




2016-2017 CAPITAL BUDGET

**2017-2021 CAPITAL
IMPROVEMENT PROGRAM**



**DEFERRED
MAINTENANCE
AND
INFRASTRUCTURE
BACKLOG**



COUNCIL AGENDA: 2-9-16
ITEM: 2.11

Memorandum

TO: HONORABLE MAYOR AND
CITY COUNCIL

FROM: Toni J. Taber, CMC
City Clerk

SUBJECT: SEE BELOW

DATE: February 9, 2016

SUBJECT: Status Report on Deferred Maintenance and Infrastructure Backlog

RECOMMENDATION

As recommended by the Transportation and Environment Committee on February 1, 2016, accept status report on the City's Deferred Maintenance and Infrastructure Backlog.



Memorandum

TO: TRANSPORTATION AND ENVIRONMENT COMMITTEE

FROM: Barry Ng

SUBJECT: STATUS REPORT ON DEFERRED MAINTENANCE AND INFRASTRUCTURE BACKLOG

DATE: January 15, 2016

Approved

Date

1/25/16

COUNCIL DISTRICT: Citywide

RECOMMENDATION

- 1) Accept status report on the City's Deferred Maintenance and Infrastructure Backlog.
- 2) Recommend this report be placed on the February 23, 2016, Council Agenda.

OUTCOME

This report is intended to facilitate Committee discussion of the City's Deferred Maintenance and Infrastructure Backlog needs within the context of the upcoming budget process.

EXECUTIVE SUMMARY

This staff report provides an update on the City's Deferred Maintenance and Infrastructure Backlog (DMIB), as well as discusses near term strategies being employed in an effort to minimize certain further increases to the backlog due to impacts from the current economic conditions. Overall, the DMIB will total roughly **\$1.081 billion** in unfunded costs, with an additional **\$174 million** needed annually in order to maintain the City's infrastructure in a sustained functional condition. Completing the DMIB in January, as opposed to April, provides the City Council and the Administration context with which to prioritize available funding for the development of the 2016-2017 Proposed Capital Budget and 2017-2021 Capital Improvement Program.

Transportation Infrastructure continues to be the program that identifies the largest unfunded need. This area, focusing on the City's street network, roadway lighting and right of way

landscaping assets, has been successful in leveraging Federal, State and Regional funding to partially address the needs of the assets. Yet despite these efforts, and recent one-time contributions from construction taxes and the General Fund, significant additional revenue streams are needed to prevent continued deterioration of the transportation system.

Similar to the 2015 report, Water Pollution Control Plant, and Water Utility programs reported no unfunded needs due to stable funding streams. The Sanitary Sewer Program annual funding needs are calculated based upon the results of a 2011 Sewer Condition Assessment Pilot and an analysis of capacity improvement projects needed to address existing deficiencies in the system. The ongoing unfunded need has decreased due to greater amounts of ongoing funding that began in 2015-2016, and will continue to be evaluated during the development of the 2016-2017 Proposed Capital Budget.

Building Facilities and the Convention Center and Other Cultural Facilities also reported increases in unfunded needs. Many of the newer facilities utilize a variety of sophisticated systems, green systems and other features that enhance the user experience or increase the functionality of the venue but also increase the expertise and costs associated with their maintenance. Public Works has devoted some time over the past year to establishing a program for measurement of the needs at these facilities. While the backlog for the Convention and Cultural Facilities operated by Team San Jose has grown due to a more robust assessment of infrastructure needs, staff anticipates that a significant amount of resources will be deployed from the Convention and Cultural Affairs Fund and the Convention Center Facilities District Revenue Fund to reduce this backlog in the coming years.

The Parks, Recreation and Neighborhood Services Department (PRNS) continues to evaluate infrastructure backlog against the baseline conditions established in 2013/14. The baseline was established using data compiled by third party specialists as well as PRNS and DPW staff. The backlog grew from the previous year, despite continued growth of Construction & Conveyance (C&C) taxes. Because all of the Measure P bond has been allocated, C&C taxes and Park Trust Fund (PTF) collections are the primary revenue sources that are available to address backlog and facility replacement needs. Both of these funds are insufficient to reduce existing backlog and keep pace with anticipated lifecycle replacement. For this reason, PRNS will continue to explore alternative funding mechanisms and work with City Council to develop the most equitable and sustainable path forward.

The Airport continues to study and identify deferred maintenance backlog needs. The Department funded several one-time projects and completed some additional deferred maintenance items within the Airport's 5-year CIP. Deferred maintenance required projects not within the 5-year CIP have been identified and the Airport has developed a list of deferred maintenance totaling \$13.6 million.

BACKGROUND

In October 2007, the first comprehensive report on the City's Deferred Maintenance and Infrastructure backlog was presented to the Transportation and Environment Committee and then to the full City Council in a special Study Session. This report analyzed the unfunded infrastructure and ongoing maintenance needs over a 5-year period for 14 discrete programs in the City. The 2007 report identified a one-time unfunded need of \$915,000,000 and an ongoing unfunded need of \$45,000,000. The comprehensive report was updated in October 2008 as part of the Structural Deficit Elimination Plan efforts to reflect the Adopted FY 2008-2009 budget. The report has been updated annually.

The 2015 figures presented in last year's report were determined using the information presented in the previous reporting year and an analysis of current infrastructure conditions and needs and the funding in the Proposed Operating and Capital Budgets.

ANALYSIS

Staff has updated the 2015 backlog estimates to reflect more recent work and funds programmed into the 2016-2020 Proposed Capital Improvement Program (CIP). The current backlog of deferred needs is estimated at **\$1,081,080,600** with an additional **\$174,432,482** needed annually.

Based on these updates, the following table summarizes the current state of the City's Deferred Maintenance and Infrastructure backlog. A breakdown of this backlog by General Fund costs and Special/Capital Funds costs can be found in *Attachment A*. It should be noted that the costs in the chart below represent staff's best estimate at this time. As described throughout the memorandum, further analysis and refinement of these figures would be required before funding is requested to address these unfunded needs.

Infrastructure Backlog

Program	Current Backlog of Deferred Needs	Annual Ongoing Unfunded Needs
Airport	\$13,551,000	\$12,100,000
Building Facilities (1)	\$133,317,000	\$18,362,000
City Facilities Operated by Others (OCA)	\$7,520,000	NONE
Sports and Hospitality Facilities	TBD	TBD
Convention Center and Cultural Facilities (TSJ)	\$48,042,000	\$2,565,000
Fleet	\$8,600,000	\$1,400,000
Parks, Pools and Open Space	\$137,804,000	\$31,512,000
Sanitary Sewer (2)	TBD	\$2,300,000
Service Yards	17,000,000	TBD
Storm Sewer (3)	40,000,000	TBD
Information Technology (4)	\$4,545,600	\$3,047,482
Radio Communications (5)	NONE	NONE
Transportation Infrastructure	\$670,600,000	\$98,300,000
Regional Wastewater Facility	NONE	NONE
Water Utility	NONE	NONE
Total	\$1,081,080,600	\$174,432,482

(1) Annual Ongoing \$18,362,000 for Parks Buildings only, remaining facilities TBD.

(2) The current backlog of the entire collection system is undergoing further evaluation.

(3) A City-wide Storm Sewer Master Plan is underway to evaluate the deferred maintenance and capacity deficits within the City's storm sewer system, with initial results available in 2016. \$40,000,000 represents an urgent need for a new Pump Station at Charcot to mitigate flooding and ponding in North San Jose and capacity enhancements to the storm sewer serving the areas west of Downtown (Stockton/Julian/Taylor/Cinnabar).

(4) Information Technology needs within Departments not managed by the IT Department are not included in this estimate.

(5) While there is no current backlog in Radio Communications to maintain or replace existing equipment, there is an unfunded one-time need of \$6.4 million for the future implementation of the Silicon Valley Regional Communications System (SVRCS).

The Current Backlog of Deferred Needs column describes the lump sum funding, for which there is no approved funding source, needed to restore a given asset to a satisfactory and serviceable condition rating. The Annual Ongoing Unfunded Needs column describes the additional funding needed to maintain the asset in satisfactory and serviceable condition or to establish a sinking fund for strategic asset maintenance or rehabilitation.

Below is a summary of the status and key changes from the prior year in each asset category. Included is information on the status of near term actions that the City has taken or could take to reduce the Deferred Maintenance and Infrastructure backlog, along with any discussion of future opportunities relating to the asset category.

Airport

The Facility & Engineering Division of the Airport Department is responsible for operating and maintaining building assets totaling roughly 3,200,000 square feet. These facilities include:

- 3 Runways, 4 parallel taxiways, 14 cross taxiways, aprons and service roads (Airport Operating Area)
- 1 Fire Department building (ARFF)
- 1 Police Department building (SJPD Airport Division)
- 6 Terminal Area Buildings (A-Plus, Terminals A and B, FIS, T/A Baggage Claim, Central Plant)
- 11 Miscellaneous support buildings
- Smaller support buildings for maintaining building structure only
- 2 Public Parking Garages
- 4 Surface Parking Lots

The Airport is funded by a combination of Federal Grants (FAA), Passenger Facility Charges (PFC), Customer Facility Charges, and General Airport Revenue. These funds are still impacted as a result of aviation economic conditions and consolidation of air carriers and restructuring in major hubs and Federal budgets. The Airport tracks physical assets, horizontal and vertical, utilizing two computer based systems as well as specialized studies. For the pavement assets (horizontal), the Airport utilizes "MicroPaver" computer software for condition assessment and prioritization and Infor EAM (ver. 10.1.2) is utilized for building condition assessments (vertical). Special studies and consultants are used to supplement these two programs and in-house resources.

The last major upgrade and improvements to the Airport campus was completed in June of 2010; these assets are requiring additional maintenance to continue operating at the established efficiency levels. Maintenance items are categorized, prioritized and addressed within the Airport's 5-year CIP as funding permits. The estimated deferred maintenance project costs are valued to be \$13.6 million. The Airport is currently working on RFPs to update the pavement condition index study and a land use study to refine the Airport's future budgetary needs to maintain the physical assets. The annual unfunded needs for the Airport totals approximately \$12.1 million, primarily for airfield pavement maintenance and replacement needs.

Additional structures outside the terminal zone are primarily used in support of aviation functions, such as parts storage and tenant maintenance activities. A special study RFP will commence in February 2016 to determine the best use of the property along the south eastern portion of the Airport and potentially plan for replacement through a private/public development partnership over the next 5 to 10 years. This planned study, along with the Airport's Master Plan, will identify existing facilities that will require replacement to maximize the land use and allow the second phase of the Terminal Area Improvement Program (TAIP Phase II) construction for expanded terminal facilities based on achieving triggers related to the growth of passenger activity. The previous study for minimum investment necessary to allow continued

occupancy is not included since the facilities are identified within the limits of scope for the study of the south eastern zone.

The remaining deferred maintenance items are the horizontal surfaces (pavement). Critical areas that are maintained by the Airport include taxiways, runways, and aircraft parking areas within the Airport Operations Area (AOA) and the public right-of-way surfaces. During the past 12 months, staff continued additional joint resealing and completed replacing a section of pavement on the primary runway surface of Runway 30R. Staff implemented an improved pavement management system and is completing the RFP to obtain consultant services to provide an update on the pavement condition index (PCI) to prioritize, plan and track maintenance activities for the Air Operations Area (AOA). This program is an industry accepted best management practice for identifying pavement life and cost estimates for planning purposes.

Typically airports that serve commercial aircraft traffic have used various “cut-off” points, a critical PCI value, at which a pavement section requires rehabilitation. Generally, a Critical PCI of 70 for runways, 60 for taxiways and aprons, and 55 for shoulders and roadways is accepted throughout the industry. Preventive maintenance activities such as crack and joint sealing and patching are recommended for pavements that have a PCI greater than the critical PCI identified.

Overall the pavement network at the Airport has an area weighted PCI value of 85 (on a scale of 0-100, 100 being zero maintenance required); a number of these pavement sections are exhibiting a drop in the PCI value and will need to be considered for rehabilitation in future budget cycles. In general, the concrete pavement sections are performing well and are in better condition than the asphalt surfaced pavement sections. Six of seven asphalt surfaced air cargo ramp sections have PCI's ranging from 31 to 69 and are exhibiting multiple types of distress including both climate and load related deterioration. A detailed pavement management summary report will be evaluated by Airport Senior Staff identifying the 2016-2017 priority projects for the pavement program. The current funding allocation for this work is \$870,000.

Building Facilities

The Facility Management Division of Public Works supports maintenance, operations, and capital improvements at over 400 buildings and structures, comprising more than 5 million square feet. These buildings include:

- 36 Fire Department Buildings
- 3 Police Facilities
- 23 Libraries
- 54 Community Centers
- 251 Park Facility Buildings
- 3 City Hall Buildings
- 6 Cultural Facilities
- 7 Facilities Operated by Team San Jose (TSJ)
- Numerous Other Smaller Buildings

The conclusion of the decade of investment, which nearly doubled the square footage of the facility inventory, leads to the next half century where sustainability will be the focus. The major building systems and equipment within facilities constructed ten years ago or more are reaching their serviceable lives. These newer facilities and their systems were constructed with a high degree of variety and sophistication. This approach has enhanced the user experience and increased functionality of the facilities, but has also increased long-term costs as well as increased maintenance frequencies to preserve the asset.

Compounding this advancement in complexity of assets, previous budget deficits and shortfalls from sources generally used to fund maintenance activities, predominantly General Fund and Construction and Conveyance (C&C) Taxes, have forced reductions that have left insufficient resources to meet the needs of the facilities for day-to-day maintenance. As work items are deferred, the needs compound which can lead to infrastructure failures prior to the expected serviceable life and associated premature replacement costs.

The Facility Management Division of Public Works utilizes Infor EAM, a sophisticated enterprise asset management program that tracks repair costs, expected end of life asset durations, and data collected from asset condition assessments. These assessments have historically been conducted through third party specialists at a cost. The City Council allocated \$400,000 in FY 2015-16 for Public Works to conduct building assessments. Though this funding provides a significant start to assess the conditions of City buildings, additional funding of approximately \$600,000 will likely be required over the next two years to complete a comprehensive assessment of all City-owned buildings and structures. Until such an analysis is completed, this report will use building assessments and estimates completed to date, and make use of other best available data.

The current backlog for deferred maintenance in building facilities is estimated at \$189 million, which includes approximately \$88 million for Parks Buildings. The remainder of the backlog needs were derived from a combination of the building assessment work completed to date, a small number of third party building assessments, evaluation of building assessments completed by in-house staff, and square foot improvement costs for facilities with low ratings. A more robust estimate is anticipated once the city-wide building assessment study is completed.

Recognizing the need, the funding allocation for preventive maintenance activities in the Facility Management Division has been increased in recent years. This is a very important program for the organization, allowing for a step in the direction of properly maintaining assets. As a result of additional ongoing funding of \$500,000 included in the 2015-2016 Adopted Budget (for a total annual budget of \$1.8 million), the Facility Management Division has developed a program wherein over 90% of preventive maintenance activities are completed as scheduled, greatly improved from the 38% completion rate in FY 2011-2012. The primary focus of the program has been twofold, 1) the completion of work items that address life safety needs and 2) the preservation of assets. In the short term, this program will reduce the number of equipment failures as the preventive maintenance work will facilitate the ability for staff to identify and correct repairs prior to that equipment reaching the point of failure. Over the long term, the

results of this funding will benefit the City as preventive maintenance results in the extension of the life of assets.

City Council approved the use of an energy service contract (ESCO) to complete energy efficiency projects. The first bundle should be completed by August 2016. Similar to the Recovery Act funding from the previous years, ESCO will allow antiquated and inefficient building systems to be replaced. This program offers a new mechanism to reduce the deferred maintenance backlog. Partnering with an ESCO potentially allows for the renewal of aging infrastructure and address deferred maintenance in a timely manner by financing projects with the utility cost savings generated from the measures.

Cultural Facilities Operated by Others

These facilities, totaling over 900,000 square feet, include those listed in the following table.

Cultural Facilities	Backlog
Children's Discovery Museum	\$420,000
Tech Museum	\$2,125,000
History San Jose Facilities	\$550,000
Museum of Art	\$2,800,000
Hammer Theatre	\$1,150,000
Mexican Heritage Plaza	\$475,000
Total Budget Need	\$7,520,000

The current estimated backlog of \$7.5 million was developed by conducting condition assessments, working with the Office of Cultural Affairs (OCA), which provides management oversight for the above referenced facilities, and outreach with the facility operators.

In fiscal year 2014-2015 the City Council approved an allocation of Transient Occupancy Tax (TOT) growth above the 2013-2014 levels toward capital replacement and maintenance at various cultural facilities including the San Jose Museum of Art, Tech Museum of Innovation, San Jose Repertory Theatre, History San Jose, School of Arts and Culture at Mexican Heritage Plaza, and Children's Discovery Museum. This ongoing funding stream provides an important tool to address the deferred maintenance and infrastructure backlog, with \$2.1 million allocated in 2015-2016 and another \$3.5 million available in reserve. These amounts are expected to increase in the near future along with the rise of TOT revenues. In addition, the operators at the Mexican Heritage Plaza, the Tech Museum, and the Children's Discovery Museum are participating in a capital maintenance funding program. This program shifts a portion of their annual subsidy into a separate account to specifically address capital funding needs.

Sports and Hospitality Facilities Operated by Others

San Jose Municipal Stadium was built in 1942 and is home to the minor league baseball team the San Jose Giants. Sharks Ice was built in 1994 and, in addition to serving as a practice facility for the Sharks, it is home to San Jose State University hockey team and the San Jose Sharks junior teams. SAP Center opened in 1993 and is home to the San Jose Sharks professional hockey team. A comprehensive life cycle analysis of the SAP Center is currently being conducted that is jointly funded by the City and Sharks Sports Entertainment. Hayes Mansion is a 100 year old and distinctive California Historical Landmark, which has been refurbished into a luxurious hotel and conference center. The backlog for these facilities is currently under evaluation and as such is noted to be determined.

Sport and Hospitality Facilities	Backlog
Muni Stadium	TBD
San Jose Ice Center	TBD
SAP Center	TBD
Hayes Mansion	TBD

Convention Center and Cultural Facilities Operated by Team San Jose

These facilities are operated by Team San Jose on the City's behalf and total approximately 1.4 million square feet, including the new areas added with the recent expansion of the Convention Center.

Facilities Operated by Team San Jose	Backlog
California Theater	\$689,000
Center for Performing Arts	\$24,079,000
Civic Auditorium	\$5,750,000
Montgomery Theater	\$381,000
Parkside Hall	-
Convention Center	\$15,598,000
South Hall	1,545,000
Total Budget Need	\$48,042,000

While life cycle condition reports are still under review for all facilities, preliminary one-time deferred maintenance costs is estimated at \$48 million, with an ongoing unfunded need at \$2.6 million. With the recent rise in Transit Occupancy Tax (TOT) proceeds allocated to the Convention and Cultural Affairs Fund (536), and the availability of special tax revenue from the Convention Center Facilities District Fund (791) for improvements at the Convention Center, the Administration anticipates coming forward with a prioritized plan to address a portion of the outstanding backlog as part of the 2016-2017 Proposed Capital Budget and 2017-2021 Capital Improvement Program.

Fleet

The City's Fleet Management Program provides preventive maintenance, repairs, statutory inspections, acquisition, disposal and fueling services for a fleet inventory consisting of 2,701 vehicles and equipment that support public safety, public health, and general government operations citywide. These vehicles and equipment are categorized as follows:

Category	Qty
Police Patrol	440
Fire Front Line	113
General Fleet	1,372
Off Road Fleet	282
Other Equipment	494
Total	2,701

This year's vehicle and equipment inventory increased by 47 assets or 2% from last year's total of 2,654. These increases occurred primarily in the Police Department programs and were primarily light duty vehicles. The City's fleet assets inventory will continue to "right-size" as the organization's overall service delivery systems adjust to the current and future budget reality of the City. As this "right-sizing" occurs, vehicles that are no longer needed for one program will be shifted to another in order to ensure the City is replacing the vehicles that are the oldest and in the worst condition. This strategy helps extend the useful life of the entire vehicle and equipment inventory.

To assist in the overall management of the City's fleet asset inventory, Public Works utilizes an asset management software application called *AssetWorks* to monitor equipment utilization, maintenance and repair programs, and fuel management operations. *AssetWorks* provides the information and reporting to assist staff in maximizing the lifecycle of the City's investment in vehicle and equipment assets.

The current backlog for all funds is \$8.6 million. However, if current funding levels remain consistent over the next five years, the \$8.6 million will decrease to \$7.2 million due to higher levels of contributions from special funds anticipated in future years. Vehicles that provide support for General Funded activities currently retain a backlog of \$5.9 million. The average annual need for General Fund-only vehicles is \$2.4 million. The annual funding of \$1 million leaves an ongoing need of \$1.4 million. In addition to the General Fund only portion of the backlog, a backlog of \$2.8 million exists for vehicles that support special fund efforts. This includes equipment at the Regional Wastewater Facility, vehicles supporting fee programs, and vehicles supporting capital programs. This year's backlog includes annual estimated special funding amounts of \$2.0 million for vehicle replacements.

Public Safety vehicle funding has remained fully funded in order to ensure service. Similar to this year, it is anticipated that the 2016-2017 budget will include funding for General Fleet replacement. This will need to be increased in the future to keep up with ongoing needs and to reduce the backlog. This is an important consideration as the older vehicles cost significantly

more to maintain, which in itself creates a growing General Fund expense. These projections are calculated with vehicles reaching both age and mileage thresholds. There are a significant number of vehicles reaching age only that are not included in the backlog. Replacing older vehicles regardless of miles provides lower operating cost, higher availability, cleaner emissions, greater safety features and better fuel economy.

Parks, Recreation and Neighborhood Services

The 5-Year Capital Improvement Program (CIP) focuses on long term sustainability by encouraging the reduction of infrastructure backlog, park & trail development, and land banking for future facilities. Two Capital Implementation Teams work through the CIP to design and deliver both large infrastructure as well as small scale repair and installation projects. Together, their efforts support the development and long term sustainability of PRNS assets.

The City's infrastructure assets under this category include:

- Neighborhood and Regional Parks and Open spaces – 3,486 Acres⁽¹⁾
 - Trails – 56 miles
 - 71 Trail & park related bridges
 - Dog Parks – 10 Each
 - Aquatic Facilities – 6 pools
 - Skate Parks – 6 neighborhood and 1 regional (Lake Cunningham)
 - Community Gardens – 18 neighborhood gardens across the City
 - Sports Fields – 46 soccer and 52 baseball, softball and T-ball fields
 - Rest Room Buildings – 59 stand alone park restrooms
- (1) Including golf courses and excluding San Jose Family Camp.

PRNS anticipates future infrastructure needs at approximately \$200,149,000 as of 2013/14 and projects future backlog growth based upon facility lifecycles and unfunded liabilities. A predicted annual need of \$48,422,000 is expected each year as park assets exhaust their useful life. PRNS continues to allocate funding to specific infrastructure backlog projects in the 5-year CIP along with continuing to recommend an Infrastructure Backlog Reserve funding strategy in each new CIP Budget. With an estimated \$21.1 million expended toward backlog items in 2014-2105, the starting backlog for 2015-2016 rises by \$27.3 million to \$227.4 million. The unfunded backlog estimate is made up of the following components.

Table PRNS 1: Updated Backlog Estimate by Facility Component (Begin FY 15/16)

Facility Component	Backlog
Park Grounds	\$61,466,000
Community Buildings*	\$39,432,000
Regional Facilities	\$67,738,000
Other Buildings *	\$48,437,000
Restrooms*	\$1,756,000
Trails	\$8,601,000
TOTAL	\$227,430,000

* These figures roll up to the Building Facilities backlog

Without capital investment to replace expiring assets, the existing backlog will rapidly increase as park facilities deteriorate. Parks are strained by drought as well, which is expected to accelerate deterioration of landscaped areas.

Because all of the Measure P bond has been allocated, Construction & Conveyance (C&C) taxes and Park Trust Fund (PTF) are the primary revenue sources that are available to address backlog and facility replacement needs. Both of these funds are insufficient to reduce existing backlog and keep pace with anticipated lifecycle replacement. For this reason, PRNS will continue to explore alternative funding mechanisms and work with City Council to develop the most equitable and sustainable path forward.

Sanitary Sewer

The sanitary sewer collection system includes:

- 2,094 Miles of Sanitary Sewer Mains (6 inches to 90 inches in diameter)
- 13 Miles of Force Mains
- 16 Pump Stations
- 45,000 Manholes
- 202,000 Lateral Connections

Approximately 80% of the City sewer collection system is at least 40 years old. DPW is leading the implementation of a comprehensive Condition Assessment program with DOT's assistance to determine the infrastructure improvement needs of the aging system. Data gathered from the Condition Assessment will be utilized by both departments in determining the capital projects necessary to maintain the service life of the system as well as operations and maintenance programs to ensure uninterrupted conveyance of sewage to the treatment plant.

In order to meet the more stringent regulatory requirements of the State Sanitary Sewer Systems-Waste Discharge Requirements, DOT has made significant investments for additional equipment, personnel, and contractual resources in the implementation of several critical

Sanitary Sewer Overflow (SSO) reduction strategies over the past few years. These strategies include increased sewer line cleaning productivity, proactive cleaning of problematic sewer lines, SSO first responder program, chemical treatment of sewer lines identified as having heavy root intrusion and growth, and continued collaboration with ESD in addressing commercial areas that have evidence of excessive fats, oils, and grease (FOG) in their sewer mains.

Since beginning the implementation of the SSO reduction strategies in 2011, DOT has recorded a consistent reduction in SSO occurrences. In FY 14/15, the City recorded 96 SSOs, which shows a continued decline from the 101 SSOs recorded in FY 13/14 and the 155 SSOs recorded in FY 12/13. In addition, the continued implementation of the First Responder program has met the 30 minute or less response time for approximately 89% of SSO sewer related calls. After further analysis, the continuing downward trend in SSOs can be attributed to the increased maintenance of the existing sewer system in conjunction with the DPW repair and rehabilitation projects identified through the Condition Assessment program and Sanitary Sewer Capital Improvement Projects. DOT is currently piloting enhancement programs and depending on the effectiveness evaluation, will consider scaling up these programs for full implementation as it continues to work towards achieving the goal of having less than 3 SSO events per 100 miles of sewer main annually.

Three main components critical to the optimal performance of the sanitary sewer system include:

1. Adequate sewer conveyance and treatment capacity that would meet the needs of the City's Envision San José 2040 General Plan.
2. Replacement/Rehabilitation program that would extend the useful life of the City's sewer assets.
3. Operations and Maintenance program that aligns with the City's core services while enhancing the SSO Reduction Program.

Capacity needs

To manage system capacity needs, PW staff use a systematic process that incorporates population data, land use planning information, water use and flow monitoring data and design criteria for estimating wastewater flows in an *InfoWorks* ICM hydraulic model of the trunk sewer system with pipelines of 10 inches in diameter or larger. The model is used to assess how the system would perform under existing, near-term (5- to 10-year horizon) and long-term future dry and wet weather flow scenarios and identify pipe deficiencies and recommend capacity improvement projects. The completed Citywide Trunk Sewer System Master Plan and North San Jose Detailed Master Plan (Master Plan) identifies 104 sewer capacity improvement projects totaling approximately \$195 million. Staff has continued to re-evaluate high priority projects in an effort to confirm these projects using suitable flow data collected in recent years through the flow monitoring program. As a result of the on-going re-evaluation exercise, 65 projects, totaling nearly \$118 million remain as projects needed to address existing capacity deficiencies in the system and can be viewed as infrastructure backlog rather than deferred maintenance. To date, 12 projects have been completed. As a result, approximately \$96 million is still needed to address the remaining existing capacity deficiencies which equates to an annual cost of \$5.6

million per year for the next 17 years. New capacity improvement projects will be added to the list as Staff updates the hydraulic model with additional data collecting for smaller pipes.

Rehabilitation and condition assessment needs

PW staff currently manages sewer video inspection data and coding standards utilizing **InfoMaster** to analyze and prioritize repair and/or rehabilitation work. PW staff is currently managing several contracts to perform pipeline inspection, utilizing closed circuit television. Coupling with defect coding analysis and sewer repairs, almost 30 percent of the collection system has been inspected. This progress is in alignment with the recommendations from the Pilot Sanitary Sewer Condition Assessment Program completed in 2011. Utilizing a risk-based analysis of statistic samples of the sewer system revealed the need to invest in frequent monitoring of the high-risk pipelines. The SSCA recommended an annual investment of \$28 million for system rehabilitations in order to prevent the system from further deterioration. The SSCA also recommends a ten-year remote video inspection and analysis program for the whole collection system which equates to 10% annually. As the SSCA program continues, it is anticipated that additional funding may be needed to design and construct sewer infrastructure repair and rehabilitation projects identified in the SSCA program. Completion of these projects reduces the potential risk of SSOs due to structural deficiencies in the system and may augment the Operation and Maintenance program.

Operations and Maintenance

DOT staff has been implementing several elements of the SSO Reduction Program that was developed to address the results of the 2010 EPA/SFRWQCB audit. Currently, DOT staff utilizes an Oracle based **Hansen CMMS Prototype** software which provides staff with an inventory of the sewer collection system and tracks maintenance history, work orders, inspections and work performance efficiency. Recommendations after extensive analysis of available data have been incorporated into the planning and scheduling of O&M activities. This effort, in conjunction with procurement of additional O&M maintenance vehicles and equipment has allowed for increased line cleaning footage as well as reduced the priority repair backlog. As a result, the City is seeing a steady decline in number of SSOs. In order to continue the implementation of the strategies, it is anticipated that additional funding may be necessary to meet the 5-Year Strategic Goal of 3 SSOs per 100 miles annually.

Funding

The Sanitary Sewer Capital Program annual funding need of \$36.8 million is calculated based upon the results of a 2011 Sewer Condition Assessment Pilot, the projected cost of performing the condition assessment, and an analysis of capacity improvement project needed to address existing deficiencies in the system. With the return of the economy and due to the fact that neighboring cities and agencies are having the same need to develop and implement a condition assessment program, video inspection cost has been steadily increased over the last few years which requires an additional funding of \$700,000 to a total of \$38.4 million to support the program.

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Annual transfers from the Sewer Service and Use Charge Fund (SSUC Fund) to the Capital Fund were increased substantially in 2011-2012 from approximately \$14.5 million per year to \$31 million. The transfers have been varied between \$23 and \$25 million annually during the last few years. Beginning 2015-2016 and as part of the 2016-2020 Adopted Capital Improvement Program, this funding has increased to \$32 million per year, leaving a projected \$6.4 million funding gap.

ESD, DOT and PW are currently working together to identify the annual funding needs of all the programs that are funded from the SSUC Fund (Wastewater Treatment Plant Operating and Capital, Collection System Capital and Operating and Maintenance). The final result of this interdepartmental collaboration will be a 10-year rate strategy to advance all three programs.

The annual operating and maintenance fund (managed by DOT, currently at \$16.5 million) may also require future increases to enable DOT to continue implementing various strategies aimed at decreasing SSOs and response times. The purchase of additional equipment and resources to implement technology solutions that will enable better system monitoring and more efficient maintenance operations are some of the future investments under consideration.

An idealized annual investments for both the Capital Improvement needs (for rehabilitation and capacity expansion) and O&M of the system would total approximately \$53.6 million per year for the next 10 to 20 years as shown in the following table:

Annual Need for Maintenance and Infrastructure	
Rehabilitation	\$28,000,000
Condition Assessment	\$ 3,200,000
Capacity Projects (existing users)	\$ 5,600,000
Total Capital Need	\$36,800,000
O&M (DOT)	\$16,800,000
Total Capital and Operating Need	\$53,600,000
2015-2016 Adopted Budget Funding	\$51,300,000
Total Annual Unfunded Need	\$2,300,000

After taking into account DOT operating costs (\$16.5 million) programmed in the 2015-2016 Adopted Operating Budget and the amount of resources added into the 2015-2016 Adopted Capital Budget (\$34.8 million, which excludes fund balance primarily used for continuing projects), the remaining annual unfunded need is approximately \$2.3 million. This need will be evaluated on an annual basis to determine if any future funding increases are needed. Any future funding modifications will be the result of a collaboration between ESD, DOT and PW that considers the needs at both the Regional Wastewater Facility and the sanitary sewer collection system needs, as well as long term rate payer impacts.

Service Yards

The four City service yards include 325,000 square feet of space and over 1,800,000 square feet of property.

Service Yard Facilities	Backlog
Central Service Yard	\$ 5,000,000
South Yard	\$3,000,000
Mabury Yard	\$7,000,000
West Yard	\$ 2,000,000
Total Budget Need	\$ 17,000,000

Improvements in service yards are funded through the C&C allocated to the Service Yards fund. The Service Yards program is currently underfunded and a comprehensive Life Cycle Analysis will be completed this year. Capital improvement needs continue to rise at these facilities on an annual basis, including, paving, mechanical, plumbing, HVAC, roofing and various modernization projects. Renewal and replacement needs vary from yard to yard, building type, the extent of facilities use and abuse, and quality of original construction and maintenance management. Levels of current operating budgets and special appropriations for capital renewal and deferred maintenance also affect required funding levels. However, inevitably, building systems and components deteriorate and need replacement. If C&C funding levels for maintenance will continue to be the source of funding for these facilities, the current funding levels will fall short in meeting the long-term deferred maintenance needs. Because service yards house City fleet and equipment, the needs include both buildings and site work.

Storm Sewer

The storm sewer collection system includes:

- 1,130 Miles of Storm Sewer Pipe
- 34,720 Storm Drain Inlets
- 1,500 Storm Outfalls
- 29 Pump Stations

The citywide infrastructure needs in the Storm Sewer collection system have not been quantified; however, a comprehensive, citywide Storm Trunk Sewer Master Plan is under way which will provide a concise infrastructure investment plan in order to maintain an efficient and effective storm sewer collection system. The Master Plan project is developing a dynamic hydrologic and hydraulic model of the storm system that will be calibrated and validated using flow monitoring and rainfall data. The urban drainage model consists of gravity storm drain mains and pump stations, and integrates with the riverine system model developed by the Santa Clara Valley Water District.

The citywide Master Plan will address existing and long-term future (General Plan 2040) capacity needs as well as identify water quality improvement opportunities for stormwater capture or treatment with master plan capacity improvement projects. Initial recommendations from the citywide Storm Master Plan are expected to be completed in late 2016.

The initial master planning effort focused in the North San Jose (NSJ) Area, and the NSJ Storm Drain Master Plan study was completed in June 2014. The study identified capacity deficiencies in North San Jose, including known deficiencies in Charcot, Zanker, and Alviso areas. The NSJ Master Plan recommended 55 improvement projects totaling approximately \$131 million for flood protection. Among these projects, twelve (12) projects totaling close to \$57 million are high priority projects.

The 2016-2020 Adopted CIP provides improvements to the storm sewer collection system in Alviso and other critical areas, as well as continued pump station and outfall rehabilitation and minor storm sewer improvement projects. It has been identified that over 375 outfalls have deteriorated and require to be rehabilitated. In addition, any improvements within the riparian corridor of City owned creeks, mandatory environmental mitigation and monitoring and reporting services will be required by the regulatory agencies for a minimum of ten years of the permit term.

Funding for the Storm Sewer Capital Improvement program is derived from a transfer of funds from the Storm Sewer Operating Budget, which is funded through Storm Sewer Service Charge fees. These charges are assessed annually on properties and collected with real property taxes. The transfer level in the 2016-2020 Adopted CIP is \$9.0 million in 2015-2016, \$7.0 million in 2016-2017, and \$4.0 million per year for the remaining years of the five-year CIP. This level of funding will be sufficient for staff to continue work on the master plan, decrease the maintenance backlog by constructing projects to address known localized ponding and flooding, improve the existing system reliability, install large trash capture devices, green street infrastructure projects and increase the conveyance capacity in Alviso. However, additional resources will likely be needed as projects from the master plan are identified.

During the December 11, 2014 storm event, multiple street locations and businesses in the Charcot drainage area were flooded. The flooding condition confirmed the high priority need for a pump station and larger drainage pipelines for this area. The cost to build these capital projects is roughly \$30 million, which is well above current funding level. In the 2016-2020 Adopted CIP, a small reserve will be established for the Charcot pump station, and staff will continue to explore potential funding options to support future design and construction of these infrastructure improvements.

With this storm and other major storm events, DOT staff also observed severe flooding/ponding along the Taylor Street, Stockton Avenue, Cinnabar Street, and West Santa Clara Street storm systems, particularly at Taylor Street underpass, Pershing and West Santa Clara underpass. PW staff has identified approximately 6,800 feet of pipeline projects to improve the capacity of these systems and the costs are estimated at roughly \$10 million.

Information Technology

The Information Technology Department (ITD) enables the workforce through voice and data communications, protects and supports the City's critical data, enables service delivery through applications for the benefit of employees and the public, and provides strategic direction for technology investment across the organization.

- Manages Critical Enterprise Technologies such as HR/Payroll, FMS and the Citywide Voice and Data Network
- Stores and Protects Data Equal to 10 Times the Volume in the Library of Congress
- Maintains over 2,200 PCs and Laptops and other mobile devices
- Supports over 300 Physical and Virtual Servers
- Protects the City's Network from over 500,000 Daily Intrusion Attempts

Technology Strategy

By leveraging investments made to date, ITD is working toward establishing a City-wide baseline computing architecture. This baseline will standardize tools, streamline the City's investments in technologies, and ensure that employees have consistent and productive work environments. Currently, employee computing environments vary from department to department, and even vary within the same departments based upon the date in which the technology was received.

Below are the targeted areas for development of a baseline computing environment:

- Desktop Operating Systems
- Patch Management
- HelpDesk Work Order Tools
- Antivirus
- Applications Deployment and Delivery
- Asset Management
- Office 365
- Document Storage

The City's current fragmented environment has supported a funding strategy that helped create the infrastructure backlog in technology. As a result, ITD is often required to support systems that not only fail to meet the needs of the organization, but are no longer even supported by the manufacturers. By establishing a baseline environment, the City's technology can move from being a barrier to necessary tools, to being an enabler for productivity. In addition, prioritization for technology investment will become much clearer for all stakeholders, from Council to individual departments.

In addition to employee-facing elements, information security and access to information also require modernization and standardization. The current City network and security models are

reflective of a computing environment from the past decade, and do not represent the shift toward a modern mobile-enabled workforce.

Addressing the Backlog

Over the past fiscal year, ITD continued to focus on implementations of the City's major enterprise business applications such as HR/Payroll, Budget, Business Tax, Recycle Plus and Muni Water. In addition, ITD secured contractual services for the migration of files and folders to SharePoint, decreasing the infrastructure backlog by \$500,000 for Enterprise Content Management. An additional \$500,000 in funding is still needed to bring required functionality such as records retention, workflows, approvals, and workgroup collaboration to enhance City-wide productivity.

The infrastructure backlog was also reduced by \$125,000 one-time and \$25,000 ongoing as the purchase of a customer relationship management and service request management (CRM/SRM) was approved as part of the 2015-2016 Adopted Operating Budget.

Key systems in infrastructure backlog

FMS is approximately 25 years old and has been a part of the infrastructure backlog for many years. The City has addressed immediate issues with the system through incremental upgrades, with the next funded upgrade scheduled for 2016-2017. While still vendor supported through these incremental upgrades, FMS is not a comprehensive financial management system and does not meet the needs of the City. For example, required functionality such as Accounts Receivable are part of separate applications. At this time, FMS replacement continues to remain a part of the infrastructure backlog.

Information security also continues to be remain a part of the infrastructure backlog. ITD will be submitting a budget proposal in the amount of \$800,000 as part of the 2016-2017 operating budget to secure critical infrastructure through the replacement of the City's firewalls and enhanced security of mobile devices. If approved, it is anticipated that this funding will reduce next year's infrastructure backlog by \$800,000.

Future State

The City has made significant one-time strides in dealing with core enterprise applications that were a part of the infrastructure backlog, leaving primarily FMS. The significant remaining technical infrastructure backlog are those items related to hardware replacements, network and security architecture.

While the reduced infrastructure backlog is encouraging, an ongoing revenue source for a sustainable, modern IT environment continues to be a major obstacle in preventing a return to "tech decay." In addition, a lack of ongoing investment will quickly lead to a growth in deferred maintenance for technology, as well as a return of some systems to an infrastructure backlog.

Radio Communications Program

The City's infrastructure assets under this category include:

- Citywide Public Safety Radio Systems – 33 Radio Channels
- Simulcast Radio Systems – 11 Radio Channels
- City Owned Radio Sites – 18 Sites
- City Owned Equipment at Non City Owned Sites – 12
- Enterprise Radio Systems – Regional Wastewater Facility, Airport, and Convention Center
- Public Safety Answering Point (PSAP) – 32 Radio Consoles
- Subscriber Units (Mobile and Portable Radio Devices) – Approximately 4,700 Units
- Inventory for Support & Maintenance (Spare Parts & Supplies) – Approximately 1,000 Units
- Test Equipment – 30 Units

While there is no current backlog in Radio Communications to maintain or replace existing equipment, there is an unfunded one-time need of \$6.4 million for the future implementation of the Silicon Valley Regional Communications System (SVRCS) after accounting for allocated resources programmed in the 2016-2020 Capital Improvement Program.

The Silicon Valley Regional Interoperability Authority (SVRIA) is a joint powers authority consisting of 15 member agencies, including the City of San José, whose mission is to identify, coordinate and implement communication interoperability solutions to its member agencies by integrating voice and data communications between law enforcement, fire and rescue services, emergency medical services, and emergency management for routine operations, critical incidents and disaster response and recovery. The SVRCS, a multistage project coordinated by SVRIA, will replace the existing public safety radio systems currently in use in Santa Clara County with a system that uses the 700/800MHz spectrum, which allows for enhanced data transmissions, additional capacity for mutual aid scenarios, and the ability to record transmissions for training purposes. The additional transmission towers, repeater sites, and other infrastructure required to build out the SVRCS is estimated to cost \$28.9 million. The City's estimated share, based on its proportionate number of communication devices, is \$7.5 million, with the participation of the Valley Transportation Authority. The City will also need to purchase new radios and dispatch consoles that can fully operate on the new system at an estimated cost of \$17.1 million, bringing the City's total need for the SVRCS to \$24.6 million. It is important to note that these figures are subject to change due to ongoing discussions with the SVRIA.

According to a Memorandum of Understanding (MOU) with SVRIA, the City's \$7.5 million required contribution for infrastructure will be paid over three years. With \$3.13 million paid in 2014-2015, an additional \$3.0 million set aside in the Silicon Valley Regional Communications System Reserve as part of the 2015-2016 Adopted Budget for the payment due in September 2016, approximately \$1.4 million remains to be funded for the final payment due in September 2017.

To date, a total of \$10.3 million has been used to begin radio and dispatch console replacements. To address the \$17.1 million needed for radio and dispatch console replacement, the City has and will use grant and local funding from several sources. In addition, the 2016-2020 Capital Improvement Program allocates approximately \$2.0 million to the Silicon Valley Regional Communications System – Radios project from 2016-2017 to 2019-2020. After taking these year-to-date and future investments into account, the remaining unfunded amount for radio and dispatch console replacement is \$4.8 million.

The City's total unfunded need for implementation of the SVRCS is approximately \$6.4 million. The City will continue to explore additional sources of grant funding to further defray these costs. The scheduled completion date for the entire SVRCS project is December 31, 2018.

Transportation Infrastructure

The City's infrastructure assets under this category include:

- Street Pavement – 2,432 Miles
- Traffic Signals – 932 Signalized Intersections
- Roadway Signs – 88,276 Traffic Control Signs; 3,398 Intersection Street Name Signs; 26,236 Residential Street Name Signs
- Roadway Markings – 5,500,000 Square Feet of Markings; 478,000 Raised Pavement Markers (RPMs)
- Streetlights – 64,218 Streetlights and Poles
- Landscaping – 241.3 Acres of Landscaped Properties for General Benefit
- Street Trees – 263,976 Street Trees and 75,917 Vacant Street Tree Sites
- ADA Compliant Curb Ramps – 26,800 Locations (6,919 Locations with No Ramps; 13,700 Locations with Ramps that are Not Fully Compliant and Need Modification or Replacement; 6,181 Locations Currently in Compliance)
- Vehicular Bridges – 165 Bridges

Street Pavement

The City's most significant transportation asset is the street network consisting of 2,432 miles of pavement. The combination of age and the lack of adequate investment in the maintenance and repair of the street network over the years have resulted in continued degradation of its condition. The estimated cost to eliminate the deferred maintenance backlog continues to grow each year, and has gone up from \$503.8 million to \$521.5 million over the past year. Approximately \$100.4 million is needed annually over a 10-year period to eliminate the backlog and to improve overall pavement conditions to a rating of good. Funding levels for the next 5 years are estimated at approximately \$13.0 million per year, a significant reduction from previous years due to actions at the state level to reduce the gas tax and a drop of the one-time spike in construction taxes assessed on local private development projects. At current and projected funding levels, the backlog of deferred pavement maintenance will continue to grow and the overall condition of the network will continue to decline. The current Pavement Condition Index

(PCI) for all San Jose streets is 64 on a 100 point scale, a rating of fair, and the lowest of all cities in Santa Clara County.

Four categories of pavement maintenance have been identified and their associated funding requirements have been estimated to better define the City's total annual funding need for pavement. In sequential priority order, the first category covers citywide pothole repairs and basic management of the pavement system and is the only category fully funded at a cost of \$5.5 million annually. The second category, the 542-mile Priority Street Network, is only partially funded with the existing funding levels and needs \$13.0 million annually to remain in good condition. The 400 miles of other major streets did receive one-time funding of \$16.0 million in fiscal year 2014-2015 and \$8.0 million in 2015-2016, but the 1,490 miles of local/neighborhood streets continue to receive no dedicated pavement maintenance funding.

The majority of funding currently allocated for pavement maintenance comes from local development taxes and regional, State, and Federal funds, including Measure B vehicle registration fees, State gas taxes, Federal grants and State Route relinquishment funds. As directed in the Mayor's March Budget Message for Fiscal Year 2015-2016, as approved by the City Council, the Administration was directed to move forward with long-discussed strategies for addressing street maintenance funding needs for City Council consideration in the 2016 election cycle, and to allocate one-time funding for ballot measure polling to test the viability of both a local bond measure and sales tax increase for the June 2016 election. The Administration was also directed to continue to advocate for a substantial City share for local roads from any potential VTA funding measure in November 2016.

Traffic Safety Devices

Included in this category of transportation infrastructure assets are Traffic Signals, Traffic Control and Street Name Signs, and Roadway Markings. All three of these programs have experienced funding and staffing reductions over the past decade, as well as increases in inventory, and have both one-time deferred maintenance investment needs as well as ongoing annual shortfalls that prevent the programs from keeping pace with prescribed maintenance cycles for these assets.

Traffic Signals

The City currently maintains 932 traffic signal intersections, up from last year's 923 due to the activation of new signals, and responds to approximately 2,175 service requests annually. The intersections contain a variety of complex equipment such as traffic signal controllers and cabinets, video detection systems, flashing safety beacons, sophisticated communications systems, traffic conflict monitors, cameras, 86 miles of fiber, and 146 miles of interconnect cable throughout the City. DOT also maintains speed radar feedback signs and changeable traffic direction signs. Due to past budget reductions that dropped preventive maintenance activities for much of this equipment below recommended levels, and due to increased vacancies, currently only the most critical components that monitor the operation of the intersection are proactively maintained. Remaining resources are focused on responding to service requests in a timely manner. There is a one-time rehabilitation cost of \$4,737,000 for existing equipment, and an

ongoing annual shortfall of \$3,345,000. These figures include amortized replacement costs and maintenance costs for new equipment, as well as the cost to provide all preventive maintenance activities for all existing signalized intersections and anticipated system expansion.

Traffic Control and Street Name Signs

DOT's Traffic Sign Maintenance Section (TSMS) installs and maintains traffic control signs in the City right-of-way to regulate traffic, warn motorists (e.g. schools zones), and provide other basic traffic directions. Proper maintenance of these signs is essential to the safe and efficient flow of traffic and pedestrians through the public right-of-way. The TSMS also installs new residential street name signs and maintains traffic signal intersection street name signs. There are 88,276 traffic control signs, an estimated 26,236 residential street name signs (cobalt blue signs), and 3,398 traffic signal intersection street name signs (large green signs) in the City of San José. TSMS has an inventory and database for all traffic control signs and overhead street name signs, and has begun building the inventory for residential street name signs.

In 2006-2007 TSMS began using 3M High Intensity Prismatic (HIP) sheeting for the traffic control Preventative Maintenance (PM) program. HIP sheeting provides high levels of retro-reflectivity for various traffic scenarios, and outperforms other conventional products on several critical attributes like long-term reflectivity, durability and competitive life cycle costs. It is bright, durable, and better for the environment. The traffic control sign PM program was completed at the end of 2014 with all signs being replaced using the HIP material. The life expectancy of HIP signs is 12 years with very little drop-off in reflectivity. TSMS has begun a new reflectivity study tracking the life of the HIP signs installed in the early years of the TC preventative maintenance program.

Over time, the City has taken over maintenance responsibility from both the State and County for roadways throughout the City. When this occurred, the additional expense of repairing damaged or destroyed crash barriers on high speed roadways was not accounted for. An inventory effort in 2015 determined that the City is now responsible for 20 crash barriers on either new or relinquished roadways. It is estimated that 10% of the barriers must be replaced in a given year, which results in an estimated ongoing unfunded need of \$68,000 annually to repair this infrastructure.

The estimated one-time cost to eliminate the current backlog of street name signs in need of replacement is \$1,746,000. An annual ongoing need of \$222,000 exists to keep up with prescribed maintenance cycles and ensure that all signs meet visibility and operational standards, as well as to repair crash barriers as needed.

Roadway Markings

The roadway markings inventory includes roadway striping, crosswalks, stop bars and messages on street surfaces, and Raised Pavement Markers (RPMs). The purpose of these marking devices is to regulate and guide motorists, pedestrians and cyclists to increase roadway safety, particularly during low visibility conditions. Currently, there are 5.5 million square feet of roadway markings throughout the City. To have 100% of markings in good condition, major

roadway striping should be repainted every year; arterial legends and curb painting should be repainted on a 2-year cycle; and residential areas should be repainted on a 3-year cycle. Current funding only allows for a 2-year repaint cycle for striping on major roads; a 3-year cycle for arterial legends and curbs; and a 6-year cycle for residential areas. There are currently about 3.5 million square feet (65%) in good condition, which leaves 2.0 million square feet that need to be painted to achieve 100% in good condition.

The City has approximately 478,000 Raised Pavement Markers (RPMs) – 272,000 on residential streets and 206,000 on major roadways. Currently, 100% (272,128) of Residential RPMs have exceeded their life expectancy of 8 years and are in need of replacement, as well as an estimated 22% (45,062) arterial buttons in need of replacement. There is no ongoing preventative maintenance program to replace RPMs.

In order to achieve 100% of the total roadway markings inventory (5,508,705 square feet of paint and all Raised Pavement Markers) in good or better condition, one-time funding of \$3.1 million is needed to complete an additional 2.0 million square feet of roadway markings (37% of inventory) and install 317,190 Raised Pavement Markers. Additionally, \$1.4 million is needed annually to meet all prescribed preventive maintenance cycles.

Right-of-Way Street Lighting

The City of San José owns and maintains 64,218 streetlights and streetlight poles, 23,545 of which have been converted to LED light fixtures to date. The current streetlight network contains 32,683 painted octaflute streetlight poles and 31,535 remaining lights that are either on galvanized poles, decorative poles, or are decorative up lights.

The Streetlight Maintenance Program is currently complaint-driven, addressing those outages or damaged lights that have been reported by the public. Current resources, assuming full staffing levels, support a target service level for repairs of streetlight outages at 65% within 7 days. Unfortunately, maintaining full staffing has not been possible, and workloads have increased from an average of 800 service requests completed per month 4 years ago to a current average of 1,100-1,300 service requests completed per month in FY2014-15. It is anticipated that service requests will drop by approximately 33% once the LED conversion projects currently underway or planned are completed.

There is an identified ongoing need of \$900,000 to address the continuing problem of streetlight copper wire theft. Wire theft increased from an average of 15 new incidents per month just four years ago to an average of 50 new occurrences per month in FY2014-15. In FY2014-15, one-time funding was approved for staffing and materials to address the backlog of known wire theft locations. An additional one-time allocation of \$1 million was also approved for deterrent measures to slow down the occurrence of wire theft. By the end of FY 2014-15, the backlog of wire theft repair locations was eliminated, and 5,000 locking metal lids were installed to deter future theft. Ongoing funding of \$900,000 is needed for two crews to keep up with new wire theft occurrences.

The 32,683 painted octaflute streetlight poles have different degrees of paint conditions on their surface. The City previously allocated funding to refurbish old painted octaflute streetlight poles with poor paint conditions (e.g. peeling paint, exposed metal) into galvanized poles which have significantly longer life expectancies. This funding was discontinued due to budget shortfalls more than a decade ago. Refurbishing all of the 32,683 painted streetlight poles with galvanized surfaces would require a total one-time rehabilitation investment cost of \$27.2 million

The City's Green Vision target is to convert all streetlights in the City to smart LED type by the year 2022. Under City Council direction, staff efforts are underway to solicit partnership proposals from the technology industry and establish an agreement for the conversion of the remaining 40,000 streetlights.

Streetscapes

A significant element of the City's transportation infrastructure is its vast streetscape, consisting of right-of-way landscape, street trees, sidewalks, curb & gutter, and curb ramps.

Right-of-Way Street Landscaping

There are 241.3 acres of General Funded street landscape including roadside and median islands. In 2001, staff prepared an assessment of the median island landscape throughout the City, which identified several locations where median island landscape would be appropriate. Those locations total approximately 50 acres of new landscaping. To date, approximately 26 acres have been installed. It is estimated that there are locations totaling 24 acres left where landscaping could be installed. Some of the median islands are constructed but do not have landscaping; others require the island to be constructed. There is no current funding identified for installing the remaining landscaping projects, which are estimated to cost approximately \$14.4 million in one-time money. Of the 240 acres, there are currently 78 acres of remaining high level landscape (Type 2) with trees and shrubs, including 10.5 acres with turf. It is estimated that \$2.2 million will be needed to convert these locations to low-maintenance Type 1 designs. When combined with the procurement of vehicles for additional staff at \$1,170,000, brings the total one-time need in Street Landscaping to \$17,770,000.

Since FY2006-2007, the average landscape acreage per maintenance worker has risen from approximately 8 acres to 27.65 acres due to resource reductions and a growing inventory. In FY2000-2001, the condition of the City's street landscapes reached their peak in terms of condition, with 86% in good or better condition. Due to budget balancing over the past decade, conditions have declined to the current 52% in good condition. DOT is proposing 7.5 acres per worker as the desired baseline staffing that is needed to maintain Type 1 landscape in good condition, and 5 acres per worker for Type 2 landscape, with a desired target of 90% of all landscapes maintained with generally funded resources in good or better condition. This represents an ongoing annual shortfall of approximately \$3,800,000. The other components of the ongoing shortfall in the Landscape Maintenance Program include an estimated annual need of \$500,000 to renovate 7.5 acres per year of landscape (replacing dead or damaged trees and shrubs and irrigation systems), and \$56,000 for weed abatement spraying for concrete islands.

There are two other areas related to landscape services in which future funding shortfalls exist, although they are not entirely able to be quantified at this time. The first is the growing problem of illegal dumping, which is being addressed through the efforts of a Citywide Task Force. Program management, deterrent measures such as cameras, fencing and other barriers, specialized equipment, as well as a continued outreach and awareness-building program and more effective enforcement measures will be needed to address the issue long-term. DOT will be requesting ongoing funding for one FTE to provide illegal dumping clean-up response in the 2016-17 Budget process.

Additionally, with storm water quality regulations tightening up, and new requirements in the revised Storm Water Permit, bioretention has become a required feature for new development throughout the City. Bioretention is the process in which stormwater is collected into a treatment area which consists of a grass buffer strip, sand bed, ponding area, organic layer or mulch layer, planting soil, and plants. Runoff first passes over or through a filtration bed, and is distributed evenly along the length of the ponding area, which consists of a surface organic layer and/or groundcover and the underlying planting soil. These new design features are not completely understood at this time, and the ongoing maintenance associated with them has yet to be fully defined. Development is increasing, and new development in the public right-of-way will trigger required "green street" designs to ensure that contaminants and sedimentation are removed from stormwater runoff before the water enters the storm sewer system. With more of these features being installed throughout the City, there is a need for enhanced maintenance activities that have only recently begun to be quantified and costed out. Some maintenance funding will be requested in the 2016-2017 Proposed Budget for the growing number of bioretention facilities currently in existence or planned for near-term installation.

Street Trees

The City of San José's community forest consists of public trees as well as those trees that are on private property. Overall, including both public and private trees in San Jose, it is estimated that there has been a net increase of 12,487 additional trees since the start of the City's Green Vision in 2007. There are an estimated 263,976 street trees within the public right-of-way under the jurisdiction of the Department of Transportation. Of those, 18,626 trees are in areas which are maintained by the City, such as median islands and roadside landscapes. In addition, there are an estimated 75,917 vacant street tree planting sites, 1,451 of which are on City-maintained parcels.

The San José Municipal Code requires property owners to maintain street trees adjacent to their properties. The City is a major property owner and, therefore, has the responsibility to prune and maintain street trees adjacent to its properties. It is estimated that \$1.4 million in one-time funding is needed to bring all existing City-maintained trees into good condition, and an additional \$862,000 is needed one-time to plant trees in existing City-maintained plant-able sites. One-time funding of \$300,000 is needed to develop the City's Community Forest Management Plan, bringing the total of one-time funding needed to \$2.5 million. The City intends to apply for a CalFire grant to fund the creation of the Management Plan, assuming state funds are made available in 2016. If awarded, this will reduce the one-time funding need and provide a roadmap for managing both City-maintained trees and the remaining street trees in San Jose's community forest.

Additionally, ongoing annual funding of \$300,000 is needed to maintain a 5-year pruning cycle and replacement needs for the 18,626 City-maintained trees, as well as \$300,000 per year to update the City's street tree inventory.

Sidewalks/Curb & Gutter/ADA Compliant Curb Ramps

Per the City's Municipal Code, property owners are responsible for the cost of repairs for sidewalks and curb & gutter adjacent to their property. The City does not have a curb & gutter inventory, but it is estimated that there is approximately \$39,100,000 worth of existing needed repairs throughout the City, based on a 2001 2% sampling of curb & gutter. Additionally, while there is no actual inventory of sidewalks, it is estimated that there are 4,500 miles of sidewalk in various widths from 5 feet to 13.5 feet, which is based on the number of centerline miles of street. The rate of sidewalk damage is not known; however, with the recent tree inventory, over 31,000 sidewalk discrepancies have been brought to the attention of City staff indicating that a significant body of work exists and has yet to be noticed or reported by residents. It is estimated that, under the current sidewalk repair policies, approximately 7,500 sidewalk locations will be repaired each year.

The City's current Americans with Disabilities Act (ADA) Sidewalk Transition Plan includes a collection of programs, administrative procedures and design standards that support the implementation of accessible public sidewalks for people with disabilities. In recent years, the City has spent an average of \$1,250,000 annually to construct ADA compliant curb ramps. There are 26,800 locations that have been identified where ADA curb ramps should exist. Of these locations, 6,181 currently have ADA compliant ramps. There are 13,700 locations that have ramps that are not compliant and must either be modified or replaced, and there are 6,953 locations that have no ramp at all and require the installation of new ramps. The one-time cost to bring the remaining 20,619 ramps into compliance is estimated at \$60,000,000.

Missing Sidewalks

Although there is no complete assessment of missing sidewalks throughout the City, PW and DOT staff are noting and compiling locations of missing sidewalk as inspection staff become aware of them. Some notable locations include Alviso, County pockets annexed to the City, and certain areas where the design standards differed from those of today (North San Jose, portions of Almaden Valley hillside areas and industrial areas.)

Although the City of Alviso consolidated with the City of San Jose in 1968, the area continues to be deficient in a number of infrastructure categories, including sidewalks, curb and gutter, street lighting and street trees. Deficient streets include portions of El Dorado, Moffat, Liberty, Liberty Court, Gold, Catherine, State, North First and Spreckles.

Typical improvements that would accompany the installation of new sidewalk include storm sewers, street lighting, curb and gutter, water meter valve boxes, sewer cleanouts and street trees. These additional improvements add significant cost above the cost of the sidewalk. Sidewalk installations also frequently require conform work with the existing improvements on private property.

The existing data, although not comprehensive, indicates a total of 118 miles of missing sidewalk in the City.

Bridges

DOT is responsible for the maintenance of 165 bridges throughout the City. The City utilizes bridge inspection reports provided by Caltrans bridge inspectors to determine the costs needed to maintain and rehabilitate these bridges. There currently is a one-time backlog of \$32.0 million to rehabilitate four bridges that have been identified by Caltrans to be structurally deficient or functionally obsolete. Previous funding sources have been from the Federal Highway Bridge Replacement and Rehabilitation (HBRR) grant program. DOT staff will continue to pursue these grant funds to address the current backlog of bridge rehabilitation projects.

The Caltrans bridge inspection reports also identify corrective maintenance requirements for which the City currently allocates \$100,000. However, this funding allocation is used only for minor bridge repairs and does not provide for preventive maintenance of the City's 165 bridges. A detailed condition assessment of all 165 bridges would be required to determine the extent of work and the cost needed to implement a preventive maintenance bridge program.

TRANSPORTATION INFRASTRUCTURE SUMMARY

Due to many years of budget reductions and underfunding, a one-time investment is needed in every major Transportation asset category in order to bring the assets into good condition and most have ongoing shortfalls creating further backlogs and declining asset conditions.

The table below summarizes the various assets that comprise the total estimated one-time deferred maintenance and ongoing infrastructure backlog for Transportation Infrastructure elements that are the City's responsibility to maintain.

Transportation Infrastructure Needs (in Millions)		
Transportation Asset	One-Time Funding Need	Annual On-Going Shortfall
Pavement	\$521.5	\$87.4
Traffic Signals	\$4.7	\$3.3
Roadway Markings	\$3.1	\$1.4
Roadway Signs	\$1.8	\$0.2
Streetlights	\$27.2	\$0.9
ADA Curb Ramps	\$60	\$0
Trees	\$2.5	\$0.6
Landscaping	\$17.8	\$4.4
Bridges	\$32.0	\$0.1
Missing Sidewalk	TBD	TBD
Total	\$670.6	\$98.3

San Jose/Santa Clara Regional Wastewater Facility

Facility Description

The San José-Santa Clara Regional Wastewater Facility¹ (RWF) is a regional advanced wastewater treatment plant that serves eight South Bay cities and four special districts through the following agencies:

- City of San José
- City of Santa Clara
- City of Milpitas
- Cupertino Sanitary District
- County Sanitation District 2-3
- Burbank Sanitary District
- West Valley Sanitation District (Campbell, Los Gatos, Monte Sereno, and Saratoga)

The RWF is jointly owned by the cities of San José and Santa Clara through a Joint Powers Agreement (JPA), and the City of San José operates the facility as the administering agency of the JPA. The total service area population is about 1.4 million, including a diverse commercial and business sector with more than 17,000 sewer main connections.

The RWF is located at the southern end of the San Francisco Bay and is bordered on the south by State Route 237, on the west by the Alviso community, and on the east by the City of Milpitas. While the RWF is situated on a nearly 2,600 acre site, the main operational process area encompasses approximately 180 acres and the biosolids lagoons and drying beds takes up 750 acres. The remaining acreage is comprised of a former salt pond (approximately 850 acres) and buffer lands. The current wastewater treatment processes include screening and grit removal, primary sedimentation, secondary treatment by the activated sludge process, secondary clarification, filtration, disinfection, and dechlorination. The RWF has an average dry weather flow design capacity of 167 million gallons per day (mgd), and a peak wet weather flow design capacity of 271 mgd. For 2015, the Average Dry Weather Influent Flow (ADWIF) and Average Dry Weather Effluent Flow (ADWEF) were 96.2 mgd and 68.9 mgd, respectively.

The RWF was built over three main periods: The original facility was constructed in 1956 and consisted of just a primary treatment process, three digesters, and a small pump and engine building with capacity to treat 36 million gallons of wastewater per day. A secondary biological nutrient removal treatment process was added in 1964 to enable nitrogen removal. And, a nitrification treatment process and filtration facilities were added in 1979.

Significant recent capital improvements include the construction of the South Bay Waster Recycling system in 1998, the Wet Weather Reliability Improvement project in 2007, and a new sodium hypochlorite disinfection facility in 2011. The City of San José also partnered with the Santa Clara Valley Water District to construct the Silicon Valley Advanced Water Purification

¹ The legal, official name of the facility remains San Jose/Santa Clara Water Pollution Control Plant, but beginning in early 2013, the facility was approved to use a new common name, the San José-Santa Clara Regional Wastewater Facility.

Center (SVAWPC), which became operational in 2014, to produce up to 10 MGD of highly purified water for commercial and industrial reuse.

Rehabilitation Needs

Most of the RWF's infrastructure is now more than 50 years old and in need of significant rehabilitation and/or replacement. A 2007 Infrastructure Condition Assessment report (ICA) identified nearly one billion dollars in needed improvements to address aging electrical, mechanical, and structural assets after decades of deferred maintenance and minimal capital reinvestments. In March 2007, the City Council accepted the ICA report and directed staff to proceed with the development of a Plant Master Plan (PMP) to guide near-term and long-term capital rehabilitation and replacement needs at the RWF. A comprehensive master planning and community engagement process followed over the next three years and resulted in the Plant Master Plan Preferred Alternative that recommended comprehensive technical improvements and a land use plan for the entire site. The technical component of the master planning process was completed in 2011 and recommended over 100 capital improvement projects at an estimated cost of \$2.2 billion dollars over 30 years.

The PMP Preferred Alternative was adopted and the environmental impact report was approved by the San José and Santa Clara City Councils in November and December 2013, respectively. In February 2014, the City of San José completed a project validation process to update and prioritize the recommended projects into 33 construction packages to be initiated in the next ten years. The validation process was used to inform and develop the Five-Year Capital Improvement Program (CIP) for the RWF. The Adopted 2016-2020 CIP identified funding needs in the amount of \$1.07 billion, of which approximately \$709 million is for construction projects.

Funding & Financing Strategy

The Sewer Service and Use Charge (SSUC) Fund and contributions from the City of Santa Clara and Tributary Agencies serve as the primary revenue source for the RWF capital improvement program. For a span of ten years, from 1994 through 2004, there had been no sewer rate increases. Beginning in fiscal year 2004-2005, the City Council began approving a multi-year rate increase strategy to provide additional funding to the SSUC Fund to fund critical capital infrastructure improvement projects such as the Plant Wet Weather Reliability Improvement and the Plant Electrical Reliability projects. Annual rate increases have ranged from 4% to 15% over the last ten years. More recently, it was recognized that a capital improvement program of this size and longevity requires a base level of cash and a long term funding strategy to provide sustained funding for program and project implementation.

Since February 2014, a team comprised of City staff and program management consultant staff, and has been working on a ten-year funding strategy to support implementation of the 33 construction packages identified through the project validation effort. The ten-year funding strategy is comprised of a ten year funding forecast, guiding principles and fiscal best practices, and development of a financial model to capture the ten year funding requirements, including anticipated revenue and expenditure streams through fiscal year 2024-2025.

Based on discussions with the Technical Advisory Committee (TAC) and the Treatment Plant Advisory Committee (TPAC), which includes staff representing all of the Tributary Agencies, it was determined that the primary objective of any funding strategy was to provide all agencies with predictability and stability, to the maximum extent possible, with respect to annual cash contributions in support of the RWF CIP. Several guiding principles, to support this primary objective, were developed in collaboration with the City of Santa Clara and Tributary Agencies and received support from TPAC in April 2014:

- Develop a long-term funding strategy that includes a base level of cash-funded capital investments and allows agencies to plan for future revenue needs;
- Identify and incorporate Operations and Maintenance (O&M) costs associated with large capital projects;
- Pursue external financing to the maximum extent practical in order to mitigate impact on rate payers and achieve intergenerational equity; and
- Minimize borrowing costs to the maximum extent practical and maintain high bond ratings to minimize long-term financial costs.

Currently, the estimated forecast indicates annual expenditures ranging from \$150 million to \$320 million in the ten year period. Capital costs over the ten year period are estimated at \$1.4 billion. Funding this large capital improvement program at the RWF will require a combination of cash and debt financing. Staff is continuing to work with the City of Santa Clara and the Tributary Agencies to develop a long-term funding strategy and financing plan that will explore the use of a commercial paper program, variable rate debt, and/or California Clean Water Act State Revolving Fund (SRF) loans in addition to traditional long-term fixed rate debt in order to minimize overall cost of borrowing for capital improvements. Consistent with the guiding principles noted earlier, San José staff, working with the City's financial advisor, Public Resources Advisory Group (PRAG), is developing a plan that is intended to balance the need to pursue external financing (as opposed to pay-as-you-go funding) to mitigate near-term impacts on rate payers and achieve intergenerational equity with the goal of minimizing long-term financial costs.

It is important to note that the forecasted expenditures are based on the best information available at this time and may change due to a variety of factors such as changes to the schedules and budgets of the capital improvement projects and variances from current assumptions for operations and maintenance costs and/or project delivery methods. The forecasted numbers will be updated on an annual basis, through the budget process.

Water Utility System

The San Jose Municipal Water System (Muni Water) includes:

- 344 Miles of Water Mains Ranging from 6-Inches to 24-Inches in Diameter
- 17 Reservoirs