



COUNCIL AGENDA: 2/28/17-3/14/17
ITEM: 3-73.4

Memorandum

TO: HONORABLE MAYOR AND
CITY COUNCIL

FROM: Toni J. Taber, CMC
City Clerk

SUBJECT: SEE BELOW

DATE: February 16, 2017

**SUBJECT: STATUS REPORT ON DEFERRED MAINTENANCE AND
INFRASTRUCTURE BACKLOG**

RECOMMENDATION: As recommended by the Transportation and Environment Committee on February 6, 2017, accept the 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 18, 2017

Approved

Date

1/30/17

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 28, 2017, 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 **\$1.51 billion** in unfunded costs, with an additional **\$144 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 2017-2018 Proposed Capital Budget and 2018-2022 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 last year's City sales tax measure and ongoing projected funding from the recently passed VTA Measure B sales tax, significant additional revenue streams are needed to prevent continued deterioration of the transportation system.

Similar to the 2016 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 in the Sanitary Sewer Program 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 2017-2018 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. Instead of preparing this type of cost prohibitive assessment on an annual basis, the baseline estimates include the estimated annual cost of maintaining park facilities to prevent new backlog, and created a platform from which a real-time capital facility assessment and monitoring tool could be deployed to track repair costs, expected end of life asset durations, and asset condition assessments. PRNS recently hired a Program Manager to support the Business Intelligence strategy and is working to transition the tracking of infrastructure backlog needs through the use of the Infor EAM asset management system. This will allow for automated tracking of maintenance needs, repairs, and the outstanding backlog, making the facility assessment process more efficient. Meanwhile, efforts are underway to improve project prioritization, funding, and tracking to ensure that the Capital Improvement Program elevates infrastructure backlog projects above new development projects.

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 projects that are not within the 5-year CIP have been identified and the Airport has developed a list of deferred

maintenance totaling \$4.9 million excluding pavement items which are currently under investigation with a Consultant to identify the scope associated costs for budgeting purposes. The annual unfunded needs for the Airport are reported this year as “to be determined” pending the completion of the pavement analysis and land use study results.

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 2016 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 2016 backlog estimates to reflect more recent work and funds programmed into the 2017-2022 Proposed Capital Improvement Program (CIP). The current backlog of deferred needs is estimated at **\$1,513,904,000** with an additional **\$143,985,000** 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	TBD	TBD
Building Facilities (1)	\$147,073,000	\$18,360,000

City Facilities Operated by Others (OCA)	\$2,216,000	TBD
Sports Facilities	TBD	TBD
Convention Center and Cultural Facilities (TSJ)	\$67,570,000	TBD
Fleet	\$8,600,000	\$1,400,000
Parks, Pools and Open Space	\$156,945,000	\$31,510,000
Sanitary Sewer (2)	TBD	\$1,700,000
Service Yards	25,200,000	\$4,640,000
Storm Sewer (3)	\$295,000,000	TBD
Information Technology (4)	\$22,300,000	\$175,000
Radio Communications	NONE	NONE
Transportation Infrastructure	\$789,000,000	\$86,200,000
Regional Wastewater Facility	NONE	NONE
Water Utility	NONE	NONE
Total	\$1,513,904,000	\$143,985,000

(1) Annual Ongoing \$18,360,000 for Parks Buildings only, remaining facilities TBD.

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

(3) Initial results of the City-wide Master Plan identified \$295 million in high priority projects.

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

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 continue to be impacted as a result of aviation economic conditions with additional consolidation of air carriers and restructuring in major hubs and limited 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 is utilized for building condition assessments (vertical). Special studies and consultants are used to supplement these two programs as well as 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 for building project costs is estimated to be \$4.9 million. The Airport is currently completing the analysis to update the pavement condition index study and a land use study will be released for study to refine the Airport's future budgetary needs to maintain the physical assets. The annual unfunded needs for the Airport will be pending the outcome of the pavement analysis and land use study results.

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 fiscal year 2016-2017 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 is currently replacing a section of ramp pavement. Staff implemented an improved pavement management system study and the consultant is completing the analysis 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 had an area weighted PCI value of 85 (on a scale of 0-100, 100 being zero maintenance required) based upon the 5-year old study; 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.

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 (2000-2010), 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 and \$300,000 in FY 2016-17 for Public Works to conduct building assessments. Additional funding of approximately \$200,000 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 \$147 million, which includes approximately \$102 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. 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 of 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 June 2017. ESCO will allow antiquated and inefficient building systems to be replaced, for example upgrading to LED lighting and energy efficient HVAC systems. 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	Estimated Five-Year Rehabilitation Need
Children’s Discovery Museum	\$1,150,000
Tech Museum	\$1,650,000
History San Jose Facilities	\$950,000
Museum of Art	\$1,200,000
Hammer Theatre	\$1,400,000
Mexican Heritage Plaza	1,750,000
Total Budget Need	\$8,100,000
Cultural Facilities Capital Maintenance Reserve	\$5,884,000
Remaining Unfunded Need	\$2,216,000

*The current reserve level is estimated to fully fund all planned projects through 2019-2020; an additional \$2.2 million would be needed to complete the projects identified in 2020-2021 and 2021-2022.

The current estimated rehabilitation need through 2021-2022 has been recently updated to approximately \$8.1 million. This figure was developed through discussions with the Office of Cultural Affairs (OCA), which provides management oversight for the above referenced facilities, the facility operators, and, importantly, through the evaluation of condition assessment reports that provide information at a more detailed level than was previously available.

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, Hammer Theatre, History San Jose, School of Arts and Culture at Mexican Heritage Plaza, and Children’s Discovery Museum. This funding stream has been an important tool to address the deferred maintenance and infrastructure backlog, with \$2.7 million allocated for these facilities in 2016-2017 and another \$5.9 million available in reserve.

On an ongoing basis, the amount of TOT set aside in accordance with City Council direction exceeds \$5 million annually, potentially yielding more than \$25 million over the next five years and exceeding rehabilitation needs of the cultural facilities. The current reserve level of \$5.9 million is estimated to fully fund all planned projects through 2019-2020 without any additional TOT set aside. Additional TOT set aside of approximately \$2.2 million would be needed to complete the rehabilitation need over the next five years. 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 minor capital funding needs.

Sports 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. The backlog for these facilities is currently under evaluation and as such is noted to be determined.

Sport Facilities	Backlog
Muni Stadium	TBD
San Jose Ice Center	TBD
SAP Center	None

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	\$1,445,000
Center for Performing Arts	\$47,847,000
Civic Theater	\$1,449,000
Montgomery Theater	\$181,000
Parkside Hall*	-
Convention Center	\$15,103,000
South Hall	1,545,000
Total Backlog	\$67,570,000

*Parkside Hall is Part of the Museum Place development project

While life cycle condition reports are still under review for all facilities, preliminary one-time deferred maintenance costs are estimated at \$67.6 million. 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, has provided the City with significant resources to address the backlog. Scheduled for the City Council agenda for January 31, 2017 are staff recommendations to fully fund the contract awards for improvements to the Convention Center

Exhibit Hall lighting and ceiling rehabilitation (approximately \$21 million total project cost) and rehabilitation of the Civic Auditorium HVAC system (approximately \$7 million total project cost). If not awarded, these amounts would add to the backlog totals cited above. The ongoing unfunded backlog is still under development.

Fleet

The City's Fleet Management Program provides preventive maintenance, repairs, statutory inspections, acquisition, disposal and fueling services for a fleet inventory consisting of 2,724 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	458
Fire Front Line	114
General Fleet	1,392
Off Road Fleet	272
Other Equipment	488
Total	2,724

This year's vehicle and equipment inventory increased by 23 assets or 1% from last year's total of 2,701. 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 \$6.9 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 approximately \$6.0 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 \$2.6 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 \$3.2 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 – 3,503 Acres⁽¹⁾
- Trails – 57 miles
- 71 Trail & park related bridges
- Dog Parks – 10 Each
- Aquatic Facilities – 6 pools
- Skate Parks – 7 neighborhoods and 1 regional (Lake Cunningham)
- Community Gardens – 17 neighborhood gardens across the City
- Sports Fields – 100, including soccer, baseball, softball, and T-ball fields
- Rest Room Buildings – 61 stand alone park restrooms

(1) Including golf courses and excluding San Jose Family Camp.

PRNS anticipated future infrastructure needs at approximately \$200,149,000 as of 2013/14 and projects future backlog growth based upon facility lifecycles and unfunded liabilities. Adjusted for inflation, a predicted annual need of \$49,870,000 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 \$18.3 million expended toward backlog items in 2015-2016, the starting backlog for 2016-2017 rises by \$31.5 million to \$259.0 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	\$70,003,000
Community Buildings*	\$44,909,000
Regional Facilities	\$77,146,000
Other Buildings *	\$55,164,000
Restrooms*	\$2,000,000
Trails	\$9,796,000
TOTAL	\$259,018,000

* 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 have been 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:

- 2,030 Miles of Sanitary Sewer Mains (6 inches to 90 inches in diameter)
- 10 Miles of Force Mains
- 18 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 FY2015-16, the City recorded 55 SSOs, which shows a continued decline from 97 SSOs recorded in FY2014-15, 101 SSOs recorded in FY2013-14, and 155 SSOs recorded in FY2012-13. The 55 SSOs is equivalent to approximately 2.4 SSOs per 100 miles of sewer main per year. After further analysis, the continuing downward trend in SSOs can be attributed to the improvements made in the 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. In FY2015-16, the First Responder program met the 30 minutes or less target response time for approximately 81% of SSO sewer related calls. DOT continues to make adjustments to its maintenance program and will continue to evaluate the program's performance as it works towards keeping the SSO rate at 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 development and planning information, water use and flow monitoring data, and design criteria to estimate wastewater flows in the trunk sewer system of 10 inches in diameter or larger using *InfoWorks* ICM hydraulic computer model. The model is used to assess system performance for existing, near-term (5- to 10-year horizon) and long-term future under dry and wet weather flow scenarios, identify system deficiencies and recommend capacity improvement projects. The completed Citywide Trunk Sewer System Master Plan and North San Jose Detailed Master Plan (Master Plan) identifies over 100 sewer capacity improvement projects totaling approximately \$190 million, of which about 75% of the projects, or \$135 million, were to address existing deficiencies. Since FY2008-09, the City has included 35 of these projects into the multi-year CIP work plan and, to date, 24 of these projects have been completed.

Staff has continued to evaluate and validate projects identified in the Master Plan as having existing capacity deficiency using flow data collected through the on-going flow monitoring efforts. As a result, 43 projects, totaling nearly \$68 million, remain as potential projects to address existing capacity deficiencies in the system and can be viewed as infrastructure backlog rather than deferred maintenance. This equates to an annual cost of \$4.3 million per year for the next 16 years.

Staff is working on expanding the model to include smaller sewer mains of 8 inches in diameter or smaller. This effort will result in new capacity improvement projects being added to the work plan in future years.

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. Coupled with defect coding analysis and sewer repairs, 46 percent of the collection system has been inspected. This progress is in alignment with the recommendations from the Pilot Sanitary Sewer Condition Assessment Program (SSCA) 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.

In 2016, the City entered into a Consent Decree with San Francisco Baykeeper, a California non-profit organization, to resolve any potential Clean Water Act claims that were brought up by Baykeeper. The Consent Decree requires the City to develop and implement an Exfiltration Abatement Program which will identify all sewer mains with high risk of sewage exfiltration (leaking out) causing contamination of the storm drain system. The Consent Decree also requires the City to repair/rehabilitate these sewer mains at a rate of 6.5 miles annually. Staff has revised its work plan to integrate the Exfiltration Abatement Program into the SSCA program to identify high risk pipe in the system using video inspection. The exact extent of the repair and rehabilitation of the high risk sewer mains is not known at this time; however, during the first few years, any immediate repair needs will be carried out as part of the existing CIP sewer repair program and additional needs will be quantified and planned for in future years.

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 utilize an in-house developed, GIS-capable CMMS software which 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 resulted in the steady decline in the repair backlog and in the number of SSOs. Last year, however, the miles of sewer lines cleaned declined slightly from 1,035 in FY2014-15 to 993, and the percent of SSOs responded to within 30 minutes declined from 89% in FY2014-15 to 81%. In order to continue the implementation of the strategies, it is anticipated that additional funding may be necessary to further reduce the number of SSOs within the City.

Funding

The Sanitary Sewer Capital Program annual funding need is calculated based upon the results of the 2011 Sewer Condition Assessment Pilot, the projected cost of performing the condition assessment, and an analysis of capacity improvement projects needed to address existing deficiencies in the system. With the return of the economy and neighboring cities and agencies that have the same need to develop and implement a condition assessment program, video inspection costs have steadily increased over the last few years which requires additional funding of \$700,000 to a total of \$36.2 million to fully fund the annual capital program.

Beginning in FY2015-16, the annual transfer from the Sewer Service and Use Charge Fund (SSUC Fund) to the Capital Fund was increased and maintained at \$32 million per year, leaving a projected \$4.4 million funding gap.

The implementation of the Exfiltration Abatement Program has been carefully crafted into the CIP and has not caused any impacts on the current budget. Staff will continue to monitor all expenditures related to the Exfiltration Abatement Program and request for adjustments to the budget or staffing as needed.

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 \$16.7 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 investment for both the Capital Improvement needs (for rehabilitation and capacity expansion) and O&M of the system would total approximately \$52.4 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	\$ 3,900,000
Capacity Projects (existing users)	\$ 4,300,000
Total Capital Need	\$36,200,000
O&M (DOT)	\$17,900,000
Total Capital and Operating Need	\$54,100,000
2016-2017 Adopted Budget Funding	\$52,400,000
Total Annual Unfunded Need	\$1,700,000

After taking into account DOT operating costs (\$17.9 million) programmed in the FY2016-17 Adopted Operating Budget and the amount of resources added into the FY2016-17 Adopted Capital Budget (\$34.5 million, which excludes fund balance primarily used for continuing projects), the remaining annual unfunded need is approximately \$1.7 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, 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	\$ 8,100,000
Mabury Yard	\$7,600,000
South Yard	\$5,000,000
West Yard	\$ 4,500,000
Total Budget Need	\$ 25,200,000

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 was completed this past 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 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.

Storm Sewer

The storm sewer collection system includes:

- 1,100 Miles of Storm Sewer Pipe
- 32,200 Storm Drain Inlets
- 1,510 Storm Outfalls
- 30 Pump Stations

A hydrologic and hydraulic (H&H) computer model of the City's storm drain 24-inch and larger and riverine system was developed for the Citywide Storm Sewer Master Plan. The modeling effort was coordinated with the Santa Clara Valley Water District for storm runoff methodologies and parameters, and use of their riverine model. The integrated model was calibrated using FY2013-14 and FY2014-15 wet season flow and rainfall data, and validated using observed creek levels and flooding data for recent storm events.

The H&H model was run for the 10-year 24-hour design storm event, and used the 3-year event to prioritize capacity improvement projects. Preliminary high priority projects to alleviate predicted flooding of 6 inches or deeper at the 3-year event for existing conditions were identified in 56 drainage areas. The capital cost for these high priority projects for flood protection purpose was estimated to be roughly \$295 million.

In addition to addressing existing capacity need, the citywide Master Plan will address long-term future (General Plan 2040) capacity needs, as well as identify water quality improvement opportunities with flood control projects. The Master Plan study is expected to be completed in Summer 2017.

During the preparation for the citywide Master Plan study, the North San Jose (NSJ) Area Master Plan study was completed in June 2014. The study identified capacity deficiencies in North San Jose, including known flooding in the 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 2017-2021 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 rehabilitation. In addition, any improvements within the riparian

corridor of City owned creeks requires mandatory environmental mitigation, monitoring and reporting to 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 2017-2021 Adopted CIP is \$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. Additional resources will likely be needed, however, 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 levels. 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) mission is to execute, secure, and sustain the civic solutions that allow San Jose to thrive. The department enables the workforce through voice and data communications, executes citywide protects, and supports the City's critical data. Ultimately, ITD enables service delivery through hardware and software tools used by employees to perform the essential functions of their jobs. Providing strong strategic direction for technology investments across the organization leverages the City's IT funding for maximum benefit.

After a decade of disinvestment, the City's focus is on modernizing core systems and solutions that support the changing demands of departments. Obsolete and aged IT assets in place routinely fail and cannot meet requirements for new solutions departments acquire and aim to implement. Related, serious audit findings related to staffing, project execution, and asset management continue to mount. These accumulated needs are referred to as "Tech Debt".

Critical Enterprise Technology assets include:

- HR, payroll, financials, and workers' compensation systems;
- Citywide voice/data network, data storage, server compute, and backup solutions;
- The Wickedly Fast WiFi public wireless network and current expansions to school attendance areas;
- Approximately 4,900 PCs, 5,000 desktop phones, and 4,100 city-owned mobile computing/communications devices (laptops, tablets, and cell phones); and
- Over 300 physical and virtual Servers, hosts, and appliances.

Overall, the deferred maintenance and infrastructure backlog for ITD is approximately \$22.3 million in one-time costs and an estimated \$175,000 annually. The estimates represent the cost to replace aging infrastructure using 2016 dollars. Adding to the need to invest, the City's Tech Debt continues to accumulate each year it is unaddressed— siloed assets prevent interoperability needed to support the San Jose Smart Cities Vision, failures and outages increase, and the City's significant Cybersecurity risks from unsupported and obsolete systems disrupt public services.

Current figures are part of a comprehensive review of IT assets that was part of the City's IT Strategic Planning Process completed at the end of 2016. A large number of assets were discovered to have been unaccounted for previously or underestimated. It is clear that the City's large deferred infrastructure maintenance backlog—San Jose's Tech Debt—has accumulated to a point where major investments are now unavoidable.

Information Technology Strategic Initiatives

1) Re-platform the City on current technologies that will sustain operations and innovation efforts.

The current value of assets for the enterprise infrastructure systems is slightly over \$10.8 million and includes all technology equipment needed to support enterprise services. It excludes department-specific information technology assets used by Police, Airport, and Libraries, that have dedicated staff and funding to support their infrastructure operations. Approximately 71% of the supporting IT hardware is past End-of-Support or End-of-Life. One-time costs to replace deskside and Data Center IT assets is approximately \$8.3 million, with an ongoing maintenance cost of roughly \$175,000.

The largest cost of the infrastructure backlog is the estimated \$4.9 million needed to replace approximately 5,000 desktop computers. The quantity of computers to be replaced is based on the number of users citywide. Without an asset management tool—a deficiency identified in multiple audits—staff is unable to accurately report the full current environment and determine which equipment needs to be replaced, or if there are any outdated, unlicensed, or inappropriate software installations. Further, the City does not take advantage of volume licensing and imaging opportunities, operating a decentralized, one-off PC purchasing model.

The balance of \$3.4 million in infrastructure backlog connects to replacement of the core network, server, storage, security, disaster recovery, and uninterruptible power supply equipment. Increasingly, ITD is unable to respond to new requests from departments due to the age of the City's current hardware, virtualization software, and server operating systems. Just as important is the fact that the City's IT infrastructure continues to age, the number of outages and lost work hours continues to grow, and the cost for vendor support of obsolete IT assets continues to rise. The department expects in the next year to two, failures will occur that ITD will not be able to restore from.

Current practice is to replace components of the server environment as they fail, sometimes with used and auctioned parts. Often to work around an aged core, City departments maintain disparate technologies for their operations, replicating costs. This fragmented environment increases the infrastructure backlog in technology and diffuses the effect of IT investments organizationally. As a result, some departments are modernized whereas the majority are forced to operate on IT assets which fail to perform to standards, but that also are unsupported by their manufacturers.

ITD recommends modernizing the City on current technologies that will sustain operations and innovation efforts. By replacing the City's aging compute, storage, and virtualization equipment to converged or hyper-converged infrastructure technologies staff, the City would transition to current technologies that can respond to needs communicated by departments, support Cloud computing and storage uses, refresh staff skills, and leverage a singular investment to benefit almost all departments. High availability and security features on current infrastructure build would also resolve deficits in the City's ability to provide stronger security controls, malware recovery, and business resumption in the event of disaster.

As referenced, the City maintains approximately 300 virtual and physical servers. Of those, over 90% have operating systems that are beyond End-of-Support or End-of-Life. Audit reports completed by the City Auditor's Office found the software platforms to be obsolete and unsecure. ITD is working on related needs for an Asset Management and Control solution, as well as with Microsoft to true-up the City's overall licensing compliance on an ongoing basis.

Important industry shifts include the transition to user-based software licensing and forced-maintenance of software on a subscription basis—e.g., Office 365, subscription software, serverless/platform-as-a-service/infrastructure-as-a-service, and similar structures. In this new reality, the City will be required to pay to maintain its IT environment and will have fewer options to allow IT assets to age past support. ITD, the Budget Office, Finance, and Departments will need to set strong strategies to manage costs as those models displace one-time purchase software in addressing the organization's current and future needs.

Of special importance, the City's Financial Management System (FMS) is almost 30 years old and based on a system architecture from the 1980s. It performs admirably and the City has received long-term value from the investment. Although upgraded numerous times, departments report the system lacks functionality in many key areas including contract administration,

procurement, budgeting, project and program cost accounting, and the like. In many cases, the City has addressed the functional deficiencies with other systems, duplicative systems, and/or tools designed for other functional needs. The cost to re-platform this system is approximately \$15 million dollars. It should be the Finance Department's decision when the City should aim to have accrued adequate funding to support a replacement, which will likely be a major, multi-year project.

The City does not use a true enterprise content management system (ECM), causing an inability to effectively administer a Records Management Program, eDiscovery searches, or Legal Holds. CHAD, the current electronic records management system, is a stand-alone system that is inefficient and cannot enforce records retention. An ECM is used to create, store, distribute, discover, archive and manage unstructured content, such as scanned documents, email, reports, and office documents to enable organizations to deliver relevant content to users where and when they need it. City records may be kept beyond the legally mandated time required. Similarly, records may be disposed of prematurely without an ECM, causing spoliation violations. The Office 365 and SharePoint subscriptions already maintained by the City include an enterprise-class electronic content and records management solution. The City has struggled with adoption across departments. ITD recommends focusing on legal and records management needs by implementing in target departments with support from the offices of the City Attorney and City Clerk, along with the Finance and HR departments, to cover critical needs first and to set the foundation for broader adoption. The estimated one-time and ongoing costs for completing implementation of the ECM and eDiscovery Center solutions are estimated to be \$370,000 one-time and exclude any staff necessary for support.

2) Address growing risks of cybercrime and cyberdisasters by creating a Cybersecurity Office.

Information and systems security require modernization and standardization across departments. Multiple audits have made significant findings of the current state of the City's security staffing, IT assets controls, and systems administration. These needs couple with a shift toward a mobile-enabled workforce that places City IT assets and information in the field; exponentially growing risk of cybercrime; and the absence of adequate cybersecurity talent.

Because of past resource constraints, the City lacks a dedicated Cybersecurity Program to administer security functions city-wide—Identification, Protection, Detection, Response, and Recovery services. The City has critical exposures in its risk profile, based on its prominence, size of its budget, plethora of systems and technologies, absence of citywide and IT training, and lack of focus and clear responsibilities. The organization lacks even basic asset management tools to inventory and administer the City's hardware and software. These collective needs have emerged in the past five years and continue to grow. Meanwhile, the City has not allocated the new resources to match.

Based on violations experienced by peer organization and the City itself over the past two years, the City has been fortunate to-date. Nonetheless, major violations and non-compliance will

inevitably impact San José, just as it has harmed others. An Information Systems Security/ Cybersecurity Program, tools, and services are necessary to manage growing risks of cybercrime and cyberdisasters, operating requirements, and business resumption needs. The City will need to make up for investments not made in the past.

3) Build ability to resume critical services quickly and transition to a business resumption model.

The City's current disaster recovery solution and processes are outdated, consume excessive resources, and would require days to weeks to restore the majority of the City's business systems. This project would re-platform the City's important on-premise systems onto a modern business resumption solution, defined by replication, within-hours recovery point objectives, and options for reconstituting City services at geographically separated data centers in an emergency.

Most of the City's disaster recovery plans are over 15 years-old. Technologies have changed drastically. Further, the City can now achieve strong Recovery Point Objectives, Recovery Time Objectives, geographic separation goals, and automated replication at reasonable cost that were previously unavailable.

Given the disaster risks present in the Bay Area, it is essential that the City modernize its business resumption solutions and planning for critical technology systems, as well as reduce unnecessary and excessive infrastructure demands of products currently in use. Investments will be maximized by taking a city-wide business resumption approach versus buying redundancy on a system-by-system basis. ITD staff believes it can achieve the outcomes detailed through the one-time and ongoing investments in the cost to re-platform the City on current infrastructure technologies, sustaining operations and innovation efforts.

Recent Efforts to Address the Backlog

Over recent fiscal years, ITD focused on upgrading operating system software to Windows 10 to address immediate compatibility and security vulnerabilities from the End-of-Life of operating systems the City used with \$500,000 in one-time funds provided. Additionally, funds included in the 2016-2017 Adopted Operating Budget allowed ITD to replace a portion of servers (\$200,000) on End-of-Life operating systems; upgrade remote facilities network (\$500,000); upgrade some failing network equipment (\$75,000); and pilot virtualized computers (\$500,000).

Future State

The significant remaining technical infrastructure backlog are those items related to hardware replacements, network and security architecture. 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 and an electronic content management system that will need to be updated.

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 the accumulation of technology debt. In addition, a lack of ongoing investment in technology will lead to an accumulation of deferred maintenance, as well as a return of some systems to an infrastructure backlog. As identified in audit findings, a Technology Replacements Fund is recommended to be established to accumulate resources for future replacements of the city's aging infrastructure that can be upgraded in a phased approach or have become today's subscription-based. The City has under invested in technology over the past decade due to budget deficits. Therefore, to plan for the immediate and future replacement the aging infrastructure, staff recommends setting aside funding each year in smaller amounts rather than any single year in a large amount. Establishing this fund will also ensure the City can upgrade to new equipment when it comes available rather than waiting for funds to become available, as has been past practice. Over the upcoming year, staff will be developing a comprehensive solution to bring all IT hardware and software up to current industry standards as well as strategically upgrade to enhance security and limit down time for users.

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 6,700 Units (2,100 are already configured to use with SVRCS with 650 left to purchase)
- 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 \$5.0 million for the future implementation of the Silicon Valley Regional Communications System (SVRCS) after accounting for allocated resources programmed in the 2017-2021 Capital Improvement Program.

The Silicon Valley Regional Interoperability Authority (SVRIA) is a joint powers authority consisting of 19 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 \$15.0 million, bringing the City's total need for the SVRCS to \$22.5 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 2015-2016, \$3.0 million paid in 2016-2017, and the remaining \$1.4 million was added to a SVRCS Reserve as part of the 2016-2017 Adopted Operating Budget, which will fully fund the City's share and will be paid in September 2017.

To date, a total of \$10.0 million has been used to begin radio and dispatch console replacements. To address the \$5.0 million remaining need for radio and dispatch console replacement, the City has and will use grant and local funding from several sources. In addition, the 2017-2021 Capital Improvement Program allocates approximately \$2.0 million to the Silicon Valley Regional Communications System – Radios project from 2017-2018 to 2020-2021. After taking these year-to-date and future investments into account, the remaining unfunded amount for radio and dispatch console replacement is \$3.0 million.

The City's total unfunded need for implementation of the SVRCS is approximately \$5.0 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 – 2,434 miles
- Traffic Signals – 936 signalized intersections
- Roadway Signs – 89,436 traffic control signs; 3,398 intersection street name signs; 26,236 residential street name signs
- Roadway Markings – 5,600,000 square feet of markings; 513,005 raised pavement markers (RPMs)
- Streetlights – 64,403 streetlights and poles
- Landscaping – 241.5 Acres of landscaped properties for general benefit

- Stormwater Treatment Control Measures (TCMs) – 12 locations comprised of 127,000 square feet of landscaping, 2 pump stations, 11 infiltration systems and 15 tree well filters
- Street Trees – 282,755 street trees and 74,942 vacant street tree sites
- ADA Compliant Curb Ramps – 26,800 locations (6,468 locations with no ramps; 12,920 locations with ramps that are not fully compliant and need modification or replacement; 7,412 locations currently in compliance)
- Bridges – 151 National Bridge Inventory (NBI) vehicular bridges (20 feet or greater in length); 70 vehicular bridges less than 20 feet in length; 11 pedestrian bridges

Street Pavement

The City's most significant transportation asset is the street network consisting of 2,434 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 has resulted in continued degradation of its condition. The estimated cost to eliminate the deferred maintenance backlog continues to grow each year, as illustrated by the increase from \$503.8 million in 2014 to \$521.5 million in 2015, and the further increase to \$584.4 million in 2016. Approximately \$108 million is needed annually over a 10-year period to eliminate the backlog and to improve overall pavement conditions to a rating of Good (70 or higher on an industry-standard 0-100 scale). Funding levels for the next 5 years are estimated at approximately \$32 million per year. This is a significant increase from last year's deferred maintenance report in which the 5-year annual funding estimate was \$13 million, but still does not meet the growing amount of funding needed to restore the overall network to Good. This increase in funding is a result of the recent passage of the Valley Transportation Authority (VTA)-sponsored Measure B, a 30-year half cent sales tax which is estimated to result in \$19 million per year in transportation funding for the City of San Jose. With this sustained revenue stream, DOT will be able to fully fund pavement maintenance on the Priority Street Network (PSN) and the Other Major Streets (OMS) which, together, comprise approximately 40% of the entire street network in San Jose and carry the majority of City traffic. In the event that other funding sources are secured and the program's funding level exceeds \$32 million, DOT would then be able to reinstate a program to address the pavement maintenance needs of the other 60% of the City's neighborhood/local streets, which is something it has not been able to do since 2012. 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 62 on a 100-point scale, which is 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 fully funded at a cost of \$5.5 million annually. With the addition of the VTA Measure B funding, the second category, the 544-mile Priority Street Network, is now fully funded with the \$13.0 million needed annually to remain in good condition. Additionally, Measure B funds will fully fund pavement maintenance needs on the

400 miles of other major streets (OMS). The 1,490 miles of local/neighborhood streets, however, continue to receive no dedicated pavement maintenance funding.

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 Traffic Signal Maintenance Team responds to approximately 2,175 service requests annually, and maintains 936 traffic signal intersections (934 signals and 2 Hybrid Pedestrian Beacons – HAWKS), up from last year's 923 due to the activation of new signals. 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 continued hiring challenges which have increased the section's overall vacancy rate, 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 \$4.8 million for existing equipment, and an ongoing annual shortfall of \$3,347,000. 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 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. This section also installs new residential street name signs and maintains traffic signal intersection street name signs. There are 89,436 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. The section maintains 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, DOT began using 3M High Intensity Prismatic (HIP) sheeting for the Traffic Control Preventative Maintenance (TCPM) 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 TCPM program was completed at the end of 2014 with all traffic control signs being replaced using the HIP material. The life expectancy of HIP signs is 12 years with very little drop-off in reflectivity. The section has begun a new reflectivity study tracking the life of the HIP signs installed in the early years of the TCPM preventative maintenance program.

The estimated one-time cost to eliminate the current backlog of street name signs in need of replacement is \$1,870,250. An annual ongoing need of \$212,000 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 5.6 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 two-year cycle; and residential areas should be repainted on a three-year cycle. Current funding only allows for a two-year repaint cycle for striping on major roads; a three-year cycle for arterial legends and curbs; and a 6-year cycle for residential areas. As a result of the deferred maintenance, approximately 3.1 million square feet (55%) are currently in good condition, which leaves 2.5 million square feet (45%) that need to be painted in order to achieve 100% of markings in good condition.

The City has approximately 513,005 Raised Pavement Markers (RPMs) – 272,128 on residential streets and 240,877 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 14% (33,722) of 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 (5.6 million square feet of paint and all RPMs) in good or better condition, one-time funding of \$3.5 million is needed to complete an additional 2.5 million square feet of roadway markings (44% of inventory) and install 305,850 RPMs. 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 64,403 streetlights and streetlight poles, 24,801 of which have been converted to LED light fixtures to date. The current streetlight network contains 32,482 painted octaflute streetlight poles and 31,921 remaining lights that are either on galvanized poles, decorative poles, or are decorative uplights.

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 5 years ago to a current average of 1,054 service requests completed per month in FY2015-16. It is anticipated that service requests related to bulb and fixture malfunction will be nearly eliminated once the streetlight LED conversion is completed; however, other electrical problems such as stolen wire and burned fuses will still need to be addressed. The full scope of ongoing maintenance needs for LED streetlights is not known at this time.

There is an identified ongoing need of \$353,750 to address the continuing problem of streetlight copper wire theft. Wire theft peaked in FY2014-15 with an average of 50 new occurrences per month. By the end of FY2014-15, the backlog of wire theft repair locations was eliminated, and 5000 locking metal lids were installed to deter future theft. Ongoing funding of \$353,750 is needed for one crew and the necessary materials to keep up with new wire theft occurrences.

The 32,482 painted octaflute streetlight poles have varying 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 32,482 painted streetlight poles with galvanized surfaces would require a total one-time rehabilitation investment cost of \$24.8 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 241.5 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 27 of those acres have been installed, leaving 23 acres still to be completed. 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 \$13.8 million in one-time money. Of the 241.5 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, the total one-time need in Street Landscaping is \$17,170,000.

Since FY2006-07, the average landscape acreage per maintenance worker has risen from approximately 8 acres to 30.18 acres due to resource reductions and a growing inventory. In FY2000-01, 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 reductions since that time, conditions have declined to the current 51% 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 \$4,158,000. The other components of the ongoing shortfall in the Landscape Maintenance Program include an estimated annual need of \$572,000 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.

Most illegal dumping complaints were assumed by the Environmental Services Department (ESD) at the start of FY2016-17. Currently, DOT only responds to Priority One (P1) complaints that pose an immediate safety hazard or obstruction in the public right-of-way. ESD will incorporate the proactive patrol of alleyways beginning in January 2017. DOT will continue to respond to P1 calls in the alleyways, and anticipates a combined total of approximately 1600 P1 service requests during this fiscal year.

Stormwater Treatment Control Measures (TCMs)

To comply with the Municipal Regional Permit (MRP) as issued by the State Water Resources Control Board, the City has begun to require the design and construction of stormwater treatment control measures (TCMs) on every new development project that installs over 2000 square feet of impervious surface. TCMs include hydrodynamic separators, bioretention basins, biotreatment cells, flow-through planters, tree well filters, subsurface infiltration systems, detention basins and pervious pavement. New development in the public right-of-way now triggers required "green street" designs to ensure that contaminants and sedimentation are removed from stormwater runoff before the water enters the storm sewer system. As mandated by the MRP, the City is required to provide a high level of landscape management and maintenance services on a regular and prescribed basis to ensure functionality of the TCMs that are installed within the public right-of-way.

To date, DOT has accepted 12 public stormwater assets located throughout the City. In summary, these assets include a total of 109 biotreatment cells (22,000 square feet of landscape), one retention basin (67,000 square feet), one bioretention basin (11,200 square feet), 13,000 square feet of riparian mitigation landscaping, two pump stations, general landscaping (10,000 square feet), 11 subsurface infiltration systems (3800 square feet), and 15 tree well filters. The ongoing annual budget shortfall to maintain these 12 locations is \$132,600, which includes

funding for the Stormwater Asset Manager position and contractual money for the required maintenance.

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 282,755 street trees within the public right-of-way under the jurisdiction of the Department of Transportation. Of those, 18,643 trees are in areas which are maintained by the City, such as median islands and roadside landscapes. In addition, there are an estimated 74,942 vacant street tree planting sites, 1,434 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 \$1.7 million in one-time funding is needed to bring all existing City-maintained trees into good condition, and an additional \$645,300 is needed one-time to plant trees in existing City-maintained plant-able sites. One-time funding of \$60,000 is needed to develop the City's Community Forest Management Plan, bringing the total of one-time funding needed to \$2.4 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 2017. 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 \$376,000 is needed to maintain a 5-year pruning cycle and tree replacement needs for the 18,643 City-maintained trees, as well as \$16,000 per year to update the street tree inventory for City-maintained trees.

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 2% sampling of curb & gutter conducted in 2001. 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 were 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.

Additionally, the City installs or retrofits ramps along corridors where paving projects occur which accounts for approximately 10% of paving project costs. This funding source is variable and directly linked to available street pavement maintenance funding, and has ranged from \$1.3 million to approximately \$2.4 million in recent years. There are 26,800 locations that have been identified where ADA curb ramps should exist. Of these locations, 7,412 currently have ADA compliant ramps; 12,920 locations have ramps that are not compliant and must either be modified or replaced; and 6,468 locations have no ramp at all and require new installation. The one-time cost to bring the remaining 19,388 ramps into compliance is an estimated \$68,000,000.

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

Bridges

DOT is responsible for the maintenance of 151 National Bridge Inventory (NBI) bridges throughout the City, each of which exceeds 20 feet in length. There are an additional 70 vehicular bridges that are less than 20 feet in length for which no inspection history exists as they are not classified in the NBI, and an additional 11 pedestrian bridges for which DOT receives periodic service requests to repair. NBI bridges are periodically inspected by CalTrans, and DOT utilizes the reports generated from those inspections to determine the costs associated with maintaining and rehabilitating these bridges. Currently, there is a one-time backlog of \$82 million to rehabilitate 24 bridges that have been identified by CalTrans to be structurally deficient or functionally obsolete, as well as to provide recommended smaller maintenance tasks on 46 additional bridges.

If all documented rehabilitation and replacement work were accomplished, DOT estimates that it would require approximately \$130,000 annually to perform periodic corrective maintenance on its NBI bridges based on existing unit prices. The City currently allocates \$100,000 for bridge

maintenance. Aside from City dollars, the Federal Highway Bridge Replacement and Rehabilitation (HBRR) grant program has served as a funding source. DOT staff will continue to pursue grant funds to address the current backlog of bridge rehabilitation projects. Additionally, DOT will seek to secure an engineering consultant to inspect the 70 bridges not classified as NBI and generate a list of deficiencies to add to the deferred maintenance backlog.

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	\$584.4	\$76
Traffic Signals	\$4.8	\$3.3
Roadway Markings	\$3.5	\$1.4
Roadway Signs	\$1.9	\$0.2
Streetlights	\$24.8	\$0.4
ADA Curb Ramps	\$68	\$0
Trees	\$2.4	\$0.4
Landscaping	\$17.2	\$4.3
Stormwater TCMs	\$0	\$0.1
Bridges	\$82.0	\$0.1
Missing Sidewalk	TBD	TBD
Total	\$789	\$86.2

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 Water 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 2017-2021 CIP identified funding needs in the amount of \$970.5 million, of which approximately \$825.1 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 the 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
- 15 Pump Stations
- 14 Wells
- 3 Fluoride Injection Stations
- Other Appurtenances including Meters, Laterals, Hydrants, Air Release Valves, and Sample Stations

Currently, there are no unfunded capital needs at Muni Water. However, Muni Water is implementing a Water Master Plan which may identify additional maintenance or infrastructure needs that require increased funding. The annual reinvestment into the system (approximately \$5.6 million) funds rehabilitation of water reservoirs, a meter replacement program, and other infrastructure improvements. Per the Municipal Code, the water utility maintains a Reserve for System Rehabilitation and Replacement (\$2.7 million) for any unanticipated capital needs. Overall, the assets are well maintained in good to excellent condition.

COORDINATION

This memorandum was coordinated with the following Departments: Airport, Environmental Services, Information Technology, Parks, Recreation & Neighborhood Services, Transportation, and the City Manager's Budget Office.

CEQA

Not a project

/s/
BARRY NG
Director of Public Works

For questions please contact Michael O'Connell, Deputy Director at 408-535-8300.

Attachment

GENERAL FUND

	Current Backlog of Deferred Needs	Annual Ongoing Unfunded Needs
BUILDING FACILITIES (Police, Communications, City Hall, Other)	22,600,000	TBD
TECHNOLOGY (Infrastructure & Software Upgrades)	22,300,000	175,000
FLEET REPLACEMENT	5,800,000	1,400,000
TRANSPORTATION INFRASTRUCTURE	5,400,000	6,900,000
TOTAL GENERAL FUND UNMET/DEFERRED INFRASTRUCTURE AND MAINTENANCE NEEDS	56,100,000	8,475,000

SPECIAL FUNDS/CAPITAL FUNDS

	Current Backlog of Deferred Needs	Annual Ongoing Unfunded Needs
AIRPORT	TBD	TBD
BUILDING FACILITIES (Fire, Library, PRNS)	124,473,000	18,360,000
CITY FACILITIES OPERATED BY OTHERS	5,516,000	TBD
CONVENTION CENTER & OTHER CULTURAL FACILITIES	67,570,000	TBD
FLEET REPLACEMENT	2,800,000	NONE
PARKS, POOLS & OPEN SPACE	156,945,000	31,510,000
SANITARY SEWER SYSTEM	TBD	1,700,000
SERVICE YARDS	25,200,000	4,640,000
STORM SEWER SYSTEM	295,000,000	TBD
RADIO COMMUNICATIONS	NONE	NONE
TRANSPORTATION INFRASTRUCTURE	783,600,000	79,300,000
WATER POLLUTION CONTROL PLANT	NONE	NONE
WATER UTILITY SYSTEM	NONE	NONE
TOTAL POTENTIAL OTHER FUND UNMET/DEFERRED INFRASTRUCTURE AND MAINTENANCE NEEDS	1,461,104,000	135,510,000
TOTAL UNMET/DEFERRED INFRASTRUCTURE AND MAINTENANCE NEEDS	1,517,204,000	143,985,000