# **RESOURCES & ENVIRONMENT (R&E)**

**USC/** **College of Nursing “Boilerplate” Information for Sponsored Award Proposals**

*The following includes ‘boilerplate’ (basic) information about the University of South Carolina (USC) and the College of Nursing (CON):*

* *Use only what you need*. *Include only the information that is pertinent to your proposal* (not the whole thing). Note that there is some information overlap between sections.
* Be sure to add specific department, lab, equipment, and collaboration information as needed for your proposal and edit out what is not relevant to it.
* Other USC units and external institutions/organizations should be able to supply you with their R&E information upon request.
* Overview and contact information about additional CON centers and programs is at: https://sc.edu/study/colleges\_schools/nursing/

*Updated Summer 2024 (Arial 11 pt.)*

# **The University of South Carolina (USC)**

**The University of South Carolina (USC)** was established in 1801 and is a full-service, state- assisted research university that includes the 358-acre Columbia campus and seven regional campuses, with a total full-time student body population of more than 35,000 in Columbia and 50,000 overall. Located in the capital city of Columbia in the geographic center of the state, USC's main campus is part of a thriving metropolitan area of more than 800,000 inhabitants. USC offers a broad spectrum of educational opportunities with 14 colleges and schools that encompass 324 undergraduate and graduate degree-granting programs. USC confers 25% of all bachelors, graduate, and professional degrees awarded at institutions of higher education in South Carolina.

**USC Research Capacity.** In fiscal year 2024, USC was awarded over $300 million in extramural sponsored award funding, 72% percent of which was for research. USC is listed in the Carnegie Classification of Institutions of Higher Education as a Very High Research Activity University.

The University provides researchers with a full range of grant and contract-related services through its Sponsored Awards Management and Grants and Funds Management offices. USC’s Office of Research Compliance oversees the institutional review processes for human and animal subjects as well as disclosure and management of financial conflicts of interest and assists with scientific misconduct regulation and export controls.

**The SC SmartState Centers of Economic Excellence** **program** was established by the state's General Assembly in 2002 with $180 million of non-tax revenue funds generated from the South Carolina Education Lottery. These funds, along with legislatively mandated dollar-for-dollar matching non-state funds, provide support for hiring world-class researchers who serve as the endowed chairs of the SmartState Centers. The 51 Centers are grouped into six industry- focused Smart Clusters to facilitate engagement with business, students, potential faculty, and the public. Each Center includes one or more endowed chair, research infrastructure, technical staff, and sustainable funding sources. USC is home to 27 SmartState Centers, including 18 that are headquartered at USC's Columbia campus and eight within which USC actively collaborates working with other SC research institutions.

**USC Libraries.** Thomas Cooper, the University’s main library, is centrally located on the Columbia campus, and the School of Medicine library is a 15-minute drive from central campus. Both libraries maintain an extensive collection of health-related resources, including books,

journals, and indices. Access to online databases and full-text journals is available through the Thomas Cooper Library Web page.

**USC’s Division of Information Technology (DoIT)**, under the direction of the Vice President for Information Technology and Chief Information Officer, oversees centralized and distributed computing and telecommunications services for academic, research, and administrative use to meet the needs of USC faculty, staff, and students. DoIT provides the USC community with computing, voice, and data communications, networking, data security, video transport, information technology training, Web services, customer support, desktop and server support, installation and maintenance of IT infrastructure, policies and procedures assistance, PC labs, software licensing and distribution, IT planning, applications development and support, and operational systems. The Columbia campus is covered by wireless service. USC has a licensing agreement with Microsoft that includes 5TB of secure cloud storage space for every faculty and staff member on OneDrive. Microsoft has signed legal agreements with the University that hold them liable for the security and protection of data stored on OneDrive. OneDrive provides USC researchers with the capability to share data and results with external partners by emailing them a link to securely download the data.

**Healthcare Evaluation Systems and Technological Informatics Archive (HESTIA).**HESTIA is a centralized clinical data center used for storing, managing, and analyzing data collected from clinical trials, medical studies, patient records, and other healthcare related sources. It serves as a repository for diverse types of medical information, including patient demographics, medical history, laboratory results, imaging data, and treatment outcomes. HESTIA plays a crucial role in advancing medical research, improving patient care, and driving innovation by providing a centralized platform for managing and analyzing clinical data.The key functions of the core to (1) provide a secure environment for clinical data, (2) organize and manage data efficiently, ensuring data integrity, accuracy and compliance with HIPPA (Health Insurance Portability and Accountability Act), (3) integrate data from multiple sources that enables comprehensive analysis and insights across diverse populations and diseases, (4) provide tools and resources for analyzing the data including statistical analysis, machine learning and Artificial Intelligence algorithms, and data visualization techniques, (5) provide robust security to protect patient data, (6) ensure compliance with university, state, federal, and industry standards governing the collection, storage, and use of clinical data.

# **The College of Nursing (CON)**

The College of Nursing, located in the urban setting of the University of South Carolina’s Columbia campus, is housed in the Williams-Brice building, a six-story facility that has been remodeled over time to maintain state-of-the-art technology to support the College’s mission.  The CON is one of five health-related colleges including pharmacy, social work, public health, and medicine. The faculty has a philosophical commitment to collaborate with other health disciplines. This commitment has been fulfilled through interdisciplinary collaboration in health planning, grant writing, delivering services, and developing educational programs.  The CON offers both graduate and undergraduate programs. Graduate programs include two doctoral programs, the Doctor of Nursing Practice (DNP) degree and the Doctor of Philosophy in Nursing Science degree, and a Master of Science in Nursing (MSN) degree. The College offers a four-year undergraduate program that leads to the Bachelor of Science in Nursing (BSN) degree with an RN/BSN option.  A combined BSN/MSN Education Plan is available for both BSN and RN/BSN.

At USC College of Nursing, we value each student, staff, and faculty. We want everyone to feel welcome and included. We aim to cultivate and support the values of the College of Nursing: diversity, inclusivity, commitment, caring, integrity, respect, and professionalism. We believe that diversity, equity, and inclusion are necessary to achieve academic and institutional excellence. All members of the CON community not only matter, but their unique perspectives are the core of our strength and success

**College of Nursing Academic Resources**

The College of Nursing has a Local Area Network utilizing Microsoft Active Directory as the directory service.  All faculty members have direct access to this network on campus and access remotely through a Virtual Private Network (VPN).  Each faculty and staff member at the college is issued a laptop no older than three years with a docking station.  Administrative database support is offered for tracking student progress and institutional resources.  In addition to the college intranet, each faculty member has access to the campus network thereby providing access to the Internet. The college uses Microsoft Office 365 and Adobe Acrobat D for its word processing needs.  Microsoft Outlook is the college’s email system and provides email, scheduling, task lists for the faculty remotely or at the college.  The college also has a central data repository in addition to the University mainframe data storage.

The university also provides all faculty, staff, and students with a connection to Microsoft OneDrive for 5 Terabytes of cloud storage each.  There is a Business Associates Agreement in place to hold Microsoft liable for data loss or some breech incidents of data.

All computers are equipped with Symantec Endpoint Protection, FireEye HD incident response software, and Identify Finder software for antimalware and security of data.  Data access is regularly audited, and logs are reviewed for access.

**Online Meetings/Sessions & Video Capture Technologies.** The College of Nursing faculty and staff have several options available to them for the purposes of remote communications, meetings, and interviews.  Video conferencing technology affords the researcher the opportunity to interview study participants who they may otherwise not be able to due to cost or distance restrictions.  There are three technologies at the researcher’s disposal which offer different benefits.

* Microsoft Teams
	+ USC authenticated access to the online platform for management of conferencing sessions
	+ Shareable guest links to non-USC participants
	+ Online recording of meetings and storage behind authentication
	+ Gallery view for moderating/monitoring multiple video feeds at once
	+ Phone Dial in Options (Extra Charge)
	+ Integration with Microsoft Office 365/Teams allows for creating channels that can be private and allow for user
	+ Enhanced collaboration through use of the Teams platform for messaging, file sharing as well as online forms
	+ Live automatic captioning
* Blackboard Collaborate Ultra (mostly geared towards
	+ USC authenticated access to the online platform for management of conferencing sessions
	+ Shareable guest links to non-USC participants
	+ Online recording of meetings and storage behind authentication
	+ Breakout rooms
	+ Phone Dial in Options
* Zoom
	+ Shareable guest links to non-USC participants
	+ Online recording of meetings and storage behind authentication
	+ Breakout rooms
	+ Phone Dial in Options
	+ Gallery view for moderating/monitoring multiple video feeds at once
	+ A key advantage of Zoom is its ability to securely record locally to a desktop computer without recourse to third-party software.
	+ Allows for users to type captions as well as a third-party integration option
	+ Provides a separate audio file from the main video file

The College of Nursing recently completed a million-dollar renovation to create a state-of-the-art distance learning/conference enabled, multi-purpose classroom.  Additionally, four video conferencing rooms setup for a variety of web conferencing protocols are available.  This technology affords the ability to offer a wide range of video and data collaboration functions.  Web collaboration is possible using Adobe Connect and GoToMeetings that can provide unlimited on-demand web meetings.  Faculty and staff can create virtual conference rooms from any web connected location.  The College utilizes Blackboard as its Learning Management System.

The College of Nursing houses a Clinical Simulation Lab (CSL) and a skills lab. The skills lab has eight simulation suites, four clinical exam rooms for simulated participants, two conference rooms for 12, five multi-purpose/AV classrooms for 18, a skills area and a space to set up a variety of community health scenarios.

The CSL features an open classroom area which will seat approximately 40 students for classroom style learning through group simulation and advanced audio/visual presentation. In addition, there are eight individual simulation suites, four clinical office suites, and three control rooms. These rooms have the capacity for groups of 5-6 for simulation experiences that replicate the hospital/clinical environment. The lab hosts a hospital-like setting including beds with head wall units that house suction and oxygen, exam tables, task trainers, and high-fidelity manikins. Three of the suites can be changed into anything from a home environment to an outpatient care setting to an intensive care room to provide students with a variety of health care provider experiences.

The combination of these items provides for an up-to-date teaching environment. In addition to its physical environment, the CSL also has a robust IT infrastructure that permits the digital capture of audio, video, and graphical software data to support educational and research activities including opportunities for distance learners to participate in simulations through mobile robots or tele-health.  These data are stored in a secured environment that conforms to educational and research human subjects’ protection requirements.

## **College of Nursing Clinical Resources.** The Greater Columbia area includes six major hospitals and several state and federal health care institutions that provide a wide variety of teaching and research settings for graduate and undergraduate students. Currently, the College of Nursing has contracts with approximately 500 clinical placements sites in which students may have practicum experiences. Among these are hospitals within a 60-mile radius of the Columbia Metropolitan area, all the mental health facilities of the South Carolina Department of Mental Health, gerontological health care settings, all facilities of the South Carolina Department of Health and Environmental Control, several clinics and inpatient care facilities of the S. C. Department of Corrections, urban and rural community health-related agencies, and several physician offices. Area hospitals including – PRISMA Health Alliance, WJB Dorn Veterans Administration Medical Center, William S. Hall Psychiatric Institute, Providence Hospitals, and Moncrief Army Hospital – are affiliated with the University of South Carolina School of Medicine and are the major sites for the clinical teaching of medical students.

**Practice.** The Office of Practice Innovation, Partnerships and Policy, under the leadership of an Associate Dean, guides the development of community partnerships to create opportunities for faculty to practice through the roles of clinician, educator, researcher, consultant, and administrator. The College of Nursing has cultivated interprofessional academic and practice-based partnerships that provide faculty opportunities to serve as model teaching sites for undergraduate and graduate nursing students.

**College of Nursing Research Resources**

The College of Nursing houses an Office of Research (OR) under the leadership of an Associate Dean for Research. Two Program Coordinators, a biostatistician, and graduate assistants staff the OR. The OR assists faculty with research proposal development and submission including budget preparation. The OR also provides assistance to faculty with dissemination activities such as abstract, manuscript, and poster preparation and provides information on funding opportunities.

The College of Nursing Research Council is a standing committee within the faculty governance structure. The Council assumes a key role in carrying out the research mission of the College.

## A full-time doctorally prepared statistician and part-time graduate assistants augment the research capabilities of faculty and graduate students who are conducting research, preparing proposals, and/or developing manuscripts. Faculty have access to retrieval systems containing national census and health data within the University computer system. A variety of packaged computer software (statistical, graphics, word processing, and spreadsheets) are available for faculty use. The campus also provides access to several supercomputer cores for major processing applications.

## **REDcap** is a self-service tool available for surveys as well as data acquisition, capture, and management, and is provided to all USC students, staff, and faculty. The survey tool allows for various survey scenarios, including conditional logic, data uploads, and advanced formatting. All data are stored on a secure server and can be exported to formats useful to researchers for statistical analysis.

**College of Nursing Business Office.** The CON at USC has a dedicated business office that among other responsibilities, includes pre-award budget review, post award budget tracking along with support for approved grant transaction procurement and salary management.  This dedicated business office is separate from the CON Office of Research with the mission of working with the Office of Research to provide strong internal controls over the pre and post award grant business process.

**FIRST FIIRE Grant.** The CON received its largest NIH grant in 2022, $13.6 million, in partnership with the Arnold School of Public Health. This NIH Common Fund’s Faculty Institutional Recruitment for Sustainable Transformation (FIRST) program aims to enhance and maintain cultures of exclusive excellence in the biomedical research community. The USC project team, FIRST FIIRE (Faculty Initiative for Improved Recruitment, Retention, and Experience), has developed, cultivated, and implemented institutional programs and practices to promote inclusive excellence with the goal of sustainable institutional culture change. Ten tenure-track faculty (5 in the CON) are being hired during this six-year funding and will receive significant protected research time, startup packages, and mentoring to be successful NIH scientists. The grant has three cores: Administrative Core, Faculty Development Core, and Evaluation Core.

**CON Biobehavioral Research Center.** The CON Biobehavioral Research Center, a state-of-the-art, approximately 15,000 square-foot research space on the first floor of the CON, is expected to be completed in Spring 2025. This center will include: 1) An experimental laboratory (wet bench) for CON faculty and their research teams to process and store research specimens and to perform experiments related to their research. 2) A clinical research and innovation suite to perform clinical research studies. The Suites will also have dedicated parking for participant use.

**Biobehavioral Experimental Laboratory (wet bench).** Approximately 1,600 square feet of laboratory space will be located on the first floor of the CON. These laboratory facilities will include all equipment necessary for CON faculty and their research teams to perform biobehavioral research, including freezers (-20°C & -80°C), a refrigerator, water baths, a nanodrop UV spectrophotometer for measurements of RNA to examine purity via 260/280, weights and balances, microcentrifuges, and single and multi-channel pipettes. Equipment will include a plate reader and a Quant studio real-time and digital PCR for faculty use.

In addition, there will be one chemical fume hood, bench-top autoclave, temperature-controlled rocker, dishwasher, ice machine, and a deionized water supply readily available in the laboratory. There will be a 180-square-foot dedicated clean room that will house one biosafety cabinet. This cabinet will include filtration and will be routinely certified on an annual basis. The lab will also include space for four (4) cubicles for student work, bench space, and an office for the Laboratory Director (TBH).

**Biobehavioral Clinical Research and Innovation Suite.** The clinical research and innovation suite will house the newest technology and equipment for clinical studies. There are over 2000 square feet available to CON faculty. This includes a spacious patient intake area, a clinical exam suite with space and supplies for phlebotomy and specimen collection,and secure office space for record retention. The Suite will host a community Collaboratory, areas for physical activity and exercise research, two 20-seat areas for focus groups, interview rooms, conference rooms, and offices for visiting investigators. In addition, we plan to have an area dedicated to pediatric, adolescent, and young adult-focused research.

## **The ACORN Center.** The **A**dvancing **C**hronic Care **O**utcomes through **R**esearch & i**N**novation (ACORN Center) is the University of South Carolina’s arm of the Clinical Effectiveness and Patient Safety SmartState Center, which has another arm at the Medical University of South Carolina. The SmartState Centers of Economic Excellence program was established by the state's General Assembly in 2002 with $180 million of non-tax revenue generated from the South Carolina Education Lottery. SmartState research centers (1) expand the state's knowledge base, (2) create public-private partnerships, (3) support startup firms, and (4) help retain highly talented workers to actively support the ongoing development of the knowledge economy. The ACORN Center focuses on innovative, multidisciplinary research to improve health and quality of life among people with chronic conditions. The Center is located within the College of Nursing on the USC Columbia campus and is co-directed by Dr. Cynthia Corbett, Professor, and SmartState Endowed Chair, part of the leadership team for this proposal, and Dr. Lorie Donelle, Emily Myrtle Smith Endowed Professor of Nursing and contact MPI for this proposal. Dr. Magwood, Myrtle Irene Brown Endowed Professor of Nursing and MPI of this grant proposal, is also a core member of the ACORN Center. The ACORN Center has grown from 7 core members in 2018 to 15 core and 6 associate members in 2024.The Center also supports several undergraduate and graduate research assistants. To generate interdisciplinary research to improve chronic care outcomes, the Center offers seed grant funding for feasibility and pilot studies. The 2024 ACORN Center seed grant ($20K) was awarded to Dr. Jennifer May and her research team for their proposal, *Health Utilization, Expenditures, and Health Outcomes for Lesbian, Gay, and Bisexual Older Adults using the Health and Retirement Study*. Dr. May is a core member of the ACORN Center and one of the faculty hired by the NIH FIRST FIIRE award. The ACORN Center has three offices, a part-time coordinator, and a part-time research assistant to assist faculty in their research. The coordinator and research assistant have desks in a shared research workspace (newly designed in 2023) on the 6th floor in the College of Nursing building, where most ACORN faculty offices are located. Locking file cabinets, hardware (e.g., digital recorders, iPads, and laptops), and software (e.g., Nvivo, Canva Pro) available for research.

**Cancer Survivorship Research Center (CSC), College of Nursing.** The CSC is housed within the College of Nursing (CON). It is located on the sixth floor of the College and is co-directed by Dr. Karen McDonnell and Dr. Bernardine Pinto, Inaugural Health Sciences Endowed Professor. The center's mission is to create, expand, and disseminate knowledge addressing survivorship across the cancer continuum. This mission is in keeping with the Center’s vision to conduct research that alleviates the impact of cancer in South Carolina, the nation, and the world. Seven faculty from multiple disciplines comprise the core of the cancer researchers in the CON. Created in 2011, the Center has been renovated to offer maximum support to nursing faculty focusing on cancer research. The Center has funds for research projects. It includes dedicated and private faculty and staff offices, dedicated student cubicles, and a variety of administrative/networking resources such as copier, printer, fax, scanner, and computer networking capabilities. Many oncology clinicians participate in the CSC, and they have an especially strong research relationship with the South Carolina Oncology Associates Cancer Care Center. The CSC engages both undergraduate and graduate students and recently began awarding dissemination travel grants to graduate students who are presenting at a conference.

**Perinatal, Pediatrics, & Family Research Center.** The Perinatal, Pediatrics, & Family Research Center (PPFRC) is directed by Dr. Robin Dail, Health Sciences Endowed Professor, at the CON. The Mission of PPFRC is to improve health and well-being for families in SC and beyond through research and innovation, leadership, and excellence through collaborative, interdisciplinary research by the members of the PPFRC. The main goals for the PPFRC are to 1) Decrease morbidity and mortality for women in SC and beyond, before and after childbirth, 2) Decrease morbidity and mortality for premature infants and children born in SC from birth to 2 years old, 3) Facilitate the health and wellbeing of families in SC during the child-bearing years with increased access to equitable, quality healthcare through research. The PPFRC personnel include faculty, staff, graduate, and undergraduate student research assistants (GRAs/UGRs), and people not affiliated with USC. The Core Faculty includes 10 researchers within the CON. PPFRC Associate Faculty are USC faculty who have appointments at Colleges or Schools other than the CON. Affiliate PPFRC Faculty are people who contribute to the PPFRC but are not USC employees or students. The PPFRC sponsors faculty speakers nationwide to present their research each month to the PPFRC. These efforts are designed to expand group research knowledge and expertise and to foster research collaboration amongst group members.

**USC IT Environment and Resources**

**Division of Information Technology (DoIT).** The Division of Information Technology (DoIT), under the direction of the Vice President for Information Technology and Chief Information Officer, provides strategic leadership for information technology, instructional services, e-learning, and research computing at USC to support the University's mission and meet the needs of the faculty, staff, and students at the University of South Carolina. DoIT serves USC community through diverse services such as computing, telecommunications, networking, data security, video transport, information technology training, web services, customer support, desktop and server support, installation and maintenance of IT infrastructure, policies and procedures, PC labs, software licensing and distribution, IT planning, partnerships, applications development and support and operational systems.

**College of Nursing Information Technology.** The College of Nursing maintains a IT staff of 4 full-time employees, dedicated to serving the college community, which includes our research faculty. The nursing IT department has well established and integrated relationships with central IT as well as the greater university IT community.

**Network Infrastructure.** The College of Nursing utilizes a robust network infrastructure and Microsoft Active Directory, which is provisioned and managed by the USC Division of Information Technology. All faculty members have direct access to this network on campus and access remotely through a Virtual Private Network (VPN).  Duo Mobile, multifactor authentication is also required to access the majority of online resources. Secure Wi-Fi is available throughout the Columbia Campus.

**Standard Technology.** Each faculty and staff member at the college is issued a laptop or desktop workstation no older than three years. Each FTE is assigned a network account which provides them access to the enterprise resources, which include 5TB of cloud storage space in OneDrive as well as access to the Microsoft Office 365 suite, Microsoft Teams and Microsoft Onedrive. Other software is available to our faculty and staff based on need and request. Network printing is available throughout the college of nursing building.

**Grant Purchased Technology.** In the event a grant recipient intends to purchase additional, non-standard technology (ex: tablets), the recipient has the option to manage, distribute, track, maintain inventory and ensure item return, or seek the assistance CON IT. However, if support from CON IT is requested, additional costs will incur. At the end of the grant any equipment not retained by the participants would be returned to the university and would become a USC Nursing owned device. At that point, IT becomes responsible for inventory, tracking, distribution, and support.

**Endpoint Security.** All computers are equipped with Microsoft Windows Defender and Spirion, which protect users from threats as well as finds any sensitive information that may be stored on the workstations. Each workstation is also secured by Umbrella Roaming Client, which allows security and policy-based protection, including intelligent proxy, to be enforced no matter to which network you are connected. Workstations also have SecureConnector by Forescout installed, which helps to protect sensitive information, secure access to resources and demonstrate compliance through continuous monitoring and automated risk mitigation. Remote support is available through the installed Bomgar client. Bigfix client runs on each workstation to deliver updates, patches and fixes to machines. Every windows workstation has whole disk encryption enabled by default through use of bitlocker technology.

**Collaborative Platforms.** The College of Nursing faculty and staff have several options available to them for the purposes of remote communications, meetings, and interviews.  Soft Codec video conferencing technology affords the researcher the opportunity to interview study participants who they may otherwise not be able to due to cost or distance restrictions, without the need for a conference bridge or special hardware.  Two of the platforms available to researchers are Microsoft Teams and Zoom. The University of South Carolina has a signed BAA with Microsoft. This covers their storage platforms as well as the Microsoft Teams collaborative platform.

**College of Nursing Data Storage**. Research faculty have access to store regular data on a windows server file share that is centrally managed and backed up at the university enterprise level. If data has phi they must utilize a secure/HIPAA eligible file storage environment such as FSx, provided by Amazon Web Services. The University of South Carolina Division of IT has contracted with Amazon Web Services to provide academic units a secure HIPAA eligible file storage environment.  The College of Nursing utilizes this DOIT/AWS partnered service to store our research data.  In addition to the HIPAA eligible service from AWS, the University of South Carolina has implemented additional measures to meet HIPAA compliance.  Each workstation that connects to the AWS FSx file share has whole disk encryption enabled through BitLocker, updated Windows 10 installed as well as the standard security and endpoint management software on all USC workstations.  A workstation can only connect to our AWS FSx share from within a locked down subnet in the College of Nursing or through a secure Virtual Desktop.  The College of Nursing Technology Center maintains a robust inventory of workstations and users who have access to the secure file share.  Users are also required to participate in a HIPAA training session as well as attest to their proficiency.

**More about Amazon Web Services FSx.** Built on Windows Server, Amazon FSx provides shared file storage with the compatibility and features that your Windows-based applications rely on, including full support for the SMB protocol, Windows NTFS, and Active Directory (AD) integration. Amazon FSx uses SSD storage with high levels of throughput and IOPS, and consistent sub-millisecond latencies.

**Compliance.** AWS has the longest-running compliance program in the cloud and is committed to helping customers navigate their requirements. Amazon FSx has been assessed to meet global and industry security standards. It complies with PCI DSS, ISO 9001, 27001, 27017, and 27018), and SOC 1, 2, and 3, in addition to being HIPAA eligible. That makes it easier for you to verify our security and meet your own obligations. For more information and resources, visit our compliance pages. You can also go to the Services in Scope by Compliance Program page to see a full list of services and certifications.  AWS enables covered entities and their business associates subject to the U.S. Health Insurance Portability and Accountability Act of 1996 (HIPAA) to use the secure AWS environment to process, maintain, and store protected health information.

**Encryption.** Amazon FSx for Windows File Server always encrypts your file system data and your backups at-rest using keys you manage through AWS Key Management Service (KMS). Amazon FSx encrypts data-in-transit using SMB Kerberos session keys when you access your file system from clients that support SMB 3.0 (and higher). The College of Nursing and DOIT also enforce in-transit encryption on all connections to the file system by limiting access to only those clients that support SMB 3.0 and higher to help meet compliance needs.

**Backups.** Amazon FSx takes daily automatic backups of your file systems and allows you to take additional backups at any point. Amazon FSx backups are incremental, which means that only the changes after your most recent backup are saved, thus saving on backup storage costs by not duplicating data.

Amazon FSx supports file- or folder-level restores to previous versions by supporting Windows shadow copies, which are snapshots of your file system at a point in time. With shadow copies, your end-users can view and restore individual files or folders from a prior snapshot with the click of a button in Windows File Explorer. Shadow copy snapshots are taken twice each business day.

**Site Selection.** Prior to choosing a location, AWS performs initial environmental and geographic assessments. Data center locations are carefully selected to mitigate environmental risks, such as flooding, extreme weather, and seismic activity. Our Availability Zones are built to be independent and physically separated from one another.

**Redundancy.** Data centers are designed to anticipate and tolerate failure while maintaining service levels. In case of failure, automated processes move traffic away from the affected area. Core applications are deployed to an N+1 standard, so that in the event of a data center failure, there is sufficient capacity to enable traffic to be load-balanced to the remaining sites.

**Availability.** AWS has identified critical system components required to maintain the availability of our system and recover service in the event of outage. Critical system components are backed up across multiple, isolated locations known as Availability Zones. Each Availability Zone is engineered to operate independently with high reliability. Availability Zones are connected to enable you to easily architect applications that automatically fail-over between Availability Zones without interruption. Highly resilient systems, and therefore service availability, is a function of the system design. Through the use of Availability Zones and data replication, AWS customers can achieve extremely short recovery time and recovery point objectives, as well as the highest levels of service availability.

**Capacity Planning.** AWS continuously monitors service usage to deploy infrastructure to support our availability commitments and requirements. AWS maintains a capacity planning model that assesses our infrastructure usage and demands at least monthly. This model supports planning of future demands and includes considerations such as information processing, telecommunications, and audit log storage.

**Business Continuity Plan.** The AWS Business Continuity Plan outlines measures to avoid and lessen environmental disruptions. It includes operational details about steps to take before, during, and after an event. The Business Continuity Plan is supported by testing that includes simulations of different scenarios. During and after testing, AWS documents people and process performance, corrective actions, and lessons learned with the aim of continuous improvement.

**Pandemic Response.** AWS incorporates pandemic response policies and procedures into its disaster recovery planning to prepare to respond rapidly to infectious disease outbreak threats. Mitigation strategies include alternative staffing models to transfer critical processes to out-of-region resources, and activation of a crisis management plan to support critical business operations. Pandemic plans reference international health agencies and regulations, including points of contact for international agencies.
 **Employee Data Center Access.** AWS provides physical data center access only to approved employees. All employees who need data center access must first apply for access and provide a valid business justification. These requests are granted based on the principle of least privilege, where requests must specify to which layer of the data center the individual needs access and are time-bound. Requests are reviewed and approved by authorized personnel, and access is revoked after the requested time expires. Once granted admittance, individuals are restricted to areas specified in their permissions.

**Third-Party Data Center Access.** Third-party access is requested by approved AWS employees, who must apply for third-party access and provide a valid business justification. These requests are granted based on the principle of least privilege, where requests must specify to which layer of the data center the individual needs access and are time-bound. These requests are approved by authorized personnel, and access is revoked after request time expires. Once granted admittance, individuals are restricted to areas specified in their permissions. Anyone granted visitor badge access must present identification when arriving on site and are signed in and escorted by authorized staff.

**AWS GOVCLOUD Data Center Access.** Physical access to data centers in AWS GovCloud (US) is restricted to employees who have been validated as being US citizens.

**Data Center Access Review.** Access to data centers is regularly reviewed. Access is automatically revoked when an employee’s record is terminated in Amazon’s HR system. In addition, when an employee or contractor’s access expires in accordance with the approved request duration, his or her access is revoked, even if he or she continues to be an employee of Amazon.

**Data Center Access Logs.** Physical access to AWS data centers is logged, monitored, and retained. AWS correlates information gained from logical and physical monitoring systems to enhance security on an as-needed basis.

**Data Center Access Monitoring.** We monitor our data centers using our global Security Operations Centers, which are responsible for monitoring, triaging, and executing security programs. They provide 24/7 global support by managing and monitoring data center access activities, equipping local teams and other support teams to respond to security incidents by triaging, consulting, analyzing, and dispatching responses.

**CCTV.** Physical access points to server rooms are recorded by Closed Circuit Television Camera (CCTV). Images are retained according to legal and compliance requirements.

**Data Center Entry Points.** Physical access is controlled at building ingress points by professional security staff utilizing surveillance, detection systems, and other electronic means. Authorized staff utilize multi-factor authentication mechanisms to access data centers. Entrances to server rooms are secured with devices that sound alarms to initiate an incident response if the door is forced or held open.

**Intrusion Detection.** Electronic intrusion detection systems are installed within the data layer to monitor, detect, and automatically alert appropriate personnel of security incidents. Ingress and egress points to server rooms are secured with devices that require everyone to provide multi-factor authentication before granting entry or exit. These devices will sound alarms if the door is forced open without authentication or held open. Door alarming devices are also configured to detect instances where an individual exits or enters a data layer without providing multi-factor authentication. Alarms are immediately dispatched to 24/7 AWS Security Operations Centers for immediate logging, analysis, and response.

**Asset Management.** AWS assets are centrally managed through an inventory management system that stores and tracks owner, location, status, maintenance, and descriptive information for AWS-owned assets. Following procurement, assets are scanned and tracked, and assets undergoing maintenance are checked and monitored for ownership, status, and resolution.

**Media Destruction.** Media storage devices used to store customer data are classified by AWS as Critical and treated accordingly, as high impact, throughout their life cycles. AWS has exacting standards on how to install, service, and eventually destroy the devices when they are no longer useful. When a storage device has reached the end of its useful life, AWS decommissions media using techniques detailed in NIST 800-88. Media that stored customer data is not removed from AWS control until it has been securely decommissioned.

**Power.** Our data center electrical power systems are designed to be fully redundant and maintainable without impact to operations, 24 hours a day. AWS ensures data centers are equipped with back-up power supply to ensure power is available to maintain operations in the event of an electrical failure for critical and essential loads in the facility.

**Climate and Temperature.** AWS data centers use mechanisms to control climate and maintain an appropriate operating temperature for servers and other hardware to prevent overheating and reduce the possibility of service outages. Personnel and systems monitor and control temperature and humidity at appropriate levels.

**Fire Detection and Suppression.** AWS data centers are equipped with automatic fire detection and suppression equipment. Fire detection systems utilize smoke detection sensors within networking, mechanical, and infrastructure spaces. These areas are also protected by suppression systems.

**Leakage Detection.** To detect the presence of water leaks, AWS equips data centers with functionality to detect the presence of water. If water is detected, mechanisms are in place to remove water to prevent any additional water damage.

**Equipment Maintenance.** AWS monitors and performs preventative maintenance of electrical and mechanical equipment to maintain the continued operability of systems within AWS data centers. Equipment maintenance procedures are carried out by qualified persons and completed according to a documented maintenance schedule.

**Environment Management.** AWS monitors electrical and mechanical systems and equipment to enable immediate identification of issues. This is carried out by utilizing continuous audit tools and information provided through our Building Management and Electrical Monitoring Systems. Preventative maintenance is performed to maintain the continued operability of equipment.

**Ongoing Data Center Risk Management.** The AWS Security Operations Center performs regular threat and vulnerability reviews of data centers. Ongoing assessment and mitigation of potential vulnerabilities is performed through data center risk assessment activities. This assessment is performed in addition to the enterprise-level risk assessment process used to identify and manage risks presented to the business as a whole. This process also takes regional regulatory and environmental risks into consideration.

**Third-Party Security Attestation.** Third-party testing of AWS data centers, as documented in our third-party reports, ensures AWS has appropriately implemented security measures aligned to established rules needed to obtain security certifications. Depending on the compliance program and its requirements, external auditors may perform testing of media disposal, review security camera footage, observe entrances and hallways throughout a data center, test electronic access control devices, and examine data center equipment.