

CIP White Paper
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Section 1 – Overview

The Department of Information Technology (DoIT) builds, manages and maintains City government information technology infrastructure and systems used by City departments to serve constituents, including data, telephone and radio networks, website and Internet connections, television channels , data center facilities, servers and storage. DoIT also manages and directs the development of designated projects on behalf of the City, other departments, and other regional partners. DoIT's Capital Improvement Program (CIP) supports major maintenance, improvements, replacements and upgrades to the City's existing technology infrastructure and systems, as well as the development and implementation of new capacity and systems.

2014-2019 CIP Highlights

DoIT's Proposed CIP budget for 2014-2019 is \$117 million. Funding comes from a number of sources including rate allocations to City Departments and external partners, Cable Franchise Fees, accumulated reserve funds, bonds and grants. The Proposed CIP continues the project to replace the existing data center with the Next Generation Data Center project and also includes two new projects, the Information Technology Security Program and Technology Management Tools as described in greater detail below.

Next Generation Data Center

In 2012, the City identified an electrical system problem in the Seattle Municipal Tower (SMT) that directly impacted the City's primary data center and other information technology infrastructure housed in the SMT. City staff repaired the system and determined that to avoid similar problems in the future the City needed a new approach to data system management. The City hired an engineering consultant in 2012 to develop preliminary options and costs for an upgraded system of data centers. The City set a three-year timeline for the project with initial funding provided in 2013.

The project Steering Committee, which includes senior executives from DoIT, Finance and Administrative Services, City Budget Office, Seattle Police Department, Seattle City Light and Seattle Public Utilities, approved the following strategy for the new Data Center:

- Use two locations to maximize options for data recovery in the event of an emergency, with a new primary facility within the greater Puget Sound area and a smaller secondary facility in a location outside the Puget Sound region;
- Locate the Data Center in an existing facility already outfitted for that purpose rather than building a new facility. This option has lower upfront costs and a faster move-in timeframe;
- Acquire up to 6,000 square feet at the primary facility, with an additional 4,000 square feet maximum at the secondary location; and

- Adopt guiding principles for how departments will share network services, storage, management services and physical space in the new data center.

In 2014, the City will develop a detailed design addressing the technology, facility, governance, services and relocation process. In addition, DoIT will begin buying equipment, testing, and piloting and final location selection. Preliminary cost estimates for the new Data Center range from \$27 million to \$39 million depending on which choices are made to meet the City's needs. In 2014, the \$2.6 million of project costs are paid with available fund balance in the DoIT operating fund and future costs will be included in the allocated rates to departments. DoIT expects to complete the project in 2015. While the City's goal is to incorporate all systems into the new Data Center, there are a number of critical systems that are housed outside the City's main data center. DoIT is working with other departments to create a plan to either move these systems into the new data center or upgrade the systems to increase resiliency and business continuity.

Information Technology (IT) Security Program: Recognizing the importance of data security, DoIT is consolidating and centralizing security related projects that were previously spread across different programs and projects. Consolidating the IT security projects will allow costs to be more easily tracked.

Technology Management Tools: This project upgrades the City's out-dated help desk ticket system and change management system that tracks network problems. This upgrade will replace two systems with one system to allow DoIT to track problems in the City's information technology environment more efficiently. DoIT recommends making this change in 2014, rather than the original 2015 plan to better coincide with the implementation of the Next Generation Data Center project and leverage other changes that will need to be made at the same time. DoIT will use available fund balance to cover the 2014 project costs.

The remainder of the DoIT 2014-2019 Proposed CIP focuses on routine maintenance, replacement and upgrades for existing system. The 2014 projects include:

- Additional fiber optic cable link installation;
- Planning, repair, replacement, and modification of software, hardware, and electronics in the City's data and communications infrastructure;
- Equipment replacement and upgrades in the 800 MHz radio network program;
- Computing services architecture environment software and hardware replacement and upgrades; and,
- Replacement of Seattle Channel equipment.

A list of projects funded in 2014 is provided in the below table.

Program/Project Name	2014 Amount	Planned Spending
800 MHz Radio Network Program	\$2,054,873	Infrastructure upgrades, including \$1.5M for Simulcast
Computing Services Architecture	\$2,986,212	Routine equipment (servers, storage & facility infrastructure) replacement/upgrades (\$1.72M) & maintenance (\$1.263M)
Data Infrastructure	\$1,371,931	Routine equipment replacement /Backbone upgrades/intrusion detection system/routers/servers (\$823K) and maintenance (\$549K)
Electronic Records Management System	\$3,000,000	Implement comprehensive citywide electronic records management system
Enterprise Computing	\$2,170,096	Major replacements (P6 servers & storage)
Fiber-Optic Communication Installation & Maintenance	\$3,430,928	Fiber Installation (\$2.565M) & maintenance (\$866K)
IT Security	\$272,313	Capital replacement (\$91K), maintenance (\$99K), & log analysis and multi-factor authentication (\$83K)
Next Generation Data Center	\$20,998,410	Operating costs (\$1.700M), Equipment (\$12.038M), Buildout and Project costs (\$7.260M)
Seattle Channel Maintenance & Upgrade	\$292,658	Equipment replacement; computer graphics system, replace data backup (\$245K) & maintenance (\$48K)
Technology Management Tools	\$150,000	Develop detailed plan for replacement of the City's IT Incident Management and Change Management Systems
Telephone Infrastructure	\$979,940	Routine telephone replacement equipment (\$170K), Telephone system conversion Yr-4 of 8-Yr plan (\$635K), & maintenance (\$175K)
Department Total	\$37,707,362	

Section 2 - Summary of Upcoming Budget Issues and Challenges

DoIT's CIP has grown steadily over the past twelve years and projects have been completed successfully on time and within budget. Close fiscal stewardship by DoIT has allowed us to make the most of our CIP funds: savings have been used to expand scope and/or complete additional efforts, and City funds have been used to leverage grant and external funding to maximum benefit.

DoIT's CIP has compiled a solid track record of successes. These include:

- Installation and implementation of the Puget Sound next generation voice/data switching system (PSIC) in the Puget Sound region for King, Pierce and Snohomish Counties (\$4.5M)
- Addition of a 4th 800 MHz site for regional radio system (\$1M)
- Replacement of the Interactive Voice Response (IVR) system (\$1.4M)
- Replacement of the City's enterprise class servers and storage environment (\$2.9M)
- Installation of Mobile Data Computers in police vehicles (\$6M)
- SPD/SFD CAD and RMS System Replacements (\$10+M)
- Installation of over 540 miles of fiber optic cabling.

For technology throughout the City to stay relevant, new investments and requirements will need to continue, including:

- The City's growing dependency on IT requires an increasing commitment to fund the associated support and replacement costs. In addition, the continued rapid rate of change in technology presents a major challenge for the City. User demands (both internal staff and constituents) around technology continue to grow as available functionality expands.
- Rapid and major changes in technology. The continued rapid rate of change in technology presents a major challenge for the City. User demands (both internal staff and constituents) around technology continue to grow as available functionality expands. Capabilities which barely existed two years ago are now considered essential by both City staff and constituents (such as smart phone applications and WIFI access). Vendors regularly "de-certify" and stop supporting products the City relies upon, leaving us the choice of spending significant amounts of money to upgrade to supported products or risk running important/critical City functions on unsupported platforms. Furthermore, IT Staff need to receive almost continual training to keep their skills current and relevant to the new systems in use by the City. As a City we need to think creatively about how we can meet upcoming changes in technology and needs of departments in an environment of reduced resources. We must identify ways to get the most of the resources we have for technology.
- To achieve more efficiency and reduce costs as a City, future technology decisions by departments need to take into consideration how best to combine projects, approaches and efficiencies across the City. The Next Generation Data Center Project offers the opportunity to reduce or eliminate duplication in a number of areas.
- The City needs to develop a Citywide strategy for IT systems in the event of a disaster. The increasing reliance of City staff on technology systems creates an increasing vulnerability in the event of a disaster. Critical City functions cannot be performed without access to technology systems and the data stored within them.

To start to address these issues, in 2012 we proposed to "re-invigorate" the Chief Technology Role and refocus/reinstitute some of the duties originally designated by ordinance for that role, including the following:

- Develop, promulgate and implement City-wide policies and standards governing the acquisition, management, and disposition of information technology resources;
- Develop policies and standards for the management, maintenance and operation of City information technology resources;
- Review City department budget submittals to ensure that information technology budget priorities and guidelines are appropriately addressed in proposed budget allocations, and that all proposed uses of technology resources are consistent with the City's policies and standards;
- Make recommendations to the Mayor and City Council on changes to department information technology budget submittals for consistency with the City's policies, standards, and technology agenda;
- Determine the most effective ways of providing information technology resources, including services and the management thereof, using City or contracted sources, to City departments;

1. Beginning with the 2013 Adopted Budget, the CTO has taken a much more active role in reviewing and providing feedback on technology funding citywide by reviewing all BIPS submitted by Departments and identifying:
 - ❖ Duplication; do any of the proposed BIP's duplicate other efforts across the City?
 - ❖ Significant effects; do any of the proposed BIP's cause significant effects on other systems (such as the backbone network)?
 - ❖ Rate impacts; would any of the proposed BIP's cause impacts to rates charged to other departments? (Ex. If one city department proposes to pull out of a rate pool, what are the rate impacts to the other departments)?
2. We have also proposed to work with CBO to develop a means for the CTO to review and provide input on Departments full IT budgets vs. just on the BIP requests. This is in keeping with the CTO responsibility outlined in the 1999 ordinance to "ensure that information technology budget priorities and guidelines are appropriately addressed in proposed budget allocations, and that all proposed uses of technology resources are consistent with the City's policies and standards."
3. We continue to be interested in working work with FAS to implement a process requiring Chief Technology Officer approval/sign off on any major IT procurement BEFORE it begins. All of these items focus on the idea that in an era of limited resources, we need to make the most effective use possible of the funds available for IT. If we can spend less money on duplicative or inefficient systems, we will have more money to spend on critical business system improvements.

Section 3 - Thematic Priorities

In addition to supporting Mayoral and Council goals for the City, DoIT has several thematic priorities which drive its work and consequently its operating and CIP budgets. These are:

- ***Ensure reliable maintenance and operation of the technology tools and systems supporting City Departments' staff, missions, and services.*** The reliable and continued operation of these systems is critical to the ability of City employees in all departments to perform their work. As such, a majority of DoIT's CIP supports asset preservation and keeping these tools and systems continuously operational.
- ***Keep City technology and data safe, secure and compliant.*** The increasing "computerization" of the City's information and operations has been paralleled by both similar growth in the threats and risks to those systems as well as a growth in the laws and regulations associated with electronic data and systems. As a result, we are seeing a steady increase in the need for investments related to security and/or compliance with state and federal regulations, laws and requirements.
- ***Use technology to make City government more accessible, accountable and transparent.*** With the rapid growth in the Internet and the associated tech-savvy nature of the population, there is an increasing expectation that the City's information and processes will be readily available via

technology in near-to-real time.

- **Improve efficiency and effectiveness.** From its earliest stages, the City has invested in technology to improve the efficiency and effectiveness of its staff in doing their jobs, and this continues to be a key driver for our investments. In addition, some technology investments can result in monetary savings and/or the ability to stretch limited resources further (e.g., virtualization of servers).
- **Investments and foundations for the future.** A key part of DoIT's mission is to perform strategic planning for the City within the technology sector and to ensure that the City's technology investments move in sync with what is happening in the broader industry and world. This includes planning for and investing in key technology trends and emerging technologies as appropriate.

Section 4 - Project Selection Criteria

DoIT uses a multi-step process to identify and prioritize projects for inclusion in their CIP.

STEP 1: Identification of Technology Needs and Opportunities

In this step, needs and opportunities for technology investments are identified. Information is drawn from a number of sources, including:

- The Citywide Enterprise Technology Multi-Year Strategic Plan
- Citywide Technology Roadmaps (updated annually)
- Customer Requirements/Requests
- Asset Replacement Schedules
- Coordination with partners (regional efforts, vendor partners, etc.)
- Special studies including the 2012 IT Efficiencies Study

This step includes development of initial cost estimates & other resource requirements, potential timing, and dependencies.

STEP 2: Identification of CIP and Non-Discretionary Projects

In this step, items identified in Step 1 are filtered to determine if they are (1) CIP appropriate or not and (2) discretionary or not. Criteria for determining if they are CIP appropriate or not include:

- Overall dollar value
- Timeframe of implementation (e.g., multi-year project)
- Lifespan of investment
- Investment in and preservation of long-term infrastructure

Projects which are determined to be non-CIP in nature are moved over for consideration and ranking with other Department BIPS as part of the normal budget cycle.

Criteria for determining if they are Non-Discretionary include:

- Legally mandated (e.g., debt service, federal or state law/regulation changes, court orders, etc.)
- Urgent security or risk mitigation needs (e.g., major system failure, major security breach)
- Reimbursable services to others (e.g., DoIT manages a regional fiber consortium where the partners contract with DoIT to get work done).

Projects which are determined to be Non-Discretionary are automatically included in our CIP and budget proposal. Discretionary Projects proceed to Step 3.

STEP 3: Prioritization of CIP Appropriate Discretionary Projects:

The projects remaining after Step 2 are then screened to determine if they are a match for DoIT's normal maintenance, upgrade, and replacement programs within the CIP. Projects such as these tend to be smaller in scale (<\$250,000), "like for like" replacements (e.g., old equipment replaced by new equipment with little to no functionality change) etc. These projects are rated by program managers based on criteria tailored to each program and implemented as annual funding allows.

Larger capital projects which are best implemented on a stand-alone basis due to the size and complexity of the project are evaluated and ranked separately based on the following criteria:

- Asset Preservation/Replacement/Maintenance
- Product Lifecycles
- Legal Requirements/Mandates
- Security/Risk Mitigation
- Reimbursable from other sources (other depts. or outside entities, grants, reserves)
- Leveraging Opportunities
- Dependencies (on other Products, Equipment, etc.; also on staff/resource availability/long-term supportability)
- Internal Customer Demands (including capacity) – including Mayoral/Council Priority
- External Customer Demands – Citizens, businesses, etc.
- External Drivers (vendor changes, regional commitments, etc.)
- Efficiency/Effectiveness Improvements/Resource Savings/ROI
- Key Future Trend/Forward-Looking/Pro-active

The final result is a list of prioritized large capital projects which are included in DoIT's proposed budget for inclusion in our CIP.

Section 5 - Aligning Infrastructure with Planned Growth

At the present time, DoIT's CIP has no alignment with Urban Centers and Villages. As an internal service Department, the majority of DoIT's CIP funds the technology infrastructure which supports City employees. Thus, geographically, most of our investment aligns with the location of City employees and City facilities and will continue to do so in the future.

Section 6 - Future Projects/What is on the Horizon

As of the time this document is written, DoIT has identified a number of initiatives/issues which are on the horizon and will need to be addressed at some future point, but for which we do not currently have funding. A detailed list has been provided in the matrix as part of Section 4 of this document, which includes:

- **Infrastructure which requires replacement/upgrades.** DoIT's CIP contains sufficient funding to cover routine replacement of lesser value items which occur every year (e.g., switches, mid-

range servers, etc.). However, it is not funded sufficiently to cover some larger value, more intermittent, replacements that will be necessary.

- **Long term Major Upgrades to Regional Radio System.** The City is part of the countywide public safety radio system. The King County system is interconnected to comparable radio systems in Pierce and Snohomish Counties. The current technology platform is approaching phased obsolescence and will need to be replaced or upgraded by 2017. A three-county committee of elected and appointed officials explored options for collaboration, including regional funding strategies, but eventually determined that each county needed to act independently, on its own time frame, to complete its own replacement or upgrade project. Currently, the plan is to include a levy for replacement of the King County radio system in the fall of 2014.
- **Software/systems which require replacement/upgrades.** The CIP includes funding in 2014 for the replacement of the City's Email Archiving System. However, in addition to this funding to replace existing functionality, additional features for file and video archiving may be required in the future. DoIT's CIP does not currently include funds for that effort.
- **Future growth in capacity due to customer demands and usage.** The CIP includes funding to replace existing capacity, but it does not include funds to cover the routine growth in capacity. Increased City usage of technology combined with external legal retention requirements effectively ensures a continued growth in certain areas, such as data storage, of the IT infrastructure.

Section 7 - CIP Revenue Sources

DoIT's CIP has been funded through a variety of revenue sources, including:

- **Rates/Allocations:** There are multiple services within the department that are allocated based on a percentage of use for the service provided. In addition, services are billed using a basis for the service billed. For example, time and materials, # of dial tones/circuits, quantity of equipment and or actual costs. Costs for labor and materials in this category are also billed directly to projects supported by the department. In recent years, rates/allocations have accounted for an increasing percentage of DoIT's CIP funding.
- **State and Federal Grants:** Federal and state grants have been used to finance system replacements (CAD/RMS for SPD/SFD) and new capabilities. In some cases, DoIT has been the direct recipient of the funds; in others, we have managed grant-funded projects for customers. The use of grant funding for the DoIT CIP has been intermittent.
- **Cable Franchise Fees:** DoIT collects Cable Franchise Fees that are set in franchise agreements with the cable provider. Some of this revenue has been used to fund the O&M CIP Program which supports the Seattle Channel. Cable Fees have historically provided a minor (<1%) portion of DoIT's CIP program.
- **Reserves:** In some instances, DoIT's rates/allocations include the collection of funds which are accumulated and held in a reserve in DoIT's Operating Fund balance. Currently, this is only done for the 800MHz radio system, although it has been considered in other areas. Expenditures of these reserve funds appear in our CIP program. Historically, there is a low level of spending for

ongoing O&M items, with intermittent large expenditures associated with major replacements/upgrades.

- **Private Dollars:** Private funding contributions to capital projects. In the past, DoIT projects have occasionally included funding from external non-public sources (e.g., the AMR funds received as part of the Fire/Police CAD/RMS projects). Such instances are highly intermittent, usually for relatively small dollar value, and not projected to continue at any appreciable level.
- **Levy:** In the past, DoIT received some CIP funding from a Levy for the development, acquisition and installation of the 800 MHz emergency radio communication system. Going forward, the future replacement/upgrade of the county-wide radio system will also involve a new Levy. Outside of that, no additional Levy funding is anticipated.
- **To Be Determined:** Occasionally, DoIT's adopted CIP includes future projects for which a specific funding source has yet to be specified. These projects will not go forward unless/until funding is secured.

Section 8 - CIP Spending by Major Category

The below table reflects DoIT's 2014-2019 Proposed CIP.

DoIT	2014	2015	2016	2017	2018	2019	Total
(Funded) Equipment Replacement	19,120,903	13,724,745	3,406,558	3,663,785	4,304,222	3,702,069	47,922,282
Facilities	8,959,911	7,144,817	-	-	-	-	16,104,728
Major Maintenance	3,196,462	3,357,774	3,540,041	3,676,990	3,798,331	3,923,675	21,493,273
(Funded) New Capacity/Ability	82,800	-	-	-	-	-	82,800
PM Services for Projects	2,564,785	2,682,766	2,814,221	2,926,790	3,023,374	3,123,145	17,135,082
Software Upgrades	3,782,500	3,350,438	407,691	427,667	444,774	459,452	8,872,521
Unfunded Needs	-	1,174,724	1,088,409	546,616	564,654	3,860,233	7,234,636
Totals	37,707,362	31,435,263	11,256,919	11,241,848	12,135,355	15,068,575	118,845,322

- **Major Maintenance:** Includes major maintenance costs for equipment, software and fiber networks.
- **Equipment Replacement (funded):** Includes ongoing acquisitions of capital equipment in CIP programs that are regularly due for replacement based on the fixed asset system with a 3-10 year life. This also covers upgrades where the technology is no longer going to be supported by a vendor. Equipment purchases for the Next Generation Data Center are included here.

- New Capacity/Ability (funded): Includes projects that provide new capacity or ability (vs. the maintenance or replacement of existing systems/capabilities). The IT Security new log analysis and multi-factor authentication acquisitions are included here.
- Unfunded Needs: Includes initiatives that will be required at a future date (such as enterprise storage, and interactive voice response replacement) but for which a specific funding strategy has yet to be determined.
- PM Services for Projects: Includes projects/initiatives where DoIT is providing project management services to other Departments and regional coalitions/entities, but does not generally own the resulting system/equipment/application. This includes construction and maintenance of fiber installations by regional partners and projects managed for other City Departments.
- Facilities: Includes acquisition/upgrades/build outs for DOIT or IT related facilities, primarily City data centers.
- Software Upgrades: Includes acquisition/upgrade/replacement of major software/applications. With the change in accounting rules under GAAP, DoIT will be capitalizing major software acquisitions and including them in our CIP going forward. The replacement of the Electronic Records Management System, software components of the Next Generation Data Center, and the Technology Management Tools projects are included here.