



Information and Communication Technology Plan **DRAFT**

FY 2020-24

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Message from the City Administrator

Dear Mayor Breed and Members of the Board of Supervisors:

I am pleased to submit the proposed City and County of San Francisco Information and Communication Technology (ICT) Plan. The ICT Plan describes the City's technology strategy to help guide our investments and initiatives for the next five years.

In the fifth iteration of the ICT Plan, we renew our focus on the role technology plays to modernize services throughout San Francisco. Our technologies should help improve the lives of our residents and businesses.

Since the last ICT Plan, we have made substantial progress towards using technology to improve government operations and provide better services. Most notably, the City has implemented a new financial system to wholly transform the way departments manage our financial data. Over the next five years, we will continue to build on and expand the functionality of our new financial system to provide an unprecedented level of transparency and efficiency in the administration of local government.

Our technology is also helping address our most pressing problems with the housing crisis and with public safety. Our investments will help our Homelessness Department coordinate social services to those most in need and help our public safety agencies share data better. The ability to share information to provide better services will be the foundation to creating a better and safer San Francisco.

I am proud of our many accomplishments and look forward to a future that is even brighter. Looking ahead, I am pleased to say San Francisco has more tools to achieve our goals than ever before.

Over the next five years, the City is poised to continue our progress by investing a record amount of funds towards transformative technologies. The proposed FY 2020-24 ICT Plan recommends \$233.3 million in General Fund support to improve City services. Although the demand for technology investment continues to outpace available resources, the City is well positioned to invest in technologies with the most impact.

I look forward to accomplishing our goals together.

Sincerely,

Naomi Kelly

City Administrator

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Executive Summary

The Committee on Information Technology (COIT) is pleased to present Mayor London Breed and the Board of Supervisors the Information and Technology (ICT) Plan for fiscal years (FY) 2019-20 through FY 2023-24.

The purpose of ICT Plan is to organize upcoming technology investments for the City and County of San Francisco and provide strategic direction. In support of Mayor Breed's emphasis on equity and government accountability, the ICT Plan provides a picture on how technology will modernize government and help us achieve our shared goals.

A Technology Vision for San Francisco

Our vision in San Francisco is to become a responsive, transparent digital city with easy to use and accessible services for every resident, visitor, business, and employee.

The following section describes our strategic goals which help to guide financial strategies.

➤ **Goal 1: Support and Maintain Critical Infrastructure**

The City's technology infrastructure is aging and requires a focused effort towards modernization. In particular, three major areas outline our infrastructure direction: the City's network, telephony, and movement to affordable cloud environments.

➤ **Goal 2: Prepare and Protect City Systems**

Whether from a natural or man-made emergency, the City's information systems and communications must be operational and restored quickly if interrupted. From public safety radio communications to network and internet service, disaster preparedness and cyber security protections require constant vigilance.

➤ **Goal 3: Make City Operations More Efficient and Effective**

To provide the next generation of services, our technology needs to create efficiencies in cost and operations. Our data should help guide our way to finding this value, which requires additional sophistication in analytics and data science.

➤ **Goal 4: Improve the Service Experience**

Technology is transforming government services to be easier to use and more accessible. Replacing our legacy technologies, redesigning existing practices and innovating new services is key to our modernization efforts.

Financial Forecast

Looking forward towards FY 2019-20 through FY 2023-24, City departments anticipate initiating 130 projects for a total of projected cost of \$669.1 million. COIT approval is required for all technology projects with an estimated cost over \$100,000. Only a select number of high priority projects are also eligible to receive support from the General Fund.

Figure 1: Five-Year Forecast of Technology Projects

	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24
Number of Projects	104	86	60	42	34
Total Projected Cost	352.3	121.2	103.3	57.8	34.4
General Fund Request	69.1	51.6	48.3	30.2	20.8

Note: Cost figures are in \$ millions.

To support the upcoming technology requests, COIT recommends funding from two General Fund sources: the Major IT Project Allocation and the Annual Allocation. COIT recommends prioritizing funding towards projects that align with City priorities and have the highest impact over the next five years.

Figure 2: COIT Allocations Five-Year Forecast

	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24
Annual Allocation	14.1	15.5	17.1	18.7	20.6
Major IT Allocation	22.5	24.7	27.2	29.9	32.9
Total	36.6	40.2	44.3	48.7	53.4

Note: All figures are in \$ millions.

In particular, COIT recommends funding the following projects with the Major IT Allocation given their size and importance to City operations.

- **Electronic Health Records (EHR):** A unified EHR system will allow the Department of Public Health to transition to a modern system to meet quality and safety objectives and enhance service deliver outcomes.
- **Public Radio Replacement Project:** The upgrade of the citywide radio communications system is used primarily by the City's public safety and public service agencies.
- **Property Assessment & Tax System:** Replacing the property assessment and tax system is a joint effort between the Assessor's Office, Treasurer Tax Collector, and the Controller's Office.
- **City Telecom Modernization:** The transition to Voice over Internet Protocol (VoIP) will move the City's phones from a private telephone carrier to the Internet.
- **Computer Aided Dispatch Replacement:** The CAD system is the City's core application for receiving, categorizing, and dispatching Police and Fire 9-1-1 calls.

To address current and future needs, COIT recommends the following:

- **Recommendation 1:** Due to increasing need for technology resources, COIT recommends the Major IT Allocation and Annual Project Allocation grow by 10% annually.
- **Recommendation 2:** Funding for the ongoing support and maintenance of technology lags behind investment for new technology. COIT recommends expanding the IT Refresh Fund to meet demand and conducting an analysis on appropriate funding levels needed to support existing technologies.
- **Recommendation 3:** The increasing size and importance of technology projects throughout the City requires mature governance. COIT recommends all projects over \$1M have a project steering committee with a defined charter, multiple stakeholder engagement, and independent verification and validation.
- **Recommendation 4:** The risk of cyber threat continues to grow and requires increased coordination and collaboration within the City to prepare for a cyber incident. COIT recommends formalizing authorities and governance for citywide cyber incident response to make citywide decisions and developing a formal cyber incident working group for ongoing information sharing and incident preparation composed of cybersecurity professionals.
- **Recommendation 5:** All City services should be digital by design and minimize paper requirements. To support the acceleration of digital service redesign and centralization of all City services on the City website, COIT recommends all departments conduct an inventory of all services provided to residents, businesses, and visitors.
- **Recommendation 6:** To modernize government services, COIT recommends the City initiate a citywide effort to remove all paper processes and eliminate storage costs where possible. COIT recommends the City & County of San Francisco goes paperless by 2024.

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Introduction

San Francisco is a city that embraces change and technology. Our communities value diversity of thought and are home to some of the leading innovators of the world. Their example is helping local government become more modern and effective than ever before.

Our vision in San Francisco is to become a responsive, transparent digital city with easy to use and accessible services for every resident, visitor, business, and employee.

Through strategic planning and smart investment, government services will incorporate new technologies and streamline business process to better serve San Francisco. The modernization of City infrastructure and government operations will enable the City to better support our community, especially those in the most need.

The purpose of ICT Plan is to organize upcoming technology investments for the City and County of San Francisco and provide strategic direction. In support of Mayor Breed's emphasis on equity and government accountability, the ICT Plan provides a picture on how technology will modernize government and help us achieve our shared goals.

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Building A Modern Government

San Francisco is undergoing a period of unprecedented growth and development. However even with the abundance of new opportunity, our communities still face many pressing issues. Facing a housing crisis and ever increasing cost of living expenses, local government still plays an important role in helping our communities reach their fullest potential. In this dialogue between local government, residents, and our businesses to improve our community, technology plays an increasingly important role.

Among the highest priorities in San Francisco are issues that affect us all: homelessness on our streets and neighborhoods, improving public safety outcomes, and streamlining permitting. For each of these initiatives, technology is helping City make meaningful progress. By helping redefine service delivery strategies and providing better analysis, technology is key to achieving our goals.

The following section describes three major City initiatives in which technology is helping pave the way for a more modern and responsive government.

Homelessness in San Francisco: Helping Our Most Vulnerable Residents

San Francisco's number one priority is to address its homelessness crisis. According to the City's 2017 point-in-time count, approximately 7,500 individuals experience homelessness on any given night in San Francisco. This count includes about 4,350 people whose primary nighttime residence is outdoors or other unsheltered places.

The Department of Homelessness and Supportive Housing (HSH) is leading the City's efforts to make homelessness in San Francisco rare, brief, and a one-time occurrence. Created in 2016, the Department has an annual operating budget of \$284 million and a staff of 125 FTEs in FY 2018-19. Through its efforts, the Department rehouses nearly 2,000 every year and assists approximately 15,000 unhoused people with services targeting to resolving their homelessness. HSH's technology platform underpin its efforts to efficiently manage the City's Homelessness Response System and better deploy limited resources.

The Online Navigation and Entry (ONE) System: Supporting Coordinated Entry

In the Department's strategic framework, HSH describes its vision for creating a coordinated, data-driven, and integrated Homelessness Response System. The ONE System is the technology infrastructure for all homelessness housing and services that will make this vision possible.

By retiring 15 separate databases that track services, the Department will be able to improve accountability and better provide services tailored to each individual. Once implementation is complete, the ONE System will be used by HSH staff, nonprofit contractors, and City partners for more coordinated assessment and prioritization, data sharing across programs, improved service delivery and better tracking of results.

With the first phase of the ONE System completed, the Department has eliminated housing waiting lists and redesigned its services to help people with the appropriate interventions. The development of a comprehensive database system will help the City provide supportive housing, rapid rehousing subsidies, and other solutions to people experiencing homelessness.

For more information on San Francisco's efforts to end homelessness, please go to <http://hsh.sfgov.org/>.

Public Safety: Accountability and Transparency through Improved Data Sharing

As a core value, San Francisco seeks to promote accountability and transparency throughout the public safety and judicial system. The City continues to be committed to the equitable treatment of all parties within the criminal justice system.

In support of these values, San Francisco initiated the Justice Tracking Information System (JUSTIS) project to create a central system to share information between public safety agencies. Participating in JUSTIS are the following agencies:

- Adult Probation
- District Attorney
- Emergency Management
- Juvenile Probation
- Police Department
- Public Defender
- Sheriff
- Superior Court

The JUSTIS system enables data sharing between public safety agencies and deploy robust reporting on the local criminal justice system. Ultimately, JUSTIS helps to promote data-driven insights into criminal justice objectives and outcomes.

Roadmap to the Future: Maximizing the Value of JUSTIS

During the past 20 years, technology has evolved considerably. Driven by the Department of Technology, a tremendous technical modernization effort is underway to support JUSTIS stakeholders in their efforts to make better decisions in the execution of their vital duties.

This modernization effort contains four lines of effort:

- First, a full renovation of the underlying data architecture will be conducted and an established common taxonomy that will aid in supporting a deeper understanding of criminal justice information for all stakeholders.
- Second, establishing reporting and analytics that will aid in decision making, improve transparency, create efficiencies, and solidify accountability across all criminal justice agencies.
- Third, a decommission of the old infrastructure and an optimization of the platform.
- And finally, organizational and change management support to the stakeholders, while establishing and maintaining strong governance.

This effort in support of JUSTIS is a critical undertaking that is central to the equitable treatment and better outcomes for all in San Francisco.

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One-Stop Permitting: San Francisco's Permit Center

Local government issues a variety of permits for special events, businesses, and construction across the City. In San Francisco, more than 14 departments have permitting authority, and many are located in various locations across the City. As a result, getting a permit can sometimes be overly complicated and confusing.

To address this issue, the City has initiated a bold project to centralize permitting in one building. To be located at 49 Van Ness and opening in spring 2020, the Permit Center will co-locate 11+ departments in one location and will transform the permitting experience. With the expectation of conducting more than 500 customer interactions per day, the Permit Center is an exciting development re-imagining how local government does business.

A Digital Experience: Permits Made Easier

Underpinning the new Permit Center will be a variety of technologies transforming the service experience. With the principle of putting the customer first, technology is helping redesign the permitting process to be friendly, simple, and efficient.

Some of the major ways technology may be used include:

- ***Online, Self-Service Permits:*** The future of permitting interweaves a digital experience with the in-person service experience. Centralizing all information onto the City's website will help provide much needed transparency, but the Permit Center also promises to implement more online transactions. Customers will be able to check minimum requirements, calculate fees, and book appointments online, as well as easily apply online for many permits.
- ***Wayfinding & Queuing:*** For customers who visit the Permit Center, they will have to navigate 39,000 square feet with 11+ different departments offering over 600 types of transactions! To ensure the new space is well organized and clear for customers, the City is investigating technology options to help customers know exactly where to go and how long they will need to wait for service.
- ***Data-driven Decision-making:*** The new Permit Center is the catalyst for the implementation of new technology across the board, as well as intelligent systems to help people navigate the in-person experience. These new technologies will also produce data that has previously been hard to capture, such as overall volumes of permit types and analytics that help us see ways to improve our overall permitting experience.
- ***New Permit System & Electronic Plan Review:*** The City has modernized the permit process starting from Planning Department through the inspections with the Department of Building Inspection. The Accela permit system streamlines the work process between departments and built-in rules provide consistent work processes and fee calculations. Additionally, the multi-department task of reviewing hard copy plans is being automated with electronic plan reviews. The digital documents will be managed more efficiently between review teams and easily shared with the applicants.

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Strategic Goals

To reach our vision of becoming a responsive, transparent digital city with easy to use and accessible services, we need to coordinate our investments to make a maximum impact. The following section describes our strategic goals which help to guide financial strategies.

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Goal 1: Support and Maintain Critical Infrastructure

The City's technology infrastructure is the basic set of systems which support our operations and services. Much like capital projects, technology infrastructure requires continual maintenance and investment to ensure our critical systems are available at all times.

The City's technology infrastructure is aging and requires a focused effort towards modernization. In particular, three major areas outline our infrastructure direction: the City's network, telephony, and movement to affordable cloud environments.

Over the next five years, departments have proposed 31 technology projects to support technology infrastructure. The combined projected cost for all infrastructure projects is projects to be \$374.6 million over the next five years.

Network, Data Centers, and Telephony

The Department of Technology manages 240 miles of fiber-optic cable to support 400 City facilities and operations throughout San Francisco. With the ultimate goal of connecting all City buildings by 2025, the City's fiber network is a critical piece of infrastructure enabling the next generation of City services

Over the next five years, the Department of Technology will install a Software Defined Network (SDN). The City's SDN will provide a future proof, high-availability network that can accommodate the demands of data from future applications, voice, video, cloud providers, and mobility. The modernized network also delivers continuity of operations with a secondary data center in the event of a disaster.

The Department of Technology is also investing in the build of a hybrid cloud environment. Named SFCloud, City cloud services are housed in-house with high speed connections to several third party cloud providers. The City network extends to these environments to allow scalability, redundancy, and a managed security environment that is compliant with specialized data requirements.

Investment in the City's network also provides an opportunity to modernize the City's voice communications. A unified communication tool is critical to support 35,000 employees and 60 City Departments in a highly mobile and decentralized work environment. By replacing the decades old analog phone system with a citywide Voice-over-Internet Protocol (VoIP) system, the City seeks to lower overall maintenance and support costs.

Strategic Objective: Maintain maximum availability of network and telecommunications systems.

Key Performance Indicator

Replace 40 end of life PBX call centers by 2023

Network modernization for 20 City Departments by 2022

Provide 99.99% Data Center and Network Uptime

Upcoming Projects Highlights:

Department of Technology

SFCloud Expansion:

The objective of SF Cloud is to build a cost competitive on-premise solution for cloud services to enable citywide migration. Decrease maintenance costs and enhance security, redundancy, stability, and recovery ability. Networking and virtualization hardware, additional Azure storage, archive and back-up tools for discovery and disaster recovery resets.

Department of Technology

Mainframe Retirement:

New program (collection of projects) that encapsulate the end-goal of decommissioning of the 40+ year CABLE3/CMS Mainframe System for Criminal Justice and Court Processing for CCSF. Supporting the current CABLE3/CMS mainframe is no longer extendable to meet legislative changes.

Initiative Snapshot: The Mayor's Vision for Digital Equity, Tech Literacy & Internships

San Francisco is committed to building a supportive and inclusive digital society. As more and more of City services use technology, the City has a responsibility to make sure all residents have the tools and the access to all services. Our vision for digital equity is full and equitable access to digital technology and its benefits so all residents and communities can thrive, regardless of demographic.

Digital equity begins with access to the Internet. The City has expanded its high speed fiber network to public housing complexes and connected over 1,800 households at no cost to the Internet. Partnering with a local Internet provider allows low income families access to the Internet for school work, job hunting and all the many medical and government services.

Through our programs with the Public Library, the SFConnected program, and TechSF, the City is actively training and exposing thousands of residents to digital tools. In particular, San Francisco's efforts target:

- Low-income households
- People with disabilities
- Residents with limited English proficiency
- And seniors

However, connecting residents to the Internet also increases exposure to new risks from criminals and scammers attempting to steal private information. In response, San Francisco is developing new programs to address new threats head on. The City's Digital Equity program in partnership with the Department of Technology's cybersecurity team has created digital literacy and security trainings to help our most vulnerable residents. Over the next five years, the cybersecurity program will expand as the City's fiber network reaches more communities.

With cybersecurity programs in place among others, the City will also expand on internships and on the job training for high school students through the Opportunities for All program and other City internship programs. The internships allow the high school and college students to see the wide variety of technology jobs in the City and help them develop their professional skills to become the next City employee.

By bringing stakeholders together and coordinating effort, San Francisco aims to close the digital divide.

Read the full City's Digital Equity Strategy at <https://sfcoit.org/digitalequity>.

Goal 2: Prepare and Protect City Systems

Whether from a natural or man-made emergency, the City's information systems and communications must be operational and restored quickly if interrupted. From public safety radio communications to network and internet service, disaster preparedness and cyber security protections require constant vigilance.

Departments have proposed 18 technology projects to security City technology, with a combined projected cost of \$12.3 million over the next five years.

Cybersecurity

The Department of Technology is taking steps to secure City infrastructure by establishing strong policies and practices while integrating superior cybersecurity tools. Protecting our systems and data from outside intrusion or disruption is the mission of the City's Cybersecurity Program.

The City deploys a range of cyber security measures to keep business operations safe online. In addition to implementing consistent vulnerability management practices and continuing to refine identity and access management, the Chief Information Security Officer is establishing and building out a robust risk mitigation program over the course of the coming years.

Strategic Objective: Increase awareness of cybersecurity best practices and establish risk management strategies citywide.

Key Performance Indicator

100% of departments have adopted a major cybersecurity framework by 2020.

80% of departments represented in quarterly security roundtable.

Upcoming Projects Highlights:

Department of Technology

Security Incident Event Management:

A third-party solution to provide advanced threat protection performed with rules based processing 24x7, includes monitoring, incident investigations, validation of threats, and notification for select City environments.

Disaster Preparedness

San Francisco is a city that is vulnerable from a multitude of threats. As an international city located on multiple fault lines, a disaster either man-made or natural is inevitable. Several offices are charged with actively preparing San Francisco including:

- Department of Emergency Management,
- City's Chief Resiliency Officer,
- Controller's Office,
- City's Chief Information Security Officer.

Redundancy and failover of the City's critical system ensure that the City can quickly stabilize and begin to operate during a crisis. Regular stress-testing and building resiliency by expanding our regional partnerships remains a priority for City departments.

The coming years will see a robust regional exercise program, which will include simulated cyberattacks, tightening our collaboration with our neighboring counties and cities, and entrenching our partnerships with federal and local cyber professionals.

Strategic Objective: Increase the City's preparedness and resilience for an eventual disaster.

Key Performance Indicator

100% IT Continuity of Operation Plans (COOP) completed by department July 2018.

80% of departments represented in disaster preparedness roundtable.

Upcoming Projects Highlights:

Department of Human Resources

Disaster Service Worker Management System:

During a major disaster, the City and County of San Francisco's Human Resources Department is responsible for registering spontaneous volunteers and deploying them and Disaster Service Workers for the City. In an effort to modernize and utilize technology, DHR hopes to develop a solution that efficiently solves the problem of registration/intake, deployment, tracking, and communicating with spontaneous volunteers.

Goal 3: Make City Operations More Efficient and Effective

To provide the next generation of services, our technology needs to create efficiencies in cost and operations. Our data should help guide our way to finding this value, which requires additional sophistication in analytics and data science.

Over the next five years, departments have proposed 63 technology projects in support of the City's business technologies. The combined projected cost for all projects is approximately \$269.0 million.

Citywide Shared Systems

Business technology enables every one of the City's diverse programs and services to achieve efficiencies, improve service and benefit the entire City of San Francisco. Breaking down silos of automation by leveraging shared business systems makes best use of employee time and resources. Supported by policy and procedures, shared, enterprise systems benefit the City by:

- Reducing duplication of business technology assets, data and solutions
- Achieving greater return on business technology investment
- Efficient use of resources through simplified and streamlined business systems
- Effectively and easily sharing data with no need for integrations
- Centralizing user support and administration functions
- Enabling Departments to be agile and quickly adapt and respond to business process changes
- Sharing the reports, dashboards and new services among the City-wide user community

To support the shared use of technology, the Department of Technology conducts regular workshops, forums, communities-of-interest meetings, and training to enable teams to share best practices and learnings between Departments.

Over the next five years, the City will increase the use of shared, enterprise applications to reduce cost and speed the modernization of business technologies.

Strategic Objective: Make it easier and faster for Departments to modernize their business technology.

Key Performance Indicator

Implement shared services for Help Desk operations for 4 Departments by 2020

Implement and integrate business technology for 5 departments responsible for electronic plan reviews

Implement digitization projects to "go paperless" and share records management systems

Initiative Snapshot: Achieving the Future of the Smart Cities Promise

"Smart Cities" and the "Internet of Things" (IoT) are a set of modern digital technologies, civic innovations and system modernizations that have come together to create the opportunity to drive fundamental changes in government, business and society to enhance the Quality of Life.

In San Francisco "Smart Cities" information and communication technologies are in use today and envisioned for the future to enhance the quality and performance of urban services such as energy, transportation and utilities in order to be more effective, efficient, equitable and responsive, and provide new, innovative public service.

San Francisco is consistently ranked among leading Smart Cities globally. Some prominent examples of current Smart Cities technologies include:

- Installation of a new radio system for all buses, trains, trolleys which transmits vehicle telematics to the control center where data is aggregated and analyzed for operational business decisions. The data is also used for predictive analytics on arrivals to deliver better routing and give riders information to choose their best route. (Municipal Transportation Agency)
- Global warming has impacted the city and salt water intrusion into the sewer system disrupts wastewater treatment and rusts the infrastructure. A network of sensors in the wastewater pipes detects the salt water and enables utility crews to mitigate the problem. (Public Utilities Commission)
- Keeping the City clean is a core mission and the use of smart trash cans that map waste levels in the cans and automatically determine when the can should be emptied is lowering fuel costs and keeping the streets cleaner (Public Works)
- The City uses smart phone apps to deliver services to residents as well as allow employees to be mobile. Social care workers use an app to look up the medical history of a homeless person to connect them to the correct care facility, police officers use a mobile app to create a citation and residents use the mobile 311 app to report any concern or problem in the City.
- Light poles are a public asset that helps deliver the City's smart technology. For example, in select areas City poles host a mini computer to deliver Wi-Fi, cameras, and microphones as well as dim the lights to conserve energy.
- Smart Building are part of our Smart Cities strategy and the Public Utilities Commission building was designed with recycled water for cooling, treats waste water, directs sunlight to 950 people in the building and includes a digital arts wall for inspiration. The new One-Stop Permit Center has exterior glass that is controlled by an intelligent controller to optimize the reflectivity and keep the building at a constant temperature.

- Smart network infrastructure allows the City's computer network to be reliable and protected from cyberattacks. Smart network sensors, software defined network technology and active monitoring and alerting are all technologies that enable City business systems to operate uninterrupted.
- The San Francisco Airport has implemented smart technologies for:
 - Wayfinding by the visually impaired via beacons to the gates
 - Using biometrics to authenticate passengers for customs which will soon be used at boarding gates – no more boarding passes to lose!
 - GPS based landing zones for planes to more efficiently get them off of the runway which allows more planes to use the airport
 - Parking lot wayfinding to cars and congestion monitoring at departure areas to allow airlines to include passenger unloading and travel up to the gate

Smart Cities technologies will continue to advance the goals of a more effective, efficient, equitable and responsive City. City leadership, governance, and public private partnerships contribute to the success of these projects.

Data Sharing & Architecture

To modernize our government, the City must do a better job of collecting and using data to drive decisions. Key to a vision of a data-driven City is promoting data access, use, and governance.

Led by the Department of Technology, the DataSF team is engaged in citywide efforts to capture the full potential of data and achieve high-quality information for the widest data sharing and analytics. The City's Open Data Portal is a one-stop shop for employees and residents to access city data for reporting, business analytics, decision making, visualizations and predictive analytics. In partnership with the Controller's Office, programs like Data Academy also aid in the building of internal capacity to leverage data and analytics more effectively.

In the coming years, the Department of Technology will deploy enterprise data services to help promote internal data sharing and data science. This work will include helping support enterprise data management practices, integrations, and analytics. Ultimately, our aim is to build a performance-based culture driven by data, enterprise architecture is the infrastructure of the future.

Strategic Objective: Increase the availability and quality of data available on the Open Data Portal.

Key Performance Indicator

Conduct a predictive analytics data science pilot for 311.

Expand the use of PowerBI to 20% more users citywide

Upcoming Projects Highlights:

Police Department

National Incident Based Reporting System

The current JUSTIS hub and integration tools do not meet the needs of a modern integrated JUSTIS environment and must be modernized to enable data analytics, predictions, data driven decisions.

Public Works

Integration Hub

Replacement of existing, in-house integration hub with industry standard, customized off the shelf (COTS) system to leverage enterprise support and knowledge. Documentation of new system including end to end workflow and will eliminate point to point integration and single points of failure.

Goal 4: Improve the Customer Service Experience

Technology is transforming government services to be easier to use and more accessible. Replacing our legacy technologies, redesigning existing practices and innovating new services is key to our modernization efforts.

Over the next five years, departments have proposed 18 technology projects in support of technologies that improve the service experience. The combined projected cost for all projects is \$13.1 million.

Enhance Resident Experiences with Digital Services

Imagine a city where a family in the Mission could apply for affordable housing from a computer at their local library. Or an aspiring café owner could apply for and track every permit for her business online on a City website.

The City is committed to achieving this vision through transformative service redesign. The mission of the Digital Services Office is to do more than just build websites, but to rethink how the City delivers services. The primary responsibility of the Chief Digital Services Officer will be to help departments redesign existing services from the ground up and build services to be digital by default.

Over the next five years, the City will begin to redesign the City website to feature services that are easy to use and accessible. Ultimately, we want every resident, visitor, and business to feel confident that whenever they need something from the City, they can get it quickly and easily.

Strategic Objective: Make it easier for residents to transact with the city by taking a services-based approach to the site.

Key Performance Indicator

Migration of all department websites by 2024 onto the City website

Upcoming Projects Highlights:

General Services - Digital Services

Citywide Web Project

The project supports the implementation of the Digital Services Strategy. By making services available online through a citywide site we are increasing equity and access to services, as well as operational efficiency and excellent city services.

Initiative Snapshot: Innovation through New Technologies

New technologies and innovative practices are needed to make government more collaborative, inventive, and responsive. San Francisco is a recognized global leader in piloting new technologies and partnering with our community to invent new solutions and the City's efforts are led by the Office of Civic Innovation (OCI), located within the Department of Technology.

The OCI team empowers City staff through partnerships that introduce new approaches, expand resources and develop digital solutions for Citywide priorities. With many Departments having policy or service-specific Innovation teams within their Departments, together with OCI a culture of innovation and continuous improvement grows across the organization.

The OCI teams leads two programs built on innovative public/private partnerships:

- ***Startup in Residence (STIR)*** is a program that connects government agencies with startups to develop technology products that address civic challenges. Over 16 weeks, startups and government work together to co-develop solutions that create real impact. Startups work with government partners to get to the root of civic challenges through user-testing, skills-sharing, data analysis, and prototyping a technology product or service. The program has led to innovations in the way the city enters into procurement relationships with startups who often have a difficult time working with governments and more broadly has helped spur a culture of innovation within participating agencies.
- ***Civic Bridge*** is a program that connects City Departments with pro bono private industry teams from companies such as Adobe, Bloomberg, Edelman, Google and McKinsey to solve civic challenges. During the 16 week partnership, pro bono partners go through a process to understand the challenge and government landscape ultimately, delivering complete solutions for Departments. Together the pro bono partners and Departments showcase learnings/process at Flash Talks and demonstrate the project's value and impact at Demo Day. About 6 month after demo day, Departments report their progress to partners and City staff which builds on the Team's library of best practices.

Over the next five years, OCI will help create new public-private partnership models in the City and County of San Francisco, introduce new skills and tools that increase the responsiveness of government, and help to expand more pilots of new technologies citywide.

Learn more about MOCI at <http://www.innovation.sfgov.org/>.

Financial Forecast

A major component of the City's ICT Plan is to provide direction for the strategic investment of technology projects. The following section previews the City's upcoming financial picture and describes the framework for future funding decisions.

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Technology Project Forecast

From FY 2019-20 through FY 2023-24, City departments anticipate initiating 130 projects for a total of projected cost of \$669.1 million. Projects are reflective of submissions from all 54 City departments with a projected cost over \$100,000.

Figure 1: Five-Year Forecast of Technology Projects

	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24
Number of Projects	104	86	60	42	34
Projected Cost	352.3	121.2	103.3	57.8	34.4

Note: Cost figures are in \$ millions.

Upcoming technology projects are needed to address a variety of business needs throughout the City. Below is a table describing the primary theme for each technology project.

Figure 2: Forecast of Technology Projects by Theme

	Number of Projects	Projected Cost
Business Specific	14	66.9
Case Management	16	41.5
Customer Service Experience	13	11.1
Digitization & Document/Records Management	10	9.0
Infrastructure: Network & Data Centers	19	203.1
Major IT Project	5	216.7
Resource Management	17	71.5
Risk Management: Cybersecurity & Business Continuity	18	11.9
Staff Collaborative Tools: Data Analysis/Data Sharing	18	37.1

Note: Cost figures are in \$ millions.

A full list of projects is available in Appendix E.

Funding Structure

Funding for technology projects comes from a variety of sources. Within the City & County of San Francisco, the funding required to support and maintain existing technologies is separated from investments in new technologies. Overall, the vast majority of the City's technology budget is dedicated towards the ongoing support of operations and services. However, a growing portion goes towards new projects.

Every new technology project with a projected cost over \$100,000 is required to go through a centralized review and approval process conducted by the Committee on Information Technology (COIT).

At the end of the budget process, COIT provides funding recommendations to the Mayor and the Board of Supervisors for consideration in the final budget. Funding sources for all technology projects come from the following sources:

COIT's Annual Projects Allocation is a portion of the General Fund dedicated towards the investment of multiple technology projects throughout the City. Structured as a pay-as-you-go fund, General Fund Departments may request funding to supplement their annual operating budgets.

COIT's Major IT Projects Allocation is a new General Fund allocation created in FY 2014-15 by the Mayor and the Board of Supervisors to support technology projects that impact multiple departments.

The Department of Technology's Rate Model supports the implementation of a number of Citywide ICT projects through the use of chargeback rates. In FY 2015-16, these chargeback rates were allocated 30 percent to Enterprise departments and 70 percent to General Fund departments.

Non-General Fund Sources are a critical source of support for technology projects throughout the City. Technology projects from the City's Enterprise Departments (San Francisco International Airport, Municipal Transportation Administration, the Port, and Public Utilities Commission) are wholly support by non-general fund sources. In addition, grants from Federal, State, and private sources are critical sources of funding for departments throughout the City.

The addition of the Major IT Projects Allocation has greatly expanded COIT's capacity to support City technology projects compared with previous years. In the FY 2014-18 ICT Plan, COIT's Annual Projects Allocation was only \$49.1 million. In contrast, COIT's entire allocation in the FY 2020-24 ICT Plan which includes the Major IT Projects Allocation is projected to be \$223.4 million, an increase of approximately 450 percent in funding for General Fund supported projects.

Scoring Criteria

The COIT budget process is designed to support City priorities and to promote coordination and collaboration between departments. For projects requesting support from COIT's General Fund allocation, an additional level of review to ensure City investments are impactful.

Every technology project is evaluated based on a standard scoring criteria to help identify investment priorities. The criteria helps to analyze the variety of projects which are directed towards various business purposes and contexts.

The scoring criteria includes the following measures:

- **Strategic Value:** Project alignment with Mayoral, ICT Plan, and Department priorities. Projects that are critical to a department's core mission or strategy are emphasized.
- **Project Benefits:** Benefits from the project deployment with specific quantitative measures. Priority is given to projects that transform existing services to improve residents and businesses.
- **Financial Benefits:** Evaluation of long-term cost considerations and immediate funding sources. Projects that promise financial savings are prioritized.
- **Regulatory Compliance & Risk:** Projects must consider cybersecurity concerns and should be incorporated into department plans for disaster preparedness. Priority is given to projects who incorporate risk mitigation into project planning and projects that are required by regulation.
- **Architecture & Development Plan:** Generally, the City prefers technologies that are configurable off-the-shelf products. Priority is given to departments who also consider data sharing and enterprise architecture.
- **Department Capacity:** With so many projects and ongoing activities in each department, consideration is given to the department's capacity to adequately deliver a new technology. Priority is given towards departments who have prioritized staff resources and have clear change management strategy in place.

All information on the COIT budget process is made available through monthly meetings at the Budget & Performance Subcommittee, and through the COIT website at <https://sfcoit.org/>.

Annual Allocation Projection

Through the Annual Project Allocation, COIT makes funding recommendations towards other ICT projects that range from citywide projects to department specific. The Annual Project Allocation is structured as a pay-as-you-go fund and intended to support new technology projects.

Over the next five years, the Annual Allocation is projected to continue to grow at 10% a year for a total of \$86.1M from FY 2020-24. However, the projected cost of 69 upcoming projects is \$109.3 million, leaving an overall projected shortfall of \$23.2 million.

Figure 3: Forecast of Annual Project Allocation

	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24
Number of General Fund Requests	58	43	19	12	12
Request Amount	42.7	28.9	17.9	11.2	8.6
Annual Allocation	14.1	15.5	17.1	18.7	20.6
Difference	(28.6)	(13.5)	(0.8)	7.5	12.1

Note: Fund figures are in \$ millions.

As a result of this funding gap, the COIT budget process will be a critical component towards prioritizing funding towards high-value projects.

Major IT Allocation

The Major IT Allocation is a dedicated funding source to large technology projects that impact multiple departments. These projects typically last multiple years and require intensive coordination to successfully develop and deploy. Recent examples of Major IT Projects is the replacement of the City's financial system.

The addition of the Major IT Projects Allocation in FY 2014-15 has significantly increased COIT's ability to make funding recommendations. However over the next five years, the current Major IT Projects require funding beyond resources available,

Figure 4: General Fund Requests on the Major IT Allocation

Major IT Projects	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24
> Electronic Health Records	-	-	-	-	-
> Public Radio Replacement Project	7.5	4.3	3.7	3.7	3.7
> Property Assessment & Tax System	14.5	13.2	7.6	-	-
> City Telecom Modernization	3.0	3.0	3.0	3.0	3.0
> Computer Aided Dispatch Replacement	1.4	2.1	16.0	12.2	5.4
Projected Total Allocation	22.5	24.7	27.2	29.9	32.9
Difference	(3.9)	2.1	(3.2)	10.9	20.7

Note: All figures are in \$ millions.

In addition, several other projects are potential Major IT Projects, including:

- **Citywide Customer Relationship Management:** To support the vision of providing a single service experience across the City, departments must be able to share service information with other departments. The City is investigating a single system to better coordinate customer information.
- **Voting System Replacement:** San Francisco has initiated development of an open-source voting system. The project is in early planning and scoping phases, but will continue to be developed over the next five years.

With multiple projects on the horizon, the City is forced to sequence projects to support City priorities. Although the City recognizes the inherent risks of extending a project's timeline, which can include an increase to project costs, project funding must be spread over the five year period of this plan.

Recommendations

San Francisco should be a responsive, transparent digital city with easy to use and accessible services for every resident, visitor, business, and employee. Over the next five years, every investment and every technology in the City should be working towards this singular vision.

San Francisco is proud to be global leader in the delivery of government services and is eager to incorporate the next generation of technologies. Working together to tackle our greatest problems, technology will play a pivotal role in helping to make our City a better place to live.

To address current and future needs, COIT recommends the following:

- **Recommendation 1:** Due to increasing need for technology resources, COIT recommends the Major IT Allocation and Annual Project Allocation grow by 10% annually.
- **Recommendation 2:** Funding for the ongoing support and maintenance of technology lags behind investment for new technology. COIT recommends expanding the IT Refresh Fund to meet demand and conducting an analysis on appropriate funding levels needed to support existing technologies.
- **Recommendation 3:** The increasing size and importance of technology projects throughout the City requires mature governance. COIT recommends all projects over \$1M have a project steering committee with a defined charter, multiple stakeholder engagement, and independent verification and validation.
- **Recommendation 4:** The risk of cyber threat continues to grow and requires increased coordination and collaboration within the City to prepare for a cyber incident. COIT recommends formalizing authorities and governance for citywide cyber incident response to make citywide decisions and developing a formal cyber incident working group for ongoing information sharing and incident preparation composed of cybersecurity professionals.
- **Recommendation 5:** All City services should be digital by design and minimize paper requirements. To support the acceleration of digital service redesign and centralization of all City services on the City website, COIT recommends all departments conduct an inventory of all services provided to residents, businesses, and visitors.
- **Recommendation 6:** To modernize government services, COIT recommends the City initiate a citywide effort to remove all paper processes and eliminate storage costs where possible. COIT recommends the City & County of San Francisco goes paperless by 2024.

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Appendix A: Legislation

[Five-Year Information and Communication Technology Plan – FY 2019-2020 through 2023-2024]

Resolution adopting the City's Five-Year Information and Communication Technology Plan for FYs 2019-2020 through 2023-24 pursuant to San Francisco Administrative Code Section 22A.6.

WHEREAS, San Francisco Administrative Code Section 22A.6 requires the Committee on Information and Communication Technology (COIT) to submit and the Mayor and the Board of Supervisors to review, amend and adopt in odd-numbered years a five-year ICT plan; and

WHEREAS, COIT reviewed and unanimously approved the City's fifth five-year ICT plan at its meeting held on February XX, 2019; and

WHEREAS, COIT-approved ICT plan outlines guiding priorities the City will focus on in the next five years, outlines a financial strategy to fund these technology needs and lists the currently planned technology projects for each department over the next five years; and

WHEREAS, The plan details three strategic IT goals in order to align available resources and the identified department and citywide IT project requests over the next five years; now therefore be it

RESOLVED, That the Board of Supervisors adopts COIT's proposed information and communication technology plan, with such amendments and revisions as the Board deems appropriate, as the City's five-year ICT plan for Fiscal Years 2019-2020 through 2023-24, as provided in San Francisco Administrative Code Section 22A.6.

Appendix B: Administrative Code 22A

There is hereby created a Committee on Information Technology (COIT).

- a) COIT shall be composed of five (5) permanent members consisting of the Mayor, the President of the Board of Supervisors, the Controller, the City Administrator, and the CIO, or their designees. The Mayor, the President of the Board of Supervisors, the Controller, the City Administrator and the CIO, shall elect a Chair, who shall serve for a 2-year term. All of the permanent members of COIT shall be eligible to serve as Chair. Five additional Department Heads shall be recommended by the Chair and approved by the permanent members for two year terms, one representing each of the major service areas: (a) Public Protection, (b) Human Welfare and Neighborhood Development, (c) Community Health, (d) Culture and Recreation, and (e) General Administration and Finance; and three representing the major service area of Public Works, Transportation, and Commerce. The five permanent members and eight non-permanent members will be voting members of COIT.
- b) COIT shall organize into subcommittees. The Chair shall appoint subcommittee members based on participants' technical, financial, management, and policy-making capabilities and responsibilities. The Chair shall consult with and consider the recommendations of the CIO regarding the number, type and make-up of subcommittees, Subcommittee members shall represent major service areas of the City.
- c) Purpose and Duties. COIT shall review and approve the recommendations of the City CIO for (i) the five-year City ICT plan, including budget, projects and staffing for all City departments, boards, commissions and agencies (City Departments), (ii) ICT plans, budgets, projects and staffing plans for City Departments; and (iii) ICT standards, policies and procedures to enable successful development, operation, maintenance, and support of the City's ICT.
- d) COIT shall monitor compliance of all City Departments with adopted ICT plans, budgets, projects, standards, policies and procedures.
- e) COIT shall ensure the most cost-effective and useful retrieval and exchange of information both within and among City Departments and from the City to the people of San Francisco.
- f) There will be two additional non-voting members of COIT selected by the voting members of COIT. These individuals cannot be employees of the City and County of San Francisco and shall have expertise in fields of ICT innovation and advances, emerging ICT applications, and public policy issues related to ICT.
- g) COIT shall incorporate performance and financial reporting on the Department of Technology and all other City Departments' ICT planning and purchases in the ICT Capital and Operating Plan and the annual reviews of the plan. The factors to be evaluated in determining the performance of all departments shall include, but are not limited to: quality of service level agreements, adherence to budgeted costs, and cost recovery methodology for all ICT products and services provided by City Departments, including the Department of Technology.
- h) COIT shall work to ensure adequate City ICT workforce development, including training and certification in order to maintain the competitiveness of City ICT staff.
- i) COIT will review and approve procedures, developed by the Office of Contract Administration and the Department of Technology, for the development and administration of ICT enterprise agreements. The factors addressed by the procedures will include, but not be limited to; (1) Whether the purchase is consistent with the City's current ICT Capital
- j) and Operating Plan; (2) Whether the purchase is the most economical method of obtaining the highest-quality products and services; (3) The best interests of the City.
- k) The Department of Technology shall provide support to the COIT. COIT shall review and approve the Department's annual plan, budget, and staffing required to support the Committee.

Appendix C: Recently Completed Technology Projects

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Department	ProjectName	Project Objective	Completed
311 Call Center	SF311 City Worker Mobile App	Explored development of a back-end 311 mobile application for workers to complement existing mobile application used by residents.	FY2016-17
311 Call Center	CP-006	CP-006	
311 Call Center	311 CRM - Digital Services Upgrade	Ensured the City has a central CRM platform that can enable consistent digital services from all departments to all constituents.	FY2017-18
311 Call Center	311 Call Recording and Quality Analysis Replacement	Upgraded and replaced components needed to bring recording, monitoring, and quality assurance systems back online after server and system failure.	FY2016-17
311 Call Center	311 Call Center Telephony Upgrade	Upgraded shared telecommunications equipment as well as associated Call Management, Call Recording, and Quality Management applications to enhance basic call center services.	FY2016-17
Adult Probation	Server Virtualization	Virtualized physical servers to achieve cost savings, reduce energy consumption, and safeguard data.	FY2017-18
Adult Probation	PROBSTAT	N/A	FY2017-18
Adult Probation	Build and enhance mobile infrastructure and support for Field Officers	N/A	FY2017-18
Airport	Public Wi-Fi Transition Project	Assessed state of public wi-fi network and implemented network and hardware upgrades needed to transition from previous provider.	FY2017-18
Airport	Metro-Ethernet Service Implementation	Engineered SFO network and upgraded hardware (e.g. access switches) to provide Metro Ethernet Service to SFO customers.	FY2016-17
Airport	Managed Security Upgrade	Upgraded 24/7 cloud-based security operations center providing a variety of managed security services.	FY2018-19
Airport	Information Technology Enterprise Information Architecture (ITEIA)	Structured enterprise architecture to mitigate risk, improve customer service delivery and manage the collection, storage, and analysis of large data sets.	FY2017-18
Airport	Compute Infrastructure Extension	Extended the compute processing infrastructure to support growing requirements to capture, analyze and correlate passenger, tenant and operational data.	FY2017-18

Asian Art Museum	Telephone System Replacement	Replaced legacy phone system for added functionality and improved routing of visitors inquiries.	FY2017-18
Asian Art Museum	Digital Asset Management System	Hired City's first Chief Digital Services Officer and established Digital Services Office.	FY2017-18
Asian Art Museum	Collections Management System	Defined requirements, converted data, and implemented new collections management system.	FY2017-18
Assessor-Recorder	Social Security Number Truncation and Imaging of Recorded Documents	Truncated Social Security Numbers on documents recorded between 1980 and 2008, redacted images and stored historic images in content management system.	FY2017-18
Assessor-Recorder	Digitization of Real Property Files	Converted over 205,000 paper real property files to digital format.	FY2016-17
Board of Supervisors	Records Repository	Digitized paper records which were previously in storage and not readily available for public consumption.	FY2017-18
Board of Supervisors	Legislation Drafting	Developed a web-based system to automate the process of drafting and proposing amendments to new legislation.	FY2017-18
Board of Supervisors	AAB System: Back Office Application Re-Engineering	Streamlined workflows by re-engineering the back office application used by the AAB Team and moving from an Access 2010 application to a web-based application.	FY2016-17
Children, Youth & Their Families	Sfkids.org/Children's Service Inventory Project (managed by SFUSD)	Improved awareness and policymaking through web publication of children's services inventory.	FY2017-18
City Planning	Disaster recovery & business continuity solution	Secured systems and processes to protect City Planning in the event that all or part of its operations and/or computer services are rendered unusable.	FY2016-17
Controller	Increase Exadata/Exalogic Infrastructure Capacity	Enhanced eMerge PeopleSoft System's Exadata platform to accommodate more users and enhanced functionality.	FY2016-17
Controller	Financial System Project (FSP)	Replaced City's 30 year old legacy mainframe financial and periphery systems.	FY2017-18
Controller	Expansion of PeopleSoft Enterprise Learning Management	Expand current usage of eLearning Management to interested departments (including AIR, DPH, DPW and PUC).	FY2017-18
Controller	Employee/Retiree Access Upgrade to PeopleSoft	Converted eMerge PeopleSoft System's Enterprise Portal to Interaction Hub with added functionality to improve user experience for employees and retirees.	FY2017-18

Controller	Citywide Automated Forms	N/A	FY2016-17
District Attorney	Paperless Environment / DMS Implementation	Created document management system and file repository to reduce use of paper files.	FY2017-18 - Car
District Attorney	DAMION Upgrades - JUSTIS implementation	Completed first phase of broader case management system upgrade project.	FY2017-18 - Car
Emergency Management	Logging Recorder Replacement	Replaced the end-of-life logging recorder system used to record 9-1-1 telephone calls, Police/Fire dispatch channels, and other tactical radio channels.	FY2017-18
Emergency Management	EOC Audio Visual System Refresh	Refreshed aging audio and visual equipment to support DEM's Emergency Operations Center.	FY2017-18
Emergency Management	Active Directory Migration	Migrated DEM's legacy Novell environment to a combined implementation of Microsoft Active Directory security with Network File Services to ensure internal systems integration with DT's citywide authentication services.	FY2017-18
Emergency Management	911 Phone System Replacement	Replaced the legacy 911 Phone System supporting the Public Safety Answering Point (PSAP) at 1011 Turk St.	FY2016-17
Environment	Carbon Tracking System	N/A	FY2017-18
Fire Department	System Center Configuration Management Deployment	Simplified deployment/management of workstations.	FY2017-18
Fire Department	SFFD Training Tablet Rollout	Deployed tablets to deliver interactive trainings.	FY2017-18
Fire Department	Mobile Network Consultant Services	Secured assistance to properly design a mobile network infrastructure to support Fire's mobile device operations.	FY2017-18
Fire Department	GPS Upgrades for Department apparatus	Replaced aging GPS units in Fire apparatus for improved vehicle tracking and mapping.	FY2017-18
Fire Department	Desktop Virtualization	Virtualized desktop computers to enable more efficient IT support and system consistency.	FY2017-18
Fire Department	CAD Dispatch Improvements	Increase the capability of the dispatchers to have real-time accurate locations of ambulance.	FY2018-19

Fire Department	9-1-1 Server Virtualization Configuration	Replacement of existing recorders, storage systems and a new software solution for playback.	FY2017-18
General Services Agency	Mobile CMMS	Developed mobile application for more immediate, real-time, and improved response planning for departments' CMMS requests.	FY2017-18
General Services Agency	GSA - New Medex Buildout	Upgraded, replaced, and moved technical infrastructure to the new Medical Examiner building.	FY2017-18
General Services Agency	GSA - DR	Secured disaster recovery systems and protocols for GSA departments.	FY2016-17
General Services Agency	GPS Vehicle System	Deployed GPS units and system to track movement and use of City vehicles.	FY2016-17
Health Service System	Records Management	Adopted records management system to interface with eMerge Human Capital Management System and reduce paper storage.	FY2017-18
Health Service System	Digitization of Records	Digitized over 100,000 HSS active, retired, terminated and deceased member records which include both Personal Health Information (PHI) and benefit eligibility data.	FY2016-17
Human Resources	Electronic Onboarding	Completed next phase of DHR's work to standardize processes from the time a candidate is recruited to the first day on the job.	FY2017-18
Human Resources	Citywide Testing Center Infrastructure Upgrade	Upgraded Cesar Chavez test center technology infrastructure, including improving fiber connectivity to the building, upgraded hardware and software.	FY2017-18
Human Services Agency	Data Warehouse and Business Intelligence Platform	Built a comprehensive data warehouse and reporting solution across all programs within the agency	FY2018-19
Police	Use of Force Dashboard	Provide electronic dashboard of use of force incidents, by officer, by station, etc. This is used internally to track and report use of force incidents.	FY2017-18
Police	UCR Reporting Improvements	Transform entire department from ad hoc and manual crime reporting to a single source of truth for data, based on Uniform Crime Reporting (state) standards.	FY2017-18
Police	Public Safety Building IT (FF&E)	Installed and upgraded technology infrastructure at newly constructed public safety building.	FY2017-18
Police	Officer Performance Dashboard	Designed dashboard to capture officer performance and activities and provide tool for supervisor to review performance.	FY2017-18

Police	National Data Exchange	Began sharing public incident data with other police agencies via the National Data Exchange. This allows other agencies to assist in solving our SF cases and vice versa.	FY16-17
Police	eStop	Implemented system to log and retrieve data related to traffic stops.	FY2017-18
Police	Datasf and JUSTIS data improvements	Changed the source of data for JUSTIS and Datasf from CABLE to Crime Data Warehouse. This is one of the projects required to ultimately retire CABLE incidents system.	FY2017-18
Police	Crime Data Warehouse	Implemented central repository for crime data to interface with mobile and other applications.	FY2016-17
Police	Community Sharing of Crime Information	Introduced technologies to residents and businesses to view and share crime data with one another and connect with Police in their neighborhoods.	FY2017-18
Police	Case Tracking	To provide an automated tool to assign, re-assign cases and to track investigator workloads. This system is also used to track clearance rates - by unit, by district, by investigator, etc.	FY2017-18
Port	Oracle eBusiness Suite R12 Upgrade	Upgraded the Port's Oracle eBusiness Suite of applications to the current, fully supported Release 12.	FY2017-18
Port	Migration to PeopleSoft Maintenance Management	Migrated from Oracle EBS eAM to PeopleSoft Maintenance Management.	FY2017-18
Port	eMerge Project Support	Modified existing software interfaces, developed new interfaces as required, reverse-engineered the Controller's IV-Phase functionality for the Port, and completed other activities required to meet the citywide eMerge rollout schedule.	FY2017-18
Public Defender	Scan Physical Files and Integrate into Case Management System	Converted paper files to electronic files and set up system for future integration.	FY2017-18
Public Defender	Gideon	Create a desktop and mobile application to maximize efficiency, increase the quality of legal representation.	FY2017-18
Public Health	Web Presence Initiative	Consolidated and re-designed DPH websites.	FY2017-18
Public Health	Training Systems Replacement	Replaced training systems for DPH clinicians and staff. Adopted city ELM	FY2017-18
Public Health	SF General Hospital Tech. Infrastructure Re-build	Replaced and deployed new technical infrastructure for newly constructed San Francisco General Hospital.	FY2017-18

Public Health	Population Health & Prevention Division Info. System Update	Used a grant from the Center for Disease Control to allow the Population Health and Prevention Division to acquire and information system to provide an integrated services web-based application for electronic and manual reporting, Surveillance, Care Manag	FY2017-18
Public Health	Infrastructure and Application Foundational Improvement	Completed network and system improvements in preparation to bring new applications online.	FY2017-18
Public Health	FAMIS Replacement (F\$P) Transition Support	Built and modified existing DPH systems to interface with the City's new financial system.	FY2017-18
Public Library	VoIP (Voice over IP)	Undertook necessary steps in preparation to join Citywide VoIP network.	FY2017-18
Public Library	Data Center Consolidation	Project has completed. DT upgraded library link from the Main Library to city (DT) network which also included SFO data center from 1Gb to 10Gb.	FY2018-19
Public Utilities Commission	Audio Visual equipment for SFPUC Headquarters	Completed the outfitting of the SFPUC Headquarters meeting rooms, located at 525 Golden Gate, with Audio/Visual equipment.	FY2017-18
Public Works	Records Management	Implemented ECM (Enterprise Content Management) solution that improves management of documents and records across the lifecycle necessary to support basic operations, compliance, and analysis needs.	FY2017-18
Public Works	Enterprise Project Management (DPW EPM) System	Consolidated disparate databases into one centrally managed platform for greater visibility and control over data related to capital projects.	FY2017-18
Public Works	Computerized Maintenance Management System Enhancement and field mobile solutions	Migrated on-premise CMMS servers to the cloud and implemented Mobile solution for the operation bureaus.	FY2016-17
Recreation and Parks	Thin Client Computer Conversion for Remote Users	Replaced traditional PCs with thin clients for field staff.	FY2016-17
Recreation and Parks	Park Evaluations via Tablets	Replaced paper process and redundant data entry through deployment of tablets to field staff performing park evaluations.	FY2016-17
Sheriff	Public Safety Mobile/Portable Radio Replacement	Replaced mobile and portable radios for officers.	FY2017-18
Sheriff	Business Intelligence	Deployed business intelligence tools to leverage the vast amounts of data on incarcerated persons that various units and divisions collect on criminal defendants to develop new programs and evaluate effectiveness of existing programs.	FY2017-18
Sheriff	Automated Staffing & Shift Mgmt System	Integrate with eMerge and automate the scheduling, tracking, and administration of employee schedules, overtime, backfilling, holiday signups, and vacation signups.	FY2017-18

Technology	VA Radio Site Relocation	Moved equipment and relocated radio site for better security.	FY2017-18
Technology	System Log (Syslog) Server Infrastructure Capability	N/A	FY2017-18
Technology	System Center Configuration Manager	Implemented a central desktop configuration management solution that allows City desktop administrators to centrally manage all end-user desktops for patch management, operating and application deployment and network protection.	FY2017-18
Technology	ServiceNow Service Management	Developed ServiceNow platform to further support DT's interdepartmental workflows and processes.	FY2017-18
Technology	O365 Upgrades	Continued roll-out of O365 platform to include OneDrive, Lync, MS Projects Online, and other applications.	FY2017-18
Technology	Mobile Device Management (Citywide)	Procured off-the-shelf mobile device management tool for City departments' use.	FY2017-18
Technology	Mainframe Environment - Equipment Refresh	Replaced and upgraded end-of-life mainframe infrastructure to prevent extended outages and loss of system.	FY2017-18
Technology	IT Service Management & CMDB	Developed an IT asset management system.	FY2017-18
Technology	Internal Application Development	Provided additional software and support to DT's internal application development team.	FY2017-18
Technology	IBM SCCM Smart Cloud Cost Management Services (CIMS Billing Upgrade)	Deployed billing system to more effectively manage billing for work orders, labor, services rendered, equipment, etc.	FY2017-18
Technology	Fiber Monitoring Solution	Deployed tool to monitor speed and performance of City fiber network.	FY2017-18
Technology	Fiber Connectivity	Extended and made enhancements to City's fiber network.	FY2017-18
Technology	E-Signatures	Deployed Citywide solution giving departments the ability to use electronic signatures.	FY2017-18
Technology	Enterprise Social Media	Explored deployment of Citywide tools to monitor and analyze social usage and trends.	FY2017-18

Technology	Enterprise Security Dashboard	Completed build-out of dashboard to display network/security-related events in real-time.	FY2017-18
Technology	Dig Once and Communications Asset Management	To increase reliability, Identified paths for fiber to all of DT's facilities, identified redundant paths for fiber to existing services, and created program to manage the leasing of conduit, dark fiber and other communications services to third parties.	FY2017-18
Technology	Data Loss Prevention (DLP)	Deployed software solution to prevent data loss through mitigation and redundancy.	FY2017-18
Technology	Data Center Consolidation and Virtualization - Phase 2	Completed second phase of feasibility study to move four data centers and various environments to the cloud.	FY2017-18
Technology	Data Center and DR Migration to Cloud	Completed third phase of feasibility study to move four data centers and various environments to the cloud.	FY2017-18
Technology	Cybersecurity - Identity and Access Management	Deployed Oracle Identity & Access Management security solution to manage Identities of Employees, Contractors & POIs.	FY2016-17
Technology	Cybersecurity - Endpoint Protection	Deployed solution to protect City operations, computing resources, and protected information from hacking and malicious code.	FY2017-18

Technology	Contract Management System	Deployed and enhanced ServiceNow modules to streamline contract, customer and asset management.	FY2017-18
Technology	Collaboration Shared Services	Moved from SharePoint on-premise and enabled the CityWide government cloud Microsoft SharePoint foundation to be consumed by all agencies.	FY2017-18
Technology	Citywide Financial Systems DR		FY2017-18
Technology	Citywide Breach & Cyber Incident Response, Monitoring and Training	Implemented an Enterprise Malware management system, allowing for central management, patching, and identification of systems infected with computer viruses and malware in real time.	FY2017-18
Technology	City Cloud Enhancement	Enhanced the provisioning and functionality of Infrastructure-as-a-Service (IaaS) and Platform-as-a-Service (PaaS) services for City departments, through the optimization of data center space and on-premises cloud infrastructure, plus the adoption of a pu	FY2017-18
Technology	CCSF Connectivity	Expanded fiber installation to City Buildings and along City corridors, modified fiber backbone to accommodate additional capacity, and install free public WiFi at various locations.	FY2017-18
Technology	Broadband Connectivity Planning	Undertook research and consultations with experts to explore feasibility of universal broadband.	FY2017-18
Treasurer-Tax Collector	TTX Business Intelligence	Deployed enhanced business intelligence tools for greater visibility and analytics.	FY2017-18
Treasurer-Tax Collector	Replacement Delinquent Collections Application	Implemented new system for warehousing and account management for all delinquent taxes and fees owed to TTX as well as other departments (e.g. Public Health).	FY2017-18
Treasurer-Tax Collector	License 1, 2, 3: self service and security enhancement for online filing	Developed expansion to online filing system to support multiple account users within companies as well as improved tax and fee management, resets, and support for filing differences.	FY2017-18
Treasurer-Tax Collector	Development of Adobe Experience Manager (AEM) applications	Developed tax application portal for bill presentment with online payment integration and batch printing of tax bills.	FY2017-18
Treasurer-Tax Collector	Adaptation for F&P	Integrated the Receivable Module for the Wausau Financial system; vendor compliance of taxes for delinquencies, business registration status, integration of property tax refunds; and Treasury Modules.	FY2017-18
War Memorial	War Memorial Dept Veterans Building Phone and Data	Completed War Memorial building infrastructure upgrades.	FY2017-18
War Memorial	Veterans Building #SFWiFi	Set up reliable public wi-fi access for visitors in War memorial building.	FY2017-18

Appendix D: Major IT Projects

Citywide Radio Replacement Project

Project Summary: This project is upgrading the Citywide 800 MHz Emergency Radio Communications System used throughout San Francisco by the City's public safety and public service agencies. The City currently has several disparate radio systems, for public safety, public service, and the airport, that are at the end of their service life. The project will combine all users onto one shared network, with more capacity and better coverage throughout the City. The new technology will support over 9,000 mobile and handheld radios, with over 20 City departments and outside agencies operating daily on the system.

Anticipated Outcomes:

- Improved system redundancy and consolidation of multiple radio networks onto one common platform.
- A new system with a long-term maintenance agreement will allow the City to maintain a high level of system reliability for the next 18 years.
- Better coverage throughout the City, including the Bayview/Hunters Point area and inside critical City facilities.
- Standards-based system and radios will provide better interoperability between public service and public safety agencies and will allow mutual aid agencies like BART, Oakland, San Mateo, and California Highway Patrol to operate within the City.

Total Project Budget: \$74.5 million

	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24
Projected Cost	7.5	4.3	3.7	3.7	3.7

Note: All figures are in \$ millions.

Replacement of the City's Property Assessment and Tax System

Project Summary: The project is a multi-phase joint endeavor between the Office of the Assessor-Recorder (ASR), the Treasurer & Tax Collector (TTX), and Office of the Controller (CON) to secure and modernize the City's property tax functions by replacing legacy systems that enable the assessment and collection of approximately \$3.2 billion in annual tax revenues. The departments currently maintain two separate legacy IT systems to perform these functions. The ASR's AS400 system tracks almost \$250 billion in assessed real and personal property value and manages data on approximately 212,000 parcels. TTX custom-developed mainframe application allows TTX to bill and collect property tax revenue and for CON to apportion revenue to taxing entities as required by law.

The ASR and TTX technology platforms are old and are structured as COBOL based systems. Both systems are increasingly difficult to maintain. The ASR's system is architected in a way that does not allow the department to easily adapt to business requirements to ensure data quality, data sharing, and auditability. TTX's usability and agility is predicated on talent availability and leveraging TTX's existing middleware applications.

Anticipated Outcomes:

- **Increase Efficiency and Quality:** Re-engineer assessment and tax business processes based on best practices and eliminate manual processes and workarounds.
- **Improve Revenue Collection:** Increase turnaround time for assessments and provide timely tax billing, revenue collection and certification to reduce revenue at risk.
- **Build a Resilient IT Infrastructure:** Secure \$3.2 billion in revenue through modern technology platforms that are secure and resilient.
- **Increase Access to Data:** Improve information available to public and policymakers and enable better revenue forecasting and data analysis.
- **Improve Taxpayer Service and Transparency:** Integrate property tax and assessment functions among the three departments for better customer service.

Total Project Budget: \$72.5 million

	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24
Projected Cost	14.5	13.2	7.6	-	-

Note: All figures are in \$ millions.

United Electronic Health Records System

Project Summary: DPH's current EHR vendor is end-of-life and will no longer be supported by the vendor beyond 2020. DPH must transition to a new EHR system that unifies all hospitals and clinics under a single system. A unified EHR system will allow DPH to transition to a modern system to meet quality and safety objectives and enhance service deliver outcomes throughout all DPH care delivery. The implementation of a new EHR system is projected to take five years, with an estimated ongoing operating cost of \$20 million/year.

Anticipated Outcomes:

- Single, unified EHR system for 2 major hospitals and over 40 clinics.
- Performance based service delivery.
- Non-redundant systems.
- Operational efficiencies.
- Enhanced business and clinical intelligence through advance analytics.
- Enhanced communication and data sharing with regional partners.

Total Project Budget: \$203.7 million

	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24
Projected Cost	55.9	23.1	22.6	-	-

Note: All figures are in \$ millions.

Computer Aided Dispatch Replacement

Project Summary: To plan for and to develop the budget and scope of work required to replace the City's Computer Aided Dispatch (CAD) System, including mobile CAD units for the City's first responders and SFMTA parking enforcement. The CAD system is the City's core application for receiving, categorizing, and dispatching SFFD, SFPD, SFSD, and Emergency Medical 9-1-1 calls. The City's CAD system is the emergency response system of record for the City's first responders, government, and all citizens, including the homeless. The planning phase will include: hiring of project staff; market research; acquisition of an industry subject matter expert consulting firm; scope definition; requirements gathering; and budget for this project and its extension through implementation. This major IT initiative includes: the actual system and CAD Disaster Recovery replacement; CAD mobile software and hardware replacement for SFFD, SFPD, SFSD, and SFMTA; and numerous system interfaces, system integration, and data conversion.

Anticipated Outcomes:

- Vendor interviews and market survey to enhance City's future RFP process and ensure alignment with state-of-the-art CAD technologies.
- Consultant Subject Matter Expert (SME) hired to evaluate City's CAD dispatch technologies and operations to make recommendations for improvements based on industry best practices and national standards.
- A modern Next Generation 9-1-1 system with a long-term maintenance agreement will allow the City to maintain a high level of system reliability and remain technology current for approximately 10 years after implementation.
- Improved dispatch center call taking and dispatch operations.
- Improved situational awareness for dispatchers, field personnel, and DEM.
- Improved 9-1-1 call center data, analytics and management reporting for the City's approximately 1.3 million calls received by the dispatch center.

Total Project Budget: \$37.1 million

	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24
Projected Cost	1.5	2.2	17.6	13.4	6.5

Note: All figures are in \$ millions.

City Telecom Modernization

Project Summary: Most City departments rely upon outdated, legacy phone systems that are difficult to manage, costly to maintain, and lack many of the features of a modern communications platform. In fact, a significant portion of our current fleet of Avaya PBX systems are no longer supported by the vendor and are reaching the point of obsolescence!

VoIP (Voice over Internet Protocol) moves the technology for making and receiving telephone calls from a private telephone carrier to the Internet. This means that phone connections inside our buildings will run over the same network as your computers rather than the separate legacy network they currently rely on. Using data networking protocols instead adds speed and will make our citywide telephone system much more manageable. Over time as we sunset old PBXs, we will avoid a multitude of costly repairs, and this will prove to make us a more fiscally responsible City.

Anticipated Outcomes:

- **Cost avoidance:** Our old PBXs are outdated, failing, and many are unsupported. If we allow them to fail, we will waste a large amount of money to replace them.
- **Efficiency:** We're going from managing 100's of disparate PBX's in many geographies to just one VoIP call manager. This will reduce the support staff effort, maintenance contracts, hardware and software complexity, training cost, and highly expensive footprint (data center space) to house these PBX's.
- **High availability:** Unlike our PBXs, the new VoIP call manager is designed with geographical high availability in mind.
- **Simplicity:** Collocating data and voice on the network means that we will progressively reduce the number of wires, especially in new constructions or remodels. This translates to less wires, less types of technologies and parts, and this adds up when you consider we have 35,000+ users.
- **Flexibility:** We are paving the way for new applications that provide better flexibility, such as voicemail to email integration, fully enabled mobile functionality, video conferencing capabilities. Some of these capabilities will replace costly conference call numbers.

Total Project Budget: \$21.1 million

	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24
Projected Cost	3.0	3.0	3.0	3.0	3.0

Note: All figures are in \$ millions.

Appendix E: 5-year Project Forecast

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Department	Project Name	Primary Goal	Functional Category	Projected Cost				
				FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24
Airport	Common Use Self Service (CUSS) Check-in Kiosk Expansion	4	Enhancement	0.8 M				
Airport	Digital Signage Software System Enhancement	4	Replacement		0.4 M	0.4 M		
Airport	Multi-Use Flight Information Display Upgrade	4	Replacement		2.5 M	2.5 M		
Airport	Public WiFi - Rental Car Center	1	Replacement	1.7 M				
Airport	Telecommunication Infrastructure Airport Wide	1	Enhancement	0.4 M	0.3 M	0.8 M	2.0 M	
Arts Commission	Salesforce Database Upgrades	3	Enhancement					0.2 M
Arts Commission	Salesforce Phase 2	3	Enhancement	0.1 M	0.1 M			
Arts Commission	Upgrade ART website	4	Enhancement			0.1 M	0.1 M	
Asian Art Museum	Asian Art Museum Update Network Infrastructure	1	Replacement	0.3 M	0.3 M			
Asian Art Museum	Asian Art Museum Update Wifi	1	Replacement		0.2 M			
Asian Art Museum	Security System life cycle replacement	2	Replacement	0.2 M	0.2 M	0.2 M	0.2 M	0.2 M
Assessor-Recorder	Property Assessment & Tax Systems Replacement	1	Replacement	14.5 M	13.2 M	7.6 M		
Assessor-Recorder	Recorder System Replacement Project	1	Replacement	0.7 M	0.2 M	0.2 M	0.2 M	0.2 M
Controller	Budget System & Performance Measurement Project	1	Replacement	3.1 M	3.7 M	0.2 M	0.2 M	0.2 M
Controller	Business Units Implementation	3	Enhancement		0.1 M	0.1 M		
Controller	CON Systems Integration with Human Resources Modernization Project	3	Replacement	0.7 M	0.7 M	0.7 M		
Controller	Enhanced Configuration of Project Costing with Time & Labor	3	Enhancement				0.1 M	
Controller	Gateway Portal Access	4	Enhancement	0.2 M	0.2 M			
Controller	Hardware Replacement for SF Financial System	1	Replacement		2.5 M			
Controller	Implementation of Deal Management Module	3	New		0.1 M	0.1 M		
Controller	Legacy Systems Data Migration	3	Replacement	0.9 M	0.2 M	0.2 M		
Controller	New Hire & Life Events Online Benefits Enrollment	4	New	0.2 M	0.2 M			
Controller	PeopleSoft Implementation of Maintenance Management Module	3	New		0.1 M	0.1 M		
Controller	PeopleSoft Upgrade Project	1	Enhancement	3.0 M				
Controller	Service Work Orders Enhancement	3	Enhancement		0.1 M	0.1 M		
Controller	SF Learning Citywide Adoption	3	Enhancement	1.2 M	1.2 M			

District Attorney	Replacement Case Management System	3	Replacement	0.1 M				
Econ & Workforce Development	San Francisco Job Portal	4	Enhancement	0.7 M	0.7 M			
Elections	Asset Tracking System	3	Replacement	0.3 M				
Elections	Election Information Management System	1	Replacement	0.2 M	0.2 M	0.2 M	0.2 M	0.2 M
Elections	Vote-By-Mail Ballot Auditing Equipment	3	Enhancement	0.1 M				
Emergency Management	Citywide Radio Replacement Project	1	Replacement	7.5 M	4.4 M	3.8 M	3.8 M	3.8 M
Emergency Management	Computer Aided Dispatch Replacement - Scoping Project	1	Replacement	1.6 M	2.2 M	17.7 M	13.4 M	6.5 M
Emergency Management	Dispatch Console Replacement	1	Replacement	2.3 M				
Emergency Management	Network Core Refresh	1	Replacement		0.3 M			
Emergency Management	Perimeter Security System Refresh	2	Replacement		0.3 M			
Ethics Commission	Data Sharing and Analysis Tools for an Informed Public	4	Enhancement	0.2 M	0.2 M	0.2 M		
Fine Arts Museums	Collections Managment System Implementation	3	Replacement	0.8 M				
Fine Arts Museums	Legion of Honor and de Young Security Systems Upgrades	2	Replacement	0.3 M	0.4 M	0.2 M		
Fire Department	Desktop Virtualization/Secure Remote Access of User Desktops	2	Enhancement	0.6 M				
Fire Department	Electronic Health Records (EHR) Software	3	New	0.2 M				
Fire Department	Field Tablet Deployment	3	Enhancement	0.2 M				
Fire Department	Fire Station Network Reconfiguration	1	Replacement	0.3 M				
Fire Department	Incident Display Boards	4	New	0.3 M				
Fire Department	Record Digitization/Document Management/Permit System Implementation	3	Replacement	0.5 M	0.2 M			
Fire Department	Training Simulator	3	New	0.3 M				
General Services Agency	ADM Records Digitization Project	3	New	0.2 M				
General Services Agency	CCSF Digital Equity Pilot Expansion	4	New	0.3 M				
General Services Agency	Citywide web project	4	New	1.1 M				
General Services Agency	County Clerk - Clerk IT System Replacement	3	Enhancement	0.7 M	0.1 M			
General Services Agency	CRM Gap Mitigation and Modernization	3	Enhancement	1.0 M	1.0 M			
General Services Agency	CRM Upgrade	3	Enhancement					0.3 M
General Services Agency	Integration service expansion and Oracle upgrade	3	Enhancement		0.2 M			0.2 M
General Services Agency	Telephone Systems Improvements	1	Enhancement	0.4 M			0.2 M	

Health Service System	Benefits Decision Tool	4	New	0.3 M				
Health Service System	In-Person Visit improvement project	4	Enhancement	0.2 M				
Health Service System	Integration of Health Benefit Experience	3	Enhancement	0.1 M		0.6 M		
Homelessness & Supportive Housing	The Online Navigation and Entry (ONE) System Expansion	3	Enhancement	9.6 M	5.4 M	4.9 M		
Human Resources	DHR Critical Databases	3	Replacement	0.2 M				
Human Resources	Disaster Service Worker Management System	2	New	0.5 M				
Human Resources	Hiring Modernization Project	3	Replacement	2.5 M	2.0 M	1.0 M		
Human Resources	Personnel Services Contract Database Upgrade	3	Replacement	0.1 M				
Human Resources	SmartPDF	3	Replacement	0.1 M				
Human Resources	Training Video File Conversion and Hosting	3	Replacement	0.1 M				
Human Resources	Workers' Compensation Medical Payment Data Integration	3	Enhancement	0.2 M	0.0 M			
Human Services Agency	Endpoint Refresh	2	Replacement	2.3 M				
Juvenile Probation	YGC Security Camera Project	2	Replacement					
Municipal Transportation Agency	Enterprise Asset Management System Implementation	3	Replacement	5.0 M	4.5 M	3.0 M	2.5 M	2.5 M
Municipal Transportation Agency	ITS Radio System Replacement Project	1	Replacement	135.0 M				
Municipal Transportation Agency	PARCS (Parking Access & Revenue Control System)	3	Replacement	10.0 M	0.5 M	0.5 M	0.8 M	0.8 M
Municipal Transportation Agency	Train Control System - Crossover Activation in West Portal	1	New	12.0 M	6.0 M			
Police	Collisions Reporting and Tracking System	3	Replacement	0.5 M	0.8 M	0.4 M	0.4 M	0.4 M
Police	eCitations - Phase 2	3	Enhancement	0.5 M	0.5 M	0.5 M	0.5 M	0.5 M
Police	Foundational Network Systems - Phase 2	1	Replacement	1.1 M	0.4 M	0.4 M	0.4 M	0.4 M
Police	National Incident Based Reporting System (NIBRS)	3	Enhancement	5.3 M	1.6 M	1.6 M	1.6 M	1.6 M
Police	Property and Evidence Replacement System	3	Replacement	0.6 M	0.0 M	0.0 M	0.0 M	0.0 M
Police Accountability	Case Management Project	3	New	0.1 M				
Port	Backup & DR Optimization	2	Replacement			0.1 M	0.1 M	
Port	Capital Planning/Facility Condition Integration	1	New			0.7 M	0.7 M	
Port	Enterprise Reporting	3	Replacement				0.5 M	0.5 M

Public Defender	Gideon Development	3	New	0.1 M	0.1 M			
Public Health	Environmental Health Information Management System	3	Replacement	2.0 M	2.0 M	1.0 M	1.0 M	
Public Health	Unified Electronic Health Record	3	Replacement	55.9 M	23.1 M	22.6 M		
Public Library	RFID Collections Management Modernization	3	New	0.4 M				
Public Library	Tech'd Out	4	Enhancement	0.2 M				
Public Utilities Commission	Asset Management Improvements	3	Enhancement	0.3 M	0.3 M	0.3 M	0.3 M	0.3 M
Public Utilities Commission	Internet based / Microsoft Office 365 unified telephony / communications	1	Replacement	0.2 M	0.3 M	0.3 M	0.3 M	0.4 M
Public Utilities Commission	Multi-factor Authentication	2	Enhancement	0.6 M	0.6 M	0.6 M	0.6 M	
Public Utilities Commission	Northern California Network and Internet performance upgrades	1	Enhancement	3.3 M	0.2 M	0.2 M	0.2 M	0.2 M
Public Utilities Commission	Power Enterprise – Power Billing System	3	Replacement	8.7 M	8.7 M	8.7 M	8.7 M	
Public Utilities Commission	Security Incident & Event Management	2	New	0.1 M	0.1 M	0.1 M	0.1 M	0.1 M
Public Utilities Commission	Smart City Controllers	1	New	16.6 M	1.0 M	0.6 M	0.5 M	0.3 M
Public Utilities Commission	Stormwater Flow Cost Allocation	3	New	4.2 M	2.8 M	0.9 M	1.0 M	1.0 M
Public Utilities Commission	System wide rationing / Drought surcharge / SB 814 (Excessive residential water use	3	New	0.8 M	1.0 M	0.3 M		
Public Works	Capital Project Lifecycle Management	1	Enhancement	0.8 M	0.9 M	0.6 M	0.5 M	
Public Works	Enterprise Data Warehouse	3	New	0.2 M	0.2 M	0.2 M	0.2 M	0.2 M
Public Works	GIS Basemap Update Tools	3	Replacement	0.2 M				
Public Works	Learning Management System Project	3	New	0.2 M	0.1 M	0.1 M		
Public Works	Public Works Integration Hub	3	Enhancement	0.4 M	0.1 M			
Public Works	Records Management	3	New	0.4 M	0.4 M	0.2 M	0.2 M	0.1 M
Public Works	Unmanned Aircraft System (Drones) survey project	3	New	0.2 M	0.2 M	0.1 M		
Recreation and Parks	Digital Media Signage	4	New	0.3 M	0.1 M	0.0 M	0.0 M	0.0 M
Recreation and Parks	Implement MuleSoft API integration platform	3	New	0.2 M	0.0 M	0.0 M	0.0 M	0.0 M
Recreation and Parks	Park Evaluation Application Replacement	3	Enhancement	0.3 M	0.1 M	0.1 M	0.1 M	0.1 M
Recreation and Parks	Security Cameras at Recreation Facilities	2	New	0.3 M	0.2 M	0.2 M	0.2 M	0.2 M
Recreation and Parks	VFA Data Collection and Implementation	3	Enhancement	0.8 M				

Sheriff	Application Data Center Hardware Replacement	3	Replacement	0.5 M				
Sheriff	Body Worn Camera - Post-Pilot Expansion	2	New	0.2 M				
Sheriff	Jail Management, Records Management and CLETS/NCIC Systems Replacement	3	Replacement	0.6 M	0.6 M	0.6 M		
Sheriff	RFID Based Access/Security Control System	2	New					
Technology	Apptio Budget Management Tool	3	New	0.5 M	0.3 M			
Technology	BCDR Planning Tool for Business Continuity	2	Enhancement	0.1 M	0.1 M			
Technology	Benefits Management System	3	Replacement	0.3 M	0.3 M			
Technology	Capital Moves Builds Relocation Project Resources	1	New	0.3 M	0.4 M	0.4 M	0.4 M	0.4 M
Technology	City Telecom Modernization	1	Replacement	3.0 M	3.0 M	3.0 M	3.0 M	3.0 M
Technology	Data as a Service Platform	3	New	0.3 M	0.3 M			
Technology	Data Privacy Coordinator	2	New	0.2 M	0.2 M	0.2 M		
Technology	Emerging Technology Work Group Management	4	New	0.2 M	0.2 M			
Technology	IAM Version 2	2	Enhancement	1.1 M	0.5 M			
Technology	JUSTIS 5 year Roadmap Implementation	3	Enhancement	0.4 M	2.0 M	3.7 M	3.8 M	3.8 M
Technology	Mainframe Retirement (CMS)	1	Replacement	2.5 M	1.6 M			
Technology	Network Modernization (Upgrade the Network)	1	Enhancement	3.3 M	3.0 M	3.0 M	3.0 M	3.0 M
Technology	Open Source Election Project	1	New	3.0 M	3.0 M	3.0 M	3.0 M	
Technology	Security Incident Event Management Service	2	New	0.4 M				
Technology	SF Cloud Expansion	1	New	1.1 M	1.1 M			
Technology	Upgrade the Enterprise Address System Technology Stack and Rebuild EAS Front End	3	Enhancement	0.2 M	0.2 M			
Treasurer-Tax Collector	Annual Business Tax Forms	4	Enhancement					
Treasurer-Tax Collector	Business Tax System Replacement	1	Replacement	3.0 M	3.0 M	3.0 M	3.0 M	3.0 M
Treasurer-Tax Collector	Payment Card Industry (PCI) Compliance	2	Enhancement	0.4 M				
Treasurer-Tax Collector	Point of Sales System - One Stop	4	New	0.5 M				