Statewide Elections Information Management System

Modernization Project Plan

State Board of Elections

November 1, 2023

NORTH CAROLINA
STATE BOARD OF ELECTIONS

Contents

1. A detailed description of the project, including the scope of work involved.

Executive Summary

The State Board of Elections (SBE) maintains the Statewide Elections Information Management System (SEIMS). SEIMS, initially developed in 1998, is a central elections management network that coordinates statewide elections processes, voter registration, and reporting of election night and canvassed results. SEIMS is used by the SBE and the 100 County Boards of Elections (CBEs) of North Carolina to perform various election-related tasks and to facilitate the administration of elections in the state. The existing SEIMS applications are outdated with antiquated source code and decreased efficiencies. The SEIMS Replacement Project (SEIMS Modernization Project) is a phased approach to modernize SEIMS in a cloud based, more secure environment.

Currently, SEIMS is 12 separate, decentralized client based applications and 2 web-based applications. This decentralization requires SBE to maintain database infrastructure in all 100 counties. With the approved funding, SBE will convert 5 of the remaining 12 client based applications to web-based modules, build non-specific module features such as notifications, change history, and dashboards, as well as procure reporting and imaging functionality.

The 5 modules, plus the more recently developed web applications implemented in September 2021 and July 2023 for web scanning and the issuance of voter photo ID, are components in the continued development of the SEIMS Suite. The Suite will allow State and county users to conduct elections processes in a more lean, efficient, and secure manner.

Goals and Objectives

For SEIMS modernization, the goal is to move from a suite of Microsoft Windows thick client applications connecting to separate county databases to a suite of web-based applications hosted in Microsoft Azure connecting to one or more state databases, where the data is accessed by each county. From a technical standpoint, the current applications were developed between 1995-2005 and use antiquated software frameworks that are not capable of being modernized to current security and programming standards. They also connect to 100 separate county databases, which in turn connect to state databases. This project will modernize the codebase using ASP.NET, Blazor, and Azure resources with modern security practices, as well as hosting all counties on a single database to lower cost and upkeep, and enable faster updates as needed. Additional objectives are as follows:

1. Using updated source code, convert 5 separate applications into modules of one central application and design the user interface of the SEIMS Suite to improve the user experience.
2. Create a communications module that will permit the SBE and CBE users to share sensitive or confidential voter information more securely and improve inter-agency communications.
3. Add a dynamic reporting and document management module that will permit the SBE and CBE users to create their own reports as well as add or modify election forms, letters and notices as well as customize documents easily.
4. Integrate the Geographic Information System (GIS)-based addressing and election district assignment system.

5. Incorporate the ability to create a master database of geopolitical units with the relevant election contest elements to expedite election setup and ballot assignment.
6. Add the ability to import voter registration data from other National Voter Registration Act (NVRA) agencies into SEIMS; currently only Division of Motor Vehicle data is imported to SEIMS.
7. Create the ability to integrate voter data or share information with SBE's campaign finance applications.
8. Add an imaging solution to expand the ability to scan or import other election-related documents beyond voter registration applications and absentee request forms and develop automated processes to handle tasks related to the documents.

Benefits and Impacts

Business Benefits

1. **Faster Compliance**- SBE can modify SEIMS modules more quickly to adhere to mandated changes thus allowing CBEs to comply with election laws/rules sooner.
2. **Reduced System Downtime**- A web-based application does not require SBE nor CBE users to log out of SEIMS for the deployment of new/modified functionality; less State and county downtime means fewer gaps in productivity.
3. **Improved Efficiency**- Newer technology allows for improved processing time and streamlining of various election processes.
4. **Enhanced Utilization of Data**- With the introduction of a dynamic reporting tool, authorized CBE users will have the ability and flexibility to create reports using county specific data. This autonomy helps CBEs to meet their particular data analysis needs.
5. **Increased User Satisfaction**- Not having to work on or work around weekend deployments fosters quality of life for SBE and CBE staff, which could promote greater employee satisfaction and retention.

Citizen Benefits

1. **Improved Jurisdiction Accuracy**- GIS-based addressing helps ensure voters are assigned to the correct precinct/voting site. This could reduce confusion during early voting and on election day and help build voter confidence, and could help avoid the potential for misassigned ballots which, in some cases, could result in a new election.
2. **Enhanced Public Record Request Response Time**- Dynamic reporting will improve response times for data and information requests.

Technology and Operational Benefits

1. **Improved Security**- Improved security results in fewer chances of cyberattacks, increased protection of confidential and personal information, and less money spent on recovering from an attack.

2. **Improved Adaptability**- New, more agile technology will allow SBE to modify SEIMS functionality more easily. Whether it is responding to a mandated change or making the system more user-friendly, the development time will be shorter and the deployment seamless.
3. **Fewer External Impacts**- The web-based application will not be impacted by changes to various operating systems like Chrome and Edge. This means less time dedicated to testing and/or tweaking SEIMS to adjust to operating system changes and fewer changes to deploy to the counties.
4. **Streamlined Access**- The Azure Virtual Desktops will not be required to access the 5 modernized modules, making the modules more efficient and easier to use. Once the remaining 7 modules are modernized, there will be significant cost savings with the elimination of the Azure Virtual Desktops.
5. **Upgraded User Interface**- New technology allows for a cleaner, easier to read, easier to use user interface which leads to a better experience for the user community.

2. A projected timeline for the completion of the project, including detailed milestones.

Projected Timeline and Milestones

The many tasks of the SEIMS Modernization Project span roughly 4 years. Within that timeframe, different project team members will take part in recruiting processes, procurement processes, and most importantly the Software Development Lifecycle in a variety of ways.

The following timelines and milestones have been established.

Staffing

To limit costs, outsourced personnel will be onboarded and offboarded as their skills are needed. This milestone includes recruiting, purchasing necessary hardware and supporting software (e.g., Adobe InDesign, Visual Studio, and MS Visio), interviewing, human resource processes (e.g., timesheets and confidentiality policies), and time for acclimating the new hires to the team.

Architecture Diagrams

These detailed diagrams of the system demonstrate the module's technology, they show how a solution has been built and identify technical dependencies.

Modules & Software Development Kits

For the 5 modules and 2 Software Development Kits (see section 4 of this document), up to six milestones may apply. Below are the milestones and what they entail.

1. Procurement
    a. Posting the Request for Proposal (RFP).
    b. Selecting a vendor.
    c. Purchasing the Software Development Kit.

2. Development
    a. Analysis: Documenting technical requirements for a module.
    b. Scripts: Designing data tables and relationships within and across tables, as well as within and across modules in the application.
    c. Coding/Unit Testing: Coding and unit testing a new/modernized functionality.
    d. Code Review: Quality assurance check of completed code.

    If a module has templated and parameterized reports, they will be converted during this stage.

3. Testing
    a. Test Plans: Developing plans to test functionality for one or more functional areas in a module.

   b. System Testing: Testing new/modernized functionality to ensure it works as designed within the new module as well as across other modernized modules and remaining legacy applications.
   c. Standard Report Creation: Developing standard reports all county boards can generate from the module.

4. Documentation
   a. Help Files: Creating step-by-step instructions of how to use the functionality in a module. Help files will be accessible via the application.
   b. Functional Demos: Demonstrating the completed and tested functionality of one or more functional areas of a module.
   c. User Reviews: A small group of users will conduct reviews of the modernized functionality. If during the user review phase discrepancies or inconsistencies are discovered in the help files or functional design documents, they will be corrected during this phase.

      Time permitting, functional design documents, user-friendly descriptions of the fields, their attributes, and functionality within a module, will be created for each module.

5. Learning Management
   a. Learning Materials: Based on need, creating learning materials to support the new/modernized functionality.
   b. Trainings: Delivering learning materials in the form of job aids, self-paced videos, or virtual and/or in-person instructor-led trainings.

6. Go Live of Each Module
   a. Go/No Go Meeting: Conducting Go/No Go meetings to obtain executive leadership approval to push the new/modernized modules to production. Known issues, risks, concerns, and current industry climate will be taken into consideration.
   b. Release Notes: Creating and supplying the user community with high-level summaries of the modules and any major changes or new features.
   c. Go Live: Providing the new/modernized features to the user community.

Completion of the Project

When the 5 applications have been converted to modules, this project will be considered completed.

Description	Milestones	Milestone Dates
Architecture Diagrams – Technical diagrams that demonstrate the technology in use. The purpose of the architecture diagram is to show how a solution has been built and any technical dependencies. In addition to the 5 legacy applications converted to modules during this effort (Security Manager, Election Manager, Geocode, VoterScan, and VoterView), architecture diagrams will be completed for the remaining 7 legacy applications and 2 web applications, which are: • Election Reporting • Ballot Style • Provisional Voting • Petition Checking • One Stop System Manager • Voter Tools • Election Night Results • Intranet Web Applications • Development Web Applications	**All SEIMS Diagrams Completed**	**Feb 2025**
Security Manager (SM) – Used to assign and manage access to SEIMS on an individual user basis. It manages users, their profiles and general information about the county board of elections.	Development	Nov 2024
	Testing	Dec 2024
	Documentation	Dec 2024
	Learning Management	Mar 2025
	Go Live	**Mar 2025**
Non-Application Components (NA) – Non-application specific functionality (e.g., notifications, change history, and dashboards) that will be used throughout the application. For that reason, this does not have a specific go live date.	Development	Apr 2025
	Testing	Apr 2025
	Documentation	**Apr 2025**
Staffing – Outsourced personnel will be onboarded as their skills are needed for the project. Initial recruiting begins in January 2024 and concludes in June 2025.	**Initial Recruiting Completed**	**Jun 2025**
Dynamic Reporting (DR) – A reporting and templating solution that can provide a modern reporting interface which allows users to customize reports and document templates and generate standardized documents and reports.	Procurement	Apr 2024
	Development	Jul 2025
	Testing	Jul 2025
	Documentation	Aug 2025
	Learning Management	**Dec 2025**

Description	Milestones	Milestone Dates
Imaging Software (IS) – Allow users to view scanned images saved as TIFF (Tagged Image File Format) or PDF (Portable Document Format) as well as provides the ability to scan and translate barcode data.	Procurement	May 2024
	Development	Apr 2026
	Testing	Apr 2026
	Documentation	**Jun 2026**
Election Manager (EM) – Used to create and manage contests, candidates, and referenda for any given election. It also provides a means to have some control over the format of ballots generated.	Development	Sep 2025
	Testing	Apr 2025
	Documentation	Dec 2025
	Learning Management	Jun 2026
	Go Live	**Jul 2026**
Geocode (GC) – Manages street segments and their relationships with election jurisdictions. Using it, you can copy the active street-file database, called a geocode; add, change, or remove street segments.	Development	Feb 2026
	Testing	Feb 2026
	Documentation	Apr 2026
	Learning Management	Jun 2026
	Go Live	**Jul 2026**
VoterScan (VS) – The primary data entry application. The application allows the user to enter voter registration information received by county boards of elections from voters or from voter-supplied information that is electronically transferred from third-party entities such as the Division of Motor Vehicles. Additionally, VoterScan allows the user the ability to capture and process absentee voter information.	Development	Aug 2026
	Testing	Aug 2026
	Documentation	Sep 2026
	Learning Management	Oct 2026
	Go Live	**Nov 2026**
VoterView (VV) – The primary voter registration database for each county. It provides access to voter information, absentee voter information, polling place information, poll worker information, and jurisdictional information.	Development	Apr 2027
	Testing	Apr 2027
	Documentation	May 2027
	Learning Management	Jun 2027
	Go Live	**Jul 2027**
Completion of the Project – The 5 modules included in this effort will be fully modernized.	**All 5 Modules Completed**	**Jul 2027**

3. The total cost of the project to the State, including five years of operation and maintenance costs after the completion of the project.

BUDGET

The SEIMS Modernization Project's phased approach for 5 modules will begin in January 2024 and wrap up in June 2027. The project team will consist of contracted, time-limited, and various full-time SBE staff. The contracted and time-limited staff will be onboarded and offboarded the project as their skillsets are needed. The SBE IT team will be engaged throughout the life of the project and other SBE staff will participate when needed for short-term tasks such as functionality demonstrations, user reviews, and Go/No Go meetings.

Implementation

The total cost to convert and implement 5 of the 12 SEIMS applications to modernized modules is $7,249,637. This includes $5,565,040 for hardware, software, outsourced personnel, and a 10% contingency plan. $1,684,597 is estimated for SBE full-time employees assigned to the project.

	Hardware				**$16,885**
	Laptops (outsourced staff)			$16,885	
	Software				**$2,102,150**
	Azure	Jan-24	Jun-27	$1,848,240	
	Dynamic Reporting Solution	Apr-24		$100,000	
	Imaging Software	Apr-24		$50,000	
	Supporting Software			$103,910	
	Contractors				**$2,886,005**
	Developers (5)	May-24	Apr-27	$1,563,064	
	Solution Architect (1)	Feb-24	Feb-25	$354,200	
	Business Analyst (1)	Jul-24	Jun-27	$204,194	
	Data Analyst (1)	May-25	Sep-27	$414,998	
	Instructional Designer (1)	Nov-24	May-27	$126,314	
	Trainer (1)	Nov-24	Jul-27	$183,235	
	Code Review	May-24	Apr-27	$40,000	
	Contingency Costs (10%)				**$560,000**
	Various SBE Full-Time Employees	Jan 24	Sep-27		**$1,684,597**
Total Cost					**$7,249,637**

Operations & Maintenance

The ongoing & maintenance costs for SEIMS will be dependent on the availability of additional funding to convert the remaining 7 legacy SEIMS applications to modernized modules in the SEIMS Suite.

Until all applications are converted, SBE will incur a monthly cost for Azure to maintain these legacy applications. Azure costs are based on usage per user per month. This tends to lead to higher costs in a General Election year as counties ramp up their staff to manage a greater influx of voter registration applications and public inquiries as well as run heavier populated election events like providing photo IDs, early voting, and election day.

SEIMS will incur approximately $5.3M every 5 years in Azure costs. This does not include an additional estimated $1.25M for licenses, currently absorbed by SBE.

Year: Election Type	Average Azure costs	Average License costs	Average users
Odd year: Municipal	$825,000	$350,000	650
Even year: Mid-Term	$1,075,000	$400,000	850
Even year: General	$1,275,000	$475,000	1000

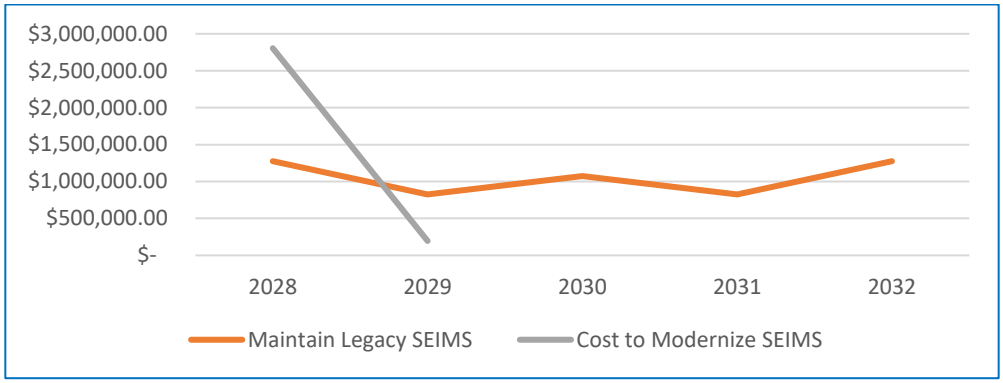

Figure 1: Estimated Cost Comparison

With additional funding, SBE could fully modernize SEIMS and begin to recognize ongoing savings in approximately 3 years.

Descriptions of the Remaining Applications
Election Reporting (ER) – Used to import and aggregate election results.
Ballot Style (BS) – Uses information from the Geocode and Election Manager modules to determine and display all appropriate and unique combinations of voters, jurisdictions, and contests for a selected election, and thus, enabling a county to assign the correct ballot style for each combination.

Descriptions of the Remaining Applications
Provisional Voting (PV) – Provides the functionality for the recording, researching and managing provisional voting records for an election event. The application is used to record the disposition of a provisional vote.
Petition Checking (PC) – Provides a format for electronic storage and verification of information taken from conventional paper petition forms. The information displays in a format that matches exactly, the information as displayed on the paper petition and the order in which that information is displayed on the paper petition.
One Stop System Manager (OS) – Handles most of the processes involved with the one-stop voting and importing voter history.[Name change to Early Voting in progress.]
Voter Tools (VT) – Web portal for all SEIMS public web applications.
Election Night Reporting (EN) – Used to import and aggregate election results.
Intranet Web (IW) – The State Board of Elections' intranet website. Used by CBE and SBE staff for application support of the SBE IT department and the provided software.
Dev Web Apps (DW) – State intranet reports used by the IT department of the SBE.

4. A detailed description of the vendors expected to be involved in the project, their functions, and the total costs of using the vendors.

VENDORS

SBE will work through the State IT Procurement process to source, evaluate, and select vendors to address the following needs. Costs for these items are identified in the prior Budget section.

Dynamic Reporting

SBE is looking for a reporting Software Development Kit (SDK)/solution to provide a modern reporting interface that will allow users to create, generate, and customize reports and pixel perfect documents via an easy-to-use designer. These reports should be able to be controlled through interfaces via the modernized SEIMS web applications. With 800+ SEIMS users, spanning 100 counties and the State Board staff, many of them having a myriad of unique requirements for reporting, SBE seeks to provide an advanced reporting and templating solution that will provide greater flexibility to end-users in generating custom reports.

See Appendix A: Dynamic Reporting Requirements for more details.

Imaging Software

In addition to the reporting features, SBE will procure an imaging Software Development Kit/solution to allow users to view scanned images saved as TIFF (Tagged Image File Format) or PDF (Portable Document Format). The imaging solution will also provide the ability to scan and translate barcode data. Detailed requirements for this feature will be documented once the project begins.

5. The personnel to be involved in the project, including both State employees and contract personnel.

PROJECT PERSONNEL

The SEIMS Modernization Project requires a culmination of skillsets to be successful. The project will engage various full-time State and outsourced staff throughout the life of the project.

Below are the primary teams that will have recurring roles on the project. Other SBE staff may be asked to participate in various tasks, as needed.

It should be noted that outsourced staff are dedicated to the project whereas full-time staff will split their time between the project and their usual day-to-day operational responsibilities, including any mandated changes that occur throughout the lifecycle of the project.

Executive Leadership

Executive Director, Karen Brinson Bell

The Executive Leadership team will serve as SBE key stakeholders. This team will receive periodic updates on the project including progress, upcoming tasks, and budget. This team will also serve as the final point of escalation for challenges and obstacles.

Before each module is implemented, the Executive Leadership team will be provided with a summary of the module's functionality, feedback from system testing and user reviews, and the proposed implementation date. Using this information, the current industry climate, and election activities, they will give the Go/No Go decision on the deployment of the module.

Strategy Team

Agency General Counsel, Paul Cox
Chief Information Officer, Bret Kelly
Chief Operating Officer, Sanford Chancellor
Communications Director, Patrick Gannon
Deputy Director, Trena Velez

Information Technology

Chief Information Officer, Bret Kelly

Each of the three Information Technology teams provides unique technical support and know-how to the project.

Application Development & Support

This team analyzes, designs, codes, and unit tests features and functionality of the modules. Members provide system testing as a "second eye" to newly coded modules and create help files to assist the users community with using the modules.

Full Time Staff:

- Application Development & Support Manager, James Lell

- Lead Software Developer, Ken Ward
- Senior Software Developer, Chris Cox
- Senior Software Developer, Gowri Ramaswamy
- Senior Software Developer, Michael Steffens
- QA Analyst, Luis Thompson
- QA Analyst, Radhika Solige
- Software Support Specialist, Evelyn Wanjiru

Outsourced Staff:

- 5 Developers, TBD
- Solution Architect, TBD
- Data Analyst, TBD

Infrastructure

The Infrastructure Team manages access to the cloud and monitors our activity on the cloud; this helps ensure satisfactory processing time for transactions in the modules.

Full Time Staff:

- Enterprise Network Manager, Sandi Lindquist
- Desktop Support Specialist, Miguel Marquez

Data

The Data Team manages and maintains State and County databases. As each application is converted to a module, the related data will be transferred from 100 county databases to one centralized database. This allows for easier management of the data and faster processing time.

Full Time Staff:

- Database Administrator, Wayne Starnes

Business Operations

Chief Operations Officer, Sanford Chancellor

Many of the Business Operations teams will contribute to the management and administrative related project tasks.

Fiscal Management

This team is responsible for working with the Project Manager to ensure the project is on budget and invoices are paid timely and accurately.

Full Time Staff:

- Fiscal Manager, Rosilyn Mosley

Human Resources

Human Resources will assist with the recruiting and onboarding of the outsourced staff.

Full Time Staff:

- Deputy Human Resources Director, Latanya Gant

Learning & Operations Management

The Learning & Operations Management team will create learning materials for the modernized modules to provide to the State and County user community. Learning materials may be in the form of job aids, instructor led trainings, or self-paced/web-based videos.

Full Time Staff:

- Learning & Operations Manager, Jessica Buie

Outsourced Staff:

- Instructional Designer, TBD
- Trainer, TBD

Project Management Office

This team ensures the project is on track, on time, and on budget. Members also conduct user acceptance testing, assist with the user reviews, and maintain a living document of each module's features and functionality.

Full Time Staff:

- Project Manager, Lisa Berot
- Business Analyst, Jeni Harris

Outsourced Staff:

- Business Analyst, TBD

Election Services

Deputy Director, Trena Velez

The Election Administration and the Voting Systems & Field Support Teams have recurring roles on the projects. Members from the Campaign Finance Team will participate in user reviews for modules and functionality that may be integrated with future SBE campaign finance systems.

Election Administration

This team serves as the Subject Matter Experts for election subject areas. They will participate in user reviews and trainings to ensure the modernized modules continue to support election processes.

Full Time Staff:

- Elections Manager, Thomas Holland
- Candidacy and Canvass Specialist, Tiffany Holden
- In-Person Voting Specialist, Allison Blackman
- Voter Registration Specialist, Matthew Stone
- Absentee by Mail Specialist, TBD

Voting Systems & Field Support

Combined with the Election Administration Team, the Voting Systems Team serves as the Subject Matter Experts for election management and voting systems functionality. The Election Field Support Specialists provide onsite support to the CBEs throughout the state; their engagement helps ensure a smooth transition to the modernized modules.

Full Time Staff[1]:

- Voting Systems Certification/Field Support Manager, Neil Baddour
- Voting Systems Administrator, Brooks Jones
- Election Field Support Specialists/District 1 & 2, John Noce
- Election Field Support Specialists/District 3 & 4, Laura Dell
- Election Field Support Specialists/District 5 & 7, Steve Adams
- Election Field Support Specialists/District 6 & 8, Virginia McCurry
- Election Field Support Specialists/District assignment pending, TBD
- Election Field Support Specialists/District assignment pending, TBD

[1] Election Field Support Specialists were previously referred to as Security & Support Technicians.

6. A plan for county boards of elections to participate in developing the new Statewide Elections Information Management System.

COUNTY ENGAGEMENT

In 2021, SBE created HUBS (Help Us Be Successful) work groups as a collaborative approach between State and county staff, to work on election subject areas.

The HUBS Steering Committee will be asked to recruit subject area HUBS members and/or individual county board staff to create a User Review Team for each module. The Team will conduct reviews and provide feedback on new/modified functionality during the modernization of the 5 SEIMS modules.

The User Review Team for each module will include CBE recruits from small, medium, and large counties to ensure varying perspectives. The Team will also include various SBE Subject Matter Experts and Election Field Support Specialists.

User Review Team Opportunities

Each User Review Team will be asked to participate in the following project tasks/meetings for their assigned module(s):

1. **Kick-off Meeting**- The first meeting for a module's user review effort. This meeting introduces the objectives, timelines, team members and roles.
    a. **The Ask**: Participants attend the meeting to hear the overview of the effort, meet other team members and obtain a better understanding of assigned roles.
    b. **Time Commitment**: Up to 1 hour
    c. **Attendees:** All team members assigned to the module
    d. **Location**: Microsoft Teams

2. **Functional Demonstrations**- A demonstration will be provided to attendees for one or more completed functional areas of a module. These demonstrations will provide a basis for the User Reviews.
    a. **The Ask**: Attend demonstrations of the new/modified functionality, review the new functionality, and ask questions to assist in the user review process.
    b. **Time Commitment**: Each demonstration could last up to 30 minutes.
    c. **Attendees:** User Review Team
    d. **Location**: Microsoft Teams

3. **User Reviews**- The User Review Team will conduct ad-hoc reviews of the new/modernized functionality as it is released for user review. Participants shall review the functionality against current processes and new help files. If discrepancies or inconsistencies are discovered, they will be corrected during the User Review phase.
    a. **The Ask**: Conduct ad-hoc reviews of the new/modified functionality. Complete a feedback log if the help files are not in sync with the functionality or if they foresee counties having to adjust their workflows/processes to align with the functionality. The feedback log will be provided to the Project Manager.

b. **Time Commitment**: Self-paced reviews during provided date ranges. Quantity and length of necessary reviews are determined by the size of the module. Smaller modules may only have a few releases which span over a few weeks. However, larger modules may have more releases which span over several months.
c. **Attendees:** User Review Team
d. **Location**: Online Review, Microsoft Teams

SBE IT will provide additional Azure Virtual Desktop access, web application access, and login information for use during the User Review period. Due to the cost of access, this group will be limited to 10 users per module.

7. A plan for rolling out the new Statewide Elections Information Management System and training county boards of elections on its use.

Implementation & Training

Each application being converted to a module in the SEIMS Suite will follow the 6 stages below. The duration of each phase, for each module, will vary based on the number and complexity of functional areas and reports for the module.

Architecture Diagram Stage

To help ensure the SEIMS Suite aligns with the statewide architecture, SBE will complete and submit the following architecture diagrams to the DIT for each module:

- Functional Decomposition Diagram
- Application to Business Function Matrix
- Process Flow Diagrams
- Data Communication Diagram
- Environments & Locations Diagram
- Technology Stack Diagram
- Network Architecture Diagram
- Application Integration Matrix

Development Stage

During the development stage, requirements to convert the application and provide a better user experience/user interface will be documented. The requirements will be used for coding and unit testing. Scripts will be created to build data tables and support relationships between data within and across tables, as well as within and across modules.

If a module has templated and parameterized reports, they will be converted during this stage.

Testing Stage

The Testing Stage consists of the creation of detailed test plans. These plans allow a different group of staff to test the module. Key objectives are ensuring the functional areas work as designed, they do not conflict with previously coded functionality, and they work with subsequent features and functionality.

Documentation Stage

During the documentation stage, help files will be created to provide the user community guidance on how to use the functionality in the module. These help files will be accessible via the application to provide “on-demand” assistance.

At various times throughout the development of the module, small, completed chunks of functionality will be demonstrated to a User Review Team. This Team will conduct ad-hoc reviews of the modernized functionality. If during the reviews discrepancies or inconsistencies are discovered in the help files, they will be flagged and corrected.

Also, because new technology may result in fewer clicks/steps, this review period provides an opportunity to identify processes or workflows that may need modifications to align with the module.

Time permitting, functional design documents (FDDs) which are less technical descriptions of a module's features and functionalities, will be created. These documents are not intended for the general user community but serve as a system manual for State staff when determining if/how to add or modify functionality.

Learning Management Stage

The learning management stage is a critical stage as this is where training needs assessments are conducted with the subject matter experts of a module. The assessment drives which learning methodology will be used for the functional area and/or module as a whole.

Learning materials created may be in the form of job aids, instructor-led training, and web-based/self-paced training. Job aids and web-based trainings will be available for users as needed. However, at various times throughout the life of the project, instructor-led trainings may be delayed for extended periods to avoid scheduling conflicts with various election cycle tasks and responsibilities. In turn, with just in time training, a module's go live date could be delayed if its instructor-led training is delayed.

Go Live Stage

The go live stage is the final stage for a module. In preparation for go live, release notes are created to provide a high-level summary of the module and any major changes or new features that will be introduced.

Go/No Go meetings are conducted during this stage to obtain approval to go live with a module. The decision will be based on the readiness of the module and go live date's possible impact on upcoming election cycle events/tasks.

With the green light to move forward, the activities to retire the existing application and go live with the new module begin. These activities commence on a Friday evening and wrap-up by the end of day on a Sunday to allow for a Monday morning Go Live.

8. The number and total cost of personnel required to operate the new Statewide Elections Information Management System once it has been completed.

Post Implementation Costs

As the technological backbone to nearly all elections-related processes that occur in North Carolina, there are regular, ongoing personnel costs at the State and county levels to operate SEIMS. The following discussion directly addresses the legislative request to quantify the personnel costs for operating the new SEIMS.

The number and total cost of personnel required to operate SEIMS at the close of this project will vary.

For CBEs, the number of staff will depend on the size of the county. For SBE, the full-time staff will be responsible for maintaining and processing enhancements for the remaining 7 SEIMS legacy applications and the 5 modernized modules. The personnel costs are not materially different from continuing to operate SEIMS in its current state. However, for as long as the legacy applications exist, the following challenges will continue to exist:

- Staff will be faced with managing functionality across new technology and outdated technology;
- No less than two weekends a year, legacy applications will be taken offline for maintenance or updates possibly due to legislative changes, court decisions, and/or adhering to new election-related policy or law;
- Limited cybersecurity options;
- The diminishing efficiencies when modifying antiquated technology no longer supported by the vendor; and
- Azure and licenses averaging $5.3M every 5 years (see section 3 of this document).

Below are the estimated State Costs for personnel (by team) for the first year after this project ends.

Personnel	
Development Team	$1,144,550
Election Services	$74,153
Learning & Operations Management	$13,439
Project Management Office	$191,023
Total Estimated Cost	**$ 1,423,165**

9. The potential risks to the project and a strategy to mitigate those risks.

Risk Management

With every project there are potential obstacles that threaten its success. In an effort to guarantee success, it is best to identify possible obstacles and ways to address them if they occur or avoid them altogether. Below are possible obstacles for this project and proposed ways to mitigate them.

1. **Change in SBE Management**: Because management drives goals, objectives, and priorities, changes to any SBE manager involved in the project could result in a shift in focus and commitment to the project.

   Mitigation: Ensure the project plan and priority is agreed on and supported by key stakeholders. Establish an escalation process so, if the Strategy Team is at a deadlock, the topic will be escalated to a joint meeting with key stakeholders. The escalation process may also be needed if final Strategy Team decisions put the success of the project at risk.

2. **Changes to Election Schedules/Special Elections**: If by law change or other circumstance an election date is changed or added during the project timeline, it could impact the training and Go Live dates of one or more modules.

   Mitigation: Depending on the availability of outsourced personnel and funding, the SBE Team could conduct the delayed training. Seeking additional funding for an extension with outsourced personnel is another option.

3. **Competing Priorities:** With limited SBE staff and sometimes short runways to respond to public, third-party requests, legal or legislative requests, and mandated changes to election laws or procedures, staff are tasked with additional duties that could impact their contributions to the project.

   Mitigation: Request an extension to a response time or limit the number of requests at a given time. For some election-specific requests and short turnaround times, outsourcing may not be an option. However, regarding requests that could be met by hiring additional temporary staff, SBE could request funding to hire temporary staff.

4. **Employee Retention:** For government agencies employing IT professionals, the ability to offer competitive salaries and an attractive work environment is sometimes a challenge. Employees, especially those who are highly skilled or considered specialists in a subject area, can be tempted by higher salaries or more flexible/beneficial working conditions in the private sector.

   Mitigation: When budgeting, include anticipated annual hourly rate increases. Be mindful of the workload and associated timelines assigned to staff. Use SBE's priorities as guidance when assigning work and establishing individual, team, and division priorities. Communicate deadlines to allow for proper planning. Crosstrain to share the workload or establish back-ups. Implement flexible work hours.

5. **Scope Creep**: If complex or excessive enhancement requests are approved to be incorporated into this effort, this could delay the timeline and exceed the approved funding.

   Mitigation: Refine and enforce an enhancement process. The process should include reviewing the suggested change, determining its criticality to the module, the time and cost required to make the change, pros and cons of pursuing the change, and the Strategy Team's decision of how to proceed.

APPENDIX

Appendix A: Dynamic Reporting Requirements

1. A user must be able to design a report and document template through an easy-to-use interface. The report designer and template definitions must include the following features:
    1.1. Must be able to create pixel perfect reports.
    1.2. Support for different page sizes (letter, A4, labels (1x4/1x3), custom),
    1.3. Configurable data sources must include, at a minimum, Microsoft SQL Server and file-based method (e.g., JSON, XML),
    1.4. Inclusion of data fields from allowed data sources and the proper formatting of such fields (e.g., dates, money),
    1.5. Inclusion of different fonts, including but not limited to barcode fonts (e.g., Code 128, QR, IMB, PDF147),
    1.6. Inclusion of objects, such as images, graphs, and charts, etc. to represent multiple layouts,
    1.7. Ability to use formulas (for summations, counts, string combinations, etc.),
    1.8. Ability to "preview" the document filled with sample data (view, print, save),
    1.9. Inclusion of parameters that can be populated (either programmatically or by a user) when a report is run to impact the report's data,
    1.10. Ability to associate metadata (e.g., user that created/modified the report, time of creation/modification, categorization of report, and a user-defined report name) to the template/report. A user with the proper permissions must be able to create custom report/template categories.
    1.11. [For reports] support for sub-reports, so that sub-reports can be used as modules in multiple reports. Changing one sub-report should be incorporated into all reports that utilize that module, and
    1.12. [For templates] support for shared/reusable document modules (e.g., headers/logos) for easy modification across multiple documents. Changing one document module should be incorporated into all templates that utilize that module.
2. A user must be able to run user-created reports from an external web application, or there must be a mechanism to integrate the report into an application.
3. Reports and templates must be able to pull real-time (or close to real-time) data from one or more data sources and be viewable.
4. Must be performant. Should render simple reports in seconds.
5. A user must be able to control who has access to create/edit/copy templates and reports.
6. A user can copy reports and/or templates and use them as a basis for new reports and templates.
7. A user must be able to export reports to different formats including PDF. The user must also be able to export data to flat files (e.g., csv, tab-delimited text file) and/or excel.

8. A user must be able to generate a set of individual reports from a template (with the ability to display or save).
9. A user can create dashboards that can be included in an external web application. Furthermore, a user can create interactive dashboards where the Graphical User Interface (GUI) dynamically responds to user-initiated parameter changes.
10. The Vendor must be able to provide initial training and support, and an option to pay for ongoing support.
11. The Vendor must include documentation on how to use the product
12. The Product must be able to generate reports, in a performant manner, with a large number of records (100+ pages)
13. The Product must support, in a performant manner, many users (e.g., up to 1000 concurrent users) running reports simultaneously.
14. [Preferred] A user can incorporate parameterized reports in a client-side application without internet connectivity for running, viewing, printing, and saving.
15. [Preferred] A user can schedule reports for export.
16. [Preferred] The system supports additional features for report/template:
    16.1. A user can group data and provide aggregated statistics (e.g., a pivot table)
    16.2. A user can easily create new fields that categorize scalar values (e.g., ages 17 and under, ages 18-24 etc.) without the need for complicated if/then statements.
    16.3. A report and/or template can display geographic or geospatial data
    16.4. A report and/or template can calculate and display descriptive statistical measures (mean, median, mode) and lines of best fit (e.g., least square method)
    16.5. A report supports the following graphics (or a subset): bar chart, stacked bar chart, density plot, area chart, stacked area chart, nightingale rose chart, histogram, scatter plot, sunburst diagram, pie and donut charts, line chart, stream graph, heat map, box-whisker chart, tree map, radar chart, choropleth map, heat, dot, and bubble map (geographic).
17. [Preferred] A user can generate documents from different templates and merge them into a single document.
18. [Preferred] A user can design email layouts with inclusion of data field definitions (similar to requirements above) and/or inclusion of attachments generated from templates.
19. [Preferred] A user can create nested report/template categories.
20. The product must be able to function and be hosted within the Azure Gov Cloud
21. A user ‘s ability to generate a set of individual reports from a template (with the ability to display or save) must be by the following means:
    21.1. Calls initiated from an SBE-managed (external) cloud-based web application,
    21.2. Calls from an SBE-managed cloud-based API/backend process, or

21.3. Calls initiated from an SBE-managed (external) windows application without internet access.