategic Plan.

The detailed MSP identified specific goals and objectives, prioritized activities, facilitated decision-making, and linked the $4 million annual funding allocation with performance toward meeting the goals against three primary target groups—species, vegetation community, and threats. Each target group had overall goals, objectives, actions, and success criteria. The areas of highest priority were included in the two-year work plan that was submitted to the SANDAG Board for funding approval and actions on the goals were associated with contracts and/or grants. Additionally, outcomes were tracked and measured once a grant project was completed—although the outcomes were varied and relate to the specific nature of the grant. Regular field assessments were conducted to test the long-term effectiveness of the grants. According to

the draft 2017 grant audit results, a majority of the projects reviewed were determined to have exceptional or medium sustained longevity.

Moreover, SANDAG's San Diego Management and Monitoring Program and the United States Geological Services developed an on-line portal that allowed significant amounts of habitat management and monitoring data and results to be stored, tracked, shared, and analyzed between local land managers. While there was a lot of data available in portal, communicating complex results to public remains a challenge.

Specifically, while the EMP measured its progress in meeting the many specific and detailed goals, objectives, and action items in the MSP, there were no developed protocols to take the abundance of data and holistically understand the status and trend of the overall health of the preserve against the baselines established in the Multiple Species Conservation Program and Multiple Habitat Conservation Programs regional long-term conservation planning programs.[52] Additionally, while the portal was useful for EMP professionals, including local land managers and research scientists, to use to store, track, share, and analyze the significant amount of habitat management and monitoring data and results, the system was not designed to communicate complex performance results to the public.

To address this gap, SANDAG will have to undertake a significant effort and work with technical experts to take the large amount of information, analyze and synthesize the data, and present data in a simplified, yet scientifically valid way so the general public can gain an understanding of the overall health of the preserve. On July 12, 2016 the EMP Working Group discussed several examples from around the nation that have produced "State of the Preserve" reports that assessed standard metrics determine status and trends.

Too Early In Lifecycle for Significant Land Management Activities

A final step of the *TransNet* mitigation effort is the habitat management and monitoring of parcel-specific land that has been acquired and restored. These activities are used to maintain the environmental integrity of the acquired land through actions such as installing fencing and signage as well as removing debris and invasive vegetation. Of the $450 million earmarked to mitigate the regional transportation improvement projects, the *TransNet* Extension Ordinance Habitat Cost Estimate projected approximately $15.2 million would be required for parcel-specific habitat management and monitoring of acquired mitigation land. Yet, with efforts recently moving towards management and conservation over the last few years, it may be too early to summarize full impact and determine whether efforts protected or saved species.

As of September 15, 2017, only $2.1 million (or $700,000 over the last three years) was spent on maintaining the environmental integrity of land acquired through the EMP Program through land management and monitoring activities such as installing fencing and signage as well as removing debris and invasive vegetation. However, land management spending is expected to increase once restoration of the acquired mitigation land is complete and management responsibilities are turned over to local

[52] The Multiple Species Conservation Program and Multiple Habitat Conservation Program were required by law to provide large-scale preservation of native habitat and species. In San Diego, MSCP covers more than 80 species across 582,000 acres in the southwestern portion of the County; while the MHCP covers 61 species across nearly 112,000 acres in the northwestern portion of the County.

jurisdictions or other qualified land managers. As part of its review of the original EMP cost estimate, SANDAG should also consider updates to parcel-specific land management efforts.

Outcomes were tracked and measured once a grant project was completed—although the outcomes were varied and relate to the specific nature of the grant. Regular field assessments were conducted to test the long-term effectiveness of the grants. According to the draft 2017 grant audit results a majority of the projects reviewed were determined to have exceptional or medium sustained longevity.

Recommendations

To enhance the Environmental Mitigation Program and better measure performance, the ITOC should request the SANDAG Board to direct staff to perform the following:

19. Continue efforts to establish a new Memorandum of Agreement with Caltrans, California Department of Fish and Game, and the U.S. Fish and Wildlife Service to replace current one expiring before funding expires in June 2018.
20. Enhance the financing and use of *TransNet* funding for the Environmental Mitigation Program (EMP) by implementing the following:
    a. Reviewing and updating EMP cost estimates in light of higher costs than anticipated associated with restoring coastal wetlands.
    b. Considering the most efficient use of available funding and possible adjustments, as allowed by the *TransNet* Extension Ordinance, to focus on higher priority activities and projects such as restoring coastal wetlands, given updated revenue forecast information and cost estimates.
    c. Revisiting the established economic benefit methodology to ensure the calculation accurately represents the cost savings that have been achieved.
21. Make changes, as appropriate, to marketing efforts for the local streets and road mitigation bank funding available for local projects, consider revising eligibility criteria for public entities, or consider whether those monies could be better utilized within other EMP priority actions, as allowed under the *TransNet* Extension Ordinance.
22. Measure progress in meeting specific and detailed EMP goals, objectives, and action items for regional monitoring and management under the Management Strategic Plan. Specifically, develop metrics using the abundance of data to holistically understand the status and trend of the overall health of the preserve against the baselines established in regional conservation plans and formalize a system to communicate complex performance results to the public.

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Chapter 8: Information and Transparency

SANDAG and its *TransNet* partners have primary responsibility for implementing and managing the *TransNet* Program. From that responsibility, there are implied obligations to communicate efforts, activities, and results to the public not only to increase awareness of the *TransNet* Program, but also to hold officials tasked with *TransNet* Program oversight accountable to the taxpayers.

KEY RESULTS

While *TransNet* represents a significant portion of the region's transportation improvements, specific progress toward *TransNet* goals was not tracked. However, SANDAG utilized a dedicated KeepSanDiegoMoving website to provide data to the public. Enhancements to promoting the visibility of the *TransNet* Program and its contributions for the region could be made.

- SANDAG did not specifically track or report progress against Ordinance goals such as congestion relief, safety, and increased services to seniors and persons with disabilities.
- Decision makers and public would benefit from succinct summarized insights from SANDAG staff to navigate voluminous information presented.
- Because of limited *TransNet* promotion on *TransNet* partner websites, the public may not have a strong recognition or association of *TransNet* with specific project and service achievements.
- While similar to other metropolitan planning organizations, *TransNet* information on the SANDAG website is not centrally located and can be difficult to locate.
- Dashboard is an innovative tool, but projects were not always easily linked with Ordinance, and initial budgets were not included to allow public to get full snapshot of activities.

RECOMMENDATION HIGHLIGHTS

- Regularly report on implementation of *TransNet* Extension Ordinance goals by annually publishing progress on SANDAG's website, annual report, or other easily visible reporting tool.
- Modify staff reports for SANDAG Board and other oversight committees to summarize elements related to public input, pros and cons on recommended actions, and implications or impacts of those recommended actions. Ensure that staff reports are summarized to one or two pages.
- More prominently feature the *TransNet* logo on SANDAG and *TransNet* partner websites as well as through other media such as Facebook and Twitter.
- Revamp SANDAG website to capture documents pertinent to *TransNet* in a centralized area for each *TransNet* Extension Ordinance component. This includes linking Dashboard projects with those listed in the *TransNet* Extension Ordinance.
- Ensure data on completed projects is maintained in the Dashboard—even if under an archived location still accessible to the public—and separate past and future expenditures between the original *TransNet* amounts and the *TransNet* Extension Ordinance amounts.

EXAMPLE OF STAFF SUMMARY REPORT FOR AGENDA ITEM

PROS & CONS:
PROS: Notification can lead to action to forestall development activity in freeway corridors and help minimize costs as well as ensure eventual completion of the facility.

CONS: By utilizing funds for advance purchase of right-of-way, these funds are not available for other uses such as design and construction.

TECHNICAL & POLICY IMPLICATIONS:
TECHNICAL: Unless precluded early in the process, development within freeway alignments will result in increased right-of-way costs in the future.

POLICY: With the passage of Proposition 400 on November 2, 2004, the RTP includes funding for right-of-way acquisition as part of the funding for individual highway projects. This funding is spread over the four phases of the Plan. Funding for advance acquisitions may be made available on a case-by-case basis.

Chapter Introduction

Given the significant efforts employed on the *TransNet* Program, it is important to ensure that activities and results are communicated to decision makers and the public to ensure oversight committees consider available data, increase awareness of the *TransNet* Program, and improve transparency. Different methods can be used to communicate *TransNet* Program results and varied levels of emphasis can be placed based on the needs of decision makers, stakeholders, and the general public.

No Specific Tracking against Ordinance Goals Communicated

Although SANDAG provides an abundance of information to its SANDAG Board and oversight committees, there was no specific tracking of activities and progress toward *TransNet* goals such as congestion relief, safety needed to increase services to seniors and those with disabilities that could better inform SANDAG and its *TransNet* partners' progress. Based on the work performed throughout this audit, we prepared a quick snapshot of progress towards meeting the Ordinance goals as shown in Exhibit 56. This snapshot, or some similar tool, could be used by SANDAG as a foundation for future measurement and reporting.

EXHIBIT 56. PROGRESS TOWARD MEETING ORDINANCE GOALS, 2005 TO 2016 [1]

	TransNet Goal	Progress To Date	Goal Met?
1	Relieve Congestion	• Commutes of less than 30 minutes decreased from 67% percent to 64%. • Highway pavement condition improved, although local roadway pavement condition declined. • Also, use of alternate modes as a percent of total commute decreased from 18% to 17%.	Mixed Results
2	Improve Safety	• Highway and Roadways injuries decreased by 9% and fatalities decreased by 19%. • However, Bike and Pedestrian injuries and fatalities increased by 21% and 18%, respectively.	Mixed Results
3	Match State and Federal Funds	• Major corridor funds was leveraged at $1.89 to $1.00. • Local Street and Road planned leveraging was $1.10 to $1.00.[2]	Yes
4	Expand Freeways	• Expanded freeways; for example, projects were completed on the I-15, I-805, SR 52, and SR 76. • 61% of capital construction projects were completed or in-progress.	Yes
5	Maintain and Improve Roads	• At least 136 projects completed and approximately $714 million dedicated for projects on local streets and roads.	Yes
6	Increase Transit for Seniors and Persons with Disabilities	• Ridership for seniors and persons with disabilities appeared to have increased by 7 percent since the state of *TransNet*.	Yes
7	Expand Commuter Express Bus, Trolley, and COASTER Services	• Expanded transit services; for example, 3 new *Rapid* Bus Services Routes were put into service. • 94 vehicles (including 65 light-rail trolley vehicles) were purchased.	Yes

Source: *TransNet* Story Map, grant status and update reports, *TransNet* Quarterly Financial Reports, *TransNet* Dashboard, fact sheets, internal SANDAG tracking spreadsheets, California Highway Patrol's Statewide Integrated Traffic Records System, Caltrans' Freeway Performance Management System, MTS ridership by senior/persons with disabilities fare category.

Notes: [1] For years where data was available. [2] Local Street and Road leveraging was based on project funding planned per the Regional Transportation Improvement Program data and not actual local funds expended.

Information provided to Decision Makers was like Similar Entities, but Enhancements could be Made

Transportation planning and implementation is a complex and complicated area of government—especially with the variety and uniqueness of each mode of transportation between highways, local roadways, transit operations, bike and pedestrian services, environmental mitigation and habitat conservation, and grants for concepts such as Smart Growth as well as financing the entire connected system. One challenge involves how best to communicate technical and detailed information to decision makers, oversight bodies, stakeholders, and the general public when user needs are varied and often parochial.

While SANDAG Board and committees involved with *TransNet* received a multitude of information related to projects, contracts, reports, performance, and financing, the volume and type of information provided by SANDAG staff was voluminous—and similar to other metropolitan planning organizations and transportation authorities, as shown in Exhibit 57. The volume of information provided seemed dependent on the nature of the business before the oversight body, but the volume of materials can make it challenging for decision makers to digest.

EXHIBIT 57. INFORMATION PROVIDED TO OVERSIGHT COMMITTEES IS SIMILAR TO OTHER TRANSPORTATION ENTITIES

Entity	Meeting Date	Committee	Page in Meeting Packet
LA Metro in Los Angeles, California	Various	No links available on-line	--
Maricopa Association of Governments in Phoenix, Arizona	3/29/2017	Regional Council	204
	8/3/2017	Regional Council	135
	1/3/2018	Regional Council	152
Metropolitan Transportation Commission of the Bay Area, California	Various	No links available on-line	--
Orange County Transportation Authority in Anaheim, California	2/2/2018	Board of Directors	825
Puget Sound Regional Council in Seattle, Washington	2/23/2017	Regional Council	55
	2/8/2018	Regional Council	38
Regional Transportation Authority in Tucson, Arizona	1/26/2017	Board of Directors	251
	1/25/2018	Board of Directors	224
Riverside County Transportation Commission in Riverside, California	2/14/208	Transportation Commission	133
Sacramento Council of Governments in Sacramento, California	12/21/2017	Board of Directors	339
San Diego Association of Governments	7/28/2017	Board of Directors	151
	9/22/2017	Board of Directors	958

Source: Oversight board, council, and commission meeting agendas and packets available on entity websites.

For instance, some meeting packets included lengthy materials—such as audit reports or regional plan—which significantly added to the size of the packet. While other packets only discussed a few items at the particular meeting reviewed and reduced the volume of information needed. Also, nearly all meeting agenda items had some type of summary on the subject, background, and recommendations for action—similar to SANDAG. Some summaries were one to two-pages at maximum, while others were longer at five or six pages.

Yet, one particular entity, the Maricopa Association of Governments, incorporated several additional elements to its oversight body's meeting packet. In addition to the standard subject summary and recommended actions needed, the Maricopa Association of Governments agenda item summary also captured brief statements on public input, pros and cons on the recommended action, and technical and policy implications as shown in Exhibit 58. This succinct information is helpful to the decision makers to quickly synthesize the information provided and identify any impacts of their actions. Thus, SANDAG may want to add similar elements to its meeting agenda summaries as well as possible elements to comment on potential impacts from proposed actions on *TransNet* goals and implications to users of *TransNet* services. Additionally, SANDAG should ensure summaries remain at one or two pages in length.

EXHIBIT 58. EXAMPLE OF STAFF SUMMARY REPORT FOR AGENDA ITEM (EXCERPT)

PROS & CONS:

PROS: Notification can lead to action to forestall development activity in freeway corridors and help minimize costs as well as ensure eventual completion of the facility.

CONS: By utilizing funds for advance purchase of right-of-way, these funds are not available for other uses such as design and construction.

TECHNICAL & POLICY IMPLICATIONS:

TECHNICAL: Unless precluded early in the process, development within freeway alignments will result in increased right-of-way costs in the future.

POLICY: With the passage of Proposition 400 on November 2, 2004, the RTP includes funding for right-of-way acquisition as part of the funding for individual highway projects. This funding is spread over the four phases of the Plan. Funding for advance acquisitions may be made available on a case-by-case basis.

Source: Maricopa Association of Governments, Regional Council Meeting Packet, February 23, 2018.

Because Public Awareness of *TransNet* is Somewhat Unknown, Visibility could be Improved

Specific surveying of the level of public awareness of *TransNet* was not conducted; thus, it was difficult to gauge the public's views about *TransNet*. While SANDAG and its *TransNet* partners provided a significant amount of information publicly as well as captured and responded to public inquiries, there were no overall conclusions that could be drawn to measure public awareness of *TransNet* and associations drawn between *TransNet* to the actions taken or achievements realized by SANDAG and its *TransNet* partners.

Related surveys revealed mixed results on services

Over the last few years, there were several different formal surveys conducted by SANDAG and its *TransNet* partners as shown in Exhibit 59. These studies revealed mixed results on the level of user satisfaction. For instance, *Rapid* transit riders showed increased satisfaction with I-15 corridor and

Mira Mesa corridor commutes, while rider satisfaction on the Mid-City corridor decreased. Yet, none of these surveys assessed the public's awareness or views on *TransNet*. According to SANDAG, extensive public outreach is planned for the San Diego Forward: The Regional Plan update process that began in 2017 where public input and feedback will be gathered through 2019 to inform long-range planning decisions.

EXHIBIT 59. HIGHLIGHTS FROM PUBLIC SURVEYS CONDUCTED BETWEEN 2014 AND 2017

Year	Survey Conducted By	Area of Focus	Highlights
2014	City of Chula Vista	General	• 79% responded that maintenance of city services, facilities, and infrastructure was important. • 11% responded that improved and repaired roads would make the city a better place to live—the highest-ranking suggestion, next to the "not sure" response.
2015	City of San Diego	General	• Only 24% of residents were satisfied or very satisfied with the maintenance of streets, sidewalks, and infrastructure. • Where satisfied, 57% liked the accessibility of streets and sidewalks for people with disabilities and 52% were satisfied with availability of street lighting.
2016	SANDAG	*Rapid* Transit	• Mid-City corridor riders showed a decline in rider satisfaction from the previous year. • I-15 corridor rider satisfaction increased from 7.82 in 2014 to 8.31 in 2015 on a scale of one to ten. • Mira Mesa corridor rider satisfaction improved from 7.72 to 7.96 with higher ratings for frequency, on-time, and availability of bus seats.
2017	Caltrans	North Coast Corridor	• 71.5% of respondents believed information on highway and rail construction impacts was effective. • 53.8% of respondents have visited SANDAG's Keep San Diego Moving website with 68.4% of those rating information as easy to find.

Source: Community Survey Research Report prepared for the City of Chula Vista, February 27, 2014; City of San Diego Resident Survey 2015; SANDAG Rapid Passenger Satisfaction Survey Final Report, January 28, 2016; and Caltrans' Build NCC Community Outreach Survey results.

Additionally, we reviewed extensive stakeholder inquiry listings maintained by SANDAG and its *TransNet* partners to see if public views could be obtained. Based on the listings provided by SANDAG and Caltrans, most public inquiries focused on specific project questions or travel delays—not necessarily complaints or problems with *TransNet* practices or SANDAG and its *TransNet* partners.

TransNet Program promotion could be strengthened

While there was some association of the *TransNet* Program with the many achievements to date on SANDAG's website, we found limited promotion of *TransNet* outside of SANDAG for instance, although *TransNet* was highlighted through ITOC's annual report, had data available through several links on SANDAG's website, and associated *TransNet* capital construction projects with posted signage referring to "*TransNet* funds at-work," there was no significant promotion of *TransNet* outside of SANDAG.

In fact, there was no mention of *TransNet* on the website homepage for most of the *TransNet* partners including Caltrans, MTS, NCTD, and the local jurisdictions—although Caltrans had earmarked a section for *TransNet* projects under one of its links. Additionally, two of the smaller local jurisdictions made reference to a SANDAG bike project underway or had a link to specific SANDAG projects such as the LOSSAN—yet, there were no specific references, logos, or linkage to *TransNet*. Partially, the limited promotion of *TransNet* with the capital construction projects or other services could be related to the view that *TransNet* is just one

of several funding sources leveraged to help fulfill the region's transportation needs. Although SANDAG created a *TransNet* logo, it was not featured on its website homepage, Facebook page, or Twitter account nor on the platforms used by the *TransNet* partners.

As a result, the public may not have a strong recognition of *TransNet* and the projects and services it funds or an association of the program with *TransNet* partners' achievements. Thus, SANDAG may want to more prominently feature its *TransNet* logo on SANDAG and *TransNet* partner websites as well as through other media sources such as Facebook and Twitter.

While better than most other entities reviewed, visibility of *TransNet* for public could be enhanced

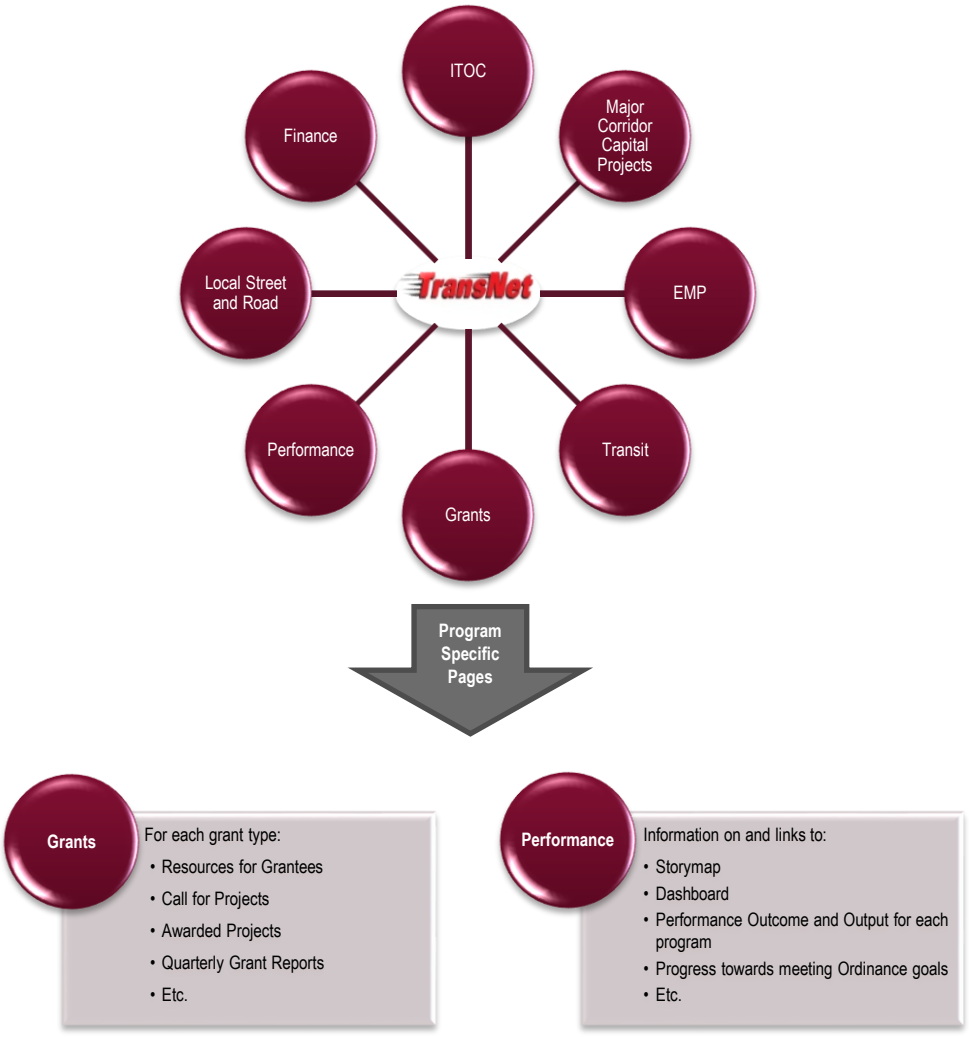
With voters likely interested in the return on their sales tax investment, we found that information made available by SANDAG to the public for the *TransNet* Program was more accessible than most other entities with local sales tax measures we reviewed—although some enhancements could further elevate the level of visibility of *TransNet*.

Specifically, when compared to 20 other metropolitan planning organizations and transportation authorities in California and Arizona, SANDAG's *TransNet* information aligned most closely with the Arizona Maricopa Association of Government's website information. By far, SANDAG and the Maricopa Association of Government's websites had more documents and data available on their local sales tax measures with overviews, related projects, cost information, performance dashboard, and periodic reporting to convey status. Most other entities had some combination of this information, but no significant visibility of the local tax measure used for transportation improvements.

However, given the importance of the *TransNet* Program to the success of the region's transportation network and the responsibility for transparency to the public, SANDAG's website could more prominently highlight the *TransNet* Program so that a taxpayer has quick visibility to related documents, activities, and the various entities implementing the program. For instance, while there was a dedicated section for *TransNet* with links to various documents, the website could be more clearly organized to make it easier to find information as well as feature links to all *TransNet* areas. Exhibit 60 provides an example of how the *TransNet* website could be reorganized and certain documents that could be captured within each *TransNet* section.

As such, each *TransNet* area should have a separate section or link that groups pertinent documents that are currently available on the website, but require a search inquiry to locate. All documents were provided to the SANDAG Board and other oversight committees at some point, but documents were attached to the SANDAG Board meeting packets making it challenging for the general public to mine information.

EXHIBIT 60. EXAMPLE OF *TRANSNET* WEBSITE LAYOUT



Source: Auditor-Generated.

Dashboard is Innovative Tool, but Enhancements Could Improve Transparency

For more than a decade, the *TransNet* "Dashboard" promoted transparency and greater accountability. This innovative and interactive tool allowed the public to obtain timely information about corridor, segment, or project status, budget, and schedule. Data presented derived from financial records for costs and project management tools for schedule information. Public viewers could get a quick status of projects or delve deeper into segments and individual projects, and *TransNet* project managers used the automated tool for project monitoring.

However, there are certain enhancements that could enable the pubic to more easily align results against the *TransNet* Ordinance expectations and have a more complete snapshot of project status against expected budgets and schedules. For instance, projects tracked in the Dashboard were not linked to Ordinance project titles or descriptions making it challenging to determine progress towards fulfilling *TransNet* Program promises without some type of identification system. Additionally, projects drop off the

Dashboard once completed along with any budget and cost information; thus, making it challenging to identify overall progress to date. Comparing activity against the Ordinance is further complicated because initial *TransNet* monies are combined with *TransNet* Extension monies, making it difficult to get a true comparison.

Recommendations

To better summarize information for decision makers and inform the public on *TransNet*, the ITOC should request the SANDAG Board to direct staff to perform the following:

23. Regularly report on implementation of *TransNet* Extension Ordinance goals by annually publishing progress on SANDAG's website, annual report, or other easily visible reporting tool.
24. Modify staff reports for SANDAG Board and other oversight committees to summarize elements related to public input, pros and cons on recommended actions, and implications or impacts of those recommended actions. Ensure that staff reports are summarized to one or two pages.
25. Better link *TransNet* funding to project and program activities for general public awareness by implementing the following.
    a. More prominently featuring the *TransNet* logo on SANDAG and *TransNet* partner websites as well as through other media such as Facebook and Twitter.
    b. Revamping SANDAG website to capture documents pertinent to *TransNet* in a centralized area for each *TransNet* Extension Ordinance component. This includes linking Dashboard projects with those listed in the *TransNet* Extension Ordinance.
26. Ensure data on completed projects is maintained in the Dashboard—even if under an archived location still accessible to the public—and separate past and future expenditures between the original *TransNet* amounts and the *TransNet* Extension Ordinance amounts.

Chapter 9: Conclusions and Summary of Agency Response to Recommendations

During the three-year audit period, SANDAG and its *TransNet* partners conducted many activities towards accomplishing the goals of *TransNet*. In fact, the entities involved delivered on promises such as expanding freeways, improving local roads, adding capacity to rail services, and increasing services to seniors and those with disabilities. Additionally, SANDAG leveraged sales tax monies to complete or start 61 percent of the major corridor capital projects envisioned over the 40-year lifecycle of *TransNet*, employed leading project management practices and innovative project delivery through the Construction-Manager/General-Contractor (CMGC) method, and implemented a robust Environmental Mitigation Program (EMP).

Our audit also revealed that SANDAG and its *TransNet* partners had challenges financing the *TransNet* Program and capturing performance to measure its efforts in meeting *TransNet* goals—similar to other transportation planning entities. From a fiscal perspective, SANDAG must balance sufficient revenues to cover project costs and forecasting those efforts over the remaining 30 years of the sales tax measure. While several changes were recently made to revenue forecasting and financial planning, practices could be improved to strengthen results and increase transparency for decision makers and the public. In terms of performance, with the exception of major corridor commutes and transit performance, SANDAG was challenged to measure and report performance in other *TransNet* areas. Over the last several years, similar to SANDAG, transportation agencies and the federal government have been evolving in terms of performance priorities, goals, target setting, and data collection methods. In fact, the federal government has mandated certain performance measurement features under its Moving Ahead for Progress in the 21st Century (MAP-21) Act in 2012 and Fixing America's Surface Transportation (FAST) Act from 2015.

To improve efficiency, effectiveness, and accountability to the taxpayers of the San Diego region, ITOC should request that the SANDAG Board direct its staff and *TransNet* partners to consider and implement recommendations summarized in Exhibit 61. In general, SANDAG and its *TransNet* partners agreed with the recommendations.

EXHIBIT 61. FY 2018 *TRANSNET* PERFORMANCE AUDIT RECOMMENDATION MATRIX

	Audit Recommendation	Auditee Response
Chapter 1: *TransNet* Financing		
1.	Enhance the Plan of Finance (POF) process and information provided to decision makers by implementing the following: a. Leveraging historical data and previous POFs to provide additional information regarding estimates of future revenue sources, by comparing projections against historical data as well as comparing estimates from previous POFs against actual funding secured.	This process will be more formally incorporated as part of the *TransNet* Major Corridors Plan of Finance annual updates. Staff Lead - Dawn Vettese (*TransNet*)
	b. Continuing efforts to increase the transparency of sales tax revenue forecasts by showing a range of possible values based on a true confidence interval. SANDAG staff should work with the Independent Taxpayer Oversight	SANDAG staff and economic consultants are working to create sales tax forecasts that incorporate ranges and scenarios and will present this work to ITOC for input.

	Audit Recommendation	Auditee Response
	Committee (ITOC) and the SANDAG Board to select a confidence level or levels that best communicates the range of possible values projected by the forecast including best case, worse case, or reasonably expected scenarios.	Staff Lead - Jim Miller (Technical Services)
	c. Developing a process or policy for more frequent reporting—such as quarterly—to oversight committees on cost increases and include factors used to estimate costs, project stage or milestone used as basis for cost, and reasons for cost increase such as inflation, materials spike, or scope changes using Dashboard data and other reliable data sources.	Staff will present information on cost estimating practices and methods used to communicate cost changes to the ITOC, Transportation Committee and Board in April/May 2018 for input. Staff Lead - Jim Linthicum (MMPI)
2.	Ensure the "Plan of Excellence" and its 7-point Data Accuracy and Modeling Work Plan are implemented to reduce the potential for data errors and develop formal procedures covering version control, periodic archival of dynamic or continuously updated data and documents, data validation and accuracy, and release and reporting of data. The status of the implementation of the 7-point plan and new procedures for data authentication should be documented and reported back to decision makers.	Significant progress has been made on the 7-Point Data Accuracy and Modeling Work Plan and ongoing efforts have been incorporated into the agency's Plan of Excellence with progress tracked there. As part of the 7-Point Plan, staff determined that errors were limited to income variables (Point 1), have conducted a dependency analysis to determine where the income variables were used and correct as needed (Point 2), developed a comprehensive flow diagram showing interactions between data and modeling components (Point 3), surveyed agency staff to understand and document how data are disseminated and used (Point 4), convened a nationwide expert panel for recommendations for regional forecasting (Point 5), developed processes and standards to communicate data, methods, and analysis in a clear and transparent manner (Point 6), and (Point 7) realigned people, processes, and technology to support adequate staffing and expertise. Staff Lead - Ray Major (Technical Services)
3.	Regularly track and report on the *TransNet* Program's financial capacity to complete projects and programs by implementing the following: a. Establishing a formal structured protocol to review funding sources and uses occurring in the last 10 to 20 years of the *TransNet* Extension Program to identify potential capacity and revenue constraints that would impact the ability to complete the major corridor projects by 2048 and assess options such as delaying projects, eliminating projects, or reducing scope as warranted. This capacity assessment should be formally revisited on a regular basis, so that decision makers are aware of periods in which the agency may have to consider delaying projects or reducing project scope as needed.	This process will be more formally incorporated as part of the *TransNet* Major Corridors Plan of Finance, in coordination with the adopted Regional Plan. Staff Lead - Susan Huntington (*TransNet*)
	b. Monitoring *TransNet* revenues and debt service obligations against needed growth projections to better ensure that revenues are sufficient to meet debt service, as well as regularly reporting on results and options to oversight committees that could include restructuring,	SANDAG Finance and *TransNet* staff will continue to communicate information on a regular basis, including cash flow needs, changes to project timing, and sales tax projections; meet and discuss with the SANDAG financial advisor any potential changes to needs; meet

	Audit Recommendation	Auditee Response
	refinancing, or retiring existing debt or delaying the transition to a pay-as-you-go approach for financing capital projects.	with investment bankers to understand instruments currently on the market that could fit SANDAG needs; and include all relevant information at regular intervals or on an as-needed basis at ITOC meetings. Staff Lead - André Douzdjian (Finance)
	c. Identifying methods to assess options, if needed, to delay, eliminate, or reduce scope of projects and whether the method would follow the same priority process used in the San Diego Forward: The Regional Plan or a different process would be used.	As part of the 2019 Regional Plan update, all projects, including *TransNet* projects, will be evaluated. Staff Lead - Phil Trom (Planning)
	d. Monitoring and reporting on the impacts of changing transportation technologies on the transportation network and future *TransNet* projects as part of long-term planning to avoid building expensive infrastructure that could be rendered obsolete.	SANDAG will include technology assumptions in the development of revenue constrained transportation scenarios for the 2019 Regional Plan. Staff Lead - Phil Trom (Planning)
4.	Continue to work closely with the Metropolitan Transportation System (MTS) and North County Transit District (NCTD) to monitor the *TransNet* Transit Operations Plan by comparing actual *TransNet* revenues and operating costs against the *TransNet* Transit Operations Plan projections as additional services begin operations to highlight and mitigate the impact to the local operators, how to absorb any discrepancies through other funding sources, or potential scenarios for reductions in service if warranted. Communicate status, recommended actions, and any mitigation activities.	SANDAG will work with MTS and NCTD to develop a new methodology to proactively monitor *TransNet* Transit Operations funding, focusing on existing data for costs and revenues and recognizing the limitations of estimating costs and revenues over such a long term. Once a new methodology has been established, staff will report annually to ITOC and Transportation Committee. Staff Lead - Muggs Stoll (Planning)
Chapter 2: Performance Framework		
5.	Establish a comprehensive performance framework by implementing the following: a. Setting targets to measure *TransNet* performance against the *TransNet* Extension Ordinance goals in-line with federally mandated deadlines or at a faster pace. At a minimum, some narrative could accompany performance reporting to help others understand whether data and results were favorable or unfavorable.	SANDAG will be setting performance management goals related to the MAP-21/FAST Act timelines and requirements. Staff will evaluate federal performance management goals in order to align with *TransNet* funded projects. Staff Lead - Rachel Kennedy (Planning)
	b. Capturing performance outcome data related to safety metrics, pavement condition, and bridge condition for highways, local roadways, and bicycle (bike) and pedestrian modes. 1. Use the California Highway Patrols' Statewide Integrated Traffic Records System (SWITRS) to measure and monitor safety statistics—both for motorized and non-motorized fatalities and serious injuries—especially against the new safety targets developed by Caltrans and adopted by SANDAG. 2. Track and report highway pavement and bridge condition available from Caltrans on the SANDAG website or provide a hyperlink to where that	1. SANDAG staff is collaborating with Caltrans on target-setting for safety. Caltrans is helping to provide county level SWITRS data to MPOs for both motorized and non-motorized fatalities and serious injuries. SANDAG has supported the statewide 2018 safety targets and will be highlighting safety projects included in the 2018 RTIP and 2019 Regional Plan. Staff will continue to monitor and analyze SWITRS safety data as it becomes available. SANDAG and Caltrans will collaborate on establishing annual safety targets as per MAP-21/FAST Act requirements.

	Audit Recommendation	Auditee Response
	information is available for taxpayers. Additionally, work with Caltrans to determine if bridge and pavement data can be isolated for San Diego County from the Imperial County data contained within the Caltrans District 11 reported data. 3. Track and report on local jurisdiction pavement condition by requiring local jurisdictions to provide pavement condition index data as soon as pavement condition surveys are performed and results become available. 4. Obtain and use private sector data to analyze congestion and delay on local streets and roads or evaluate status of Caltrans' Performance Measurement System (PeMS) to capture road performance including level of coverage of detection.	2. SANDAG is collaborating with Caltrans on target setting for bridge and pavement condition. Caltrans will be providing county level data for these measures for facilities on the National Highway System (NHS). SANDAG will look for opportunities to share this information as it may relate to *TransNet* projects. 3. For additional data collection efforts on Pavement Conditions, SANDAG staff will need to work with CTAC to determine an approach for reporting readily available pavement data. This may involve an amendment to the ordinance to make such data collection a requirement. 4. Currently, SANDAG uses PeMS data, and use of private sector data will be examined subject to existing third data sources (INRIX). Examination of other sources is subject to implementation and efforts under Recommendation 5e. Staff Lead - Rachel Kennedy (Planning)
	c. Conducting more robust analysis of cause and effect for all performance metrics to provide meaning to results or help determine if different strategies or projects should be employed to get a better result. For instance, consider using heat maps to identify where the majority or significant severity accidents occur and work with Caltrans and local jurisdictions to inform solutions and future projects.	The recommended analysis likely will require the use of modeling/other analytical tools and additional resources. SANDAG staff will propose an approach to implement this recommendation based on the outcome of Recommendation 5e. Staff Lead - Rachel Kennedy (Planning)
	d. Providing regular performance monitoring reports that consider past performance in relation to *TransNet* goals through quarterly updates to the SANDAG Board and committees, annual public reports on the status of *TransNet*, and website postings.	More regular reporting is feasible for highway system performance, as more robust data is available via Caltrans PeMS. Local street and road performance (in terms of average speed and travel time) is now available via a third-party vendor (INRIX). Transit data reporting (in terms of passengers per revenue hour, passengers per revenue mile, operating cost per passenger, operating cost per revenue hour, revenue hours per employee, and farebox recovery ratios) also is feasible and can be made available via reporting currently conducted under Transportation Development Act monitoring. Staff Lead - Ellison Alegre (Operations)
	e. Considering allocating funding for additional performance monitoring activities given that SANDAG will likely require more data sources, tools, and resources to track, validate, analyze, ensure quality, and report performance.	SANDAG staff will develop options to implement this recommendation, including any potential budget impacts, and bring to the Transportation Committee and Board for review and direction. Staff Leads - José Nuncio (*TransNet*), Ray Traynor (Operations),
6.	Explore and study public-private partnerships with entities such as Google, Waze, Scoop, TomTom, or others to integrate and summarize performance results as well as provide	SANDAG staff in the Operations Department have been working on partnerships with transportation information providers such as Google and Waze. Our

	Audit Recommendation	Auditee Response
	information on a real-time basis to travelers identifying different commute times and options.	current 511 system uses Google traffic and transit data as well as utilizes the Google map. Future plans have us extending the regional Data Hub into a Transportation Mobility Cloud with the intent of utilizing third-party data as well as sharing public data with the private sector. Staff Lead - Alex Estrella (Operations)
7.	Enhance the Story Map tool, *TransNet* project status listing (shown in Appendix A), or develop a different tool to capture project output details and track *TransNet* accomplishments over time by implementing the following: a. Developing a comprehensive universe of *TransNet* projects completed, underway, and planned. Reconcile universe back to *TransNet* Extension Ordinance and what was expected to be delivered. Once universe is reconciled for historic projects, update universe as new projects are started and continue reconciliation of those new projects to the *TransNet* Extension Ordinance. b. Building upon planned output data currently captured through the Regional Transportation Improvement Program's automated ProjectTrak database and reported in the Annual Output and Outcome report by reconciling those planned outputs with actual accomplishments. Consider requiring local jurisdictions to provide a closeout report with updated, actual data as projects are completed.	The implementation of this recommendation will require changes to existing tools and processes. SANDAG staff will propose an approach to implement this recommendation based on the outcome of Recommendation 5e. Staff Lead - Michelle Smith (*TransNet*)
Chapter 3: Major Corridor Capital Construction		
8.	Update and refine the project listing started in the 10-Year Look-Back Review to ensure all major corridor projects are tracked back to those in the *TransNet* Extension Ordinance. Regularly report on project and financial status using the project listing developed in 10-Year Look-Back Review as a foundation or develop an alternate tool to accomplish the goal of tracking against the *TransNet* Extension Ordinance.	Project Office staff will utilize the project list crosswalk created with the 10-Year Look-Back Review and incorporate the data field into the dashboard webform as part of the 2019 upgrade. Staff Lead - Susan Huntington (*TransNet*)
9.	Begin gathering data on whether the Construction Manager/General Contractor (CMGC) method used on the Mid-Coast Corridor Transit project is delivering on expectations for cost savings, efficiencies, better quality, or collaboration to solve problems rather than using a typical silo-approach between design, construction, contractors, and owners by implementing the following: a. Comparing SANDAG's proposed metrics for assessing Mid-Coast Corridor project performance to the performance metrics and practices used by Caltrans' to determine whether there are any additional practices SANDAG may want to include or adopt, such as the Caltrans innovations log, to help formally track benefits, successes, and challenges.	Mid-Coast has procedures and tools in place to capture CM/GC savings and efficiencies including comment and review logs, risk matrix and RFI response process. To address the recommendation, an innovations log or other method of formally tracking will be developed. SANDAG will research industry standards for comparing construction contracting methods for application to CM/GC to Low Bid. Mid-Coast will be compared to Mission Valley East Light Rail Transit Extension as the closest side-by-side comparative example. Project, Construction, and CM/GC managers will continue to meet regularly to review change orders and schedule impacts identified in the survey. Staff Lead - John Haggerty (MMPI), Allan Kosup (Caltrans)

	Audit Recommendation	Auditee Response
	b. Addressing recent survey comments related to possible schedule impacts from project activities in addition to the perceived higher value of change orders.	
10.	Gather and store documents to support "benefit" statistics tracked for the North Coast Corridor and the Mid-Coast Corridor whether using the innovations log utilized by Caltrans or another method used by SANDAG. Maintain supporting documentation, such as cost comparisons, in a centralized repository that is linked or reconciled with the log or summary statistics.	Mid-Coast data are maintained on a project file sharing site and project record documents including logs and cost data will be permanently stored in a SANDAG SharePoint location. Staff Lead - John Haggerty (MMPI), Allan Kosup (Caltrans)
Chapter 4: Local Street and Road		
11.	Revisit the *TransNet* Extension Ordinance congestion relief and maintenance split to be more relevant with local needs as the *TransNet* lifecycle matures by considering elimination of the 70/30 split, change to the percentage limitations, or modification of the categorical definitions within the *TransNet* Extension Ordinance limitations.	SANDAG staff will work with CTAC to determine an approach and possible implementation steps for examining the 70/30 split recommendation. Discussion outcomes will be reported to ITOC to determine possible next steps including Board Policy expenditure guidelines changes. Staff Lead - Alex Estrella (Operations)
12.	Continue to monitor compliance with SANDAG Board Policy No. 031, Rule 21, until otherwise amended, by implementing the following: a. Following-up on the results from the SANDAG Board Policy No. 031, Rule 21 evaluation conducted by SANDAG in 2014: 1. Use results from SANDAG Board Policy No. 031, local Rule 21 review to make identified changes to the Ordinance definitions and follow-up on areas of noncompliance noted during the review. 2. Work with locals to determine a method to demonstrate compliance with SANDAG Board Policy No. 031, Rule 21. 3. Amend or establish a SANDAG Board Policy to require local jurisdictions to track and report on the number of bike and pedestrian facilities implemented using *TransNet* funds.	Board Policy No. 031 Rule No. 21 addresses accommodation of bicyclists and pedestrians. SANDAG will conduct a compliance review using the existing processes of the Policy. Results will be reported to CTAC for discussion and determination of need to modify compliance guidelines and processes. SANDAG will amend applicable Board Policy to track development of bicycle and pedestrian projects built using *TransNet* funds. Staff Lead - Linda Culp (Planning)
	b. Conducting another review of local projects and considering whether any adjustments are warranted in light of SANDAG's Complete Streets Policy.	SANDAG will conduct a compliance review using the existing processes of the Policy to determine if modifications are necessary to be more consistent with the SANDAG Complete Streets Policy. Staff Lead - Linda Culp (Planning)
Chapter 5: Transit Services		
13.	Continue to analyze major transit commute routes and services and report on whether commute times have improved or should be improved.	SANDAG staff will continue to report on this area via the annual State of the Commute Report. Staff Lead - Brian Lane (Planning)

	Audit Recommendation	Auditee Response
14.	Regularly track and report on *TransNet* goals to increase services to seniors and persons with disabilities.	SANDAG staff will look at ways to report on this area via the annual State of the Commute Report beginning FY 2018. Staff Lead - Brian Lane (Planning)
15.	Work together with the region's transit operators to analyze options offsetting the impact subsidy disparities have on available funds for expanding transit services, such as funding the pass subsidy disparity for seniors and persons with disabilities from other *TransNet* areas—as allowed by the *TransNet* Extension Ordinance—adjusting the discount offered for senior/disabled and youth riders, determining whether disparities can be funded through other sources, or maintaining existing funding and process.	SANDAG staff is currently working with the transit operators on a Regional Fare Study that may help offset the revenue impacts of the discount subsidies. Additionally, SANDAG staff will work with both transit operators' staff to study other options to increase ridership and revenues. Staff Lead - Brian Lane (Planning)
16.	Collaborate with the operators to revisit the operating cost ceiling tied to changes in the Consumer Price Index as specified in the *TransNet* Extension Ordinance so that operators have some flexibility with reasonable cost increases while still maintaining the intent of *TransNet* to provide some assurance of the reasonableness of those cost increases. This could include allowing for a wider variance in cost increases, setting a threshold for a not-to-exceed limit, expanding the target by a specified percent in years when changes to the Consumer Price Index decline, or allowing cost exclusions that can be supported, or modify *TransNet* Extension Ordinance language to apply the cost thresholds at the operator level rather than by individual mode.	SANDAG Planning and Finance staff will meet with the operators to collaborate on possible solutions to address this recommendation. It is expected that these solutions could be included in a future amendment to the Ordinance. Staff Lead - Brian Lane (Planning)
Chapter 6: Bike and Pedestrian Modes of Transportation		
17.	Continue efforts to establish baseline data for bike and pedestrian volume to identify trends and set targets.	SANDAG will continue to capture and maintain baseline data to identify trends and establish targets. Staff Lead - Linda Culp (Planning)
18.	Improve project management practices and project delivery for the Bike Early Action Program projects by implementing the following: a. Finalizing and implementing the in-progress Regional Bikeway Program Management Plan.	Upon completion of Program Management Plan SANDAG Active Transportation Team will have trainings with project managers to implement PMP practices. Staff Lead - Linda Culp (Planning)
	b. Using Dashboard data that currently tracks frequent causes of delays during the design and environmental phases of bike projects, to summarize lessons learned, identify and mitigate future preventable occurrences, and improve scheduled delivery of the remaining projects.	Guidance on documenting lessons learned will be included in the Program Management Plan. SANDAG will work to develop procedures and tools to maintain lessons learned, identify and mitigate project risks, and improve schedule delivery. Staff Lead - Linda Culp (Planning)
Chapter 7: Environmental Mitigation Program		
19.	Continue efforts to establish a new Memorandum of Agreement with Caltrans, California Department of Fish and Game, and the U.S. Fish and Wildlife Service to replace current one expiring before funding expires in June 2018.	The MOA has expired, but funding under the SANDAG CIP budget will be available for FY 2019. SANDAG will be using the results of the Ten-Year Review Look-Back and FY 2018 *TransNet* Triennial Performance

	Audit Recommendation	Auditee Response
		Audit as the basis for a new MOA starting in May 2018. Staff Lead – Keith Greer (Planning)
20.	Enhance the financing and use of *TransNet* funding for the Environmental Mitigation Program (EMP) by implementing the following: a. Reviewing and updating EMP cost estimates in light of higher costs than anticipated associated with restoring coastal wetlands.	SANDAG is tracking the change in cost for the lagoon restoration efforts and comparing it to the cost savings associated with lower than estimated land acquisition costs. Staff Lead – Kim Smith (Planning)
	b. Considering the most efficient use of available funding and possible adjustments, as allowed by the *TransNet* Extension Ordinance, to focus on higher priority activities and projects such as restoring coastal wetlands, given updated revenue forecast information and cost estimates.	SANDAG will start to discuss ways to address this issue in spring 2018 and it will become part of the revised MOA identified in Recommendation19 above. Staff Lead - Keith Greer (Planning)
	c. Revisiting the established economic benefit methodology to ensure the calculation accurately represents the cost savings that have been achieved.	Cost savings are being tracked, but true cost savings will not occur until a project has completed close-out. This has not happened yet, but over the next years SANDAG will evaluate and assign a value considering the overall costs of the program as described in Recommendation 20a above. Staff Lead - Keith Greer (Planning)
21.	Make changes, as appropriate, to marketing efforts for the local streets and road mitigation bank funding available for local projects, consider revising eligibility criteria for public entities, or consider whether those monies could be better utilized within other EMP priority actions, as allowed under the *TransNet* Extension Ordinance.	SANDAG has made several attempts to promote the availability of these credits. SANDAG will work with Communications staff to establish a systematic approach. Communications has met with the Planning EMP staff and has calendared upcoming milestones in order to plan public information releases on all communication platforms. Staff Lead - Keith Greer (Planning)
22.	Measure progress in meeting specific and detailed EMP goals, objectives, and action items for regional monitoring and management under the Management Strategic Plan. Specifically, develop metrics using the abundance of data to holistically understand the status and trend of the overall health of the preserve against the baselines established in regional conservation plans and formalize a system to communicate complex performance results to the public.	SANDAG has already identified several similar efforts from around the country. SANDAG will develop a proposed approach to these complex ideas to the public and report as a report card or similar evaluation system. Work will start in summer 2018 to develop a detailed work plan. Communications is involved in the planning effort and will effectively work with the department to produce informative pieces for distribution on multiple communication platforms. Staff Lead - Keith Greer (Planning)
Chapter 8: Information and Transparency		
23.	Regularly report on implementation of *TransNet* Extension Ordinance goals by annually publishing progress on SANDAG's website, annual report, or other easily visible reporting tool.	Communications is working on and will complete a proactive annual plan for publishing progress that will entail multiple forms of communication pieces on a variety of communication platforms. Staff Lead - Irene McCormack (Communications)

	Audit Recommendation	Auditee Response
24.	Modify staff reports for SANDAG Board and other oversight committees to summarize elements related to public input, pros and cons on recommended actions, and implications or impacts of those recommended actions. Ensure that staff reports are summarized to one or two pages.	A comprehensive review of the agenda production process, including report preparation, is being conducted based on the Board's Plan of Excellence to ensure transparency and clear, concise, and easily understandable information in reports and presentations. Staff Lead - Victoria Stackwick (Government Relations)
25.	Better link *TransNet* funding to project and program activities for general public awareness by implementing the following: a. More prominently featuring the *TransNet* logo on SANDAG and *TransNet* partner websites as well as through other media such as Facebook and Twitter.	SANDAG staff will review existing websites and make recommendations for additional *TransNet* logo and language placement to create stronger recognition of the *TransNet* Program. Staff also will begin review of partner agency websites to see where SANDAG and *TransNet* logos and corresponding language can be added/enhanced. SANDAG social media posts will reference the use of *TransNet* funding where appropriate, and #*TransNet*SD will continue to be used as a way of threading all *TransNet*-funded program and project posts together. Social media campaigns specific to *TransNet*-funded efforts and accomplishments will be more regularly pursued. Staff Lead - Joy DeKorte (Communications)
	b. Revamping SANDAG website to capture documents pertinent to *TransNet* in a centralized area for each *TransNet* Extension Ordinance component. This includes linking Dashboard projects with those listed in the *TransNet* Extension Ordinance.	The sandag.org/*TransNet* web page will be reviewed and recommendations made will include each *TransNet* component, including the Dashboard. Staff has been pursuing a complete redesign of sandag.org, expected to begin in FY 2019, which is planned to include higher visibility of each *TransNet* component, including the Dashboard. Additionally, staff will begin a coordinated review of the Dashboard to determine the most effective way to link projects back to the Ordinance. Staff Lead - Joy DeKorte (Communications)
26.	Ensure data on completed projects is maintained in the Dashboard—even if under an archived location still accessible to the public—and separate past and future expenditures between the original *TransNet* amounts and the *TransNet* Extension Ordinance amounts.	SANDAG will ensure all completed projects are maintained in the Dashboard, and that all expenditures have been associated with the appropriate funding source. Staff Lead - Lamont Dowell (*TransNet*)

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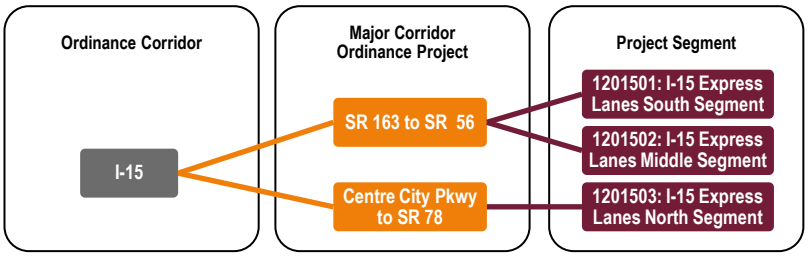
Appendix A: *TransNet* Project Status

Using the *TransNet* Extension Ordinance, *TransNet* Dashboard, major corridor program status table, and Plan of Finance documents provided by SANDAG, the status of the 48 major corridor capital construction projects by *TransNet* Extension Ordinance category and capital improvement project (CIP) number is summarized in Exhibit 63 that follows. As of June 2017, of the 48 major corridor capital construction projects, 33 percent are completed and 28 percent are currently in-progress. To-date, SANDAG reported program costs of nearly $4.4 billion and estimates approximately $22.7 billion in remaining expenditures to complete all projects planned when voters passed the *TransNet* Ordinance.[53]

Due to the complex nature of the information, Exhibit 62 below provides additional clarification to the status of data subsequently presented in Exhibit 63.

EXHIBIT 62. CLARIFICATION FOR *TRANSNET* PROJECT LISTING AT EXHIBIT 63

Exhibit Area	Description
General	All budget and expenditures amounts shown are unaudited.
Ordinance Number	▪ Numbered 1 to 48—representing the 48 major corridor projects from the 2004 *TransNet* Extension Ordinance passed by voters. ▪ EAP (Early Action Program)—19 original project segments from the *TransNet* Extension Ordinance that the SANDAG Board of Directors designated to be completed during the first 10 years of the program. Subsequent EAP project segments were approved by the SANDAG Board of Directors consistent with the *TransNet* Extension Ordinance.
Project/Segment Name	▪ 3 layers—corridor, major corridor project, and project/segment as follows: ✓ **Ordinance Corridor: 15 corridors** per the *TransNet* Extension Ordinance. ✓ **Major Corridor Ordinance Project: 48 major corridor projects** per the *TransNet* Extension Ordinance. ✓ **Project Segment: 78 project segments to date.** Project segments are shown with a seven-digit number that represents the project's capital improvement program (CIP) budget number. Only completed and in-progress projects have a CIP. Example for I-15 Corridor:  Note: The I-15 stretch between SR 56 and Centre City Pkwy was built as the I-15 Express Lanes Middle Segment. ▪ Unallocated [Ordinance Corridor Name]: Amounts per the 2005 Plan of Finance and 2017 Plan of Finance. Illustrates budgets and expenditures not yet allocated to specific projects or segments, but available for future projects on the Ordinance Corridor.

[53] The 2017 Plan of Finance provided a remaining expenditure estimate range of $20.8 billion to $25.4 billion. The $22.7 billion represents the mid-point estimate.

Exhibit Area	Description
Segment	The 48 initial *TransNet* Ordinance projects resulted in 78 individual project segments as of June 30, 2017. This number will grow as new project segments are started. Some projects support multiple corridors, but were only counted once to arrive at the grand total of 78 project segments.
Status	▪ General: Project segments where only a study was completed are shown because expenses were incurred, but were not counted as a completed project segment. ▪ Project Completed & Open-to-Traffic: At the 48 project level, check (✓) marks represent fully completed segment while percentages represent the portion of the segment that is completed. ▪ In-Progress: Project segments could be in various stages—environmental, design, or construction. ▪ Future: Project or project segments have not started and have not incurred expenses.
Budgets	▪ General: Due to rounding, some budget figures do not roll-up to the exact dollar figure. ▪ Ordinance Estimate: In 2002 dollars. Amounts per the *TransNet* Extension Ordinance. Data only available at ordinance corridor and major corridor ordinance project level. ▪ Ordinance Escalated to Year Open: Shown for completed project segments only to allow for comparison of 2002 Ordinance cost estimates to costs at time of completion using U.S. Bureau of Labor Statistics CPI data for the San Diego Region. ▪ 2005 POF Estimate: In 2005 dollars. Amounts per the 2005 Plan of Finance available for the original EAP project segments only. ▪ 2005 POF Escalated to Year Open: Shown for completed EAP project segments only to allow for comparison of 2005 budgets per the POF to the budget at time of project completion using U.S. Bureau of Labor Statistics CPI data for the San Diego Region. ▪ Project CIP Budget: CIP Budget as of June 30, 2017 from *TransNet* Dashboard for in-progress project segments only.
Expenditures	▪ General: Due to rounding, some expenditure figures do not roll-up to the exact dollar figure. ▪ Expenditures through July 2017: Project expenses as reported in the *TransNet* Dashboard and are inclusive of both SANDAG and Caltrans project expenditures. Due to timing, SANDAG expenditures include expenditures through August 2017, while Caltrans expenditures run through July 2017. ▪ Variance: Only calculated for completed projects by subtracting current expenditures from the 2005 POF Estimate (escalated to year open). ▪ Estimated Cost to Complete: Amounts per 2017 Plan of Finance at the Ordinance Corridor and Major Corridor Ordinance level only. Amounts are shown in year of expenditure dollars (YOE).

EXHIBIT 63. STATUS OF MAJOR CORRIDOR CAPITAL PROJECTS AS INCLUDED IN THE *TRANSNET* EXTENSION ORDINANCE

Ordinance Number	Project/Segment Name	Segment	Status			Budgets					Expenditures		
			Project Completed & Open-to-Traffic	In-Progress	Future Project	Ordinance Estimate (2002 Dollars)	Ordinance-Escalated to Year Open	2005 POF Estimate (2005 Dollars)	2005 POF-Escalated to Year Open	Project CIP Budget	Expenditures through July 2017	Variance (2005 POF Escalated minus Expenditures)	Estimated Cost to Complete (Escalated to YOE $)
I-15 Corridor						**$1,400M**	**-**	**$1,893M**	**-**	**-**	**$1,217M**	**-**	**$1,399M**
1	**I-15: SR 163 to SR 56**		✓	-	-	**$220M**	**$286M**	**$423M**	**$482M**	**-**	**$820M**	**-$338M**	
EAP	1201501: I-15 Express Lanes South Segment	1	2011	-	-	-	-	$332M	$380M	-	$330M	$50M	Projects Complete
EAP	1201502: I-15 Express Lanes Middle Segment [1]	2	2009	-	-	-	-	$72M	$79M	-	$464M	-$385M	
EAP	1201504: I-15 FasTrak®	3	2009	-	-	-	-	$20M	$23M	-	$26M	-$3M	
2	**I-15: Centre City Pkwy to SR 78**		✓	-	-	**$120M**	**$156M**	**$179M**	**$208M**	**-**	**$183M**	**$25M**	

Ordinance Number	Project/Segment Name	Segment	Status			Budgets					Expenditures		
			Project Completed & Open-to-Traffic	In-Progress	Future Project	Ordinance Estimate (2002 Dollars)	Ordinance-Escalated to Year Open	2005 POF Estimate (2005 Dollars)	2005 POF-Escalated to Year Open	Project CIP Budget	Expenditures through July 2017	Variance (2005 POF Escalated minus Expenditures)	Estimated Cost to Complete (Escalated to YOE $)
EAP	1201503: I-15 Express Lanes North Segment	4	2012	-	-	-	-	$179M	$208M	-	$183M	$25M	Projects Complete
EAP	1201504: I-15 FasTrak®		2012	-	-	-	-	-	-	-	-	-	
3	**I-15: SR 94 to SR163**		**-**	**✓**	**-**	**$200M**	**-**	**-**	**-**	**-**	**$16M**	**-**	**$1M**
	1280514: I-805/SR 15 Interchange	5	-	✓	-	-	-	-	-	$18M	$16M	-	-
4	**HOV Connector: I-15 / SR 78**		**-**	**✓**	**-**	**$200M**	**-**	**-**	**-**	**-**	**$1M**	**-**	**-**
	1207802: I-15/SR 78 HOV Connectors (Study only)		-	-	-	-	-	-	-	$0.1M	$1M	-	-
5	**HOV Connector: I-15 / SR 94**		**-**	**✓**	**-**	**$150M**	**-**	**-**	**-**	**-**	**$21M**	**-**	**-**
	1280508: SR 94 Express Lanes I-805 to Downtown	6	-	✓	-	-	-	-	-	$23M	$21M	-	-
6	**SR 94: I-5 to I-15**		**-**	**✓**	**-**	**$80M**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	1280508: SR 94 Express Lanes I-805 to Downtown		-	✓	-	-	-	-	-	-	-	-	-
7	**BRT Route 610: via I-15 / SR 94 (Now Route 235)**		**75%**	**25%**	**-**	**$370M**	**-**	**$130M**	**-**	**-**	**$173M**	**-**	**$118M**
EAP	1201505: I-15 BRT Stations – Rancho Bernardo, Sabre Springs, and Del Lago	7	2009	-	-	-	-	$63M	$69M	-	$49M	$20M	Projects Complete
EAP	1201506: I-15 Mira Mesa DAR & BRT Station	8	2014	-	-	-	-	$58M	$70M	-	$54M	$16M	
EAP	1201508: I-15 Bus *Rapid* Transit	9	2014	-	-	-	-	-	-	-	$34M	-	
	1201509: Downtown BRT Stations	10	2016	-	-	-	-	-	-	-	$17M	-	
EAP	1201512: I-15 BRT Sabre Springs Parking Structure	11	2014	-	-	-	-	$9M	$11M	-	$14M	-$3M	
EAP	1201514: Downtown Multiuse and Bus Stopover Facility	12	-	✓	-	-	-	-	-	$46M	$2M	-	-
	1201515: Clairemont Mesa Blvd BRT Stations (Study only)		-	-	-	-	-	-	-	-	$1M	$1M	-
	1201516: I-15 BRT Station Enhancements	13	2014	-	-	-	-	-	-	-	$0.1M	-	Project Complete
	1201518: I-15 Mira Mesa Transit Station Parking Structure	14	-	✓	-	-	-	-	-	$15M	$1M	-	-
8	**BRT Route 470: via I-15 / Mira Mesa Blvd (Now Route 237)**		**50%**	**50%**	**-**	**$60M**	**-**	**-**	**-**	**-**	**$3M**	**-**	**-**
	1201511: Mira Mesa Blvd BRT Priority Treatments	15	2015	-	-	-	-	-	-	-	$3M	-	Project Complete
	1201518: I-15 Mira Mesa Transit Station Parking Structure		-	✓	-	-	-	-	-	-	-	-	-
	Unallocated I-15		**-**	**-**	**-**	**-**	**-**	**$1,162M**	**-**	**-**	**-**	**-**	**$1,279M**
I-805 Corridor						**$2,100M**	**-**	**$2,679M**	**-**	**-**	**$514M**	**-**	**$7,473M**
9	**I-805: SR 905 to SR 54**		**50%**	**25%**	**25%**	**$150M**	**-**	**$10M**	**-**	**-**	**$40M**	**-**	**-**
EAP	1280501: I-805 South – 4 Express Lanes	16	2011	-	-	-	-	$10M	$12M	-	$28M	-$16M	Projects Complete
	1280510: I-805 South – 2 HOV and DAR		2017	-	-	-	-	-	-	-	-	-	
	1280515: I-805 South Soundwalls	17	-	✓	-	-	-	-	-	$38M	$12M	-	-
10	**I-805: SR 54 to I-8**		**25%**	**-**	**75%**	**$450M**	**-**	**-**	**-**	**-**	**$159M**	**-**	**$356M**
EAP	1280501: I-805 South – 4 Express Lanes		2011	-	-	-	-	-	-	-	-	-	Projects Complete

Ordinance Number	Project/Segment Name	Segment	Status			Budgets					Expenditures		
			Project Completed & Open-to-Traffic	In-Progress	Future Project	Ordinance Estimate (2002 Dollars)	Ordinance-Escalated to Year Open	2005 POF Estimate (2005 Dollars)	2005 POF-Escalated to Year Open	Project CIP Budget	Expenditures through July 2017	Variance (2005 POF Escalated minus Expenditures)	Estimated Cost to Complete (Escalated to YOE $)
	1280510: I-805 South – 2 HOV and DAR	18	2017	-	-	-	-	-	-	-	$159M	-	
11	**I-805: Mission Valley Viaduct**		**-**	**-**	✓	**$250M**	**-**	**-**	**-**	**-**	**-**	**-**	**$1,390M**
12	**I-805: I-8 to I-5**		**25%**	**-**	**75%**	**$380M**	**-**	**$7M**	**-**	**-**	**$204M**	**-**	**$869M**
EAP	1280503: I-805 North 4 Express Lanes	19	2010	-	-	-	-	$7M	$8M	-	$12M	-$4M	Projects Complete
	1280505: I-805 HOV/Carroll Canyon DAR	20	2014	-	-	-	-	-	-	-	$94M	-	
	1280511: I-805 North: 2 HOV Lanes	21	2016	-	-	-	-	-	-	-	$99M	-	
13	**I-805 / SR54 Interchange Improvements**		✓	**-**	**-**	**$10M**	**$12M**	**-**	**-**	**-**	**$15M**	**-**	**-**
	1280506: I-805 E Street Auxiliary Lane	22	2009	-	-	-	-	-	-	-	$15M	-	Project Complete
14	**BRT Route 628: via I-805 / I-15 / SR 94 (Now known as South Bay *Rapid*)**		**75%**	**25%**	**-**	**$500M**	**-**	**$106M**	**-**	**-**	**$96M**	**-**	**$178M**
EAP	1280501: I-805 South – 4 Express Lanes		2011	-	-	-	-	-	-	-	-	-	Project Complete
EAP	1280504: South Bay BRT	23	-	✓	-	-	-	$106M	-	$119M	$34M	-	-
	1280510: I-805 South – 2 HOV and DAR		2017	-	-	-	-	-	-	-	-	-	Project Complete
	1280512: I-805 Imperial BRT Station (Study only)		-	-	-	-	-	-	-	-	$1M	-	-
	1280513: I-805/SR 94 Bus on Shoulder Demonstration Project	24	-	✓	-	-	-	-	-	$31M	$1M	-	-
	1201513: South Bay BRT Maintenance Facility	25	2014	-	-	-	-	-	-	-	$60M	-	Project Complete
15	**SR 94: I-805 to I-15**		**-**	✓	**-**	**$70M**	**-**	**-**	**-**	**-**	**-**	**-**	**$176M**
16	**BRT Route 680: via I-805 / I-15 / SR 52**		**-**	✓	**-**	**$70M**	**-**	**$70M**	**-**	**-**	**-**	**-**	**$55M**
	1280514: I-805/SR 15 Interchange		-	✓	-	-	-	$70M	-	-	-		-
17	**SR 52: I-15 to I-805**		**-**	**-**	✓	**$70M**	**-**	**-**	**-**	**-**		**-**	**-**
18	**HOV Connector: I-805 / SR 52 Interchange**		**-**	**-**	✓	**$150M**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	Unallocated I-805		**-**	**-**	**-**	**-**	**-**	**$2,485M**	**-**	**-**	**-**	**-**	**$4,448M**
I-5 South Corridor						**$1,893M**	**-**	**$2,437M**	**-**	**-**	**$918M**	**-**	**$4,236M**
19	**I-5: SR 905 to SR 54**		**-**	**-**	✓	**$130M**	**-**	**-**	**-**	**-**	**-**	**-**	**$140M**
20	**I-5: SR 54 to I-8**		**-**	**-**	✓	**$600M**	**-**	**-**	**-**	**-***	**-**	**-**	**-**
21	**I-5: I-8 to I-805**		**25%**	**75%**	**-**	**$193M**	**-**	**-**	**-**	**-**	**$88M**	**-**	**$535M**
	1200505: I-5/I-8 West to North Connector Improvements	26	2015	-	-	-	-	-	-	-	$16M	-	Project Complete
	1200506: I-5/Genesee Interchange and Widening	27	-	✓	-	-	-	-	-	$116M	$68M	-	-
	1200507: I-5/Voigt Drive Improvements	28	-	✓	-	-	-	-	-	$12M	$3M	-	-
	1200508: I-5/Gilman Drive Bridge	29	-	✓	-	-	-	-	-	$21M	$0.1M	-	-
22	**Route 500 (Blue Line Trolley) Improvements [2]**		**87.5%**	**12.5%**	**-**	**$270M**	**$370M**	**-**	**-**	**-**	**$570M**	**-**	
	1210010: Orange and Blue Line PM	30	2015	-	-	-	-	-	-	-	$19M	-	Projects Complete
	1210020: Blue Line Crossovers and Signals	31	2013	-	-	-	-	-	-	-	$41M	-	

Ordinance Number	Project/Segment Name	Segment	Status			Budgets					Expenditures		
			Project Completed & Open-to-Traffic	In-Progress	Future Project	Ordinance Estimate (2002 Dollars)	Ordinance-Escalated to Year Open	2005 POF Estimate (2005 Dollars)	2005 POF-Escalated to Year Open	Project CIP Budget	Expenditures through July 2017	Variance (2005 POF Escalated minus Expenditures)	Estimated Cost to Complete (Escalated to YOE $)
	1210030: Blue Line Station Rehab	32	2015	-	-	-	-	-	-	-	$131M	-	
	1210040: Orange and Blue Line Traction Power Substations	33	2014	-	-	-	-	-	-	-	$29M	-	
	1210050: Orange and Blue Line Communications System	34	2015	-	-	-	-	-	-	-	$6M	-	
	1210070: Orange and Blue Line Platforms	35	2013	-	-	-	-	-	-	-	$69M	-	
	1210080: Low Floor LRT Vehicles	36	2014	-	-	-	-	-	-	-	$275M	-	
23	**Route 570 (MidCoast)**		**-**	**✓**	**-**	**$670M**	**-**	**$914M**	**-**	**-**	**$229M**	**-**	**$1,395M**
EAP	1257001: Mid-Coast Light Rail Transit (LRT)	37	-	✓	-	-	-	$914M	-	$1,814M	$229M	-	-
24	**Route 634 (*SuperLoop*) (Now known as Routes 201, 202, and 204)**		**✓**	**-**	**-**	**$30M**	**$39M**	**$52M**	**$61M**	**-**	**$31M**	**$30M**	**$56M**
EAP	1041502: *SuperLoop*	38	2012	-	-	$30M	$39M	$52M	$61M	-	$31M	$30M	Project Complete
	Unallocated I-5 South		**-**	**-**	**-**	**-**	**-**	**$1,472M**	**-**	**-**	**-**	**-**	**$2,109M**
I-5 North Corridor						**$1,670M**	**-**	**$2,060M**	**-**	**-**	**$464M**	**-**	**$3,273M**
25	**I-5 / I-805 Merge**		**25%**	**-**	**75%**	**$30M**	**$41M**	**$37M**	**$45M**	**-**	**$73M**	**-**	**$59M**
EAP	1200501: I-5 North Coast – 4 Express Lanes	39	2015	-	-	$30M	$41M	$37M	$45M		$73M	-$28M	Project Complete
26	**I-5: SR 56 to Leucadia Blvd**		**25%**	**37.5%**	**37.5%**	**$400M**	**-**	**$60M**	**-**	**-**	**$164M**	**-**	**$700M**
EAP	1200501: I-5 North Coast – 4 Express Lanes		2015	-	-	-	-	-	-	-	-	-	Project Complete
EAP	1200502: I-5 HOV Extension & Lomas Santa Fe Interchange	40	2009	-	-	-	-	$60M	$66M	-	$67M	-$1M	Project Complete
	1200504: I-5 HOV Birmingham to Palomar	41	-	✓	-	-	-	-	-	$370M	$97M	-	-
27	**I-5: Leucadia Blvd to Vandegrift Blvd**		**25%**	**37.5%**	**37.5%**	**$370M**	**-**	**-**	**-**	**-**	**-**	**-**	**$791M**
EAP	1200501: I-5 North Coast – 4 Express Lanes		2015	-	-	-	-	-	-	-	-	-	Project Complete
	1200504: I-5 HOV Birmingham to Palomar		-	✓	-	-	-	-	-	-	-	-	-
28	**HOV Connector: I-5 / I-805 Interchange**		**-**	**-**	**✓**	**$180M**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
29	**FWY Connector: I-5 / SR 56 Interchange**		**-**	**✓**	**-**	**$140M**	**-**	**-**	**-**	**-**	**$12M**	**-**	**$80M**
	1200503: I-5/SR 56 Interchange	42	-	✓	-	-	-	-	-	$19M	$12M	-	-
30	**FWY Connector: I-5 / SR 78 Interchange**		**-**	**-**	**✓**	**$150M**	**-**	**-**	**-**	**-**	**-**	**-**	**$48M**
31	**Route 398 (COASTER) / BRT Route 472 Improvements**		**31.3%**	**68.7%**	**-**	**$400M**	**-**	**-**	**-**	**-**	**$214M**	**-**	**-**
	1239801: Sorrento to Miramar Phase 1	43	2014	-	-	-	-	-	-	-	$45M	-	Project Complete
	1239803: Oceanside Station Pass-Through Track	44	-	✓	-	-	-	-	-	$28M	$5M	-	-
	1239804: Carlsbad Double Track	45	2012		-	-	-	-	-	-	$20M	-	Project Complete
	1239805: Poinsettia Station Improvements	46	-	✓	-	-	-	-	-	$29M	$3M	-	-

Ordinance Number	Project/Segment Name	Segment	Status			Budgets					Expenditures		
			Project Completed & Open-to-Traffic	In-Progress	Future Project	Ordinance Estimate (2002 Dollars)	Ordinance-Escalated to Year Open	2005 POF Estimate (2005 Dollars)	2005 POF-Escalated to Year Open	Project CIP Budget	Expenditures through July 2017	Variance (2005 POF Escalated minus Expenditures)	Estimated Cost to Complete (Escalated to YOE $)
	1239806: San Elijo Lagoon Double Track	47	-	✓	-	-	-	-	-	$73M	$11M	-	-
	1239807: Sorrento Valley Double Track	48	2015	-	-	-	-	-	-	-	$31M	-	Projects Complete
	1239808: Tecolote to Washington Crossovers	49	2013	-	-	-	-	-	-	-	$9M	-	
	1239809: Eastbrook to Shell Double Track	50	-	✓	-	-	-	-	-	$7M	$6M	-	-
	1239810: Carlsbad Village Double Track	51	-	✓	-	-	-	-	-	$4M	$3M	-	-
	1239811: Elvira to Morena Double Track	52	-	✓	-	-	-	-	-	$193M	$46M	-	-
	1239812: Sorrento to Miramar Phase 2	53	-	✓	-	-	-	-	-	$11M	$7M	-	-
	1239813: San Dieguito Lagoon Double Track and Platform	54	-	✓	-	-	-	-	-	$9M	$8M	-	-
	1239814: COASTER Preliminary Engineering	55	-	✓	-	-	-	-	-	$1M	$0.1M	-	-
	1239815: San Diego River Bridge	56	-	✓	-	-	-	-	-	$94M	$12M	-	-
	1239816: Batiquitos Lagoon Double Track	57	-	✓	-	-	-	-	-	$53M	$6M	-	-
	1239817: Chesterfield Drive Crossing Improvements	58	-	✓	-	-	-	-	-	$6M	$0.1M	-	-
	1143800: Encinitas Grade Separation Pedestrian Crossing	59	2013	-	-	-	-	-	-	-	$6M	-	Project Complete
	Unallocated I-5 North		**-**	**-**	**-**	**-**	**-**	**$1,963M**	**-**	**-**	**-**	**-**	**$1,596M**
SR 52						**$410M**	**-**	**$498M**	**-**	**-**	**$499M**	**-**	**$295M**
32	**SR 52: I-15 to SR 125**		**50%**	**-**	**50%**	**$170M**	**-**	**$210M**	**-**	**-**	**$43M**	**-**	**$56M**
EAP	1205201: SR 52 2 ML – I-15 to SR 125	60	-	✓	-	-	-	$192M	-	$12M	$7M	-	-
EAP	1205202: SR 52 Widening	61	2011	-	-	-	-	$18M	$21M	-	$36M	-$15M	Project Complete
33	**SR 52: SR 125 to SR 67**		**✓**	**-**	**-**	**$240M**	**$309M**	**$288M**	**$331M**	**-**	**$456M**	**-$125M**	**-**
EAP	1205203: SR 52 Extension	62	2011	-	-	-	-	$288M	$331M	-	$456M	-$125M	Project Complete
	Unallocated SR 52		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**$239M**
SR 94 / SR 125						**$620M**	**-**	**$765M**	**-**	**-**	**$8M**	**-**	**$1,873M**
34	**FWY Connector: SR 94 / SR 125 Interchange**		**-**	**50%**	**50%**	**$110M**	**-**	**-**	**-**	**-**	**$8M**	**-**	**$1,472M**
	1212501: SR94/SR125 South to East Connector	63	-	✓	-	-	-	-	-	$11M	$8M	-	-
35	**SR 94: SR 125 to Steele Canyon Rd**		**-**	**-**	**✓**	**$90M**	**-**	**-**	**-**	**-**	**-**	**-**	**$194M**
36	**SR 94 / SR 125: I-805 to I-8**		**-**	**-**	**✓**	**$350M**	**-**	**-**	**-**	**-**	**-**	**-**	**$206M**
37	**Route 520 (Orange Line Trolley) Improvements**		**✓**	**-**	**-**	**$70M**	**$95M**	**-**	**-**	**-**	**-**	**-**	
	1210010: Orange and Blue Line PM		2015	-	-	-	-	-	-	-	-	-	Projects Complete
	1210020: Blue Line Crossovers and Signals		2013	-	-	-	-	-	-	-	-	-	
	1210040: Orange and Blue Line Traction Power Substations		2014	-	-	-	-	-	-	-	-	-	
	1210050: Orange and Blue Line Communications System		2015	-	-	-	-	-	-	-	-	-	

Ordinance Number	Project/Segment Name	Segment	Status			Budgets					Expenditures		
			Project Completed & Open-to-Traffic	In-Progress	Future Project	Ordinance Estimate (2002 Dollars)	Ordinance-Escalated to Year Open	2005 POF Estimate (2005 Dollars)	2005 POF-Escalated to Year Open	Project CIP Budget	Expenditures through July 2017	Variance (2005 POF Escalated minus Expenditures)	Estimated Cost to Complete (Escalated to YOE $)
	1210070: Orange and Blue Line Platforms		2013	-	-	-	-	-	-	-	-	-	
	1210080: Low Floor LRT Vehicles		2014	-	-	-	-	-	-	-	-	-	
	Unallocated SR 94 / SR 125		-	-	-	-	-	$765M	-	-	-	-	-
SR 54 / SR 125						$140M	-	$173M	-	-	-	-	$383M
38	**SR 54 / SR 125: I-805 to SR 94**		-	-	✓	$140M	-	-	-	-	-	-	$383M
	Unallocated SR 54/ SR 125		-	-	-	-	-	$173M	-	-	-	-	-
SR 67						$240M	-	$296M	-	-	-	-	$994M
39	**SR 67: Mapleview St to Dye Rd**		-	25%	75%	$240M	-	-	-	-	-	-	$994M
	SR 67 Intersection Improvements at Dye Rd [3]	64	-	✓	-	-	-	-	-	-	-	-	-
	Unallocated SR 67		-	-	-	-	-	$296M	-	-	-	-	-
I-8 Corridor						$30M	-	$37M	-	-	-	-	$80M
40	**I-8: Second St to Los Coches Rd**		-	-	✓	$30M	-	-	-	-	-	-	$80M
	Unallocated I-8		-	-	-	-	-	$37M	-	-	-	-	-
SR 78						$700M	-	$864M	-	-	$90M	-	$2,332M
41	**SR 78: I-5 to I-15**		25%	75%	-	$500M	-	-	-	-	$25M	-	$544M
	1207801: SR 78 HOV/Managed Lanes (Study only)		-	-	-	-	-	-	-	$2M	$2M	-	-
	1201510: SR 78 Nordahl Road Interchange	65	2012	-	-	-	-	-	-	-	$23M	-	Project Complete
42	**Route 399 (SPRINTER) / BRT Route 471 Improvements**		✓	-	-	$200M	$245M	-	-	-	$65M	-	$428M
	1230001: SPRINTER: Single Track	66	2008	-	-	-	-	-	-	-	$65M	-	Project Complete
	Unallocated SR 78		-	-	-	-	-	$864M	-	-	-	-	$1,360M
SR 76						$180M	$258M	$342M	$416M	-	$306M	$110M	$2M
43	**SR 76: Melrose Dr to I-15**		✓	-	-	$180M	$258M	$342M	$416M	-	$306M	$110M	$2M
EAP	1207602: SR 76 Middle	67	2012	-	-	-	-	$195M	$227M	-	$162M	$65M	Projects Complete
EAP	1207606: SR 76 East	68	2017	-	-	-	-	$147M	$189M	-	$145M	$44M	
SR 56						$100M	-	$123M	-	-	-	-	$273M
44	**SR 56: I-5 to I-15**		-	-	✓	$100M	-	-	-	-	-	-	$273M
	Unallocated SR 56		-	-	-	-	-	$123M	-	-	-	-	-
Mid-City to Downtown						$90M	-	$111M	-	-	$72M	-	$55M
45	**BRT Showcase Route 611: via El Cajon Blvd & Park Blvd (Now known as Mid-City *Rapid* Route 215)**		50%	50%	-	$90M	-	-	-	-	$72M	-	$55M
	1240001: Mid-City *Rapid* Bus	69	2014	-	-	-	-	-	-	-	$41M	-	Project Complete
EAP	1201507: SR 15 BRT – Mid-City Centerline Stations	70	-	✓	-	-	-	$63M	-	$61M	$32M	-	-
EAP	1201514: Downtown Multiuse and Bus Stopover Facility		-	✓	-	-	-	-	-	-	-	-	-
	Unallocated Mid-City / Downtown		-	-	-	-	-	$111M	-	-	-	-	-
Coronado Tunnel						$25M	-	$25M	-	-	-	-	-
46	**SR 75 / SR 282 (Coronado Tunnel): Glorietta Blvd to Alameda Blvd**		-	-	✓	$25M	-	-	-	-	-	-	-

Ordinance Number	Project/Segment Name	Segment	Status			Budgets					Expenditures		
			Project Completed & Open-to-Traffic	In-Progress	Future Project	Ordinance Estimate (2002 Dollars)	Ordinance-Escalated to Year Open	2005 POF Estimate (2005 Dollars)	2005 POF-Escalated to Year Open	Project CIP Budget	Expenditures through July 2017	Variance (2005 POF Escalated minus Expenditures)	Estimated Cost to Complete (Escalated to YOE $)
	Unallocated Coronado Tunnel		-	-	-	-	-	$25M	-	-	-	-	-
	Border Access Improvements					$25M	-	$25M	-	-	$198M	-	-
47	**Border Access Improvements**		85%	15%	-	$25M	-	-	-	-	$198M	-	-
	1201101: SR 11 and Otay Mesa East Port of Entry	71	2016	-	-	-	-	-	-	-	$138M	-	Projects Complete
	1300601: San Ysidro Intermodal Freight Facility	72	2016	-	-	-	-	-	-	-	$39M	-	
	1300602: South Line Rail Freight Capacity	73	2016	-	-	-	-	-	-	-	$46M	-	
	1390501: SR905 – I-805 to Britannia Blvd	74	2012	-	-	-	-	-	-	-	$82M	-	
	1390502: I-805/I-905 Connectors	75	2012	-	-	-	-	-	-	-	$18M	-	
	1390504: SR 905/125/11 Northbound Connectors	76	2016	-	-	-	-	-	-	-	$11M	-	
	1390505: SR 905/125/11 Southbound Connectors	77	-	✓	-	-	-	-	-	$69M	$1M	-	-
	Unallocated Border Improvement		-	-	-	-	-	$25M	-	-	-	-	-
	SR 125					-	-	-	-	-	-	-	-
48	**SR 125: SR 905 to SR 54**		75%	25%		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	3312100: South Bay Expressway (Toll Road Purchase) [4]	78	2011	-	-	-	-	-	-	-	-	-	-
	1390504: SR 905/125/11 Northbound Connectors		✓	-	-	-	-	-	-	-	-	-	-
	1390505: SR 905/125/11 Southbound Connectors		-	✓	-	-	-	-	-	-	-	-	-
	15 Ordinance Corridor Grand Total		-	-	-	$9,623M	-	$12,328M	-	-	$4,391M	-	$22,667M
	Project Status at 48 Ordinance Level		33%	28%	39%	-	-	-	-	-	-	-	-

Note:

[1] Total expenditures for the I-15 Express Middle Segment include expenditures incurred under the initial *TransNet* Program. The project budget reflects the portion of the project or project segment that was to be funded by the *TransNet* Extension.

[2] While all the Blue Line Trolley Improvements have been completed and the services are open to the public, some additional work on the project is still in-progress.

[3] Project did not use *TransNet* major corridor funds; rather $14 billion of County of San Diego *TransNet* funds and $2 billion of State Highway Operation and Protection Program (SHOPP) funds were programmed for this project.

[4] The SR 125 Toll Road was purchased for $342 million in 2011 using *TransNet* funds with the intent to recover the expense through toll revenues.

Appendix B: Detailed Audit Methodology

The *TransNet* Extension Ordinance established a requirement that the Independent Taxpayer Oversight Committee (ITOC) conduct triennial performance audits of the agencies involved in the implementation of *TransNet*-funded projects. In June 2017, Sjoberg Evashenk Consulting, Inc. (Sjoberg Evashenk) was selected by the ITOC to conduct the fourth in a long series of triennial performance audits of *TransNet*-funded programs. The period covered by this audit was July 1, 2014 through June 30, 2017, except where we needed to obtain contextual or underlying support data from periods prior to 2014 or more recent information to fully analyze project activities and practices. Additionally, the audit was conducted simultaneously with the *TransNet* 10-Year Look-Back Review required by the *TransNet* Ordinance. Thus, relevant data and performance since the start of the *TransNet* Extension Ordinance was incorporated into the audit, as appropriate.

Specifically, ITOC asked Sjoberg Evashenk to examine the performance of SANDAG, Caltrans, Metropolitan Transit System (MTS), North County Transit District (NCTD), the City of San Diego, the County of San Diego, and a representative sample of the other cities of the region that have been involved in *TransNet*-funded projects. This included, but was not limited to, a review of the degree to which the projects completed achieved the goals set out in the Ordinance, financial management, project delivery, oversight, and monitoring as well as the efficiency and effectiveness of *TransNet* projects and program areas.

The primary objectives identified for this performance audit were as follows:

1. Review of goals consistent with *TransNet* Extension Ordinance Section 4. Expenditure Plan Purposes
2. Identify key metrics to which outcomes will be measured consistent with the Regional Plan
3. Identify outcomes achieved in the implementation of facilities and services under *TransNet*
4. Evaluate the status of implementation of recommendations from the third triennial performance audit and effectiveness of these prior recommendations
5. Determine whether the organizational structure and operational process continue to allow for effective and efficient project delivery, cost control, and schedule adherence
6. Identify process changes in contracting, construction, permitting, and other procedures that could improve the efficiency and effectiveness of the *TransNet* Program
7. Evaluate the efficiency and effectiveness of ITOC, including adherence to its bylaws
8. Identify and evaluate any potential barriers to and opportunities for proposed changes

To understand changes made to the *TransNet* Program since the prior audit, Sjoberg Evashenk reviewed federal and state regulations, *TransNet* Extension Ordinance updates and amendments, prior audit status of corrective action, annual budgets, fact sheets, and online data, in addition to the following:

- Regional Transportation Improvement Program of 2014 and 2016;
- 2015 San Diego Forward: The Regional Plan;

- State of the Commute Reports for 2014 and 2015-2016;
- *TransNet* Quarterly Reports from July 1, 2014 through June 30, 2017; and
- SANDAG's Capital Improvement Program and Overall Work Program for FYs 2016 to 2018.

To analyze and consider the full complement of challenges and successes surrounding the organizational and operational procedures in the implementation of the *TransNet* Program, we researched similar programs and current best practices, as well as conducted a wide-range of interviews to ascertain perspectives, insights, challenges, and recommendations on the implementation of the *TransNet* Program. Specifically, we met with more than 100 executives, officials, managers, staff, consultants, and stakeholders in areas related to transportation planning, capital construction, environmental mitigation, grant and program management, finance and economics, transit operations, local public works and engineering, and program oversight. Refer to Appendix G for a complete listing of the auditees and stakeholders interviewed.

To evaluate the financing decisions made by SANDAG to date, we conducted the following tasks:

- Reviewed the reasonableness of the Plan of Finance and debt structure model to consider reasonableness of available funding to finish Early Action Program (EAP) projects, evaluated revenue forecast and cost projection methodologies, and reviewed the analysis developed by SANDAG's external, independent financial experts related to the availability of *TransNet* funding for EAP projects.
- Assessed and compared SANDAG's practices with others in industry related to plans of finance, debt versus pay-as-you-go, financing through similar half-cent sales tax measures, levels of leveraged funding, and method for forecasting sales tax revenues.
- Identified a group of peer agencies that had a similar structure to SANDAG and had enacted or extended a half-cent retail sales tax around the same time as the *TransNet* Extension Ordinance to compare peer sales tax activity with *TransNet*'s sales tax revenues, revenue forecasting practices, leveraging, and use of bond debt.
- Reviewed revenue projections and underlying assumptions, compared past forecasts to actual collections for *TransNet* and other funding sources, and identified fluctuations in sources.
- Analyzed cost estimates and underlying assumptions, and summarized expectations with actual results for pertinent cost indicators such as construction (including labor), steel, and asphalt.
- Compared funds provided by debt versus *TransNet* only revenues to determine the number of projects that have been accelerated. Additionally, compared initial projects promised including cost estimates in first 10 years of *TransNet* with actual costs and completed projects and identified any concerns with completing planned *TransNet* projects given progress to date.
- Reviewed the 2016 Transit Operations Plan of Finance's underlying assumptions and projections of revenues and costs to determine reasonableness given current and past transit performance. Identified any periods where program cash flow were projected to be negative and would require additional operational funding.

To analyze performance related to goals of the *TransNet* Program, we conducted the following tasks:

- Captured, trended, and summarized performance outcomes and indicators using SANDAG State of Commute reports, SANDAG Performance Monitoring Reports, transit metrics from the Transit Coordinated Plan, and other sources including Caltrans State of Pavement reports and California Statewide Local Street and Road Needs Assessment. External databases were also used including the Caltrans' Performance Monitoring System (PeMS), California Highway Patrol's Statewide Integrated Traffic Records System (SWITRS), National Transportation Atlas Database (NTAD), federal Urban Integrated National Transit Database (NTD), and United States Census American Community Survey (ACS) data.
- Compared the San Diego region's performance with selected comparable areas and peers as follows:
    - For congestion performance indicators of commute time and commute share by mode, we used US census data to select the nearest two Urbanized Zone Areas (UZA) with populations greater than the San Diego UZA and the nearest three UZAs with populations less than the San Diego UZA (to arrive at a total of 5 comparison areas). That effort identified Seattle, Washington, and San Francisco–Oakland, California, UZAs as the two comparison areas with populations greater than the San Diego UZA. The three comparison areas with populations less than the San Diego UZA were Tampa–St. Petersburg, Florida; Riverside–San Bernardino, California; and Las Vegas–Henderson, Nevada. When selecting the areas with populations less than San Diego, further considerations were taken in regards to proximity to San Diego, centers of tourism, climate, and coastal areas. For example, the Minneapolis–St. Paul, Minnesota, UZA had a population closer to the San Diego UZA than the Tampa–St. Petersburg, Florida UZA, yet we did not use the locale because of drastic differences in climate; specifically, the impact that snow and ice have on the transportation system which is not experienced in San Diego.
    - For safety performance indicators, data was only available by California County (not Urbanized Area), so comparison counties were selected to best align with the UZAs chosen as described above for the congestion performance indicators. Thus, we selected San Francisco and Alameda counties to align with the San Francisco–Oakland UZA; Riverside and San Bernardino counties for the Riverside–San Bernardino UZA; and San Diego County to align with the San Diego UZA.
    - For pavement condition, data was available by California transportation districts, so comparison districts were selected to best align with the areas chosen as described above for the congestion performance indicators. Thus, we selected District 2 to align with the San Francisco–Oakland UZA; District 8 for the Riverside–San Bernardino UZA; and District 11 for the San Diego UZA.
    - For bridge condition using the National Bridge Inventory, data was available by US counties so comparison counties were selected to best align with the areas chosen as described above for the congestion performance indicators. Thus, we selected San Francisco and Alameda counties to align with the San Francisco–Oakland UZA; Riverside and San

Bernardino counties for the Riverside–San Bernardino UZA; San Diego County to align with the San Diego UZA; and King County for the Seattle, Washington, UZA.

  - For transit performance comparisons, peers were selected using transit agencies identified using the Integrated National Transit Database Analysis System based on a variety of service characteristics and urban area characteristics, such as urban population, total vehicle miles, operating budget, population density, and annual delay per traveler. These metrics were compared and assessed with other peer entities in terms of size and operations including Los Angeles, Orange County, San Jose, Santa Clara, Sacramento, and other cities in California as well as entities in Arizona, Oregon, Minnesota, Utah, Colorado, and Texas for National Transit Database Reporting Years 2013, 2014, and 2015.

- Trended performance outcomes for vehicle miles of travel, commute time, hours of delay, annual safety statistics (fatalities per 100 million vehicle miles of travel, number of bicyclists and pedestrians injured or killed, and total number of collisions), pavement condition, bridge condition, commute mode share, ridership, on-time performance, farebox recovery, preventable accidents, operating expenses, and seat utilization. Given that most data comes from data from external agencies, we did not validate performance data available.
- Reviewed historical usage of MTS Senior/Disabled and Youth discounted monthly passes and compared actual *TransNet* funds allocated for subsidies to amounts initially envisioned to assess the impact subsidies had on funds available for transit service improvements, including operations and capital improvements. We also compared discounts offered in San Diego to the 10-peer transit agencies previously identified to determine whether the monthly pass discounts included in the *TransNet* Ordinance were in-line with the types and amounts offered by peer agencies.
- Gathered and reviewed a wide breadth of data and information to summarize performance since 2014 including financial audits, performance audits, Federal Transit Administration audits, Transportation Development Act audits, San Diego Forward: The Regional Plan, Coordinated Plan, Regional Bikeway Plan, fact sheets, maps, and documents as well as data included in electronic spreadsheets or databases such as the *TransNet* Story Map, Dashboard, and ProjectTrak.

To analyze the performance, efficiency, and effectiveness of practices and processes over the Local Street and Road program, Sjoberg Evashenk conducted the following procedures:

- Reviewed changes to SANDAG's management and administration of the program including obtaining applicable policies, rules, and audits associated with the program since the last audit period. Also, we reviewed annual financial and compliance audits conducted by external audit firms that assess local agency compliance with SANDAG Board Policy No. 31: *TransNet* Ordinance Expenditure Plan Rules—Rule 17.
- Conducted site visits at the City of San Diego, County of San Diego, and City of Chula Vista to interview local engineering, public works, finance, and department management staff to gain an overall understanding of local processes and procedures related to project selection, design, right-of-way, environmental, construction, close-out, and contractor/consultant procurement as well as public outreach and information, bike and pedestrian accommodations, and pavement management.

As part of our evaluation of the Environmental Mitigation Program (EMP), we performed the following activities:

- Reviewed various pertinent reports and documents, including *TransNet* Extension Ordinance, EMP Memorandum of Agreement between SANDAG and wildlife agencies, EMP policies and guidelines, strategic plans and objectives, EMP status reports, discussion memos to decision makers, and SANDAG Board decisions.
- Interviewed SANDAG staff involved in the EMP as well as pertinent stakeholders including the EMP Working Group Vice Chair, ITOC Chair, and EMP consultants and stakeholders.
- Assessed the status and transition from a planning and acquisition focus to implementation as well as understanding progress towards evaluating what habitats have been restored or conserved as well as species protected. Additionally, summarized progress made related to measuring performance and communicating results to the public.
- Analyzed financial data, including budgeted allocations and actual program expenditures related to acquisitions, restoration, management, and administration activities as well as projected program expenditures and revised revenue estimates.
- Determined the status of the expiring Memorandum of Agreement and the effectiveness of utilization of local mitigation program funding.

To assess the processes, controls, project management, and delivery of the Major Corridor Capital Construction Program, we performed the following:

- Interviewed SANDAG and Caltrans Corridor Directors in addition to project managers as well as reviewed project documentation to understand changes in project management practices since the third triennial audit.
- Reviewed the new Construction Manager/General Contractor (CMGC) project delivery method being employed by SANDAG and Caltrans for the North Coast Corridor and the Mid-Coast Corridor capital construction projects. Compared CMGC activities and framework against industry leading practices related to project management and delivery.

To review processes, controls, and oversight exercised over Bike EAP, we performed the following:

- Interviewed SANDAG Bikeway Corridor Director, Active Transportation Program Manager, and bikeway project managers.
- Reviewed project documentation to understand bikeway project delivery framework and project management practices.
- Analyzed *TransNet* budgets and expenditures to determine Bike EAP progress.
- Queried data from the *TransNet* dashboard to determine bikeway projects' schedule and budget statuses and reasons for delay.
- Researched Complete Streets legislation, SANDAG policy, and related Caltrans directive.
- Assessed implementation of Rule 21 related to accommodation of bicyclists and pedestrians on local street and road projects, SANDAG's 2014 review of local implementation of the rule, and related presentations to oversight committees.

To evaluate information provided to decision makers and the public as well as the awareness of *TransNet* activities, we performed the following:

- Studied public surveys conducted by *TransNet* partners on *TransNet* related activities or modes of transportation.
- Reviewed public websites and links of all *TransNet* partners and more than 20 other similar transportation agencies in California and Arizona.
- Evaluated board meeting agendas and packets for the SANDAG Board and several other transportation oversight committees in California, Arizona, and Washington.

Finally, we assessed ITOC's compliance and effectiveness in fulfilling its obligations by reviewing the "Statement of Understanding Regarding the Implementation of the ITOC for the *TransNet* Program," completed conflict of interest forms, member Statements of Economic Interests, and ITOC member resumes in addition to ITOC bylaws and implementation procedures developed in concert with SANDAG. Sjoberg Evashenk reviewed ITOC meeting agendas and minutes for the months of July 2014 through June 2017, including attendance lists, annual ITOC reports, presentations of information, discussions and recommendations, and special meetings to select new members. Further, Sjoberg Evashenk compared ITOC experience requirements, activities, and practices with peers in Arizona and other regions within California.

The audit findings and conclusions were presented and discussed with representatives of SANDAG, Caltrans, MTS, NCTD, City of San Diego, County of San Diego, and City of Chula Vista in addition to the ITOC on several occasions prior to completion of the audit. Management views and comments were considered and incorporated into the audit report as appropriate.

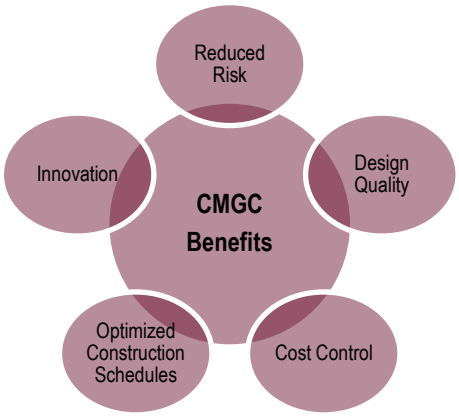
Appendix C: CMGC Project Delivery Leading Practices

Currently, enabling legislation to use the Construction Manager/General Contractor (CMGC) project delivery method is only present in 14 states in the United States—thus, making the method relatively new in the industry. The model relies on commitments from a construction manager to deliver projects within a guaranteed maximum price under an integrated approach where the CMGC is involved in each stage of the project delivery acting as consultant to the owner in the development and design phases and as a general contractor during the construction phase. This differs from traditional approaches where separate consultants and contractors are used for design and construction phases. In fact, the owner generally bears a greater proportion of the risk and control with the traditional industry Design-Bid-Build project delivery method, than the CMGC project delivery method. Yet, once a Guaranteed Maximum Price is established, the CMGC is generally contractually obligated to complete the project within the established price and, as such, assumes a greater share of the risk. National research available cites many benefits and challenges as well as associated risks that must be considered when using the CMGC project delivery method.

Many Benefits Exist, But Risk of Failure is Elevated if Leading Practices Are Not Followed

Current CMGC guidelines from the Federal Highway Administration (FHWA) highlight greater innovation, reduced risk, better design quality, fewer change orders and improved cost controls as result of using the CMGC as shown in Exhibit 64.

EXHIBIT 64. CMGC BENEFITS

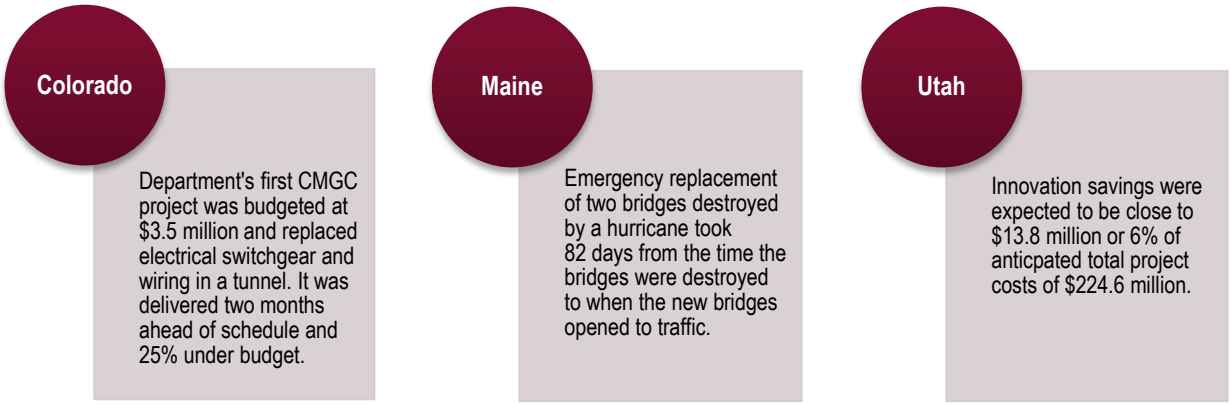


Source: FHWA CMGC Fact Sheet, August 2017.

In general, per the FHWA, CMGC is most suitable and beneficial for "transportation projects with sensitive schedules and potential constructability challenges that are located in busy urban areas." At ITOC's June 2017 meeting, Caltrans provided a NCC progress update and among other areas discussed how using the CMGC has helped with balancing earth work, staging and integrating work in the lagoons, avoiding right-of-way delays, and has allowed for greater flexibility due to collaboration among all involved parties. These benefits are similar to what other state departments of transportation (DOTs) have reported. For instance,

the Minnesota Department of Transportation (MnDOT) on its first CMGC project constructing a new bridge reported that CMGC resulted in reduced complexity of dealing with multiple contractors, aided in community involvement, reduced risks, and allowed for earlier engagement of stakeholders. Benefits quantified by other DOTs at a FHWA CMGC Peer Exchange held in 2012 are summarized in Exhibit 65.

EXHIBIT 65. EXAMPLES OF CMGC BENEFITS REPORTED AT OTHER DEPARTMENTS OF TRANSPORTATION



Source: 2012 FHWA CMGC Peer Exchange.

Note: Utah innovation savings represent the estimated direct savings based on proposed innovations and savings recognized during design for projects that completed design in 2011-2012.

Benefits, such as those shown in Exhibit 65, and challenges encountered by State DOTs over time evolved into leading practices that were collected and shared by FHWA for freeway projects. On its CMGC homepage, FHWA provided links to materials from State DOTs—some of which were generated by Caltrans as shown in Exhibit 66.

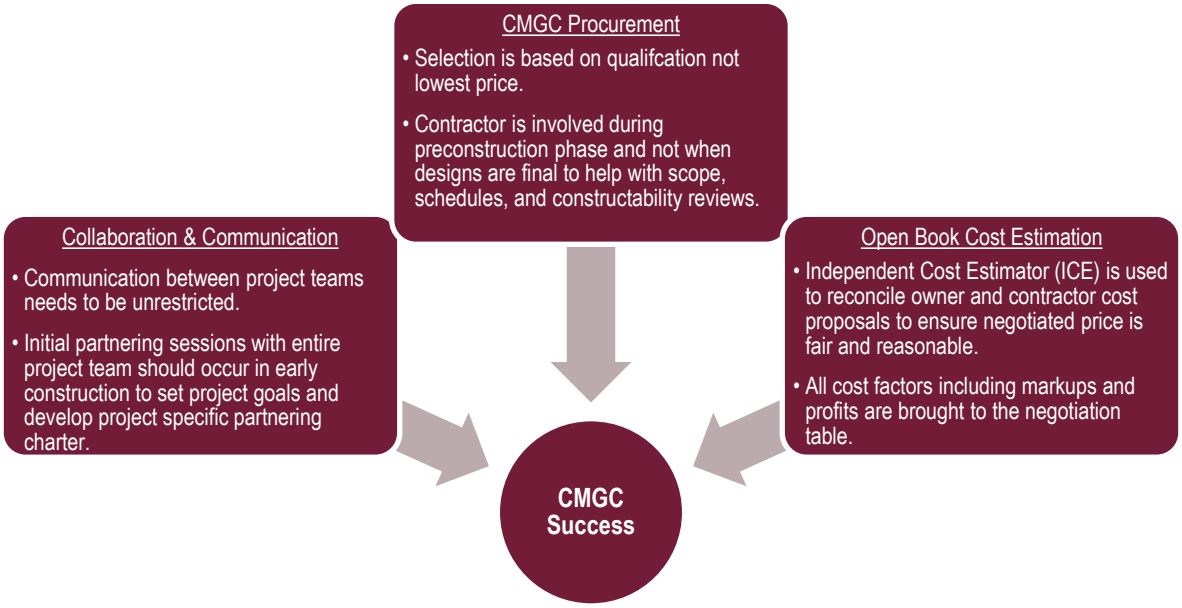
EXHIBIT 66. LEADING PRACTICES GUIDELINES

CMGC Sample Materials of Instruction	CMGC Procurement Strategies & Contracting	Risk Registries & Allocation Guidance	Other/General
Arizona DOT: Construction Manager at Risk Guide	Oregon DOT, Utah DOT: Sample CMGC Documents	**Caltrans Project Risk Management**	2007 Associated General Contractors of America & National Association of State Facilities Administrators: CMGC Guidelines for Public Owners (Joint Publication)
Minnesota DOT: Project Specific Files on Estimating Processes, Conflict of Interest, Outreach, RFP, Contract	**Caltrans: Sample RFQ**		2012 Boston State DOT Peer Exchange Conference Materials
Utah DOT: CMGC Selection Manual of Instruction			

Source: FHWA CMGC Homepage.

Further, the 2007 Joint Publication by the Associated General Contractors of America and National Association of State Facilities Administrators contained lessons learned from a public owner's perspective that evolved into a best practices document. In general, the consensus across literature for a successful implementation of a CMGC projects depends on the key areas highlighted in Exhibit 67.

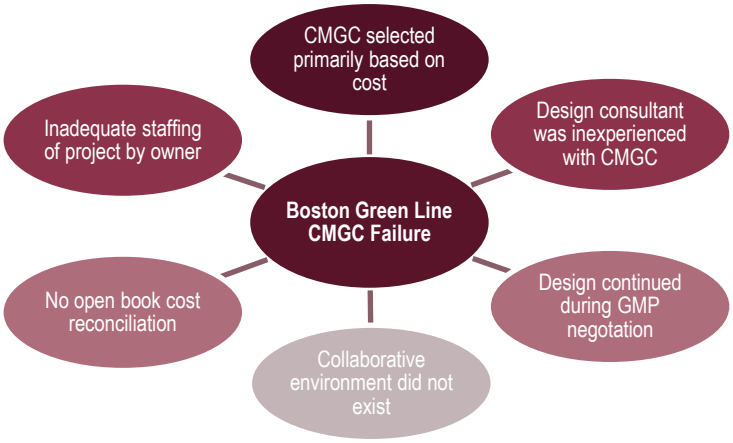
EXHIBIT 67. KEY FACTORS CONTRIBUTING TOWARDS CMGC SUCCESS



Source: Associated General Contractors of America & National Association of State Facilities Administrators: CMGC Guidelines for Public Owners (2007 Joint Publication); Caltrans 6/14/17 presentation to ITOC and report on Boston Lessons Learned.

However, there were instances where the CMGC method was not successful. The most recent prevalent example discussed in transportation industry research related to the Massachusetts Bay Transportation Authority (MBTA) $2 billion Green Line extension project that was halted in late 2015 and repackaged under a design-build model to be delivered by 2021. The Massachusetts Department of Transportation (MassDOT) engaged a consulting firm to perform a look-back study in connection with the project. [54] Key factors that contributed towards the failure of CMGC for the MBTA project are highlighted in Exhibit 68.

EXHIBIT 68. KEY FACTORS CONTRIBUTING TOWARDS FAILURE OF CMGC (MBTA GREEN LINE EXTENSION EXAMPLE)



Source: Berkeley Research Group Look Back Study, 2015; Caltrans Report on Boston Lessons Learned.

[54] Berkeley Research Group, LLC "Look Back Study" prepared for MassDOT, December 2015.

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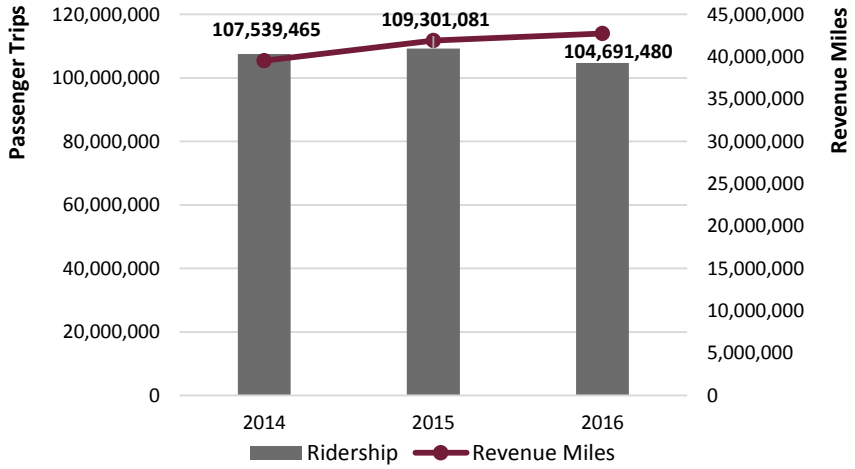
Appendix D: Systemwide Transit Performance Metrics

Typical of its industry, there was a lot of transit performance data available and reported for the San Diego region—systemwide, by operator, by route, and by *TransNet*-only funded routes. While this data was generally available on the websites of the Metropolitan Transit System (MTS) and North County Transit District (NCTD) as well as through SANDAG's Coordinated Plan, we also captured some of the more typical performance metrics for the San Diego region systemwide using federal National Transit Database (NTD) information. Data was self-reported by the transit operators and was not validated as part of this review; although the operators have undergone triennial performance audits by external parties where the data is subject to audit. Additionally, the methodology for reporting data may vary due to changes in classifications of rail (light rail, commuter rail, or hybrid rail) or type of bus as well as vary due to routes starting or stopping service over the time period examined.

Service Effectiveness: Ridership and Revenue Miles

Transit ridership across all modes declined nearly 3 percent from 107.5 million riders in 2014 to 104.7 million riders in 2016, as shown in Exhibit 69, and is expected to further decline in 2017—similar to national trends.

EXHIBIT 69. SAN DIEGO SYSTEMWIDE RIDERSHIP AND REVENUE MILES [1]



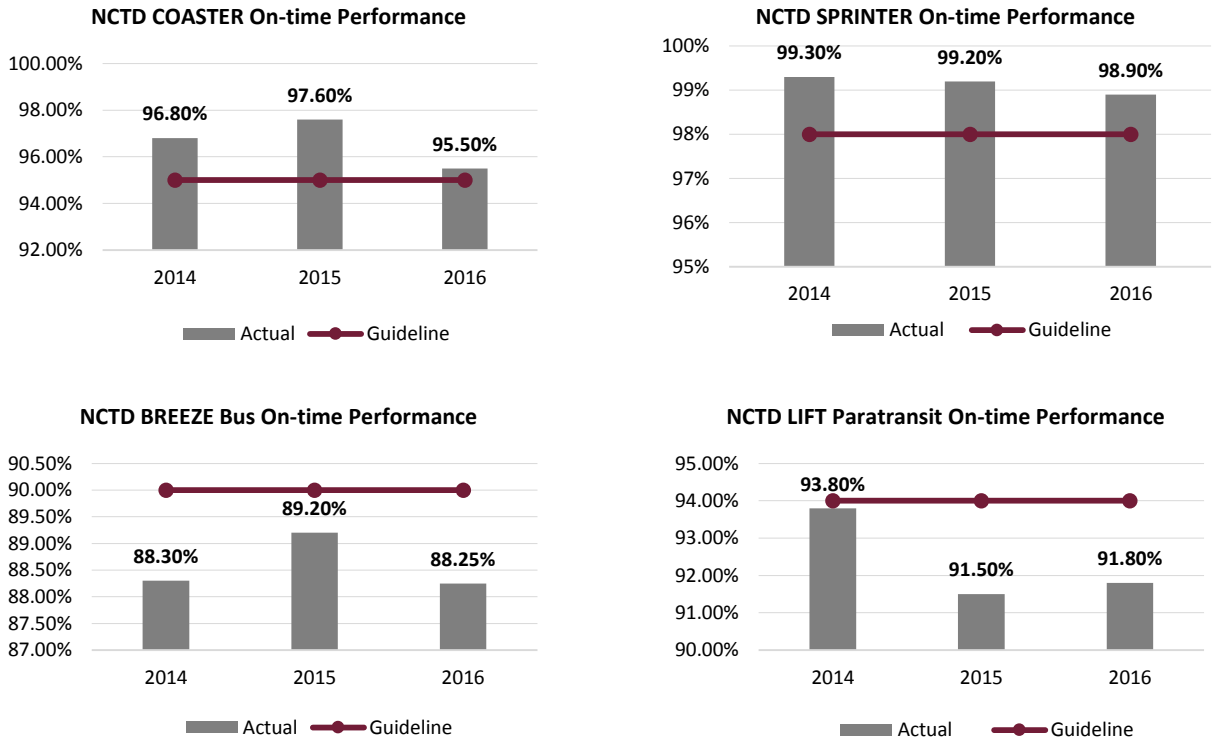
Source: http://ftis.org/ Urban Integrated National Transit Database, and MTS and NCTD FY 2016 Performance Reports.

Note: [1]Ridership does not include Vanpool.

Quality of Service: On-Time Performance

On-time performance is a metric of system quality and indicates the percent of trips that arrive on-time, and also directly impacts customer satisfaction and customers' decision to use public transportation.[55] Since 2014, both MTS and NCTD's on-time performance fluctuated by mode, with some modes generally meeting or exceeding established on-time performance guidelines such as the NCTD COASTER and SPRINTER rail services. Conversely, fixed route bus service for both operators and the NCTD LIFT paratransit service struggled to consistently meet established guidelines.[56] Although the NCTD BREEZE missed its 90 percent on-time guideline over the past three years from 2014 to 2016 as shown in Exhibit 70, on-time performance prior to that period met goals since 2006. This change in performance could be partly due to the accuracy of automatic vehicle location technology that NCTD implemented on its BREEZE buses in FY 2013. After the transition from manual to automated data collection, NCTD reported it noted a 10 percent decline in on-time performance for its BREEZE bus operations.

EXHIBIT 70. NCTD ON-TIME PERFORMANCE BY MODE



Source: SANDAG Performance Monitoring Data.

From Fiscal Year 2014 to Fiscal Year 2016 actual on-time performance for the NCTD BREEZE Bus service did not meet the guideline. While NCTD tracked and reported annual on-time performance, MTS tracked on-time performance by month and did not provide on-time performance for its MTS Access demand response service. Similarly, MTS Express, Urban Frequent, and Urban Standard route categories

[55] MTS classifies on-time as buses departing stops within zero to five minutes of the scheduled time and light rail trips arriving at their end terminal within zero to five minutes of the scheduled time.

[56] In years when NCTD on-time performance did not meet guidelines, it was within 0.2 and 2.5 percent of those established guidelines.

consistently did not meet targeted on-time performance goals as shown in Exhibit 71. On-time performance improved for several routes, including *Rapid* and *Rapid Express*, by incorporating signal priority measures and dedicated lanes for transit in addition to reducing the number of stops. Further, to enhance the accuracy of on-time performance data and provide more robust data analytics, MTS installed automatic vehicle location equipment on its contracted bus service in 2016.

EXHIBIT 71. MTS ON-TIME PERFORMANCE BY ROUTE CATEGORY, JUNE YEAR-TO-YEAR COMPARISON

MTS Route Category	Goal	June 2013	June 2014	June 2015
Rapid Corridor (Routes 235/237)	90%	✓	✓	
Express	90%			
Premium/*Rapid Express*	90%	✓		✓
Light Rail (Blue, Orange, and Green Line Trolleys)	90%	✓		✓
Light Rail (Silver Line Trolley)	90%		✓	✓
Rapid Arterial (Route 215/*SuperLoop*)	85%	✓	✓	✓
Urban Frequent	85%			
Urban Standard	90%			
Circulator	90%	✓	✓	
System On-Time Performance		**84.1%**	**85%**	**84.4%**

Source: MTS Policy 42 Performance Monitoring Reports 2013, 2014, and 2015.
Note: ✓ = Target met or exceeded. Categories provided by MTS.

Sustainability: Farebox Recovery

The farebox recovery ratio is the percent of operating expenses covered by fare revenue. A higher farebox recovery ratio indicates a greater percent of the operating costs are covered by fare revenue and provides increased financial stability. Several factors influence farebox recovery, including changes in operating costs, ridership, and fare structure. For instance, higher fares can increase the farebox recovery ratio; however, regional fares in San Diego have not changed since 2008. In fact, farebox recovery ratios have remained relatively stable over the three-year period between 2014 and 2016 as well as since the beginning of the *TransNet* Ordinance.

With the exception of several services provided by NCTD, annual farebox recovery ratios remained above internal guidelines for each mode of transit. As shown in Exhibit 72, MTS consistently exceeded goals with bus and rail farebox recovery ratios ranging from a low of 34.4 percent to a high of 56.3 percent. In fact, MTS Bus consistently exceed the Transit Development Act mandated recovery ratios for bus service. Similarly, MTS farebox recovery for paratransit services exceeded the Transit Development Act 10 percent farebox recovery ratio guideline and NCTD met the guideline in 2014, but not in 2015 and 2016. NCTD met bus and rail farebox recovery guidelines in 2014 and 2015, but did not meet targets in 2016.

EXHIBIT 72. SYSTEMWIDE FAREBOX RECOVERY BY MODE AND SERVICE, 2014 - 2016

	Guideline	2014	2015	2016	Percent Change 2014 to 2016
Fixed Route Bus					
MTS *Rapid* Express	20.0%	43.4%	52.3%	52.4%	20.7%
MTS Bus	31.9%	36.5%	35.5%	34.4%	-5.8%
NCTD BREEZE Bus	18.8%	19.6%	19.4%	16.4%	-16.3%
Rail					
MTS Light Rail	31.9%	56.1%	56.3%	54.4%	-3.0%
NCTD SPRINTER[1] Hybrid Rail	18.8%	18.3%	18.6%	17.8%	-2.7%
NCTD COASTER Commuter Rail	18.8%	38.9%	35.9%	40.0%	2.8%
Paratransit Demand Response					
MTS Access Paratransit	10.0%	13.1%	13.7%	12.9%	-1.5%
NCTD LIFT Paratransit	10.0%	11.9%	9.2%	8.9%	-25.2%

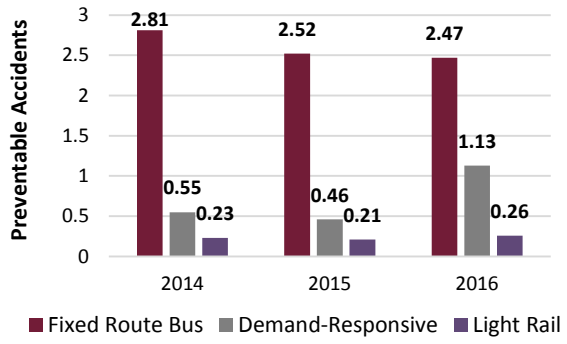
Source: SANDAG Performance Monitoring Data.

According to the most recent Transportation Development Act audit report, NCTD identified several opportunities to improve its farebox recovery. First, NCTD plans to implement any changes to the Regional Fare Ordinance. Second, NCTS plans to introduce new scheduling technology, including automated scheduling software that will allow passengers to book rides on-line or through an interactive voice response system and mobile data terminals on each LIFT and FLEX vehicle notifying customers when the vehicle is near their pick-up point. As such, NCTD believes these will improve its scheduling efficiency. Third, NCTD plans to implement a more robust eligibility certification program for those that qualify for the Americans with Disabilities Act that will use a combination of online application and in-person interview and functional assessments. NCTD indicated that when other agencies implemented similar changes, the number of unrestricted clients declined and denials increased 4 percent. Finally, NCTD plans to increase its usage of brokered trips using taxicabs and other providers.

Safety: Preventable Accidents

Several metrics can be used to measure transit safety, such as the number of preventable accidents, safety incidents, or crime rates. Exhibits 73 and 74 reflect the metric of number of preventable accidents per 100,000 miles by mode. According to MTS, this metric indicated that the driver could have potentially done something different to prevent the accident from occurring, but the accident was not a code violation. Since 2014, MTS decreased the number of preventable accidents for fixed route. Similarly, NCTD reported less than two preventable accidents per 100,000 miles by mode for each mode from 2015 to 2017.

EXHIBIT 73. MTS PREVENTABLE ACCIDENTS PER 100,000 MILES BY MODE



Source: Data provided by MTS.
Note: Fixed Route Bus includes MTS Directly Operated Bus and Contracted Fixed Route Bus.

EXHIBIT 74. NCTD AVERAGE PREVENTABLE ACCIDENTS PER 100,000 MILES BY MODE

Mode	2015	2016	2017
BREEZE	0.77	0.82	0.97
SPRINTER	0.00	0.00	0.00
COASTER	0.00	0.00	0.00
LIFT/FLEX	0.97	1.07	1.55

Source: Data provided by NCTD.
Note: NCTD could only provide data from FY 2015 to FY 2017.

Seat Utilization: Load Performance

This indicator relates to seat utilization and tracks the percent of seats occupied. Since 2014, both MTS and NCTD fixed route bus load factors have been within the guidelines established by SANDAG each year. As shown in Exhibit 75, the average weekday load factor for each mode was within established guidelines and remained relatively consistent over the 3-year period. Higher load factors over suggested guidelines indicated overcrowding on buses, trains, and paratransit vans, while a load factor lower than guidelines indicated seats were available.

EXHIBIT 75. AVERAGE WEEKDAY LOAD FACTOR BY MODE AND SERVICE

Mode and Service	Guideline	2014	2015	2016	Change 2014 to 2016
Fixed Route					
MTS Bus	1.00	0.28	0.27	0.27	-0.01
NCTD BREEZE Bus	1.10	0.22	0.20	0.20	-0.02
Rail					
MTS Light Rail	3.00	0.41	0.44	0.41	0
NCTD SPRINTER Hybrid Rail	1.00	0.25	0.25	0.27	0.02
NCTD COASTER Commuter Rail	1.00	0.20	0.20	0.19	-0.01

Source: SANDAG Performance Monitoring Data.

Productivity: Passengers per Revenue Hour

Another measure of the productivity of a transit vehicle is passengers per revenue hour. From 2014 to 2016, rail and paratransit services consistently met or exceeded established guidelines for passengers per revenue hour. Conversely, both MTS Bus and NCTD BREEZE Bus did not always meet established guidelines, as shown in Exhibit 76.

EXHIBIT 76. SYSTEMWIDE PASSENGERS PER REVENUE HOUR BY MODE

Mode and Service	Guideline	2014	2015	2016
MTS Bus	35	32	31	28
NCTD BREEZE Bus	20	19	17	16
MTS Light Rail	35	79	81	80
NCTD SPRINTER Hybrid Rail	20	85	91	74
NCTD COASTER Commuter Rail	20	47	47	45
MTS Access Paratransit	2	2	2	2
NCTD LIFT Paratransit	2	2	2	2

Source: SANDAG Performance Monitoring Data.

Headway: Frequency of Service

According to SANDAG's most recent Transit Coordinated Plan, the MTS and NCTD minimum peak service headway goals were 15 minutes for buses, 15 to 30 minutes for light rail, and 40 minutes for commuter rail. Data revealed neither MTS nor NCTD met headway goals for fixed route bus—except in 2013 where MTS commuter fixed route bus met the guideline. Conversely, both entities met headway goals for rail. For instance, the average headway for MTS light rail was approximately 11 minutes in both 2014 and 2015, well below the 15 to 30-minute goal as shown in Exhibit 77. Moreover, since *TransNet* began, average annual headway results for each mode were fairly consistent over time for rail, while fixed route showed more fluctuation.

EXHIBIT 77. SYSTEMWIDE AVERAGE HEADWAY (IN MINUTES)

Mode and Service	Guideline	2013	2014	2015
Fixed Route[1]		**21**	**23**	
MTS Commuter Bus	15 minutes	15	21	
MTS and NCTD Bus	15 minutes	23	23	
Rail		**25**	**24**	**24**
MTS Light Rail	15-30 minutes	13	11	11
NCTD SPRINTER Hybrid Rail	15-30 minutes	30	30	30
NCTD COASTER Commuter Rail	40 minutes	31	31	31

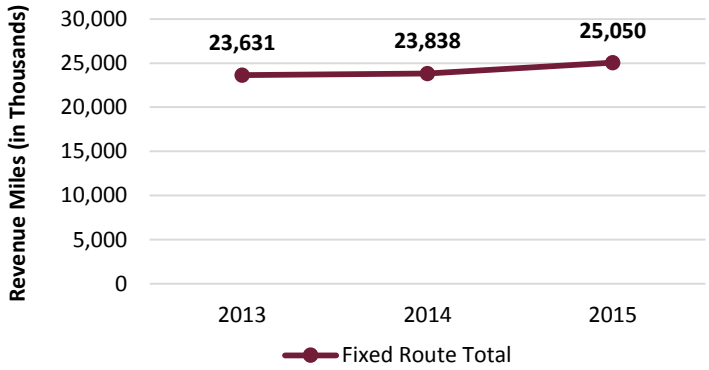
Source: http://ftis.org/ Urban Integrated National Transit Database.
Note: [1] Average headway was not reported for Fixed Route in the 2015 NTD Reporting Year.

Revenue Miles

Countywide transit revenue miles (miles traveled when in service and available to carry passengers) across all modes of transit increased from 37.8 million miles in 2013 to 41.9 million miles in 2016—an 11 percent growth.

- **Fixed Route Bus** revenue miles increased 6 percent from 23.6 million miles in 2013 to 25 million miles in 2015, as shown in Exhibit 78. Changes in total revenue miles is impacted by the number of routes offered, span of service, and frequency of service.

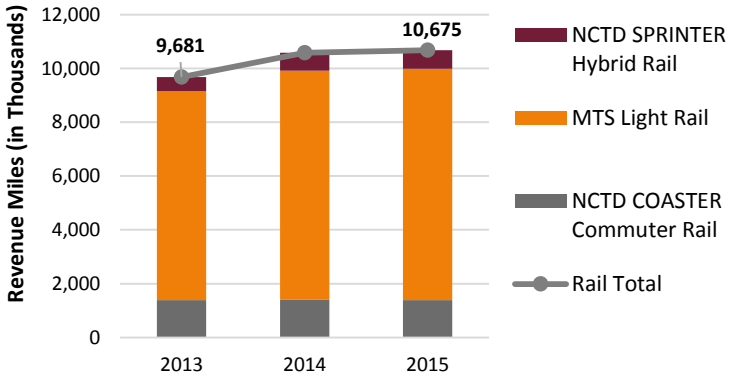
EXHIBIT 78. SYSTEMWIDE FIXED ROUTE REVENUE MILES (IN THOUSANDS)



Source: http://ftis.org/ Urban Integrated National Transit Database.
Note: Vanpool not included as it is not funded by *TransNet*.

- **Rail** revenue miles (including commuter rail, light rail, and hybrid rail) experienced growth of approximately 10 percent increasing from nearly 9.7 million miles in 2013 to nearly 10.7 million miles in 2015 as shown in Exhibit 79. Most of the increase can be attributed to MTS Light Rail operations.

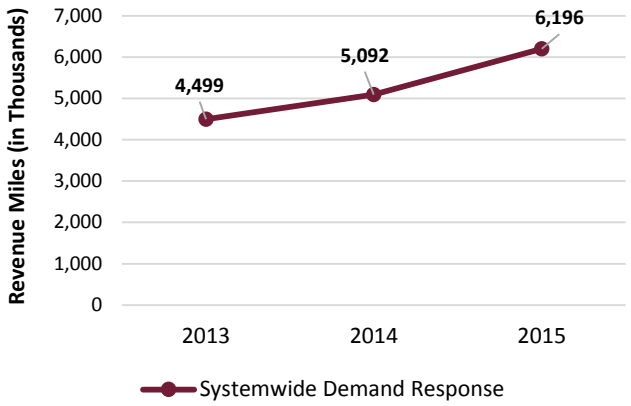
EXHIBIT 79. SYSTEMWIDE RAIL REVENUE MILES BY SERVICE (IN THOUSANDS)



Source: http://ftis.org/ Urban Integrated National Transit Database.

- **Paratransit** revenue miles increased from approximately 4.5 million miles in 2013 to 6.2 million miles in 2015—an increase of nearly 38 percent, as shown in Exhibit 80. Thus, usage of paratransit services significantly grew over the 3-year period.

EXHIBIT 80. SYSTEMWIDE PARATRANSIT DEMAND RESPONSE REVENUE MILES BY SERVICE



Source: http://ftis.org/ Urban Integrated National Transit Database and MTS and NCTD Form C for 4rd Quarter 2015 as provided by SANDAG.

Appendix E: Status of Prior Performance Audit Recommendations

The prior audit suggested improvements in a number of areas to increase efficiency such as revisiting definitions surrounding the Local Street and Road program, employing checklists over grant site visits, and streamlining processes for grant applications. Other recommendations focused on strengthening oversight and accountability to ensure the foundation surrounding the program continues to be solid. For instance, performance indicators for vehicle-hours of delay and miles traveled are now publicly available and data to measure grant performance and Local Street and Road performance are in the initial stages of development. Moreover, practices have been tightened over the Environmental Mitigation Program with defining economic benefit concepts, establishing strategic plans with clear goals, and developing management systems to track results and performance.

As of June 2017, SANDAG implemented 11 of the 18 recommendations from the FY 2015 *TransNet* Triennial Performance audit and was actively working on addressing the remaining 7 recommendations. Most of the outstanding recommendations pertain to the development of performance monitoring and reporting tools of *TransNet* funded programs. SANDAG was also still working on collecting baseline data for its Active Transportation and Smart Growth Incentive grant programs that will allow future performance evaluations. Status is shown in Exhibit 81.

EXHIBIT 81. STATUS OF FY 2015 *TRANSNET* TRIENNIAL PERFORMANCE AUDIT RECOMMENDATIONS

	Summary of Recommendation	Status
1	Summarize performance results in a report card.	Completed.
2	Finalize construction management manual.	Completed.
3	Monitor risks associated with and implement best practices with CMGC.	Completed.
4	Measure internal project delivery performance.	Completed.
5	Measure local streets and road performance outcomes.	**In-Progress**. SANDAG investigated third-party data vendors, and additional work continues to implement a new tool to address recommendation and other performance monitoring requirements from MAP-21 and FAST act. However, no outcome data has been captured and measured to date.
6	Report and summarize Local Street and Road outputs.	**In-Progress.** SANDAG developed an Outcome and Output report to gather output information. Because the current report is based on planned outputs—not actual outputs from completed projects. SANDAG is working to better capture actual output information.
7	Revisit the Expenditure Plan 70/30 definitions for Local Streets and Road congestion relief and maintenance.	Completed. Although the current audit proposes another recommendation in this area.
8	Continue effort to market local mitigation program.	Completed. Although the current audit proposes another recommendation in this area.

	Summary of Recommendation	Status
9	Measure results of mitigation efforts to implement EMP Strategic Plan and Resource Enhancement/Mitigation Program.	**In-Progress.** Tracking efforts have started. Plan is to report results on Dashboard by summer 2018.
10	Create methodology to quantify EMP economic benefits to compare against monies released.	**In-Progress**. Methodology established; analysis to identify funding deficits or surpluses is scheduled for 2018.
11	Link to transit operator performance dashboards once developed.	Completed.
12	Track and report performance and whether grants are achieving program goals.	**In-Progress**. Started working with grantees on baseline data collection and capturing post-construction data. SANDAG still developing a procedure for analysis and reporting.
13	Make minor changes in grant site visit processes.	Completed.
14	Date stamp all grant applications to determine compliance with deadlines.	Completed.
15	Develop project delivery and management plans for Bike EAP.	**In-Progress**. External contractor was selected to create plan; scheduled for by June 2018.
16	Utilize project management tools on Bike EAP projects to monitor schedule and costs, and validate accuracy of Dashboard data.	Completed.
17	Set and capture performance data for outputs, outcomes, and project delivery for Bike EAP projects.	**In-Progress**. SANDAG elected to implement this recommendation through a report card. A draft report card was provided to ITOC for comment at its 2/14/18 meeting, and summarized outputs and project delivery showing projects delivered, status, schedule milestone attainment, support-to-capital ratio, construction versus engineers' estimates, and pre-award budget and construction budget to cost—although it did not contain performance data on outcomes such as safety and rate of injuries and fatalities.
18	Alternate ITOC member terms so no more than two terms end in a given year.	Completed.

Appendix F: Assessment of ITOC's Performance

One of the key safeguards established by the 2004 *TransNet* Extension Ordinance is the creation of the Independent Taxpayer Oversight Committee (ITOC) that provides an increased level of accountability over *TransNet* revenues. Several documents guide the function of the committee including a "Statement of Understanding Regarding the Implementation of the ITOC for the *TransNet* Program," ITOC Bylaws, and Implementation Procedures in addition to the Ordinance itself. Combined, these documents provide the framework for member experience and resumes, meeting protocols and function, and member conduct and responsibilities.

Members Possessed Requisite Expertise and Service

Per ITOC bylaws, there are seven voting members representing different areas of expertise with two ex-officio members—the SANDAG Executive Director and the San Diego County Auditor. These two ex-officio members are bound by the requirements of the bylaws, but do not have voting authority. As with prior audits, we found that, over that past three years, the ITOC members possessed the requisite skills and experience to fulfill ITOC's responsibilities as outlined in the *TransNet* Ordinance, as well as continued to provide a valuable and constructive role in the ongoing improvement and enhancements to the *TransNet* Program.

Meetings were Held and Attendance Complied with Bylaws

With regularly scheduled ITOC meetings on the second Wednesday of every month except August and December, there were 30 possible meetings during the 3-year audit period. Of the 30 meetings, 3 meetings, or 10 percent, were cancelled. This rate was generally consistent with the cancellation rates noted in prior *TransNet* Triennial Performance Audits and occurred because there were no business items to bring forward to the ITOC for discussion. Moreover, the cancelled meetings did not have a detrimental effect on *TransNet* activities and did not affect schedule or cost of the program. Additionally, we found that meetings were regularly attended by the ITOC members averaging 82 percent over the 3-year period. These results comply with ITOC Bylaws.

Stated Responsibilities were Fulfilled

ITOC has ten primary responsibilities as outlined in the "Statement of Understanding Regarding the Implementation of the ITOC for the *TransNet* Program" as shown in Exhibit 82.These included conducting annual fiscal and compliance audits in addition to triennial performance audits, preparing annual reports, providing recommendations to SANDAG on proposed *TransNet* amendments and 10-year reviews, and reviewing State of the Commute reports, system performance measurement, programming of *TransNet* revenues, debt financing, and cost and schedule adherence on major congestion relief projects. As with prior audits, we reviewed past meeting minutes and documents and found that ITOC met its responsibilities.

EXHIBIT 82. COMPARISON OF ITOC RESPONSIBILITIES WITH ACTIONS TAKEN

	ITOC Responsibilities per *TransNet* Ordinance	ITOC Actions Taken
1	Conduct Annual Fiscal and Compliance Audits	Hired an independent audit firm to review local adherence to *TransNet* Extension Ordinance, Board policies, and maintenance of effort requirements on an annual basis. Monitored scope of work and relevant issues reported.
2	Prepare Annual Reports to SANDAG Board of Directors	Developed and issued annual reports that included information on *TransNet* Program projects' progress and highlights, revenue forecasting, results of audits, and upcoming activities.
3	Conduct Triennial Performance Audits of *TransNet* Funded Projects	Hired an independent auditor to review performance and opportunities for increased efficiency and effectiveness. Monitored scope of work and relevant issues reported. Results of the fourth triennial audit are presented in this audit report.
4	Make Recommendations on Proposed Amendments to *TransNet* Ordinance	Analyzed and made recommendations on amendments to the *TransNet* Ordinance and Expenditure Plan including some related to SANDAG Board Policy No. 31, Rule 6 on local street and road accrued interest and Rule 7 on public hearings on the Regional Transportation Improvement Program update.
5	Provide Recommendations in 10-year Review of *TransNet* Program	The first 10-year review report is due in 2019, and was elected by the SANDG Board to be performed as a two-step process. The first part, a 10-year look-back, was completed by an independent firm in January 2018 and the ITOC provided a letter with comments and recommendations to the SANDAG Board. The second part, the 10-year look-forward, will be completed by SANDAG in 2019.
6	Participate in Ongoing Refinement of Project Evaluation Criteria and Project Prioritization in the RTP and RTIP	Received and reviewed a variety of documentation related to topics in this area.
7	Provide Independent Analysis of Information in State of the Commute Report	Analyzed annual State of the Commute Reports as part of its standard meeting process as well as through its own annual ITOC reporting process. For instance, for the draft FY 2015 and 2016 State of the Commute Reports, ITOC made suggestions for additional analysis and different presentation of data to be considered.
8	Review and Comment on the Programming of *TransNet* Revenues in the RTIP	Reviewed, discussed, and made recommendations on programming and changes made to the program.
9	Review Proposed Debt Financing	Assessed debt service ratios and financing proposals to monitor SANDAG's ability to pay for *TransNet* Program debt as well as the Plan of Finance on a regular basis. Committee raised questions and requested changes as appropriate.
10	Quarterly Review of Major Congestion Relief Projects Identified in the Ordinance	Analyzed a variety of quarterly reports from SANDAG and its *TransNet* partners on status, progress, and performance. Committee raised questions and requested additional information as needed.

ITOC Employed Best Practices when Compared to Similar Committees

Like in previous audits, we found that *TransNet's* ITOC subscribed to many of the best practices employed by similar taxpayer or transportation oversight committees throughout the nation. Specifically, ITOC members must possess a wider breadth of experience than its peers, adhere to more formal operating protocols and attendance requirements, and follow stringent conflict of interest requirements. Review of meeting minutes also demonstrated that ITOC appeared to be highly valued by decision makers with the type of information provided to ITOC and that ITOC members diligently reviewed, questioned, and vetted the data presented in meetings.

Appendix G: List of Auditees and Stakeholder Interviewers

To gain insights, perspectives, challenges, strengths, and information on the implementation of the *TransNet* Program, we met with approximately 100 oversight committees, executives, officials, directors, managers, staff, consultants, contractors, and stakeholders in areas related to transportation planning, transit planning and operations, capital construction, local public works and engineering, bike and pedestrian activities, environmental mitigation, grant and program management, finance and economics, and program oversight. The table that follows provides a list of those auditees and stakeholder interviews.

	Interviewee Name	Title and Functional Role
		ITOC
1	Tracy Drager	Advisory Member, County Deputy Controller
2	Stewart Halpern	Chair, Finance & Budget
3	Dustin Fuller	Vice Chair, Environmental & Biology
4	Brad Barnum	Member, Construction
5	Kaitlin Arduino	Member, Real Estate, Land Economics, Right-of-Way
6	Kai Ramer	Member, Transportation Design/Construction, PE
7	Jonathan Tibbitts	Member, Architectural, Civil/Traffic Engineering, PE
8	Richard Vortmann	Member, Executive, Finance
		SANDAG – Executive Office
9	Gary Gallegos	Executive Director
10	Kim Kawada	Chief Deputy Executive Director
11	Steve Castillo	Principal Management Internal Auditor
		SANDAG – Communications
12	David Hicks	Communications Manager, Public Outreach/Public Information
13	Elizabeth Cox	Communications Manager, Marketing
		SANDAG – Operations
14	Ray Traynor	Department Director
15	Alex Estrella	Senior Regional Planner, ITS, Local Street & Road Liaison, CTAC Liaison
16	Ellison Alegre	Associate Regional Planner, ITS
		SANDAG – Finance
17	Andre Douzdjian	Department Director
18	Leeanne Wallace	Finance Manager
19	Kim Monasi	Financial Project Control Manager
20	Lisa Kondrat-Dauphin	Senior Accountant
		SANDAG – Land Use & Transportation Planning
21	Muggs Stoll	Department Director

	Interviewee Name	Title and Functional Role
22	Linda Culp	Principal Regional Planner, Active Transportation & Rail Planning
23	Keith Greer	Principal Regional Planner, Environmental & Public Facilities Planning
24	Elisa Arias	Principal Regional Planner, Long-Range Transportation Planning & Binational Planning
25	Chris Kluth	Senior Regional Planner, Bike & Ped Working Group, Non-motorized Transportation Planning, Bicycle Master Plan, *TransNet*/TDA Bike & Ped Program Oversight, Active Transportation Working Group
26	Coleen Clementson	Principal Regional Planner, Transit Planning & Land Use Coordination
27	Carolina Gregor	Senior Regional Planner, Regional Planning Technical Working Group (TWG)
28	Audrey Porcella	Regional Planner
29	Christine Eary	Associate Regional Planner, Land Use Planning & Coordination- RCP, Smart Growth Incentive Program, North County Development Review
30	Brian Lane	Senior Transit Planner
		SANDAG – Mobility Management & Project Implementation
31	Jim Linthicum	Department Director
32	Ramon Ruelas	Principal Engineer, Construction
33	John Haggerty	Director of Rail, Design & Engineering
34	Greg Gastelum	Principal Engineer, Mid-Coast Corridor Transit Project.
35	Sharon Humphreys	Principal Engineer, LOSSAN Coastal Rail, Mid-Coast Corridor Transit Project
36	Omar Atayee	Senior Engineer, Bike EAP
37	Emilio Rodriguez	Senior Engineer, Bike EAP
		SANDAG – Technical Services
38	Ray Major	Department Director & Chief Economist
39	Darlanne Hoctor-Mulmat	Senior Research Analyst
		SANDAG – *TransNet*
40	Jose Nuncio	Department Director
41	Susan Huntington	Manager of Financial Planning & Project Control, *TransNet* Project Office
42	Dawn Vettese	Financial Programming Manager, Financial Programming
43	Ariana zur Nieden	Senior Financial Programing & Project Control Analyst, *TransNet* ITOC & Program Oversight
44	Michelle Smith	Senior Financial Programming & Project Control Analyst, *TransNet*
		Caltrans
45	Caridad Sanchez	Public Information Office, Chief of Public Information & Legislative Affairs
46	Allan Kosup	Corridor Director, I-5 & SR-76
47	Gustavo Dallarda	Corridor Director, I-15 & I-805
48	Arturo Jacobo	Project Manager, I-5 North Coast
49	Ursula Paulus	*TransNet* Project Office

	Interviewee Name	Title and Functional Role
50	Karen Jewel	Project Manager, SR-72 & SR-76
51	Mohamad Khatib	Assistant Project Manager, I-5 North Coast
52	Clint Peace	Assistant Project Manager, I-5 North Coast
53	Faridun Javed	Construction Manager, I-5 North Coast
54	Steve McMillan	Senior Resident Engineer, I-5 North Coast
		NCTD
55	Matt Tucker	Chief Executive Officer
56	Janee Harris	Compliance Officer
57	Lori Winfree	General Counsel
58	Luz Cofresi-Howe	Chief Financial Officer
59	Karen Tucholski	Chief Administrative Officer
		MTS
60	Sharon Cooney	Chief of Staff
61	Paul Jabonski	Chief Executive Officer
62	Rob Schupp	Director of Marketing and Communications
63	Mike Thompson	Directors of Financial Planning and Analysis
64	Denis Desmond	Manager of Planning
65	Eric Cheng	Capital Grant Supervisor
66	Wayne Terry	Chief Operating Officer
		City of San Diego
67	Linda Marabian	Deputy Director, Transportation & Storm Water Department, Transportation Engineering Operations Division
68	Hasan Yousef	Deputy Director, Transportation & Storm Water Department
69	Kristie Reeser	Deputy Director, Transportation & Storm Water Department, Street Division
70	Akram Bassyouni	Deputy Director, Public Works Department, Right-of-Way Design Division
71	Abi Palaseyed	Assistant Deputy Director, Public Works Department, Right-of-Way Design Division
72	Benjamin Battaglia	Administrative Services & Fiscal Manager, Transportation & Storm Water Department
73	Michael Clark	Budget Coordinator, Financial Management Department
		County of San Diego
74	William Morgan	Deputy Director, DPW Engineering Services, County Engineer
75	Mark Perrett	Program Manager, CIP
76	Collins Solomon	Program Manager, CIP Construction, Engineering
77	Tony Potter	Program Coordinator, CIP
78	Murali Pasumarthi	Program Manager, Traffic Operations & Loss Mitigation
79	Mike Aguilar	Project Manager, Drainage & Pavement Management

	Interviewee Name	Title and Functional Role
80	Frank Arebalo	Senior Civil Engineer, Pavement Management
81	Robert Laudy	Unit Manager, Cartography/Recycling
82	Amparo Suter	Unit Manager, Financial Services
		City of Chula Vista
83	Richard Hopkins	Director of Public Works
84	Bill Valle	Director of Engineering & Capital Projects
85	Jose Luis Gomez	Principal Civil Engineer
86	Francisco Rivera	Principal Civil Engineer
87	Eddie Flores	City Traffic Engineer
88	Mike Sylvia	Finance & Purchasing Manager
89	Robert Beamon	Administrative Services Manager
		EMP Consultants & Stakeholders
90	Teri Fenner	AECOM; SANDAG Science Support to EMP
91	Yvonne Moore	Red Hawk Fencing; San Diego Management and Monitoring (SDMMP) Administrator
92	Dr. Kris Preston	USGS; Lead Ecologist for SDMMP
93	LeAnn Carmichael	County of San Diego, Program Manager Environmental Services, Vice Chair EMP Working Group
94	Mike Beck	Endangered Habitat League
95	Susan Wynn	U.S Fish & Wildlife Service
		CMGC Consultants & Stakeholders
96	Mike Robertson	Caltrans CMGC Consultant
97	Mike Martinez	CMGC Contractor (Flatiron)
98	Mike Spain	CMGC Contractor (Skanska)
99	Jay LaFleur	CMGC Contractor (Stacy and Witbeck)
		Other Stakeholders & Interested Parties
100	Colin Parent	Circulate San Diego, Executive Director, General Counsel
101	Jim Desmond	Transportation Committee Chair, Mayor San Marcos
102	Haney Hong	San Diego Taxpayers Association, President, CEO
103	John Anderson	Bike SD, Executive Director

Stakeholder Diane Takvorian from the Environmental Health Coalition was also contacted for interview, but respectfully declined to participate due to prior commitments and schedule constraints.

Appendix H: Auditee Response

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April 3, 2018

File Number 1500200

Ms. Cathy Brady
Director
Sjoberg Evashenk Consulting, Inc.
455 Capitol Mall, Suite 700
Sacramento, CA 95814

Dear Ms Brady:

SUBJECT: Transmittal of Responses to FY 2018 *TransNet* Triennial Performance Audit Report and Recommendations

We thank you for the opportunity to respond to the FY 2018 *TransNet* Triennial Performance Audit report and recommendations as conducted by Sjoberg Evashenk Consulting, Inc. on behalf of the *TransNet* Independent Taxpayer Oversight Committee (ITOC). The San Diego Association of Governments (SANDAG) appreciates your firm's efforts and the staff time dedicated to the comprehensive review of the *TransNet* Program for the period FY 2015 through FY 2017. The recommendations received will assist SANDAG as we continue to implement processes that improve the overall performance of the program to ensure all voter mandates are carried out as required by the *TransNet* Extension Ordinance (Ordinance).

The Fiscal Year 2018 *TransNet* Triennial Performance Audit is the fourth performance audit conducted by the ITOC. The audit includes a review of the three-year period between FY 2015 and FY 2017, focusing on the changes implemented since the third audit was conducted. Key audit results reveal that SANDAG and its partner agencies have made significant progress toward many of the *TransNet* goals outlined for voters in the Ordinance. The audit also found that while many solid practices are in place, SANDAG and its partner agencies should continue working toward further strengthening and improving the efficiency and effectiveness of *TransNet* program oversight and delivery to continually enhance operations and proactively address recommendations for improvement.

In general, SANDAG agrees with the recommendations set forth in the audit report and is committed to working with the ITOC and our partner agencies to address recommendations and continue implementing best practices for the *TransNet* Program. SANDAG appreciates that the report acknowledges that SANDAG, other transportation agencies, and the federal government have been evolving in terms of performance goals, target-setting, and data collection methods. In addition, SANDAG values that the report acknowledges that fiscal challenges also were experienced at other similar organizations, including lower than forecasted revenue collections and balancing higher project costs with reduced revenues.

However, SANDAG also would like to take this opportunity to offer further clarification regarding the notion that SANDAG was challenged to measure and report performance indicators in certain *TransNet* areas. In 2004, when the Ordinance was approved by voters, performance measurement was tied to project completion as opposed to target-setting, data collection, and reporting. As noted in the audit report, SANDAG has delivered on that promise to voters, with 61 percent of the Major Corridor projects either completed or underway and in only 25 percent of the time. We recognize that tracking and analyzing performance data also are important, and we are committed to augmenting our efforts in this area.

To reiterate, SANDAG is committed to working toward implementation of audit recommendations. SANDAG responses to audit recommendations are attached.

We are pleased that throughout the audit process, members of your staff were accessible and helpful in clarifying issues raised. We appreciate your efforts in assisting SANDAG and its partner agencies to ensure the continued success of the *TransNet* Program.

Sincerely,

KIM KAWADA
Chief Deputy Executive Director

KKA/azu/sse

cc: Dustin Fuller, ITOC Chair
Dick Vortmann, ITOC Vice Chair

Attachment

	Audit Recommendation	Auditee Response
Chapter 1: *TransNet* Financing		
1.	Enhance the Plan of Finance (POF) process and information provided to decision makers by implementing the following: a. Leveraging historical data and previous POFs to provide additional information regarding estimates of future revenue sources, by comparing projections against historical data as well as comparing estimates from previous POFs against actual funding secured.	This process will be more formally incorporated as part of the *TransNet* Major Corridors Plan of Finance annual updates. Staff Lead - Dawn Vettese (*TransNet*)
	b. Continuing efforts to increase the transparency of sales tax revenue forecasts by showing a range of possible values based on a true confidence interval. SANDAG staff should work with the Independent Taxpayer Oversight Committee (ITOC) and the SANDAG Board to select a confidence level or levels that best communicates the range of possible values projected by the forecast including best case, worse case, or reasonably expected scenarios.	SANDAG staff and economic consultants are working to create sales tax forecasts that incorporate ranges and scenarios and will present this work to ITOC for input. Staff Lead - Jim Miller (Technical Services)
	c. Developing a process or policy for more frequent reporting—such as quarterly—to oversight committees on cost increases and include factors used to estimate costs, project stage or milestone used as basis for cost, and reasons for cost increase such as inflation, materials spike, or scope changes using Dashboard data and other reliable data sources.	Staff will present information on cost estimating practices and methods used to communicate cost changes to the ITOC, Transportation Committee and Board in April/May 2018 for input. Staff Lead - Jim Linthicum (MMPI)
2.	Ensure the "Plan of Excellence" and its 7-Point Data Accuracy and Modeling Work Plan are implemented to reduce the potential for data errors and develop formal procedures covering version control, periodic archival of dynamic or continuously updated data and documents, data validation and accuracy, and release and reporting of data. The status of the implementation of the 7-point plan and new procedures for data authentication should be documented and reported back to decision makers.	Significant progress has been made on the 7-Point Data Accuracy and Modeling Work Plan and ongoing efforts have been incorporated into the agency's Plan of Excellence with progress tracked there. As part of the 7-Point Plan, staff determined that errors were limited to income variables (Point 1), have conducted a dependency analysis to determine where the income variables were used and correct as needed (Point 2), developed a comprehensive flow diagram showing interactions between data and modeling components (Point 3), surveyed agency staff to understand and document how data are disseminated and used (Point 4), convened a nationwide expert panel for recommendations for regional forecasting (Point 5), developed processes and standards to communicate data, methods, and analysis in a clear and transparent manner (Point 6), and (Point 7) realigned people, processes, and technology to support adequate staffing and expertise. Staff Lead - Ray Major (Technical Services)
3.	Regularly track and report on the *TransNet* Program's financial capacity to complete projects and programs by implementing the following: a. Establishing a formal structured protocol to review funding sources and uses occurring in the last 10 to 20 years of the *TransNet* Extension Program to identify	This process will be more formally incorporated as part of the *TransNet* Major Corridors Plan of Finance, in coordination with the adopted Regional Plan. Staff Lead - Susan Huntington (*TransNet*)

	Audit Recommendation	Auditee Response
	potential capacity and revenue constraints that would impact the ability to complete the major corridor projects by 2048 and assess options such as delaying projects, eliminating projects, or reducing scope as warranted. This capacity assessment should be formally revisited on a regular basis, so that decision makers are aware of periods in which the agency may have to consider delaying projects or reducing project scope as needed.	
	b. Monitoring *TransNet* revenues and debt service obligations against needed growth projections to better ensure that revenues are sufficient to meet debt service, as well as regularly reporting on results and options to oversight committees that could include restructuring, refinancing, or retiring existing debt or delaying the transition to a pay-as-you-go approach for financing capital projects.	SANDAG Finance and *TransNet* staff will continue to communicate information on a regular basis, including cash flow needs, changes to project timing, and sales tax projections; meet and discuss with the SANDAG financial advisor any potential changes to needs; meet with investment bankers to understand instruments currently on the market that could fit SANDAG needs; and include all relevant information at regular intervals or on an as-needed basis at ITOC meetings. Staff Lead - André Douzdjian (Finance)
	c. Identifying methods to assess options, if needed, to delay, eliminate, or reduce scope of projects and whether the method would follow the same priority process used in the San Diego Forward: The Regional Plan or a different process would be used.	As part of the 2019 Regional Plan update all projects, including *TransNet* projects, will be evaluated. Staff Lead - Phil Trom (Planning)
	d. Monitoring and reporting on the impacts of changing transportation technologies on the transportation network and future *TransNet* projects as part of long-term planning to avoid building expensive infrastructure that could be rendered obsolete.	SANDAG will include technology assumptions in the development of revenue constrained transportation scenarios for the 2019 Regional Plan. Staff Lead - Phil Trom (Planning)
4.	Continue to work closely with the Metropolitan Transportation System (MTS) and North County Transit District (NCTD) to monitor the *TransNet* Transit Operations Plan by comparing actual *TransNet* revenues and operating costs against the *TransNet* Transit Operations Plan projections as additional services begin operations to highlight and mitigate the impact to the local operators, how to absorb any discrepancies through other funding sources, or potential scenarios for reductions in service if warranted. Communicate status, recommended actions, and any mitigation activities.	SANDAG will work with MTS and NCTD to develop a new methodology to proactively monitor *TransNet* Transit Operations funding, focusing on existing data for costs and revenues and recognizing the limitations of estimating costs and revenues over such a long term. Once a new methodology has been established, staff will report annually to ITOC and Transportation Committee. Staff Lead - Muggs Stoll (Planning)
Chapter 2: Performance Framework		
5.	Establish a comprehensive performance framework by implementing the following: a. Setting targets to measure *TransNet* performance against the *TransNet* Extension Ordinance goals in-line with federally mandated deadlines or at a faster pace. At a minimum, some narrative could accompany performance reporting to help others understand	SANDAG will be setting performance management goals related to the MAP-21/FAST Act timelines and requirements. Staff will evaluate federal performance management goals in order to align with *TransNet* funded projects. Staff Lead - Rachel Kennedy (Planning)

	Audit Recommendation	Auditee Response
	whether data and results were favorable or unfavorable.	
	b. Capturing performance outcome data related to safety metrics, pavement condition, and bridge condition for highways, local roadways, and bicycle (bike) and pedestrian modes. 1. Use the California Highway Patrols' Statewide Integrated Traffic Records System (SWITRS) to measure and monitor safety statistics—both for motorized and non-motorized fatalities and serious injuries—especially against the new safety targets developed by Caltrans and adopted by SANDAG. 2. Track and report highway pavement and bridge condition available from Caltrans on the SANDAG website or provide a hyperlink to where that information is available for taxpayers. Additionally, work with Caltrans to determine if bridge and pavement data can be isolated for San Diego County from the Imperial County data contained within the Caltrans District 11 reported data. 3. Track and report on local jurisdiction pavement condition by requiring local jurisdictions to provide pavement condition index data as soon as pavement condition surveys are performed and results become available. 4. Obtain and use private sector data to analyze congestion and delay on local streets and roads or evaluate status of Caltrans' Performance Measurement System (PeMS) to capture road performance including level of coverage of detection.	1. SANDAG staff is collaborating with Caltrans on target-setting for safety. Caltrans is helping to provide county level SWITRS data to MPOs for both motorized and non-motorized fatalities and serious injuries. SANDAG has supported the statewide 2018 safety targets and will be highlighting safety projects included in the 2018 RTIP and 2019 Regional Plan. Staff will continue to monitor and analyze SWITRS safety data as it becomes available. SANDAG and Caltrans will collaborate on establishing annual safety targets as per MAP-21/FAST Act requirements. 2. SANDAG is collaborating with Caltrans on target setting for bridge and pavement condition. Caltrans will be providing county level data for these measures for facilities on the National Highway System (NHS). SANDAG will look for opportunities to share this information as it may relate to *TransNet* projects. 3. For additional data collection efforts on Pavement Conditions, SANDAG staff will need to work with CTAC to determine an approach for reporting readily available pavement data. This may involve an amendment to the ordinance to make such data collection a requirement. 4. Currently, SANDAG uses PeMS data, and use of private sector data will be examined subject to existing third data sources (INRIX). Examination of other sources is subject to implementation and efforts under Recommendation 5e. Staff Lead - Rachel Kennedy (Planning)
	c. Conducting more robust analysis of cause and effect for all performance metrics to provide meaning to results or help determine if different strategies or projects should be employed to get a better result. For instance, consider using heat maps to identify where the majority or significant severity of accidents occur and work with Caltrans and local jurisdictions to inform solutions and future projects.	The recommended analysis likely will require the use of modeling/other analytical tools and additional resources. SANDAG staff will propose an approach to implement this recommendation based on the outcome of Recommendation 5e. Staff Lead - Rachel Kennedy (Planning)
	d. Providing regular performance monitoring reports that consider past performance in relation to *TransNet* goals through quarterly updates to the Board and committees, annual public reports on the status of *TransNet*, and website postings.	More regular reporting is feasible for highway system performance, as more robust data is available via Caltrans PeMS. Local street and road performance (in terms of average speed and travel time) is now available via a third-party vendor (INRIX). Transit data reporting (in terms of passengers per revenue hour, passengers per revenue mile, operating cost per passenger, operating cost per revenue hour, revenue hours per employee, and farebox recovery ratios) also is feasible and can be made available

	Audit Recommendation	Auditee Response
		via reporting currently conducted under Transportation Development Act monitoring. Staff Lead - Ellison Alegre (Operations)
	e. Considering allocating funding for additional performance monitoring activities given that SANDAG will likely require more data sources, tools, and resources to track, validate, analyze, ensure quality, and report performance.	SANDAG staff will develop options to implement this recommendation, including any potential budget impacts, and bring to the Transportation Committee and Board for review and direction. Staff Leads - José Nuncio (*TransNet*), Ray Traynor (Operations),
6.	Explore and study public-private partnerships with entities such as Google, Waze, Scoop, TomTom, or others to integrate and summarize performance results as well as provide information on a real-time basis to travelers identifying different commute times and options.	SANDAG staff in the Operations Department have been working on partnerships with transportation information providers such as Google and Waze. Our current 511 system uses Google traffic and transit data as well as utilizes the Google map. Future plans have us extending the regional Data Hub into a Transportation Mobility Cloud with the intent of utilizing third-party data as well as sharing public data with the private sector. Staff Lead - Alex Estrella (Operations)
7.	Enhance the Story Map tool, *TransNet* project status listing (shown in Appendix A), or develop a different tool to capture project output details and track *TransNet* accomplishments over time by implementing the following: a. Developing a comprehensive universe of *TransNet* projects completed, underway, and planned. Reconcile universe back to *TransNet* Extension Ordinance and what was expected to be delivered. Once universe is reconciled for historic projects, update universe as new projects are started and continue reconciliation of those new projects to the *TransNet* Extension Ordinance. b. Building upon planned output data currently captured through the Regional Transportation Improvement Program's automated ProjectTrak database and reported in the Annual Output and Outcome report by reconciling those planned outputs with actual accomplishments. Consider requiring local jurisdictions to provide a closeout report with updated, actual data as projects are completed.	The implementation of this recommendation will require changes to existing tools and processes. SANDAG staff will propose an approach to implement this recommendation based on the outcome of Recommendation 5e. Staff Lead - Michelle Smith (*TransNet*)
Chapter 3: Major Corridor Capital Construction		
8.	Update and refine the project listing started in the 10-Year Look-Back Review to ensure all major corridor projects are tracked back to those in the *TransNet* Extension Ordinance. Regularly report on project and financial status using the project listing developed in 10-Year Look-Back Review as a foundation or develop an alternate tool to accomplish the goal of tracking against the *TransNet* Extension Ordinance.	Project Office staff will utilize the project list crosswalk created with the 10-Year Look-Back Review and incorporate the data field into the dashboard webform as part of the 2019 upgrade. Staff Lead - Susan Huntington (*TransNet*)

	Audit Recommendation	Auditee Response
9.	Begin gathering data on whether the Construction Manager/General Contractor (CMGC) method used on the Mid-Coast Corridor Transit project is delivering on expectations for cost savings, efficiencies, better quality, or collaboration to solve problems rather than using a typical silo-approach between design, construction, contractors, and owners by implementing the following: a. Comparing SANDAG's proposed metrics for assessing Mid-Coast Corridor project performance to the performance metrics and practices used by Caltrans' to determine whether there are any additional practices SANDAG may want to include or adopt, such as the Caltrans innovations log, to help formally track benefits, successes, and challenges. b. Addressing recent survey comments related to possible schedule impacts from project activities in addition to the perceived higher value of change orders	Mid-Coast has procedures and tools in place to capture CM/GC savings and efficiencies including comment and review logs, risk matrix and RFI response process. To address the recommendation, an innovations log or other method of formally tracking will be developed. SANDAG will research industry standards for comparing construction contracting methods for application to CM/GC to Low Bid. Mid-Coast will be compared to Mission Valley East Light Rail Transit Extension as the closest side-by-side comparative example. Project, Construction, and CM/GC managers will continue to meet regularly to review change orders and schedule impacts identified in the survey. Staff Lead - John Haggerty (MMPI), Allan Kosup (Caltrans)
10.	Gather and store documents to support "benefit" statistics tracked for the North Coast Corridor and the Mid-Coast Corridor whether using the innovations log utilized by Caltrans or another method used by SANDAG. Maintain supporting documentation, such as cost comparisons, in a centralized repository that is linked or reconciled with the log or summary statistics.	Mid-Coast data are maintained on a project file sharing site and project record documents including logs and cost data will be permanently stored in a SANDAG SharePoint location. Staff Lead - John Haggerty (MMPI), Allan Kosup (Caltrans)
Chapter 4: Local Street and Road		
11.	Revisit the *TransNet* Extension Ordinance congestion relief and maintenance split to be more relevant with local needs as the *TransNet* lifecycle matures by considering elimination of the 70/30 split, change to the percentage limitations, or modification of the categorical definitions within the *TransNet* Extension Ordinance limitations.	SANDAG staff will work with CTAC to determine an approach and possible implementation steps for examining the 70/30 split recommendation. Discussion outcomes will be reported to ITOC to determine possible next steps including Board Policy expenditure guidelines changes. Staff Lead - Alex Estrella (Operations)
12.	Continue to monitor compliance with Board Policy No. 031, Rule 21, until otherwise amended, by implementing the following: a. Following-up on the results from the Board Policy No. 031, Rule 21 evaluation conducted by SANDAG in 2014: 1. Use results from SANDAG Board Policy No. 031, local Rule 21 review to make identified changes to the Ordinance definitions and follow-up on areas of noncompliance noted during the review. 2. Work with locals to determine a method to demonstrate compliance with Board Policy No. 031, Rule 21. 3. Amend or establish a SANDAG Board Policy to require local jurisdictions to track and report on	Board Policy No. 031 Rule No. 21 addresses accommodation of bicyclists and pedestrians. SANDAG will conduct a compliance review using the existing processes of the Policy. Results will be reported to CTAC for discussion and determination of need to modify compliance guidelines and processes. SANDAG will amend applicable Board Policy to track development of bicycle and pedestrian projects built using *TransNet* funds. Staff Lead - Linda Culp (Planning)

	Audit Recommendation	Auditee Response
	the number of bike and pedestrian facilities implemented using *TransNet* funds.	
	b. Conducting another review of local projects and considering whether any adjustments are warranted in light of SANDAG's Complete Streets Policy.	SANDAG will conduct a compliance review using the existing processes of the Policy to determine if modifications are necessary to be more consistent with the SANDAG Complete Streets Policy. Staff Lead - Linda Culp (Planning)
Chapter 5: Transit Services		
13.	Continue to analyze major transit commute routes and services and report on whether commute times have improved or should be improved.	SANDAG staff will continue to report on this area via the annual State of the Commute Report. Staff Lead - Brian Lane (Planning)
14.	Regularly track and report on *TransNet* goals to increase services to seniors and persons with disabilities.	SANDAG staff will look at ways to report on this area via the annual State of the Commute Report beginning FY 2018. Staff Lead - Brian Lane (Planning)
15.	Work together with the region's transit operators to analyze options offsetting the impact subsidy disparities have on available funds for expanding transit services, such as funding the pass subsidy disparity for seniors and persons with disabilities from other *TransNet* areas—as allowed by the *TransNet* Extension Ordinance—adjusting the discount offered for senior/disabled and youth riders, determining whether disparities can be funded through other sources, or maintaining existing funding and process.	SANDAG staff is currently working with the transit operators on a Regional Fare Study that may help offset the revenue impacts of the discount subsidies. Additionally, SANDAG staff will work with both transit operators' staff to study other options to increase ridership and revenues. Staff Lead - Brian Lane (Planning)
16.	Collaborate with the operators to revisit the operating cost ceiling tied to changes in the Consumer Price Index as specified in the *TransNet* Extension Ordinance so that operators have some flexibility with reasonable cost increases while still maintaining the intent of *TransNet* to provide some assurance of the reasonableness of those cost increases. This could include allowing for a wider variance in cost increases, setting a threshold for a not-to-exceed limit, expanding the target by a specified percent in years when changes to the Consumer Price Index decline, or allowing cost exclusions that can be supported, or modify *TransNet* Extension Ordinance language to apply the cost thresholds at the operator level rather than by individual mode.	SANDAG Planning and Finance staff will meet with the operators to collaborate on possible solutions to address this recommendation. It is expected that these solutions could be included in a future amendment to the Ordinance. Staff Lead - Brian Lane (Planning)
Chapter 6: Bike and Pedestrian Modes of Transportation		
17.	Continue efforts to establish baseline data for bike and pedestrian volume to identify trends and set targets.	SANDAG will continue to capture and maintain baseline data to identify trends and establish targets. Staff Lead - Linda Culp (Planning)
18.	Improve project management practices and project delivery for the Bike Early Action Program projects by implementing the following: a. Finalizing and implementing the in-progress Regional Bikeway Program Management Plan.	Upon completion of Program Management Plan SANDAG Active Transportation Team will have trainings with project managers to implement PMP practices. Staff Lead - Linda Culp (Planning)

	Audit Recommendation	Auditee Response
	b. Using Dashboard data that currently tracks frequent causes of delays during the design and environmental phases of bike projects, to summarize lessons learned, identify and mitigate future preventable occurrences, and improve scheduled delivery of the remaining projects.	Guidance on documenting lessons learned will be included in the Program Management Plan. SANDAG will work to develop procedures and tools to maintain lessons learned, identify and mitigate project risks, and improve schedule delivery. Staff Lead - Linda Culp (Planning)
Chapter 7: Environmental Mitigation Program		
19.	Continue efforts to establish a new Memorandum of Agreement with Caltrans, California Department of Fish and Game, and the U.S. Fish and Wildlife Service to replace current one expiring before funding expires in June 2018.	The MOA has expired, but funding under the SANDAG CIP budget will be available for FY 2019. SANDAG will be using the results of the Ten-Year Review Look-Back and FY 2018 *TransNet* Triennial Performance Audit as the basis for a new MOA starting in May 2018. Staff Lead – Keith Greer (Planning)
20.	Enhance the financing and use of *TransNet* funding for the Environmental Mitigation Program (EMP) by implementing the following: a. Reviewing and updating EMP cost estimates in light of higher costs than anticipated associated with restoring coastal wetlands.	SANDAG is tracking the change in cost for the lagoon restoration efforts and comparing it to the cost savings associated with lower than estimated land acquisition costs. Staff Lead – Kim Smith (Planning)
	b. Considering the most efficient use of available funding and possible adjustments, as allowed by the *TransNet* Extension Ordinance, to focus on higher priority activities and projects such as restoring coastal wetlands, given updated revenue forecast information and cost estimates.	SANDAG will start to discuss ways to address this issue in spring 2018 and it will become part of the revised MOA identified in Recommendation19 above. Staff Lead - Keith Greer (Planning)
	c. Revisiting the established economic benefit methodology to ensure the calculation accurately represents the cost savings that have been achieved.	Cost savings are being tracked, but true cost savings will not occur until a project has completed close-out. This has not happened yet, but over the next years SANDAG will evaluate and assign a value considering the overall costs of the program as described in Recommendation 20a above. Staff Lead - Keith Greer (Planning)
21.	Make changes, as appropriate, to marketing efforts for the local streets and road mitigation bank funding available for local projects, consider revising eligibility criteria for public entities, or consider whether those monies could be better utilized within other EMP priority actions, as allowed under the *TransNet* Extension Ordinance.	SANDAG has made several attempts to promote the availability of these credits. SANDAG will work with Communications staff to establish a systematic approach. Communications has met with the Planning EMP staff and has calendared upcoming milestones in order to plan public information releases on all communication platforms. Staff Lead - Keith Greer (Planning)
22.	Measure progress in meeting specific and detailed EMP goals, objectives, and action items for regional monitoring and management under the Management Strategic Plan. Specifically, develop metrics using the abundance of data to holistically understand the status and trend of the overall health of the preserve against the baselines established in regional conservation plans and formalize a	SANDAG has already identified several similar efforts from around the country. SANDAG will develop a proposed approach to these complex ideas to the public and report as a report card or similar evaluation system. Work will start in summer 2018 to develop a detailed work plan. Communications is involved in the planning effort and will effectively work with the department to produce

	Audit Recommendation	Auditee Response
	system to communicate complex performance results to the public.	informative pieces for distribution on multiple communication platforms. Staff Lead - Keith Greer (Planning)
Chapter 8: Information and Transparency		
23.	Regularly report on implementation of *TransNet* Extension Ordinance goals by annually publishing progress on SANDAG's website, annual report, or other easily visible reporting tool.	Communications is working on and will complete a proactive annual plan for publishing progress that will entail multiple forms of communication pieces on a variety of communication platforms. Staff Lead - Irene McCormack (Communications)
24.	Modify staff reports for SANDAG Board and other oversight committees to summarize elements related to public input, pros and cons on recommended actions, and implications or impacts of those recommended actions. Ensure that staff reports are summarized to one or two pages.	A comprehensive review of the agenda production process, including report preparation, is being conducted based on the Board's Plan of Excellence to ensure transparency and clear, concise, and easily understandable information in reports and presentations. Staff Lead - Victoria Stackwick (Government Relations)
25.	Better link *TransNet* funding to project and program activities for general public awareness by implementing the following: a. More prominently featuring the *TransNet* logo on SANDAG and *TransNet* partner websites as well as through other media such as Facebook and Twitter.	SANDAG staff will review existing websites and make recommendations for additional *TransNet* logo and language placement to create stronger recognition of the *TransNet* Program. Staff also will begin review of partner agency websites to see where SANDAG and *TransNet* logos and corresponding language can be added/enhanced. SANDAG social media posts will reference the use of *TransNet* funding where appropriate, and #*TransNet*SD will continue to be used as a way of threading all *TransNet*-funded program and project posts together. Social media campaigns specific to *TransNet*-funded efforts and accomplishments will be more regularly pursued. Staff Lead - Joy DeKorte (Communications)
	b. Revamping SANDAG website to capture documents pertinent to *TransNet* in a centralized area for each *TransNet* Extension Ordinance component. This includes linking Dashboard projects with those listed in the *TransNet* Extension Ordinance.	The sandag.org/*TransNet* web page will be reviewed and recommendations made will include each *TransNet* component, including the Dashboard. Staff has been pursuing a complete redesign of sandag.org, expected to begin in FY 2019, which is planned to include higher visibility of each *TransNet* component, including the Dashboard. Additionally, staff will begin a coordinated review of the Dashboard to determine the most effective way to link projects back to the Ordinance. Staff Lead - Joy DeKorte (Communications)
26.	Ensure data on completed projects is maintained in the Dashboard—even if under an archived location still accessible to the public—and separate past and future expenditures between the original *TransNet* amounts and the *TransNet* Extension Ordinance amounts.	SANDAG will ensure all completed projects are maintained in the Dashboard, and that all expenditures have been associated with the appropriate funding source. Staff Lead - Lamont Dowell (*TransNet*)

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