BCIT Fiscal Year 2022
Capital Improvement Program

Thursday, January 21, 2021

9:00AM

Agency Overview

Vision

Over the next decade engage all city departments, businesses and citizens to design, build and implement technology that creates a safe, thriving and smart city.

Mission

The Baltimore City Office of Information & Technology will provide sustainable infrastructure and technology to support and enhance city departments, communities, businesses and mayoral goals.

Values

- **I**nnovation & Excellence
- **C**ustomer Focus
- **A**ccountability & Credibility
- **R**espect & Inclusion
- **E**fficiency
- Safety during COVID

BCIT Core Functions

- 311 Call Center
- Information Security
- Infrastructure (LAN, WAN, Storage, Data Center, Exchange, & Firewall, etc.)
- Fiber

- Dev Ops
- PMO
- 800 MHZ Radio
- GIS
- CitiWatch

- Mainframe & Legacy Systems
- Service Desk
- IT Contracts
- Financials
- IT Projects

BCIT BY THE NUMBERS

122
BCIT Staff

55
311 EMPLOYEES

$52.3M
Operating Budget

750
CitiWatch Cameras

315
Databases Supported

310
Miles of Fiber Supported

OVER
578K
311 Calls Processed Annually

OVER
78K
Service Desk Tickets Processed in 2020

100%
Devices on the City's Network Scanned for Vulnerabilities

Critical Issues Facing BCIT

Lack of continuous IT funding leads to the realization of operational, security, and customer service risks. Continuous investment in IT significantly reduces the City's vulnerability to cyber attacks and ability to recover and provides cost-saving opportunities, process improvements and efficiencies for Baltimore City residents.

NEEDS	IMPACT	EXAMPLE
Protection against cyber security-related threats	Mitigates against destructive malware from stopping or halting city services and/or data.	SolarWinds; phishing schemes targeting sensitive information or funds
Updating unsupported infrastructure & aging applications	Updates allow the city to provide timely and accurate critical services to city residents. Unsupported infrastructure & software increases vulnerabilities, which increases our operational risk.	End of Life Systems; cash processing; dispatching of City work crews and first responders
Investments in emerging technologies to leverage efficiencies, cost savings and better services for City residents	Residents and employees benefit from more efficient software systems and increased availability of critical services.	Office 365; ERP system
Better understanding of our data and processes	Minimizes redundancy and streamlines the delivery of services to the citizens.	Timeliness of reflecting payments on customer's accounts

Long-Term Capital Needs

Overview of Capital Needs

BCIT's capital needs are required for:

➢ Reducing the City's vulnerability to cyber attacks

➢ Supporting the maintenance of the City's aging IT infrastructure

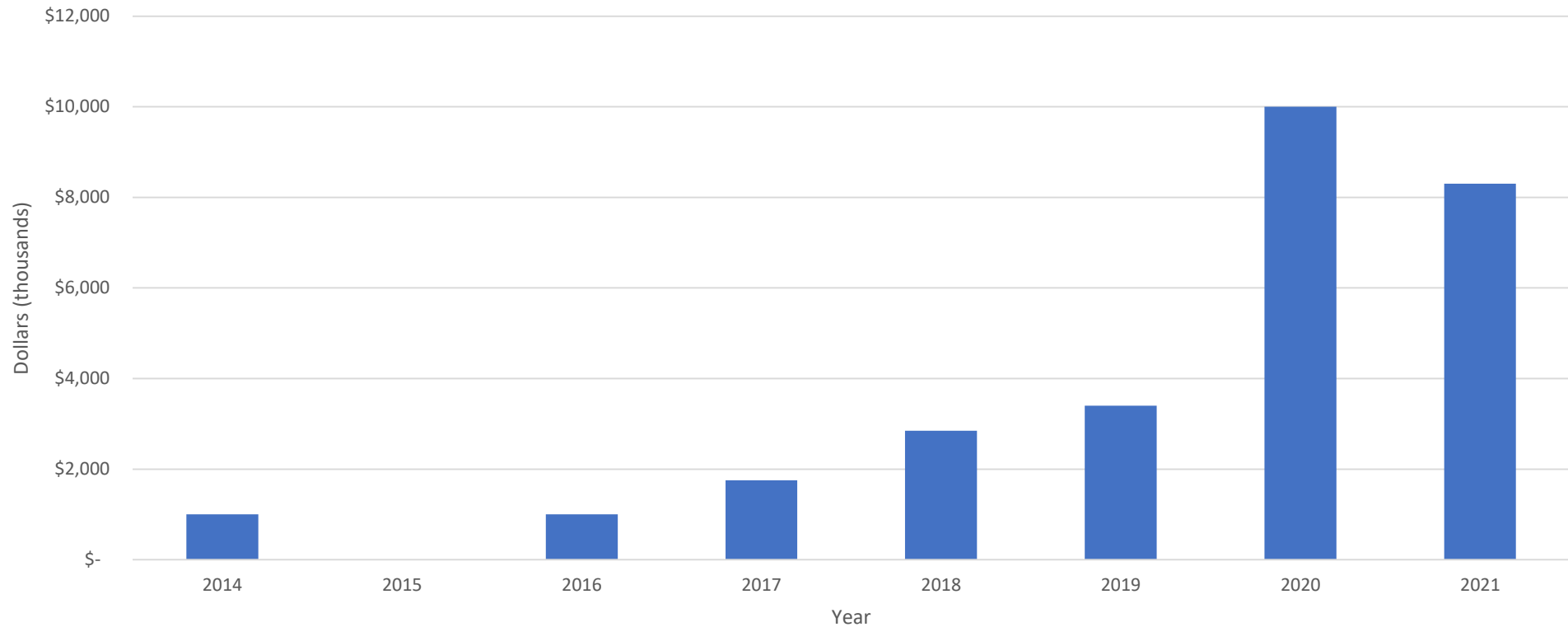➢ Modernization of applications and enterprise solutions

The need for Digital Inclusion:

➢ 96,000 City households do not have internet access which affects the ability to learn, work, access healthcare, etc.

➢ School-age children account for 60%, 3,936, of the 5,597 public housing residents

BCIT Historical Capital Allocations

CIP Funding Requests by Fiscal Year

Baltimore must change the paradigm regarding continuous information technology investment. IT investment can provide cost savings opportunities, process improvements and efficiencies, and faster and comprehensive service to Baltimore City residents.

Long-Range Planning

Capital Funds						
Area	**FY 22**	**FY 23**	**FY 24**	**FY 25**	**FY 26**	**FY 27**
Digital Inclusion	$1,000,000	$1,000,000	$1,250,000	$1,250,000	$1,250,000	$1,250,000
PSSEC	$475,000	$6,070,000	$4,210,000	$3,000,000	$3,500,000	$3,000,000
Applications	$1,700,000	$1,800,000	$1,800,000	$2,000,000	$2,000,000	$2,000,000
Information Security	$450,000	$900,000	$1,317,000	$300,000	$550,000	$1,500,000
Infrastructure	$4,375,000	$4,050,000	$4,000,000	$2,700,000	$1,950,000	$1,500,000
TOTALS:	**$8,000,000**	**$13,820,000**	**$12,577,000**	**$9,250,000**	**$9,250,000**	**$9,250,000**

Recent CIP Accomplishments

Projects Completed

CIPI #	Project Name	Project Description	Awarded Amount
117-017	Advanced Threat Protection	Implement citywide cyber security policy and auditing tools in order to be in compliance with "the Governmental Procedures - Security and Protection of Information Act of 2013" for MD.	$500,000
117-020	Virtual Desktop Infrastructure	Standardize user desktop experience to a single pane of glass to publish data and applications, streamline desktop security and facilitate simple PC administration.	$100,000
117-026	Uninterrupted Power Supplies (UPSs)	Install battery power to prevent and protect the City's email, internet, financials and telephone systems from electrical power outages.	$600,000
117-028	Virtual Private Network	Upgrade and replace legacy, unsecured VPN networks	$303,961
117-038	BCIT Email Upgrade	Upgraded the City's email system from Microsoft Exchange 2010, which is not supported as of November 2019.	$1,000,000

Projects in Progress

CIPI #	Project Name	Project Description	Amount Awarded
117-019	Replace Citywide Switches	Replace switches at locations citywide.	$750,000
117-029	Citywide Cybersecurity Upgrades	Endpoints protection – monitoring the system and identifying processes that exhibit malicious activities when they execute and stops them from running.	$350,000
Ransomware	Office 365 Rollout	Migrate users to Office 365, upgrade computers to Windows 10 and convert SharePoint on-premise to the cloud.	$878,500
Ransomware	Enhance Cyber Security Monitoring	Establish 24/7 cyber security event monitoring to collect and analyze network information, detect suspicious behavior and identify unauthorized system changes.	$678,774
Ransomware	Enhance Vulnerability Management	Establish a Vulnerability Management Program to perform 24/7 information security monitoring on BCIT computer networks and networks operated by BCIT client agencies, departments and offices.	$573,300

Projects in Planning

CIPI #	Project Name	Project Description	Awarded Amount
Ransomware	Environmental Segregation & Data Management	Improving the management of the databases including isolating/copying data to test environment and implementing best practices.	$371,200
117-051	Enhance Identity Management Password Manager	Implementing tools that validate and update user's access to applications on a consistent basis to meet security needs.	$150,000
117-060	Upgrade City's Website	Rebranding of City Websites - Mayoral priorities	$182,705
Ransomware	Cyber Risk/Metrics/Reporting	Implement a cybersecurity metrics and reporting process. Data based cybersecurity metrics, coupled with strong management reporting, will provide a balanced view of how BCIT is managing its organizational security efforts.	$209,440

Workday Project Phases

PHASE I
- Human Capital Management
- Compensation
- Benefits
- Absence
- Time Tracking
- Payroll

PHASE II
- Financial Accounting
- Budgets
- Banking & Settlement
- Customer Accounts
- Business Assets
- Projects
- Procurement
- Grants Management
- Inventory

PHASE III
- Budget Management
- Recruiting
- Performance Management
- Learning Management
- Talent Management

Workday

- Benefits:
  - Reduces manual processes and transactions
  - Creates transparency and access to real-time data to aid in decision making and planning
  - Maximizes the use of self-service functionality for employees and managers
  - Modernizes our business processes
- Description: Bring together the City's key HR & Finance applications into one modern, integrated, streamlined and easy to use system.
- Amount Awarded: $6,000,000
- Funding Source: PAYGO
- Status: Phase 1A and Phase 1B complete; Phase 2 in process

Office 365 Rollout

- Benefits:
  - Cloud Storage: OneDrive
  - Virtual Collaboration: Teams
  - Migration off of Windows 7 reducing vulnerabilities to cyber attacks
- Description: Migrate users to Office 365, upgrade computers to Windows 10, and convert SharePoint from on-premise to the cloud.
- Amount Awarded: $878,500
- Funding Source: 3rd Park & Public Facilities and PAYGO
- Status: In process

What Does OneDrive Offer?

Remote Access · Collaboration · Mobile Access

File Types · Basic Security

Citywide Cyber Security Upgrades (Endpoint Protection)

- Benefits:
  - Consolidated from 3 products to 1, providing increased efficiency and effectiveness
  - Reduces the time to quarantine devices and address malware that pose a risk
- Description: Consolidated endpoint protection, i.e., servers, workstations, etc., by monitoring the system and identifying processes that exhibit malicious activities when they execute and stops them from running.
- Amount Awarded: $350,000
- Funding Source: PAYGO
- Status: In process

FY22 to FY27 CIP Requests

Factors Critical to Project Prioritization

1. Public Safety

2. Continuity of Operations

3. Mayoral Priorities

4. Increased accessibility
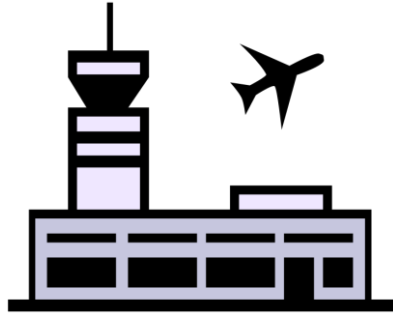
5. Efficiency and cost reductions

BCIT 2022 Spend Request Summary by Category

Area	FY 22
Information Security	$450,000
Infrastructure	$4,375,000
Applications	$1,700,000
PSSEC	$475,000
Digital Inclusion	$1,000,000
TOTAL:	$8,000,000

Requests are citywide with the exception of Digital Inclusion.
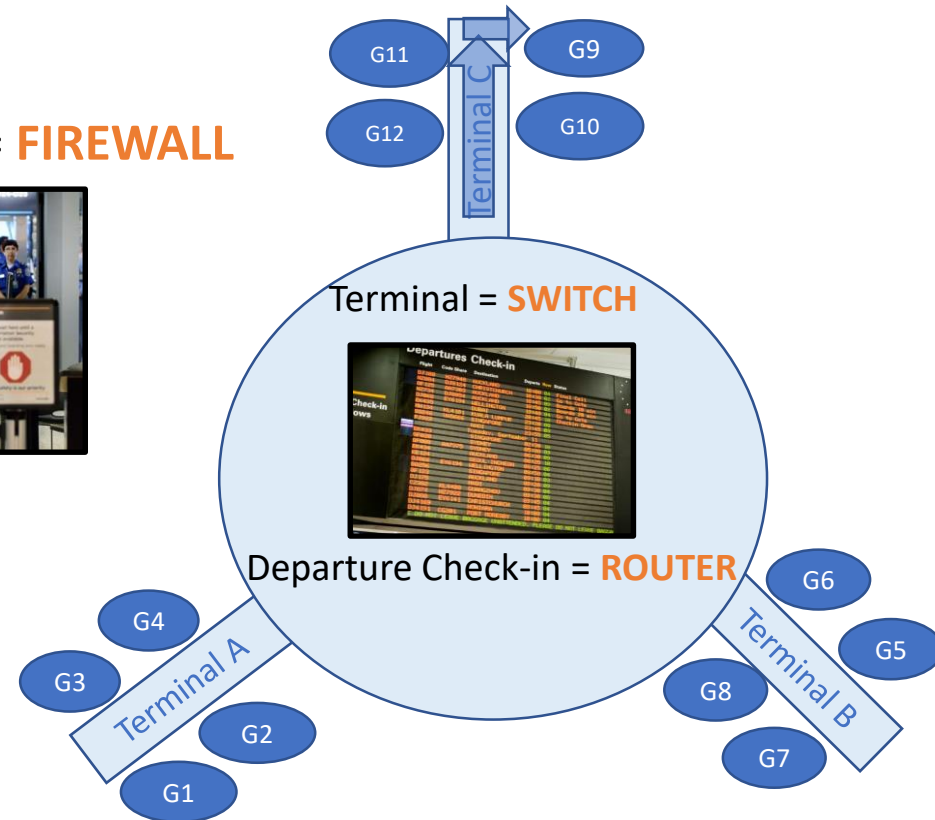Funding Source: GO Bonds

Technology Translation

Gate = **HUB**

People = **DATA**

TSA Checkpoint = **FIREWALL**

Terminal = **SWITCH**

Departure Check-in = **ROUTER**

Planes = **APPLICATIONS**

Terminal C

G11 G9
G12 G10

Terminal A
G4
G3
G2
G1

Terminal B
G6
G5
G8
G7

BCIT Information Security-Related Requests

Capital Funds		
CIPI #	**Project Description**	**FY 22**
117-029	Citywide Cyber Security Systems Upgrade	$450,000
	TOTAL:	$450,000

InfoSec: Citywide Cyber Security Systems Upgrade

What is it?

Software to prevent unauthorized access to the network; detect and identify inside network threats; and implement a citywide IT risk management program.

Why is it important?

- Prevents devices from connecting to our network that are at risk for malware infection; provides visibility and the ability to prevent malicious network traffic and implements an IT risk management program to prioritize IT projects and investment decisions.

FY 22 Requested Amount: $450,000

BCIT Infrastructure-Related Requests

Capital Funds		
CIPI #	**Project Description**	**FY 22**
117-054	Remediation of End-of-Support Systems (EOS)	$400,000
117-057	Replace End-of-Support (EOS) Network Phase 2	$400,000
117-041	Citywide Network Cabling and Wiring Upgrade	$850,000
117-048	Replace Unmanaged Network Hubs, Cables and Switches	$650,000
117-046	Citywide Data Center Fiber Divergence	$1,675,000
117-062	Upgrade Network Management Software	$400,000
	TOTAL:	**$4,375,000**

Infrastructure: Remediation of End of Support (EOS) Systems

What is it?

Upgrade Microsoft Windows servers' operating systems that are at End of Support (EOS).

Why is it important?

- Mitigates operational, security concerns, and cost risks as these servers are obsolete.
- Ensures that the City is able to receive support from Microsoft during critical or urgent incidents.
- Ensures the timely application of patches, provided by Microsoft on a monthly basis, for known vulnerabilities.

FY 22 Requested Amount: $400,000

End-of-Support 2020:
Start Planning & Budgeting

Windows 7 — X NO SECURITY
Server 2008 — X NO UPDATES
Exchange 2010 — X NO COMPLIANCE

After 10 years, support for Windows 7 is nearing the end.

January 14, 2020 is the last day Microsoft will offer security updates and technical support for computers running Windows 7. We know change can be difficult, that's why we're reaching out early to help you back up your files and prepare for what's next.

Learn more

microsoft.com/windows7

Infrastructure: Replace EOS Network Phase 2

What is it?

Replace approximately 225 End of Support (EOS) network devices such as switches and routers.

Why is it important?

- Will enable BCIT to obtain security, firmware (software built into a device) and/or operating system updates required to support the City's network during network related outages.

FY 22 Requested Amount: $400,000

Infrastructure: Citywide Network Cabling & Wiring

What is it?

Replace and upgrade citywide agencies' network cabling and wiring.

Why is it important?

- Provides increased network speed and improved security by reducing the need for unmanaged switches and hubs throughout the city.

FY 22 Requested Amount: $850,000

Infrastructure: Replace Unmanaged Network Hubs, Cables & Switches

What is it?

Removal and replacement of unmanaged network hubs, cables and switches.

Why is it important?

- Will provide increased security and managed capabilities, as well as, increased network performance and reduction of downtime.

FY 22 Requested Amount: $650,000

Infrastructure: Citywide Data Center Fiber Divergence

What is it?

Backup offsite secondary/cloud capabilities for City's mission critical data and systems.

Why is it important?

- Enables business continuity, particularly that of the City's public safety and financial system, in the event of an extended outage or catastrophic loss at our primary data center location(s).

FY 22 Requested Amount: $1,675,000

Infrastructure: Upgrade Network Management Software

What is it?

Purchase and install network management software to non-core network devices at key satellite locations.

Why is it important?

- Provide BCIT with secure remote access to network components (routers, switches, etc.) when the primary network is down by using cellular technologies.

- Allows staff to fix equipment remotely and swiftly when unable to physically access (e.g. during a significant weather event, natural disaster, etc.)

FY 22 Requested Amount: $400,000

BCIT App-Related Requests

Capital Funds		
CIPI #	**Project Description**	**FY 22**
117-060	Upgrade Baltimore City's Resident-Facing Web Assets and Applications	$700,000
117-061	Upgrade Mainframe Components to Modern and Flexible Computing Platforms	$500,000
117-059	Upgrade Application Integration and Infrastructure	$500,000
	TOTAL:	$1,700,000

Apps: Update Resident-Facing Web Assets

What is it?

Upgrade City's resident-facing web assets and applications to improve the user experience and transaction capabilities of citizens who interact with the City electronically.

Why is it important?

- Create a seamless experience with a universal login (i.e. tax bill, liens, etc.).
- Improve accessibility for all users, including those with disabilities and mobile users.
- Enable mobile access to the 50% percent of residents who do not have access to the internet in their homes.

FY 22 Requested Amount: $700,000

Apps: Upgrade Mainframe Components

What is it?

Proactively moving applications off the mainframe, over multiple years, as opposed to a very large, expensive reactionary project (e.g. liens, property taxes).

Why is it important?

- Outdated mainframe is core to many critical processes for the City but is dependent on 60 year old technology.

- Growing risk of extreme disruption to critical processes as well as very large maintenance costs.

- Engineers able to support mainframe systems are an aging workforce.

FY 22 Requested Amount: $500,000

Apps: Upgrade Application Integration & Infrastructure

What is it?

Upgrade how data is shared between applications by building a common method to retrieve, store and update data.

Why is it important?

- Resolves the 311 ticketing status issue (closed=closed)
- Resolves the growing challenges with communication between systems in the City as Workday is completed.

FY 22 Requested Amount: $500,000

BCIT Public Safety-Related Requests

Capital Funds		
CIPI #	**Project Description**	**FY 22**
117-055	Upgrade Speed and Reliability of Public Safety Communications	$475,000
	TOTAL:	**$475,000**

PSSEC: Upgrade Speed and Reliability of Public Safety Communications

What is it?

Upgrade connection between the City's fiber cables and the 800 MHz radio tower site for 911 communications, as well as police and fire emergency dispatch services.

Why is it important?

- Replaces the outdated connection that is end of industry life.
- Increases the reliability, speed and supportability of Public Safety communications.
- Allows for the 800 MHz radio system software to be upgraded to the latest version, which reduces vulnerabilities and provides for additional features.

FY 22 Requested Amount: $475,000

BCIT Digital Inclusion Requests

Capital Funds		
CIPI #	**Project Description**	**FY 22**
117-058	Broadband Connectivity for Public Housing Developments	$1,000,000
	TOTAL:	**$1,000,000**

Digital Inclusion: Broadband Deployment

What is it?

Install broadband infrastructure and internet to public housing complexes.

Why is it important?

- Low-income residents usually rely on schools, businesses, libraries and recreation centers for access to the internet.

- 96,000 City households do not have internet access which affects the ability to learn, work, access healthcare, etc.

- School age children account for 60% (3,936) of the 5,597 public housing residents in the City. Unless there is dedicated broadband service in the home, the internet is inaccessible and the impact nearly immeasurable.

FY 22 Requested Amount: $1,000,000

FY22 CIP Broadband Potential Sites
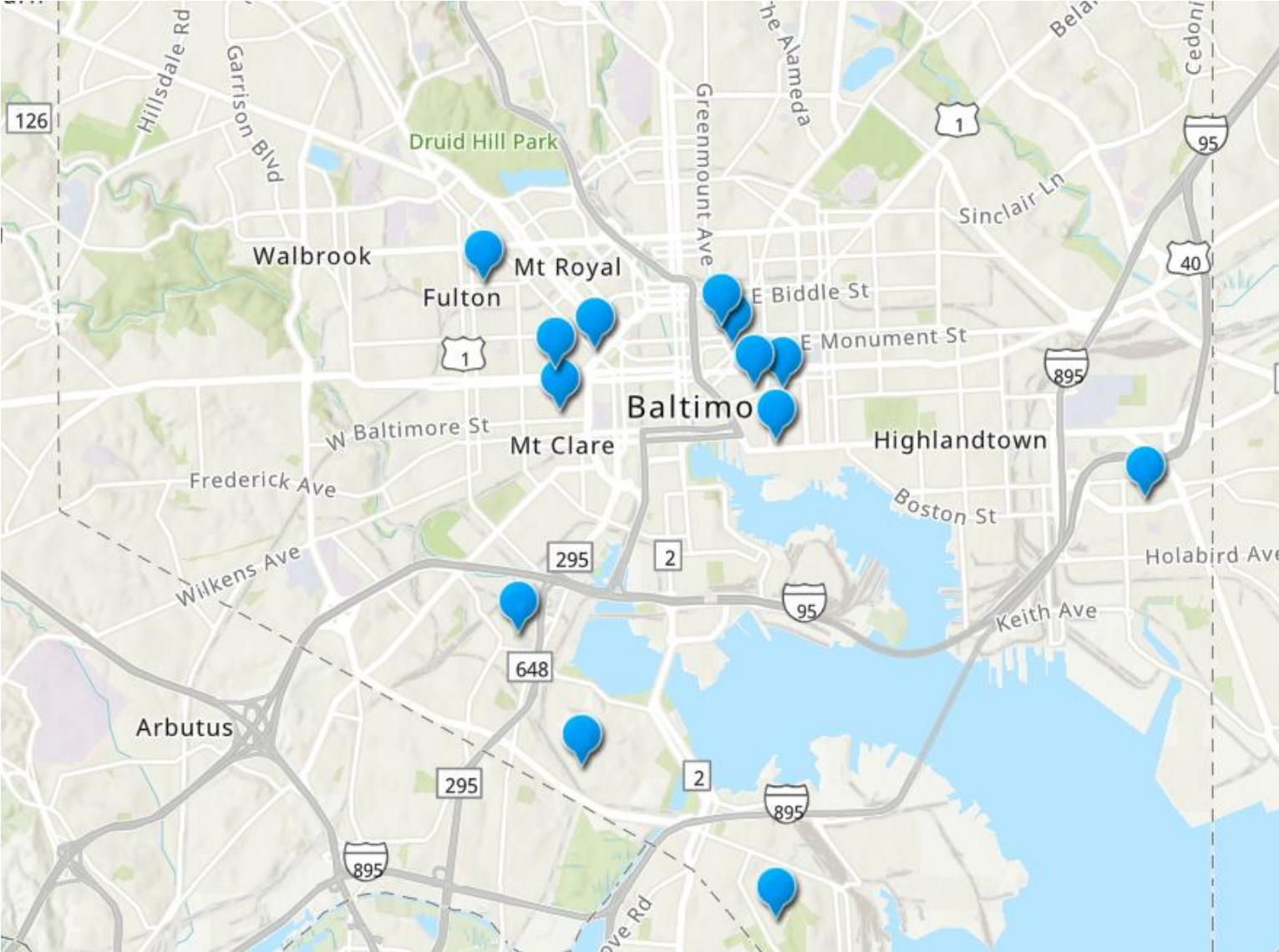
Conclusion

FY22 to FY27 CIP Request Summary

CIPI #	Project Description	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27
117-060	Upgrade Baltimore City's Resident Facing Web Assets and Applications	$700,000	$700,000	$700,000	$ -	$ -	$ -
117-061	Upgrade Mainframe Components to Modern and Flexible Computing Platforms	$500,000	$500,000	$500,000	$500,000	$500,000	$500,000
117-059	Upgrade Application Integration and Infrastructure	$500,000	$500,000	$500,000	$500,000	$500,000	$500,000
117-029	Citywide Cyber Security Systems Upgrade	$450,000	$600,000	$ -	$ -	$ -	$ -
117-054	Remediation of End-of-Support Systems	$400,000	$500,000	$500,000	$350,000	$250,000	$ -
117-057	Replace End-of-Support (EOS) Network Phase 2	$400,000	$100,000	$ -	$ -	$ -	$ -
117-041	Citywide Agencies network cabling and Wiring Upgrade	$850,000	$850,000	$1,150,000	$950,000	$950,000	$ -
117-048	Replace Unmanaged Network Hubs, Cables and Switches	$650,000	$500,000	$350,000	$250,000	$250,000	$ -
117-046	Citywide Data Center Fiber Divergence	$1,675,000	$2,000,000	$2,000,000	$400,000	$ -	$ -
117-062	Upgrade Network Management Software	$400,000	$100,000	$ -	$ -	$ -	$ -
117-058	Broadband Connectivity for Public Housing Development	$1,000,000	$1,000,000	$1,000,000	$ -	$ -	$ -
117-055	Upgrade Speed and Reliability of Public Safety Communications	$475,000	$475,000	$ -	$ -	$ -	$ -
	Future Applications	$ -	$ 175,000	$ -	$ 1,000,000	$ 1,000,000	$ 1,000,000
	CAD	$ -	$ -	$ 1,300,000	$ 3,000,000	$ 3,500,000	$ 3,000,000
	Future Information Security Projects	$ -	$ -		$ 300,000	$ 550,000	$ 1,500,000
	Future Network Infrastructure Projects	$ -	$ -		$ 750,000	$ 500,000	$ 1,500,000
	Total	**$8,000,000**	**$8,000,000**	**$8,000,000**	**$8,000,000**	**$8,000,000**	**$8,000,000**

BCIT's Equity Statement

While BCIT's primary function is internally supporting City government departments, BCIT is committed to ensuring equity in its practices, policies and investments. Our current direct impact on Baltimore residents is through our operation of the 311 Call Center which welcomes anyone to submit nonemergency service requests. Requests can be initiated through a variety of channels (phone, internet, app) with the intent of increasing accessibility for City residents.

BCIT is committed to equity in our internal and external practices as evidenced by the following **Equity Milestones.**

- Provided diversity and inclusion training to BCIT leadership
- Incorporated equity into Agency Core Values
- Updated agency procedures to provide consistency & standardization for internal workplace EEO issues
- Reflect equity in the establishment and review process of salaries by focusing on function and experience
- Instill equity practices throughout the hiring process by seeking diverse recruitment sources
- Additional diversity and inclusion training to all BCIT staff scheduled annually

Equity & CIP Requests

- Proposal: Installation of broadband infrastructure and internet to public housing facilities.

- Aligns with the Community Development Framework strategy by providing equitable access to this essential utility.

Questions?

Appendix

The Importance of Digital Inclusion

- In 2018, 96,000 households in Baltimore (40.7%) did not have wireline internet service, such as cable, fiber, or digital subscriber line service.
  - Nationwide, 69.6% of households have wireline service.
- For home wireline broadband, 73.3% of white households in Baltimore City have this service compared with 50.2% of African American households and 46.4% of Hispanic households.

Reference: Abell Report: "Baltimore's Digital Divide: Gaps in Internet Connectivity and the Impact on Low-Income City Residents."
Available at: https://abell.org/publications/baltimores-digital-divide-gaps-internet-connectivity-and-impact-low-income-city