2023-2024 IT Master Plan Executive Summary

SINCLAIR COLLEGE | AUGUST 31, 2023

INFORMATION TECHNOLOGY

APPLICATIONS • OPERATIONS • SECURITY • SYSTEMS

SINCLAIR COLLEGE

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WELCOME

Scott McCollum
Chief Information Officer (CIO)

I am delighted to extend a warm welcome to you on behalf of the IT Department. I lead a dedicated team of professionals within the IT Department, and together we are committed to shaping the technological landscape of Sinclair. Our goal is to provide cutting-edge solutions and services that empower students, staff, and faculty members in their pursuit of academic excellence and operational efficiency.

Our responsibilities span a wide range of technological aspects that contribute to the success of Sinclair. From managing network infrastructure to supporting learning technologies, data management to cybersecurity, our team ensures that the college's technological ecosystem remains robust, secure, and innovative.

We measure our success by the impact of our work. Each day, we strive to enhance the quality of education and streamline administrative operations. Success for us is when students access seamless online learning experiences, faculty and staff collaborate effectively, and the college community interacts with systems that are efficient, reliable, and secure.

This document serves as a comprehensive guide to understanding the role of the IT Department and its significance within Sinclair College. It is designed to provide you with a clear overview of who we are, what we do, and how our efforts align with the College's mission and vision.

As you explore this document, I encourage you to reach out with any questions or suggestions you may have. We are here to partner with you in leveraging technology to advance the College's goals.

Thank you for joining us on this exciting journey of learning, innovation, and progress. We are thrilled to have you as part of our community.

STRATEGIC IT PRIORITIES

We have identified the following priorities that will guide our efforts over the next 3 to 5 years, based on an internal and external IT Environmental Scan that can be viewed in Appendix 4 of this document.

• **Elevating cybersecurity** – The College's defense measures will be fortified in response to escalating cybersecurity threats. We will proactively enhance our prevention and monitoring capabilities to counter emerging threats effectively. Additionally, fostering a culture of cyber awareness among our workforce and establishing robust incident response protocols are integral aspects of this priority. Our aim is to create a secure environment that safeguards our systems, data, and sensitive information.

• **Cloud-centric architecture** – As technology trends continue to shift towards cloud-based solutions, we are prioritizing the transition to a cloud-centric architecture. This involves efficiently managing a growing number of systems, optimizing integration requirements, and implementing strong governance. By embracing cloud technologies, we intend to enhance scalability, flexibility, and overall system efficiency.

• **Classroom and facilities optimization** – We will recommend changes to "right size" the number of physical classroom spaces and align the mix of spaces with the evolving landscape of face-to-face, virtual, and hybrid learning. We will create intelligent, interactive spaces that elevate the educational experience and streamline operational efficiencies while maintaining costs.

• **Business, project, and communications excellence** – We will implement best practices to refine project execution and enhance communication channels to ensure seamless collaboration across the organization. These efforts will aim to drive efficiency, transparency, and successful outcomes and ensure the services provided meet expectations and are able to be used efficiently and effectively.

• **AI exploration and adoption** – We aim to unlock AI's transformative capabilities for sustainable growth. We will explore and integrate AI technologies across various aspects of the organization to drive productivity improvements, innovation, and cost reductions. We also recognize the need to carefully manage the associated cybersecurity and privacy implications of the use of AI technologies.

We recognize the significance of these key areas of change and transformation and have integrated them into our approach to ensure the college remains at the forefront of technological advancement.
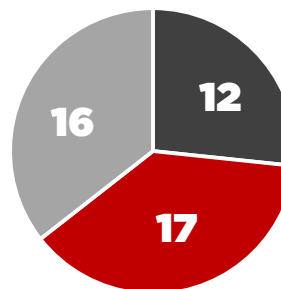
PLAN SUMMARY

PROJECTS BY COLLEGE STRATEGY/INITIATIVE

STUDENT SUCCESS
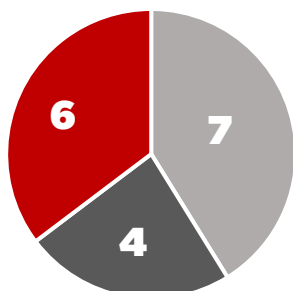
- Increase College Completion Rate
- Improve Course Success
- Decision Support for Student Success

EMPLOYEE VITALITY

- Improvement of Digital Processes
- Digitalization of Analog Processes
- Improvements for Employees

ACADEMIC EXCELLENCE
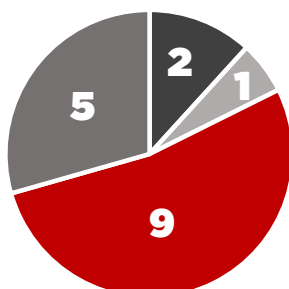
- Integrated Student Services
- Engage Students / Improve Campus Life
- Improve Learning Technologies
- Seamless Transition for Long-Term Success

COLLEGE SUSTAINABILITY
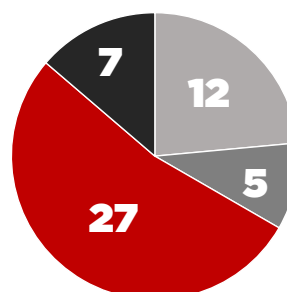
- Enhance Security / Controls
- Maintain / Sustain Tech Investment
- Compliance
- Cost Savings

COMMUNITY ALIGNMENT
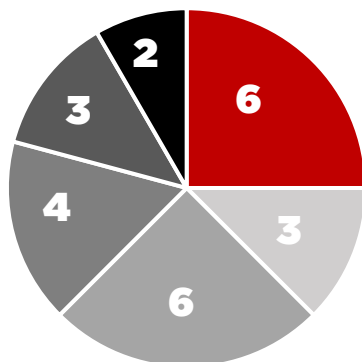
- Increase Competency Based Education
- Community Economic Development
- College Credit Plus
- Correctional Institutions
- Increase the College Going Rate
- Unmanned Aerial Systems

PROJECT CATEGORIZATION

PROJECTS BY COLLEGE DEPARTMENT

Bar chart with y-axis from 0 to 25:
- Accounting Services: 22
- Facilities Management: 16
- Human Resources: 10
- eLearning: 7
- Financial Aid & Scholarships: 6
- Business Services: 6
- Admissions: 6
- School Partnerships: 5
- Student Affairs: 5
- Life & Health Sciences: 4
- Registration and Student Records: 3
- Budget & Analysis: 3
- Conference Center: 2
- UAS: 2
- Advanced Job Training: 2
- International Education: 2
- Other: 13

PROJECTS BY COLLEGE DIVISION

Horizontal bar chart with x-axis from 0 to 80:
- Administration: ~67
- Advancement and Regional Strategy: ~1
- Chief Financial Officer: ~25
- Equity, Anti-Racism: ~1
- Organizational Development: ~8
- President: ~2
- Provost: ~20
- Student Development: ~22
- Workforce Solutions: ~4

PROJECTS BY IT PURPOSE

Pie chart with legend:
- Manageability (light gray)
- Usability (red)
- Supportability (dark gray)
- Availability (black)

PROJECTS BY TYPE

Pie chart with legend:
- Implementation (red)
- Research (gray)

4

PROJECT LIST BY DEPARTMENT

PROJECT ID	PROJECT NAME	PROJECT TYPE
	ACADEMIC ADVISING	
ITMP-585	Student Success Software	Research
	ACCOUNTING SERVICES	
ITMP-469	Bank Transfer Form	Implementation
ITMP-485	Tuition Refund Appeal	Implementation
ITMP-486	Premier Health Portal	Research
ITMP-487	AP Approval Form	Research
ITMP-488	Past Due Collections	Implementation
ITMP-489	Grants Time and Effort Automation	Research
ITMP-490	Payroll Integrations	Implementation
ITMP-491	Concur Budget Hierarchy	Research
ITMP-492	Balancing Reports	Research
ITMP-501	Bursar Document Imaging	Implementation
ITMP-502	Dereg Process Update	Implementation
ITMP-503	Grants/Project Accounting	Implementation
ITMP-504	Pay Period Change to Arrears and 26/year	Research
ITMP-505	CCP Billing & Reporting	Implementation
ITMP-506	Time Entry Processes	Implementation
ITMP-507	AJT Billing & Reporting	Research
ITMP-508	Inclusive Access Billing Process	Research
ITMP-509	AG Interest Payments	Research
ITMP-510	Assignment Contracts	Implementation
ITMP-511	Informer transition from 4 to 5	Research
ITMP-512	Document Imaging for Payroll	Research
ITMP-513	Tax Reversal Process/Issue for Sponsored Billing	Research
	ADMISSIONS	
ITMP-474	Advantage Online Orientation	Implementation
ITMP-575	CRM Analytics Dashboards	Implementation
ITMP-576	CRM Forms Creation and Support	Implementation
ITMP-578	CRM Behavior Analytics	Implementation
ITMP-597	Franklin Pathway Portal	Implementation
ITMP-761	YouScience/CRM Integration	Implementation
	ADVANCED JOB TRAINING	
ITMP-607	Additional Chromebooks at Prisons	Implementation
ITMP-608	IT Support for Prison Technologies	Implementation
	ASSOCIATE/ASSISTANT PROVOSTS	
ITMP-614	Faculty Classroom Control	Research
	BUDGET & ANALYSIS	
ITMP-470	Budget Manager Hierarchy	Implementation
ITMP-471	Operating Budget Application	Implementation
ITMP-484	Position Management	Implementation

PROJECT LIST BY DEPARTMENT

BUSINESS SERVICES

ITMP-533	Campus Store POS System	Research
ITMP-534	Incident response	Implementation
ITMP-535	Inclusive Access Automated Digital Content Integration Research	Research
ITMP-537	Unimarket Enhancements	Implementation
ITMP-539	PCard Management and Reporting	Research
ITMP-558	Parking Lot Count System	Research

CENTER FOR TEACHING & LEARNING

ITMP-604	CTL Registration Site Replacement	Implementation

CONFERENCE CENTER

ITMP-495	Conference Center Digital Signage	Implementation
ITMP-498	Centerville Rental Opportunities	Implementation

DIVERSITY

ITMP-554	Create QR Code Based DEI Exhibition Space	Implementation

ELEARNING

ITMP-584	CBE Rolling Registrations	Implementation
ITMP-586	Validation Restriction System for Course Scheduling	Research
ITMP-587	AJT Course Coordinator Enrollment	Implementation
ITMP-589	Research AI for eLearn	Research
ITMP-590	LER/Microcredential Infrastructure Research	Research
ITMP-591	LTI Integration for eLearning	Research
ITMP-760	Master/Dev Course Shell Automation	Implementation

FACILITIES MANAGEMENT

ITMP-497	Relocate eLearning/CTL Labs	Implementation
ITMP-499	President's Suite Multimedia	Implementation
ITMP-514	Wireless Card Readers	Implementation
ITMP-515	Security Camera Expansion	Implementation
ITMP-516	Reconfigure Math Lab	Implementation
ITMP-523	Centerville Recreation Center	Implementation
ITMP-524	Remodel Math Classroom	Implementation
ITMP-525	Testing Labs Sound Masking	Implementation
ITMP-526	CFO Office Multimedia	Implementation
ITMP-527	Food Pantry Security	Implementation
ITMP-528	Camera Testing Equipment	Implementation
ITMP-529	Centerville Building Automation	Implementation
ITMP-530	Relocate Center	Implementation
ITMP-531	Move/Upgrade eLearn Studio	Implementation
ITMP-532	Fire Alarm Network Upgrade	Implementation
ITMP-615	WPAFB Military Family Ed Center	Implementation

FINANCIAL AID & SCHOLARSHIPS

ITMP-519	Fraud Prevention	Research
ITMP-520	FAFSA Simplification Act	Research
ITMP-521	Financial Aid Chatbot	Research
ITMP-593	Financial Aid Debt Letter	Implementation
ITMP-594	Financial Aid Award Letter	Implementation
ITMP-595	SAP Improvement Process	Implementation

GRANTS DEVELOPMENT

ITMP-477	Grant Management	Implementation

PROJECT LIST BY DEPARTMENT

HUMAN RESOURCES

ITMP-475	Staff Performance Evaluation	Implementation
ITMP-482	Faculty Performance Forms	Implementation
ITMP-564	Automate Employment Processes	Implementation
ITMP-565	Benefits Enrollment Extensions	Implementation
ITMP-566	Tuition Reimbursement	Implementation
ITMP-567	HR Systems Optimization	Research
ITMP-568	CCP Instructor Management	Implementation
ITMP-569	Wage Update Automation	Research
ITMP-570	Secure Data Sharing	Research
ITMP-571	Migrate all analog employee files to digital	Research

INFORMATION TECHNOLOGY

ITMP-460	R&R - Network Infrastructure	Implementation
ITMP-461	Data Center Core Upgrade	Implementation
ITMP-462	R&R - Televisions/Monitors	Implementation
ITMP-463	R&R - Wireless Microphone	Implementation
ITMP-464	R&R - Multimedia Room Equipment	Implementation
ITMP-465	Permanent Outdoor WiFi	Implementation
ITMP-466	Workforce Solutions Multimedia	Implementation
ITMP-467	Hallway Phone Expansion	Implementation
ITMP-472	Upgrade to Mura 10	Implementation
ITMP-473	ColdFusion 2021 Upgrade	Implementation
ITMP-483	IT.sinclair Redesign	Implementation
ITMP-494	Campus Wide Digital Signage	Implementation
ITMP-496	R&R - Great Hall Video	Implementation
ITMP-536	R&R - Windows Desktops	Implementation
ITMP-538	R&R - Workstation Computers	Implementation
ITMP-540	R&R -Desktop Monitors	Implementation
ITMP-541	R&R - Apple Laptops	Implementation
ITMP-542	R&R - Mac Desktops	Implementation
ITMP-543	R&R - Windows Laptops	Implementation
ITMP-544	R&R - Plotters	Implementation
ITMP-545	R&R - Printers	Implementation
ITMP-546	Research Printer Manufacturers	Research
ITMP-548	R&R - Copiers	Implementation
ITMP-549	R&R - Network Servers	Implementation
ITMP-550	R&R - UPS Units	Implementation
ITMP-552	R&R - Video Capture Cameras	Implementation
ITMP-553	Replace Hyper-Converged System	Implementation
ITMP-555	Data Center Environmental Control	Research
ITMP-556	Disaster Recovery Plan	Implementation
ITMP-557	IT Operations Management	Implementation
ITMP-560	JAMS Upgrade and Governance	Implementation
ITMP-563	R&R - Data Center Power	Implementation
ITMP-598	API Management Tool	Research
ITMP-599	OneView+ Reporting	Implementation
ITMP-600	Sinclair Users Program and Database	Implementation
ITMP-605	Least Privilege Access	Implementation
ITMP-762	Tartan Card Production	Implementation
ITMP-763	Colleague Servers Upgrade	Implementation
ITMP-764	Desktop as a Service	Research
ITMP-765	Remote Device Management	Implementation

PROJECT LIST BY DEPARTMENT

INTERNATIONAL EDUCATION

ITMP-573	Study Abroad Application	Research
ITMP-574	CRM Study USA Integration	Implementation

LIBRARY

ITMP-551	Upgrade Library System	Implementation

LIFE & HEALTH SCIENCES

ITMP-481	EMS Clinical and Lab Scheduling	Implementation
ITMP-559	Dental Digital X-Ray Machine	Implementation
ITMP-562	SimMan ALS Simulator	Implementation
ITMP-602	Coding and Reimbursement System	Implementation

MARKETING

ITMP-606	WWW Redesign	Research

PRESIDENT'S OFFICE

ITMP-493	Strategic Communications	Implementation

PUBLIC SAFETY

ITMP-459	Emergency Notification System	Research

RESEARCH, ANALYTICS & REPORTING

ITMP-468	IRB Application Form	Implementation

REGISTRATION AND STUDENT RECORDS

ITMP-456	Articulation and Transfer	Implementation
ITMP-518	Sinclair/UD BS NSG Data Integration	Research
ITMP-522	Digital Credentials, Degrees and Certificates	Research

SCHOOL PARTNERSHIPS

ITMP-479	Tech Prep Portal	Implementation
ITMP-480	CCP Portal	Implementation
ITMP-583	Tech Prep Applications	Implementation
ITMP-592	CCP/CRM Integration	Implementation
ITMP-601	CCP Test Score Automation	Implementation

SCIENCE, MATHEMATICS & ENGINEERING

ITMP-561	Gas Chromatography Mass Spec	Implementation

STUDENT AFFAIRS

ITMP-476	Challenge Coins	Implementation
ITMP-579	Grants Approval Software - Phase III	Implementation
ITMP-580	MFEC Data Collection	Implementation
ITMP-581	Coaching to Complete	Research
ITMP-582	Case Management and Counseling Tool	Research

TITLE IX

ITMP-612	Student Conduct Case Management	Research

UNMANNED ARIAL SYSTEMS

ITMP-500	Springfield Airport UAS	Implementation
ITMP-547	Modeling & Simulation Grant	Implementation

WORK-BASED LEARNING

ITMP-610	Work-Based Learning Tracking	Implementation

APPENDIX 1: 2022-23 RESULTS

IT MASTER PLAN RESULTS

MEASURES	GOAL/RESULT
PROJECT SUCCESS	• 78.9% Master Plan Projects Completed (124 of 157) • 4.4% Scheduled to be Completed by EOY (7 of 157) • 17.8% Canceled / Withdrawn (28 of 157) • 11 Additional/Unplanned Projects Completed
SYSTEMS AVAILABILITY	• 99.994%
USER SATISFACTION	• 79.94% Help Desk Calls Resolved at Time of Call • 7.31% Help Desk Calls Abandoned by Caller • 80% IT Satisfaction Score from InfoTech Survey

OPERATIONAL HIGHLIGHTS

STUDENTS/STAFF SERVED

Students
30,487 Enrolled in FY23
100,418 Email Accounts

Locations/Classrooms
10 Locations
385 Multimedia Classrooms
155 Computer Classrooms
21 Remote Locations/44 Classrooms

Staff
1,419 FTEs
4,076 Accounts

TECHNOLOGIES MANAGED

Servers & Storage
486 Servers
348 Terabytes of Storage

Desktops & Applications
6,692 Desktops & Laptops
278 Applications/95 Virtual

Network, Phones, Printers
17,962 Network Ports
2,253 Phones
837 Wireless Access Points
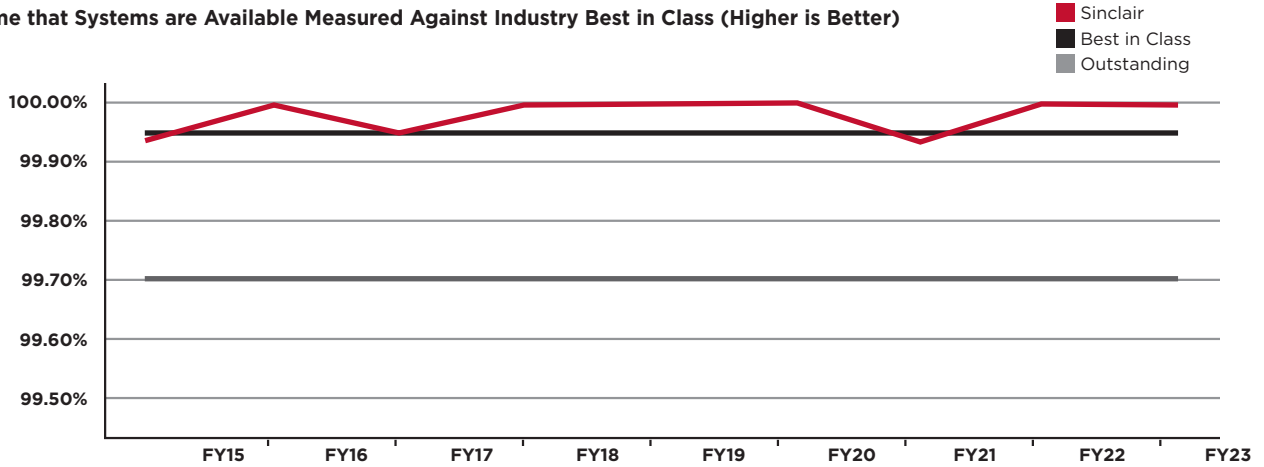2,240 MB of Internet Bandwidth

IT STAFF HIGHLIGHTS

58
Full-time Employees

13
Part-Time Employees

4
Student Employees

68.5
Full-Time Equivalents

Key Performance Measures Against Industry Benchmarks

*Industry benchmark data provided by **Gartner**, the world's leading IT research and advisory company.*
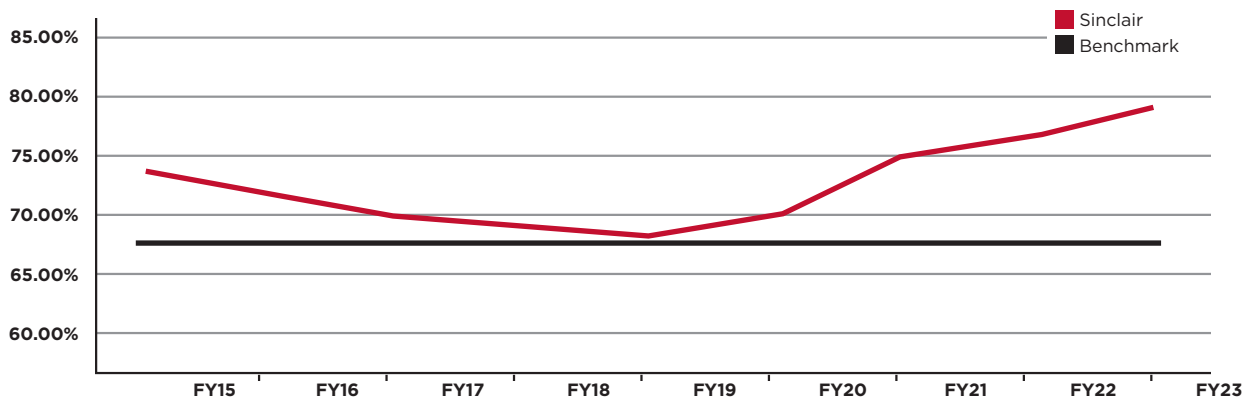
Service Availability

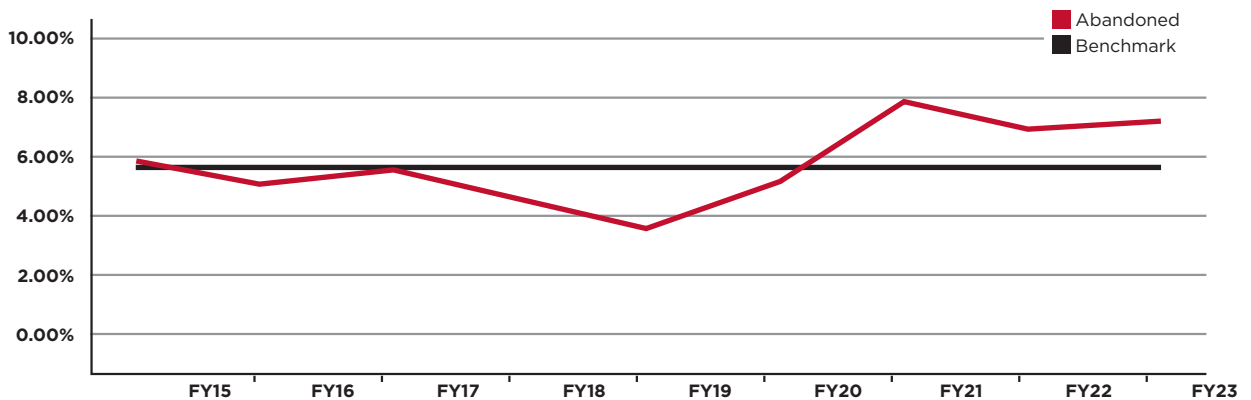**Time that Systems are Available Measured Against Industry Best in Class (Higher is Better)**

- ■ Sinclair
- ■ Best in Class
- ■ Outstanding

100.00%
99.90%
99.80%
99.70%
99.60%
99.50%

FY15   FY16   FY17   FY18   FY19   FY20   FY21   FY22   FY23

First Call Resolution

Help Desk Requests Which are Resolved Upon the Initial Contact Measured Against Industry Average (Higher is Better)

- ■ Sinclair
- ■ Benchmark

85.00%
80.00%
75.00%
70.00%
65.00%
60.00%
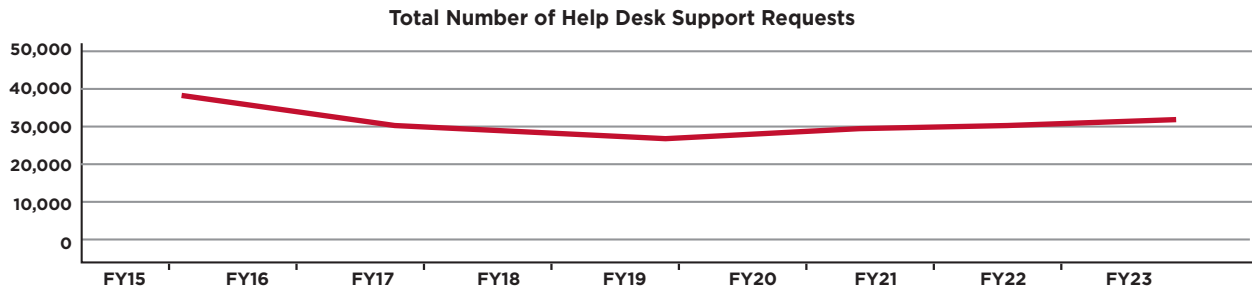
FY15   FY16   FY17   FY18   FY19   FY20   FY21   FY22   FY23

Abandoned Call Rate

Calls Made to the Help Desk Which are Hung-Up Before Being Answered Measured Against Industry Average (Lower is Better)
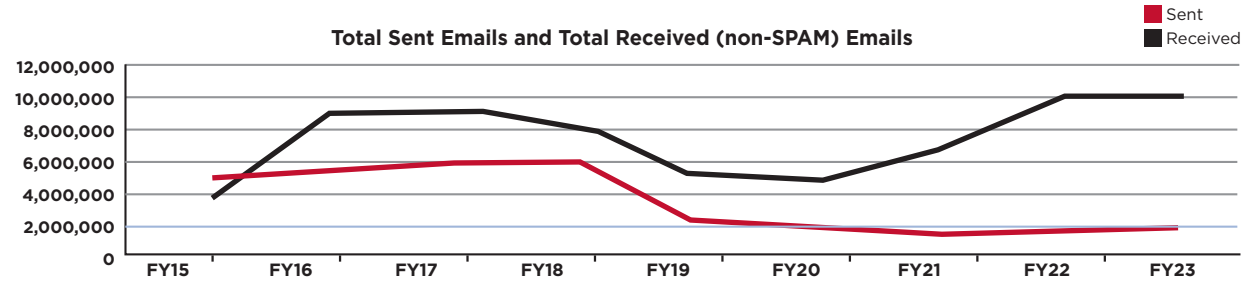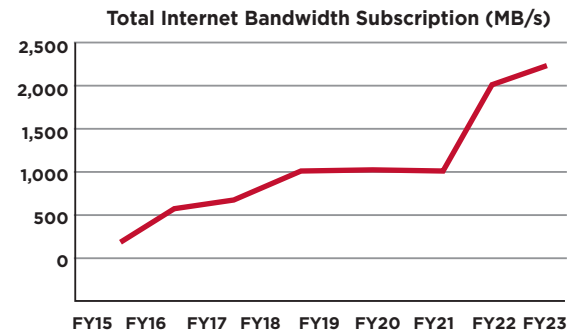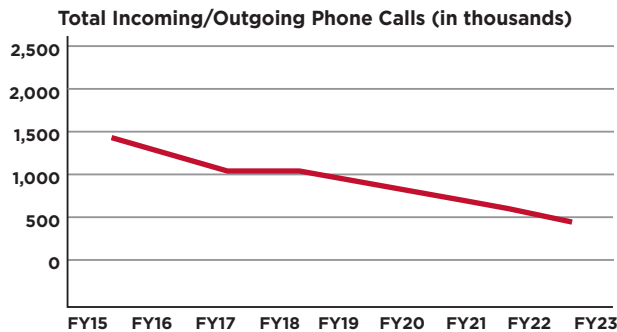
- ■ Abandoned
- ■ Benchmark

10.00%
8.00%
6.00%
4.00%
2.00%
0.00%

FY15   FY16   FY17   FY18   FY19   FY20   FY21   FY22   FY23

Additional Service/System Usage Charts

Help Desk Volume

Total Number of Help Desk Support Requests

Emails Processed

Total Sent Emails and Total Received (non-SPAM) Emails

■ Sent
■ Received

Voice/Data Transition

Total Incoming/Outgoing Phone Calls (in thousands)

Total Internet Bandwidth Subscription (MB/s)

Mobile Growth

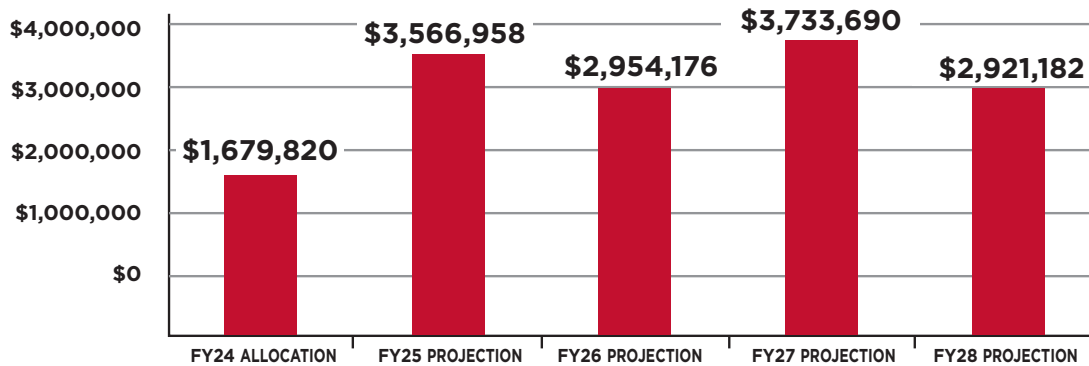### College Website Access via Phone/Tablet vs. Computer
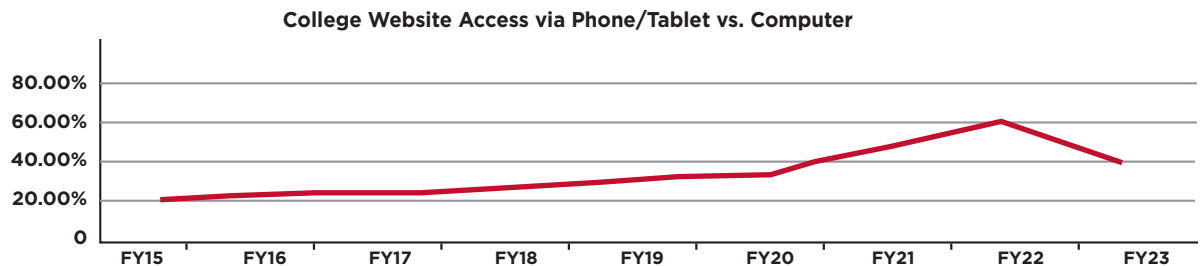
APPENDIX 2: RENEWAL/REPLACEMENT BUDGET

Summary

Detailed

Item	Total Investment	Annual Funding	FY24 Allocation	FY25 Projection	FY26 Projection	FY27 Projection	FY28 Projection
Windows desktop replacement	$3,015,775	$502,629	$53,200	$484,120	$440,895	$577,885	$383,705
Workstation computers	$1,057,500	$176,250	$110,000	$472,500	$25,000	$152,500	$52,500
PC Monitors	$1,339,600	$133,960	$133,960	$32,505	$200,448	$19,700	$102,716
Macs - laptops	$225,000	$37,500	$23,900	$37,500	$37,500	$36,342	$37,500
Macs - desktops	$929,600	$154,933	$61,600	$154,933	$154,933	$188,920	$154,933
Windows laptops w/dock	$1,938,000	$387,600	$135,600	$387,600	$387,600	$387,600	$387,600
Plotters	$40,000	$5,714	$16,000	$5,714	$5,714	$5,714	$5,714
Printers	$278,400	$39,771	$24,000	$39,771	$39,771	$32,429	$38,914
Satellite copiers	$1,034,000	$147,714	$88,000	$147,714	$147,714	$143,000	$143,000
Network Servers	$1,849,000	$369,800	$244,000	$369,800	$369,800	$339,800	$369,800
Closet UPS's	$244,800	$48,960	$48,960	$48,960	$48,960	$48,960	$48,960
Network Infrastructure	$3,700,000	$528,571	$100,000	$500,000	$100,000	$100,000	$300,000
Wireless Network Infrastructure	$585,000	$117,000	$0	$100,000	$100,000	$183,000	$100,000
UNIX Servers	$261,000	$52,200	$0	$0	$0	$261,000	$0
Storage - evergreen	$0	$0	$0	$0	$0	$0	$0
Hyper-converged systems	$340,000	$68,000	$200,000	$0	$0	$0	$0
Video Capture Cameras	$79,200	$15,840	$15,600	$15,840	$15,840	$15,840	$15,840
Backup infrastructure	$510,000	$102,000	$0	$0	$410,000	$0	$0
Phone infrastructure	$1,020,000	$145,714	$100,000	$145,000	$145,000	$145,000	$145,000
Load Balancers	$300,000	$50,000	$0	$300,000	$0	$0	$0
Library System	$35,000	$7,000	$0	$0	$0	$35,000	
Firewall	$250,000	$50,000	$0	$0	$0	$10,000	$250,000
Multimedia classroom/mtg room	$4,062,000	$338,500	$300,000	$300,000	$300,000	$300,000	$300,000
Bldg 14 forum	$375,000	$41,667	$0	$0	$0	$375,000	$0
Bldg 8 stage multimedia	$125,000	$15,625	$0	$0	$0	$125,000	$0
Great Hall multimedia	$63,000	$6,300	$0	$0	$0	$0	$0
Phone UPS	$40,000	$40,000	$0	$0	$0	$0	$50,000
Cable TV System	$250,000	$25,000	$0	$0	$0	$100,000	$0
Wireless Microphone System	$100,000	$11,111	$10,000	$10,000	$10,000	$10,000	$10,000
Charity Earley multimedia	$126,000	$12,600	$0	$0	$0	$126,000	$0
Televisions and Monitors	$150,000	$21,429	$15,000	$15,000	$15,000	$15,000	$25,000
Total	**$24,322,875**	**$3,653,390**	**$1,679,820**	**$3,566,958**	**$2,954,176**	**$3,733,690**	**$2,921,182**

APPENDIX 3: SINCLAIR IT OVERVIEW

IT CHARTER

VISION

To be recognized as a trusted partner and catalyst for business innovation through effective technology leadership.

MISSION

To help fulfill organizational goals, the IT department is committed to empowering students and stakeholders with solutions and services that facilitate effective processes, collaboration, and communication.

GUIDING PRINCIPLES

- **Enterprise Value –** We aim to provide maximum long-term benefits to the College by providing solutions that are fit for purpose and that reduce the operational complexity and cost of ownership.

- **Student Focus –** We partner with our students and stakeholders to deliver best experiences with our solutions and services.

- **Mobility –** We aim to provide solutions that are flexible and support a "learn or work from anywhere" environment.

- **Reuse > Procure > Build –** We leverage existing assets. If necessary, we configure, extend, procure or, if necessary, build custom solutions.

- **Information Management –** Data is an asset owned by the College. We ensure the integrity of this asset through sharing and integration of data that results in appropriate, timely, and secure access to information.

- **Cybersecurity –** We manage security to ensure a stable and secure environment that reflects the College's appetite for risk and protects enterprise assets.

- **Collaboration –** We support teamwork that is fostered through mutual communication, collaboration, and a culture of respect across the organization.

- **Compliance –** We operate in compliance with all applicable laws and regulations.

- **Innovation –** We seek innovative ways to utilize technology to advance the priorities of the College.

HIGH-LEVEL RESPONSIBILITIES

- **Cybersecurity –** Proactive protections, monitoring, user awareness, and incident response.

- **Systems and Support –** Reliable, well-managed systems, and end-user support.

- **Integration and Development –** Application integration, customization, and maintenance.

- **Solutions Advisory –** Advising departments on technology solutions that address needs.

- **Project and Change Management (New/Future) –** Driving the successful scoping, implementation, and adoption of technology changes.

- **Digital Transformation (New/Future) –** Identifying and implementing solutions to streamline, automate, and improve business functions.

MEASURES OF SUCCESS

• **Cybersecurity effectiveness –** Awareness. Incident/response metrics.

• **Systems availability –** Reliability. Time to restore.

• **User satisfaction –** Responsiveness. Resolution time. Etc.

• **Project success –** On-time. On-budget. On-quality.

• **Fiscal management –** Budget adherence. Spending effectiveness.

• **Transformation ROI (New/Future) –** Increasing revenues and staff productivity. Decreasing costs and risks. (Requires college leadership and department support.)

ORGANIZATION STRUCTURE
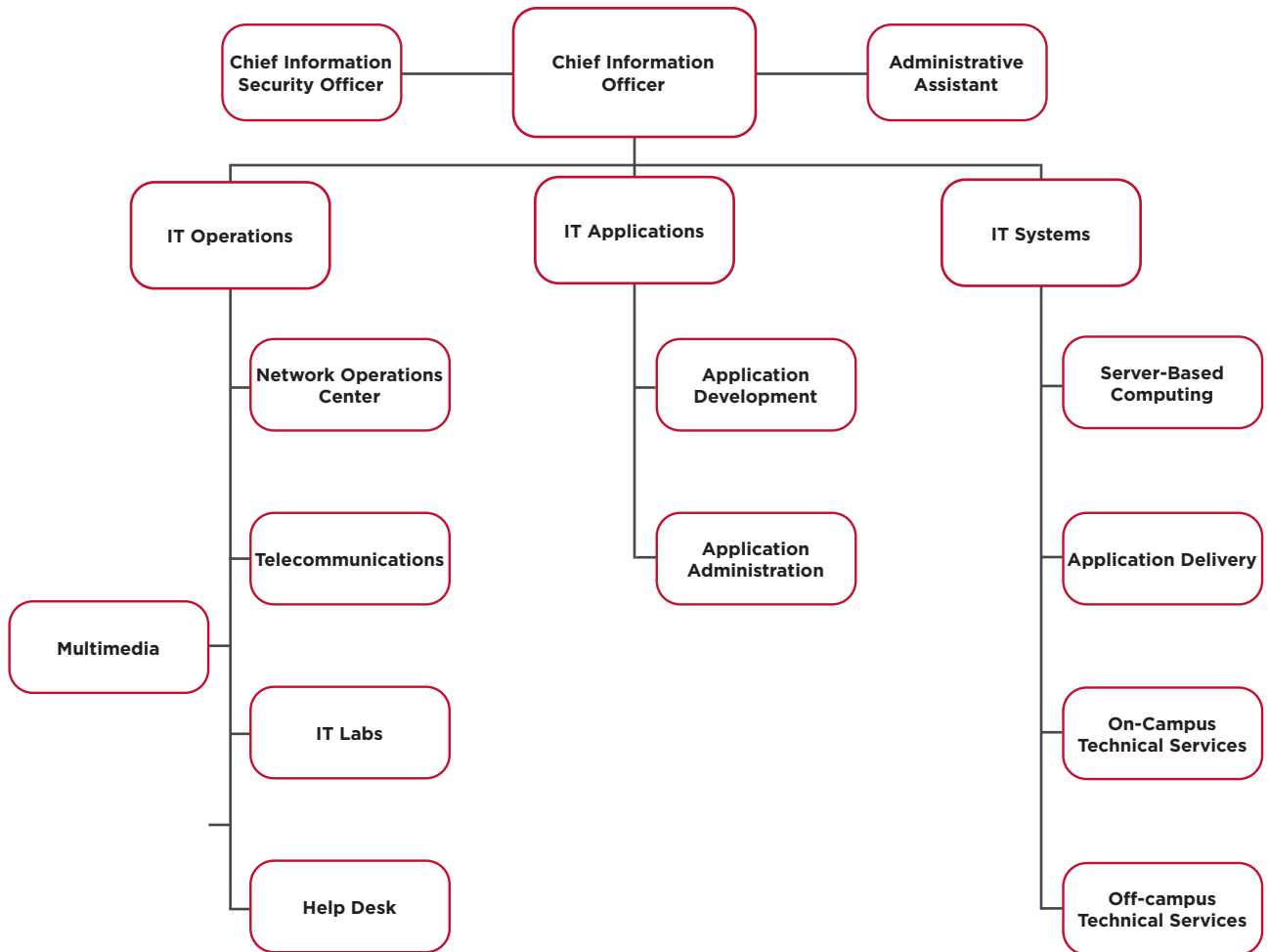
APPENDIX 4: ENVIRONMENTAL SCAN OF TECHNOLOGY

Note the following key areas of technological change/transformation that Sinclair IT anticipates impacting the college over the next 3-years.

- **Increasing cybersecurity threats.**
  - o Requires stronger prevention and monitoring capabilities.
  - o Importance of a more cyber-aware workforce.
  - o Expectations of robust incident response procedures.

- **Continued transition to cloud-based solutions.**
  - o More systems to manage.
  - o Increasing integration requirements.
  - o Less long-term demand for traditional software development projects.
  - o Growing importance of strong governance.

- **Exponential growth of AI.**
  - o Driving improvements in productivity, new innovations, cost reductions, etc.
  - o Enabling increasing threats to cybersecurity, privacy, etc.

- **Data-driven everything.**
  - o Need for comprehensive data management tools and expertise.
  - o Accelerates progress through RPA, AI/ML, digital transformation, etc.

- **Growing expectations of the workforce (driven by labor shortages).**
  - o Demand for intuitive / well-integrated systems, with appropriate training materials.
  - o Standardized systems where appropriate, yet flexibility to ensure academic freedom.
  - o A frictionless experience, bolstered by self-service tools.
  - o Ability to work from anywhere with little-to-no compromises.
  - o The need for knowledge management tools that decrease dependency on any one individual.
  - o The drive to innovate and automate through digital transformation and RPA solutions.

- **Growing expectations of students.**
  - o A frictionless experience to enroll, progress, and succeed.
  - o Ability to take classes from anywhere with little-to-no compromises.

- **Other trends.**
  - o Converging physical networks (uniting data, AV, building controls, etc.)
  - o Growth of virtual and augmented reality.
  - o Continued commercialization of blockchain.
  - o Emergence of quantum computing.