



Online Testing
Technology Readiness Analysis

For

Barnwell School District 29

Overview of Barnwell School District 29



Barnwell School District 29 is located in the midwestern part of the state with the District Office located in Williston, SC. As of February 2016, the district is comprised of 3 schools, serving approximately 900 students. Test scores for students in grades 3-8 in the district were below the state average in all areas, but slightly above peer districts in English and Reading in 2015 and leadership is working aggressively to take the appropriate measures to enhance the learning experience and increase student achievement rates in 2016.

Key Data Points

- Dr. Missoura G. Ashe has served as Superintendent for 1 year
- District Poverty Level is 82%
- Teacher Retention Rate is 86%
- Breakdown of schools:
 - Kelly Edwards Elementary, 60+ years old, grades PK-5, 433 students
 - Williston-Elko Middle, 60+ years old, grades 6-8, 204 students
 - Williston-Elko High, 20 years old, grades 9-12, 269 students

Participating District Personnel

Name of District Staff Member	Roles/Responsibilities
Don Wical	Director of Technology
Amy Nix	District Technology Coach
Dr. Carol Miner	Director of Instruction

Purpose of This Analysis

The purpose of this analysis is to provide an independent evaluation of the ability of Barnwell School District 29 to organize and conduct online testing for their students in grades 3-8 starting in the spring of 2017. Federal online testing guidelines will take effect in 2018 but South Carolina's legislature has implemented plans for all districts to begin formal online testing in March of 2017 for Math and ELA classes inclusive of all students in grades 3-8. This proactive technology analysis will benchmark a district and their schools in several key areas and provide a technology readiness score that will ultimately lead to a roadmap of detailed tasks and deliverables that are necessary to improve any of the deficient areas.

The three specific objectives of this analysis are:

1. Analyze the strengths and weaknesses of the school district and quantify their ability to carry out the online testing activities in 2017 and beyond while documenting any major gaps in "readiness."
2. Work with the district to identify recommendations to bridge the gap between where the district is and where they need to be in terms of technology readiness to carry out these activities.
3. Collaborate with the district to put in place a blueprint for completing any tasks (or procurements) necessary to achieve "technology readiness."

Analysis Background

During the 2015 budget planning period, Superintendent Molly Spearman championed the General Assembly to consider the request of reserving a portion of the K-12 Technology Initiative funds for the purpose of providing technology technical assistance to rural and less affluent districts of need. After funds were allocated through the Proviso, the Superintendent's office called together a small Advisory Task Force to begin exploration of a plan of action to implement the initiative. The Task Force included South Carolina Department of Education (SCDE) staff, representation from rural school districts, legislative representation, and private sector.

The Proviso states:

"1.94. (SCDE: Technology Technical Assistance) Of the funds appropriated for the K-12 Technology Initiative, the department is authorized to withhold up to \$350,000 in order to provide technology technical assistance to school districts."

The purpose and spirit of the Proviso is for the SCDE to provide technology-consulting services ("technology technical assistance") to school districts that would otherwise struggle in securing such services and resources. In particular, consulting services would initially focus on evaluating the state of technology, in participating districts, as it relates to readiness for standardized, online assessments beginning in 2017 and the capacities to offer quality computing based instruction, including Wi-Fi availability for support of instruction.

Proposed District Participants:

While there are a substantial number of rural-based districts in the South Carolina public school system, funds allocated for this year's initiative may not be adequate to offer high quality and much needed external, independent consulting services to all districts of need. Therefore, it is recommended that initial focus be placed on the plaintiff districts involved in the lawsuit between districts and the state (Abbeville vs. South Carolina.) and any other rural districts identified by the State Superintendent's office. As time and funding are available, other rural districts may be included. There were initially at least 30 districts involved in the state suit and about 9 remained by the end of the suit. All of the original Abbeville Law Suit districts have been given the opportunity to participate in the Online Testing Technology Readiness Analysis.

Proposed Consulting Resources/Partners:

The South Carolina Department of Education did not have adequate staffing to fully offer technology consulting services of this magnitude. Therefore, it was suggested that SCDE seek and secure external, independent contracted services to facilitate this initiative. The state interviewed several industry-consulting resources and opted to leverage a lead consultant who helped the state with the analysis and writing of the Educational Technology Plan for years 2014-2017. Robert Cardelli was contacted in late 2015 and the consultant team was finalized and officially began work the second week of November 2015.

Initial Outcomes:

As a result of the initiative, each participating district receives a personalized report detailing the consultants' findings and recommendations as to the district's technology readiness for state and other online assessments, 1:1 computing, and enhanced Internet connectivity (Wi-Fi) for the support of instruction in their schools. A blueprint outlining specific steps the district and their schools need to focus on is presented to the district's superintendent as part of the final report.

Evolution of Online Testing Requirements

No Child Left Behind legislation required states to measure students' progress in reading and mathematics annually in grades 3-8 and at least once in grades 10-12 by 2005-2006. The *Every Student Succeeds Act* (ESSA) maintains the requirement that each state implement "a set of high quality student academic assessments in mathematics, reading or language arts, and science" (114th Congress, 2015, p. S.1177-24) among its provisions. Further, mathematics and reading or language arts assessments will be administered in each of grades 3-8, and at least once in grades 9-12.

Beginning in the 2014-2015 school year, learners faced a new testing challenge in that their assessments of learning will be via online testing of the Common Core standards. Assessments are being developed by organizations such as PARCC, DRC, ACT and SBAC. Tests may take learners from 8-10 hours to complete and must be integrated into the school's daily and weekly calendar of events to complete the necessary activities. (Doorey, 2014; Gewertz, 2013). Online testing has posed concerns about required technology, sufficient bandwidth, computerized test security, learners' technology skills, and new forms of test anxiety.

States Must Become Familiar with Updated Legal Policies for Computerized Testing

Computerized testing raises new issues that require updating of test security laws and policies, as policies written for standardized testing administered via paper-and-pencil are no longer sufficient. ACT has a highly relevant report in this regard: [The End of Erasures: Updating Test Security Laws and Policies for Computerized Testing](#) by Michelle Croft (2014).

Croft (2014) outlined many concerns, noting that computerized testing does not eliminate cheating and test piracy. Such practices just take on different forms. Unique risks include such things as educators logging in to tests to view questions or change student responses, computer hacking, keystroke logging, printing, emailing, or storing test information in a computer outside the test delivery system. There is a greater risk of students accessing the Internet and other programs during testing. There is great concern about students using their own devices for testing and who has administrative privileges. Technology staff and teachers need to consider how testing workstations need to be positioned and secured so that students can't see what's on the monitors of others.

Croft (2014) recommended that states update their state statutes and regulations to reflect the shift to computer-administered assessments, concentrate efforts on controlling test access, and ensure that there is a single test security section within the updated manual that contains answers for any question that a test administrator has about test security. For example, policies should consider how student login information is secured. There should be rules on how tests are reactivated if disrupted. Additionally, these rules should emphasize having more than one proctor aid in the reactivation, and most importantly, proctors should maintain a log of all reactivations to provide documentation in the event of an investigation. Likewise, the technology should be secure and the testing window should be as short as possible to reduce the likelihood that items are compromised. Finally, states should implement steps to actively monitor test access issues through data reports to determine if there have been excessive logins or logins at times when testing should not occur (e.g., on the weekends), and have clear policies in place detailing how violations will be handled.

The test security section should also include an itemized list of what materials are secure (e.g., work folders, student authorization tickets with IDs and passwords, session rosters, scratch paper, reference sheets). "Information about who can access the test should be clearly articulated across the school and communicated to all proctors on the day of testing. In addition, there should be information on how to report test security concerns and possible violations, which can be applicable regardless of the testing format" (Croft, 2014, p. 4).

It is vital for states to adequately prepare districts and schools for the evolving testing requirements and to proactively ensure educators and students are familiar with any new policies regarding computerized test administration, including what they, test proctors, and students may and may not do. Having these policies and procedures in place is critical to the success of the testing process and the legal implications for violating any of these policies are potentially severe. Advance planning and communication is required to minimize the risks associated with testing. Any technological failures in the administration of the tests could spark an outcry to invalidate the results; especially considering that high-stakes test scores are factored into school grades, teacher salaries, and federal assistance to the state. The stakes are too high!



Changes in E-Rate Rules Will Affect Funding for Districts

The federal E-Rate Program started redirecting funding support FY 2015 (7/1/2015-6/30/2016) to focus on high speed broadband connectivity and Wi-Fi to tackle the digital divide concern. This included no longer providing funding or reducing funding support for outdated, legacy, and non-broadband related services such as...Page 12 ref: https://apps.fcc.gov/edocs_public/attachmatch/DA-14-1556A1.pdf ***FCC Order 2015, 2016:http://www.usac.org/res/documents/sl/pdf/ESL_archive/EligibleServicesList-2016.pdf

Page 2 summary reads as follows:

“The E-rate program: (1) restructured the former Priority One and Priority Two categories into Category One and Category Two; (2) eliminated Category One (former Priority One) support for outdated, legacy, and other non-broadband services including web hosting, email, and paging; (3) adopted a phase out of support for Category One voice services; and (4) limited Category Two support to the internal connections needed to enable high-speed broadband connectivity within schools and libraries, specifically LAN/WLAN (local area networks/wireless local area networks)-focused components (broadband internal connections components), basic maintenance of eligible broadband internal connections components, and managed internal broadband services.”

Services and Components No Longer Eligible for Support (Effective Funding Year 2015)

Category Two (Priority One)	Category Two (Priority Two)
<p>Services and telephone components that were listed as eligible in the former Priority One category:</p> <ul style="list-style-type: none"> • 900/976 call blocking • Custom calling services • Direct inward dialing • Directory assistance charges • Email • Inside wire maintenance plans • Paging • Text messaging • Voice mail • Web hosting 	<p>Components included in these former Priority Two entries:</p> <ul style="list-style-type: none"> • Circuit Cards/Components • Data Protection (all except for firewall and uninterruptible power supply/battery back-up) • Interfaces, Gateways, Antennas (other than as specified in this Order) • Servers (other than servers necessary for caching) • Software (other than the software that supports eligible broadband internal connections) • Storage Devices • Telephone Components • Video Components • Voice/video IP components (that had been listed in the Data Distribution entry)

Many districts have relied on this funding support since the start of the E-Rate program 18-years ago. Some districts rely on this funding reimbursement to purchase additional technology/services. Others used this to pay for operational (staff, etc) expenses.

Eligible voice services are subject to an annual 20 percentage point phase down of E-rate support beginning in funding year 2015, as described in the *E-rate Modernization Order*. The reduced discount rate for voice services will apply to all applicants and all costs for the provision of telephone services and circuit capacity dedicated to providing voice services.

South Carolina’s Testing Requirements

The South Carolina College- and Career- READY Assessments (SC READY) are statewide assessments in English language arts (ELA)* and mathematics that will meet all of the requirements of Acts 155 and 200, the Elementary and Secondary Education Act (ESEA), the Individuals with Disabilities Education Improvement Act (IDEA), and the Assessments Peer Review guidance.

All students in grades 3–8 are required to take the SC READY except those who qualify for the South Carolina National Center and State Collaborative (SC-NCSC).

SC READY Assessments are not timed, and both computer-based and paper-based testing will be available. Data Recognition Corporation (DRC) is the contractor.

*** The ELA test will be a two-day test: Session 1 (Writing) and Session 2 (Reading) for all grades.**

Estimated Times for the SC READY Assessment*

Grades	ELA Session 1	ELA Session 2	Mathematics
3-8	2.5 hours	2.5 hours	2 hours

*The SC READY assessments are not timed. The Office of Assessment is providing estimated times to assist with classroom scheduling. Since there are no previous testing times to serve as a guide for SC READY, these estimates represent the Office of Assessment’s best approximations. “Start” and “Stop” times will be collected this year so that more accurate estimated times may be provided in the future. Please note that SC READY includes some new item types designed to measure a more demanding set of standards. As a result, it is anticipated that in the first year of SC READY, students may require longer testing times than in previous years.

Links:

<http://ed.sc.gov/tests/middle/sc-ready/sample-items/>

<http://ed.sc.gov/tests/middle/sc-ready/>

<http://ed.sc.gov/tests/middle/adoption-list-of-formative-assessments/>

[http://ed.sc.gov/scdoe/assets/File/tests/assessment-information/test-dates/SCREADYDates15-16\(1\).pdf](http://ed.sc.gov/scdoe/assets/File/tests/assessment-information/test-dates/SCREADYDates15-16(1).pdf)

<http://ed.sc.gov/tests/elementary/general-information/>

Overview of Technology Readiness Analysis Team

A team of independent consultants has been hired by the State of South Carolina to conduct all aspects of this assessment. The objectivity that outside resources bring to the table has helped reduce the perception that “big brother” is searching for negative data points on a district’s leadership team. The use of third party resources has helped foster open and honest dialogue and allowed the district staff and consultants to collaborate in all aspects of the process. The team is comprised of the following individuals:

❑ **Rob Cardelli**

- Project Manager overseeing all facets of the analysis
- More than 20 years of education and government consulting expertise
- Personally worked with over 100 education customers including helping the Department of Education in South Carolina gather requirements and write the State’s Educational Technology Plan for years 2014-2017

❑ **Brenda Bryant**

- Local school teacher in Richland 2 school district
- Focusing much of her attention on the readiness of students and teachers along with professional development concerns

❑ **Bob Jones**

- Local I/T and Management Consultant with over 30 years of experience
- Focusing much of his efforts on the infrastructure, hardware, security and funding concerns
- Expert in data analytics and reporting

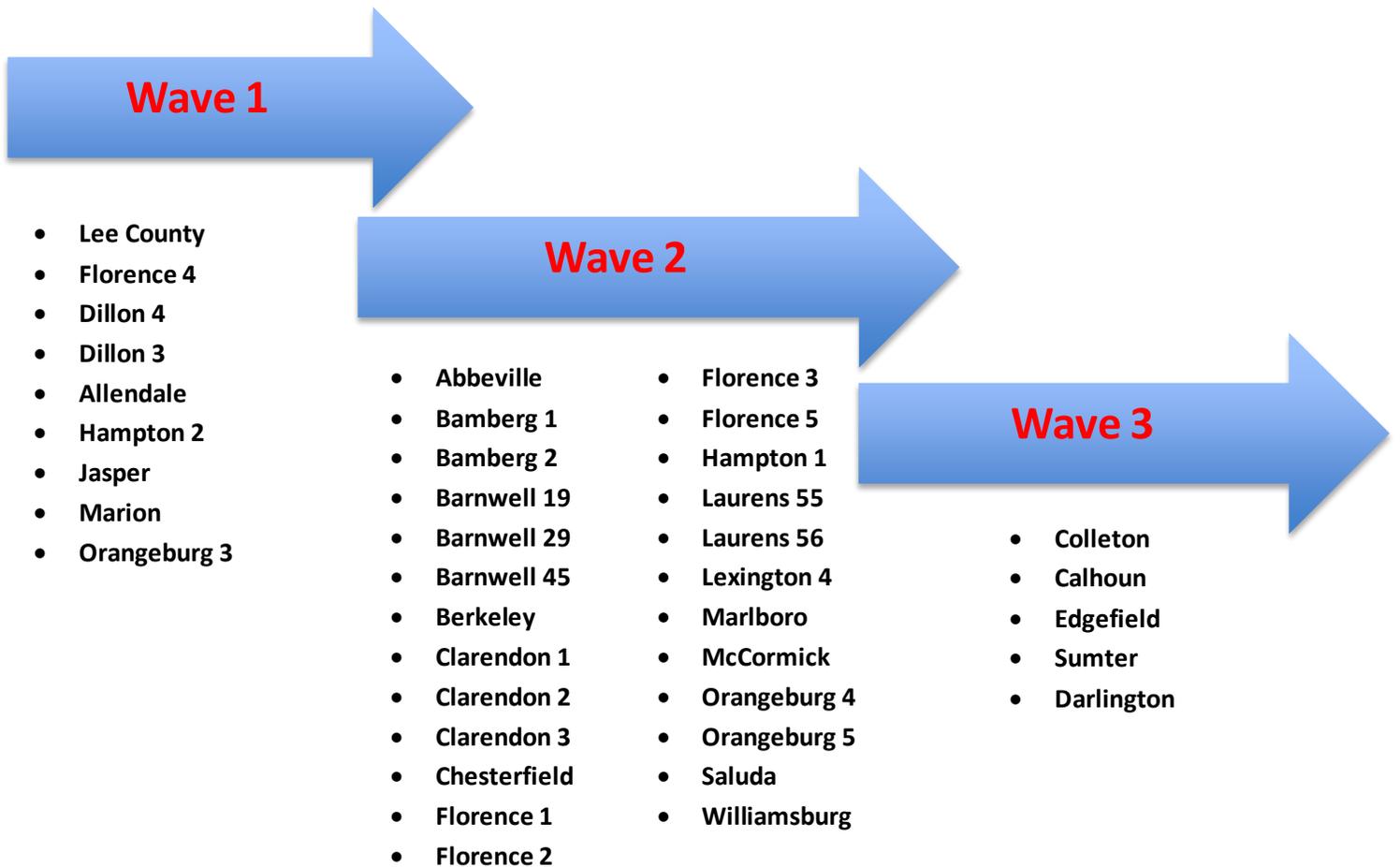
❑ **Heather Sutton**

- Local I/T consultant currently residing in the Orangeburg 4 district
- Focusing much of her effort on facilities, staffing levels, strategic planning and testing policy readiness levels
- Expert in data analytics and reporting

Participating Districts

The school districts that the state has identified as potential candidates for these optional readiness analysis studies have been prioritized into the following three categories:

- ❑ **Wave 1-** Includes the nine school districts that were still involved with the Abbeville Lawsuit at the time of the verdict
- ❑ **Wave 2-** Complete list of all districts participating in the Abbeville Lawsuit at any point in time over the last 20 years
- ❑ **Wave 3-** Other districts categorized as impoverished



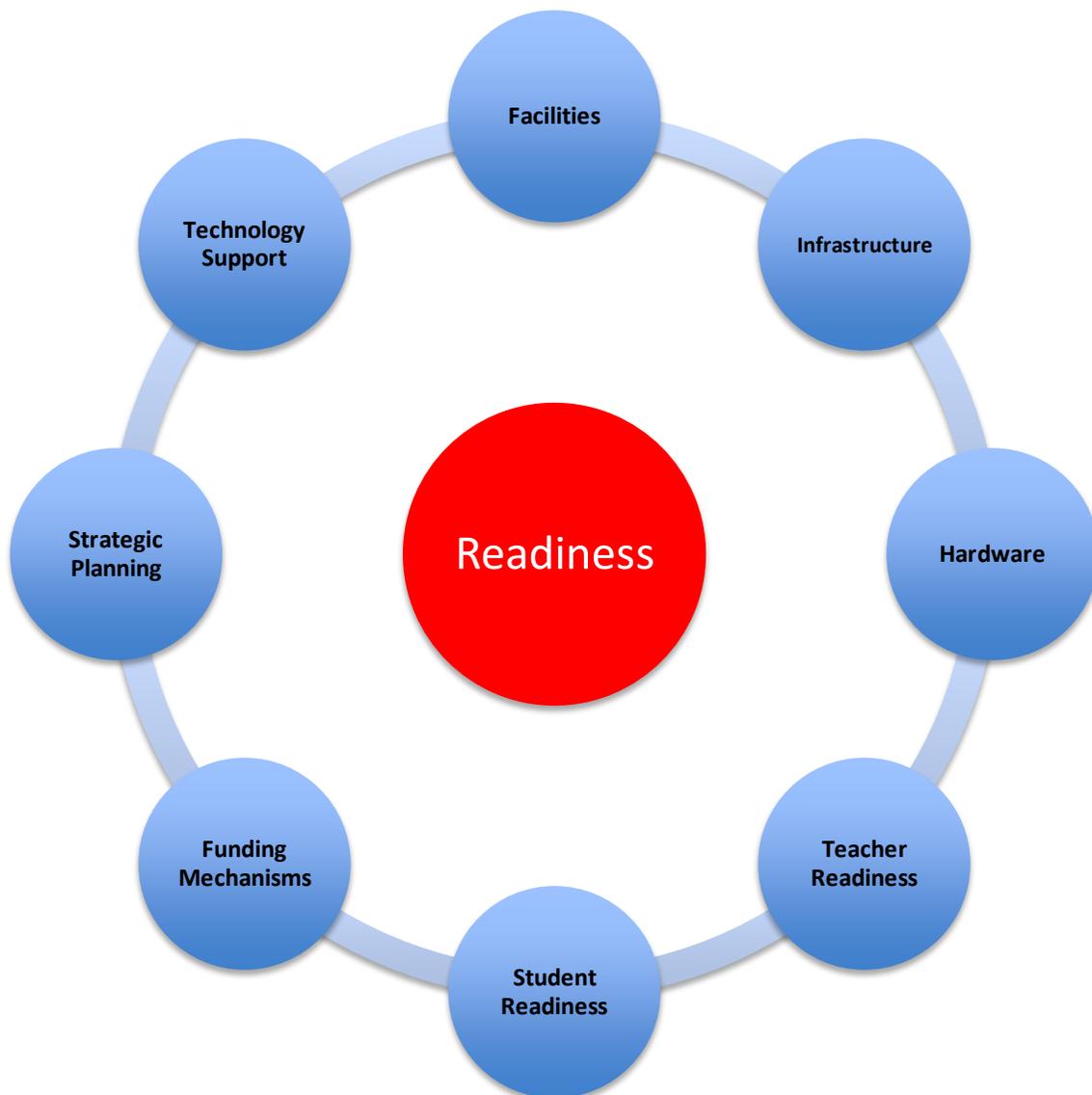
Analysis Methodology

The consultants worked with several of the Wave 1 districts to design and ultimately refine a methodology that allows for rapid data gathering with multiple collaboration opportunities for district staff to review the findings and edit the documentation to ensure the report accurately reflects the current state of the district. The consultants realize how busy the district staff are and created a methodology that is non-invasive in nature and flexible to allow the participants to work around their “day jobs” to reduce the impact on their daily operations.



Primary Areas of Focus

The technology analysis team identified several categories that are critical for a school district to achieve technical readiness for online testing. Within each category there are multiple variables that directly impact that category's degree of readiness. Accurately documenting these variables helps paint a picture of the overall level of readiness of the school district and also can be used to craft a blueprint for improving those deficient areas. The graphic shows the eight (8) categories currently being used to measure the degree of readiness. The following pages provide details surrounding the variables that are being analyzed during the analysis process.



Categories and Variables Being Measured

Note: These are generic categories and questions being asked are not specific to any one district. Each bullet point receives a score that is averaged for the overall section.

□ Impact of Facilities

- How does the availability or lack of space impact the district's level of readiness?
- How does the age of the schools impact cabling, wireless, and ability to connect to the Internet?
- Does poor air conditioning or ventilation in server rooms, network closets, or computer rooms present a risk to the availability of the computers for testing?
- Are there situations where rodents chew through cables and bring down the district computer network? How long is the network down and what is the frequency of these events?
- Are there leaky ceilings, poor flooring, mold, or other environmental conditions that could impact the testing facility?

□ Readiness of Infrastructure

- How does the amount of available network bandwidth impact the testing strategy?
- Are there any risks to testing due to the "up time" of the district (or school's) network?
- How many simultaneous testing machines can a district handle during any block of time?
- Does the district need additional wireless access points to conduct testing activities?
- Do the age and type of routers or switches impact the performance of the network and the ability of students to test in a given timeframe?
- Does the current wiring/cabling of the network impact the overall system performance? Is there anything that needs to be improved to enhance the testing experience?
- Is there any evidence that the security of the district's networks or computers could impact online testing?

□ Readiness of Existing Hardware

- How does the number of available computers directly impact the district's ability to test?
- Is there a need to upgrade the available memory (RAM) in the testing computers? How much memory is currently in the testing machines and what (if any) performance issues have been witnessed?
- Are there any concerns over the size or quality of the testing monitors?
- Is there evidence that the different types of equipment being used for online testing directly impact the staff's ability to support the technology? Are there multiple products in use overcomplicating the support strategy and overall skills of the district staff?
- Do the current operating systems of the testing computers limit the ability to test? Are there any upgrades being planned and when will these take place?
- Are there adequate backup testing machines and/or accessories to ensure the necessary number of devices on the day of testing?
- Are there any procurements currently being contemplated and will they need to be amended to reflect changes to the testing strategy?

❑ Teacher Readiness

- Are the teachers adequately prepared for 2017 online testing requirements?
- Do the teachers require professional development training to educate them on how to better leverage technology?
- Do the teachers require assistance creating and conducting computer literacy classes for their students?
- Does the district have funding to offer computer literacy?
- What is the turnover rate of the teachers? How does the turnover rate impact the district's testing strategy?
- How do the teachers interact with the district technology staff?
- Are teachers aware of testing policies and are they properly prepared to manage testing cycles?
- Do the teachers need assistance in preparing their students for computer literacy?
- Are there any other concerns related to a teacher's knowledge or ability to assist with online testing?

❑ Student Readiness

- How does the level of computer proficiency of the student's impact online testing? Are there any concerns that students are not properly prepared to take a test on a computer?
- Does the district offer kindergarten through second grade computer classes?
- Is there any proactive analysis to identify disadvantaged students in a classroom with little to no computer literacy? What, if anything, is the district doing to help these potentially at risk students?
- Does the district allow students to check out computers to take home?
- How does a district manage situations where two different teachers leverage technology differently? Is there any analysis into the student's technology proficiency between these two scenarios?
- Does the district offer practice tests to allow the students to get familiar with the testing process and what is expected of them?
- Are students aware of testing policies and the implications?
- Is there any evidence from previous online testing cycles that students need assistance in specific areas? Examples might include: typing skills, knowledge of scrolling or potentially how to properly use a mouse.

❑ Technology Support

- How many resources are available at the district level and what are their roles and responsibilities?
- What are the main skills of the staff? Are there any skills missing in the support model?
- What functions are outsourced?
- What kind of help desk system is in place and how many ticket items are open?
- How many job duties does the staff have to perform?
- Does the district staff have any assistance from within the school?
- What would the impact be on the school's ability to test if a key resource were to call in sick or resign during the testing window?
- Are there any concerns about the availability of technology staff to support the testing process?
- Are policies and testing procedures documented and disseminated to all staff?
- Are students and their families made aware of the testing policies and schedule?
- Does the technology support team regularly communicate their needs to the administration and/or school board? What is the relationship between these parties?

□ **Funding Mechanisms**

- Does the district leverage all available e-Rate funds?
- How has the district utilized e-Rate funds in the recent past?
- Does the district have experienced grant writers?
- How have technology related grants been utilized in the recent past?
- Are there any funds from e-Rate or grants that have NOT been utilized but could be leveraged to help improve the overall readiness of the district for online testing?
- Who writes the e-Rate documentation and grants? Internal or external resources?
- Are there other sources of funds the technology staff has access to and for what are they used?
- How does the district determine how the funds will be utilized?
- Are there any situations where money earmarked for technology is denied and utilized for non-technical district needs?
- What is the role of the technology staff in setting budgets and preparing for online testing needs?
- Is there a formal mechanism for cross training multiple district staff in the rules, regulations and nuances of applying for e-Rate, grants or other funding sources?
- How are the district's funds allocated for student computer literacy being spent?

□ **Strategic Planning**

- Does the district have an up to date district wide strategic plan?
- Does the district have an up to date district technology strategic plan?
- Are the district's strategic plan and the TECHNOLOGY strategic plan properly aligned?
- What is the level of involvement of the local school board?
- Who is involved in strategic planning?
 - *Superintendent?*
 - *Teachers/Faculty?*
 - *I/T staff?*
 - *Local Vendors?*
- How does the district proactively plan for new technology acquisitions?
- How do the schools leverage district I/T staff?
- How are students or teachers leveraged?
- How are local technology vendors utilized?
- What is the level of involvement with the local "consortium"?
- How does the technology staff procure hardware or services?
- Is there a risk of "single point of failure" with the district staff member?
- Does the district need specific training in proper strategic planning?
- What assistance is required from the state?

Overview of Readiness Rating Scale

To evaluate the readiness of a district in multiple areas the team created a rating scale to objectively measure how effectively (or ineffectively) a particular area rates compared to other districts. After each area has been given a score the analysis team compiles the statistics and averages them to derive a final readiness score for the district. To simplify the process the consultants used a scale of 1-5 that increases in increments of half a point. The following scale will be used to track future readiness decisions:

Rating	Description
1	The district is unable to prove they can successfully complete online testing in 2017.
2	The district could feasibly conduct testing in 2017 but there are multiple areas that need to be improved to make this happen and if they are not completed testing will more than likely be unsuccessful.
3	The district will be able to meet the 2017 Online Testing requirements. The district will not be able to handle additional subjects or grade levels without significant improvement in multiple areas.
4	The district will be able to meet the 2017 Online Testing requirements and they can meet a few extra subjects or grades but not all future needs.
5	The district is prepared for 2017 and beyond. They do not have any measurable risks associated with Online Testing for 2017 or beyond. They can handle online testing for all grades and subjects.

Summary of Findings for Barnwell School District 29

Overall Readiness Score	2.6
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Impact of Facilities

Readiness Score	2.1
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Area of Focus	Observations	Recommendations
Availability of Testing Labs	<ul style="list-style-type: none"> The elementary school has one lab and the middle school has two labs available for testing. There is no available space to add additional labs in any of the schools. Based on the consultants' observations, there are not enough testing labs available to complete online testing within the testing window in the elementary school in 2017. The middle school will not be able to complete online testing within the testing window if any additional courses or grade levels are added in the future. As online testing in high schools becomes mandatory for ACT and ACT WorkKeys, the spacing requirement of 3'x3' side by side and 3' front to back between testers could impact the number of testing seats available in a lab. 	<ul style="list-style-type: none"> Due to the lack of space for additional labs, the consultants recommend purchasing additional laptop carts. The only other viable option would be purchasing and utilizing mobile trailers. This option works well for some districts and schools where space is an issue.

<p>Age of Buildings and Impact on Cabling and Wireless Connectivity</p>	<ul style="list-style-type: none"> • Two of the three schools in the district are over 60 years old. • There are power issues in the elementary and middle schools due to the age of the buildings. This could present a significant risk during online testing. 	<ul style="list-style-type: none"> • More power supplies will be needed for laptop carts, as well as extra batteries for the schools that lack the power supplies. • Administration should explore expanded power supply options and ensure backup systems are firmly in place.
<p>Environmental Concerns (i.e. mold, air conditioning and ventilation concerns, excessive noise)</p>	<ul style="list-style-type: none"> • Data closets are not in a secured space in either the elementary or the middle school. The equipment in the middle school is located in a computer lab classroom, shielded by a plywood screen. This presents an extraordinary security risk. The data closet in the high school lacks proper HVAC which presents a significant risk of equipment overheating and compromising the network during testing. The district is in the process of correcting this issue. 	<ul style="list-style-type: none"> • Ideally, dedicated space needs to be identified to relocate equipment. If this is not feasible, the equipment needs to be contained in a locked cabinet to limit access. • Adequate ventilation in data closets is essential to ensure online testing can be conducted without interruptions. HVAC requirements should be determined for the high school data closets and an air conditioning unit be procured. <p>*HVAC in high school data closet has been repaired.</p>
<p>Condition of desks and chairs where students will be testing</p>	<ul style="list-style-type: none"> • There do not appear to be any issues with furniture in testing labs. 	<ul style="list-style-type: none"> • A formal assessment of furniture in computer labs should be conducted to ensure all furniture is in good shape and appropriate for grades using the lab.

Infrastructure

Readiness Score	2.5
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Area of Focus	Observations	Recommendations
Available Bandwidth to the district	<ul style="list-style-type: none"> Barnwell 29 currently has 100 mbps coming in to the district and has requested an increase to 150 mbps which should be in place by June. This is significantly less than their peer districts. 	<ul style="list-style-type: none"> Formal analysis of the network’s configuration to determine if the available bandwidth is able to meet the needs of the district during online testing activities. Contracting with 3rd party experts may be necessary to ensure the routers, switches, access points and cabling are properly integrated and successfully maximizing the available bandwidth. Corrective action should be taken to further “tune” the networks and support components. There are specialized tools available to help assess a network’s efficiency and it may be necessary to leverage a 3rd party to help justify purchasing additional incoming bandwidth to rectify the performance challenges.
Stability of Networks Within The Schools	<ul style="list-style-type: none"> There are currently no network stability issues. 	<ul style="list-style-type: none"> Formal load testing should be conducted to ensure networks can adequately handle the demands on online testing and streaming educational video content.
Available Bandwidth to the Schools	<ul style="list-style-type: none"> Each school has 1 GB coming in; however the district only has 100 mbps coming in from the state. 	<ul style="list-style-type: none"> As more subjects and grades are added to online testing, performance testing will need to be conducted at each school location to determine how much bandwidth is needed at each school. The district currently believes there is a risk to testing the current population but they lack the tools to confirm any challenges. Additional network hardware might be needed to expand the capacities and efficiency of the district’s network.

Cabling Challenges	<ul style="list-style-type: none"> The district has fiber going to all three schools. The administration has done a phenomenal job bringing the district up to date in the last 3 years. 	<ul style="list-style-type: none"> No recommendations are needed in this area.
Wireless Networks <ul style="list-style-type: none"> Routers Access Points Bandwidth Switches 	<ul style="list-style-type: none"> Switches are 2 years old, but there is no redundancy. This could seriously impact online testing if a switch were to go down during testing. All schools have 1 WAP for every 2 classrooms. The vendor designed the layout and it appears to be adequate. Routers are up to date. 	<ul style="list-style-type: none"> Increased bandwidth should be explored once the other hardware issues have been addressed. The new hardware should be able to accommodate significantly more bandwidth. It's important to do the hardware first and then the expanded bandwidth.

Hardware

Readiness Score	2.5
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Area of Focus	Observations	Recommendations
Number of Computers Available for Testing	<ul style="list-style-type: none"> The district has approximately 75 computers available for testing grades 3-8 in Math and ELA. According to these numbers, the elementary school will not be able to complete online testing within the testing window next year. If additional subjects or grade levels are added beyond 2017, the middle school will not be able to complete testing within the window. 	<ul style="list-style-type: none"> Since the district does not have space to add additional labs to any of their schools, laptop carts will need to be purchased to supplement the number of computers available in labs. The district needs to identify exactly how many are needed and begin the acquisition process.
Age and ability to upgrade computers	<ul style="list-style-type: none"> All labs have been upgraded in the last two years. Computers used for testing are either 1 or 2 years old. 	<ul style="list-style-type: none"> A consistent and well thought out technology refresh strategy should be created and approved by the superintendent and communicated and approved by the school board.
Available RAM (Memory) in testing computers	<ul style="list-style-type: none"> All lab computers have 4 GB of RAM. The consultants feel this is the absolute minimum requirement to successfully complete online testing. 	<ul style="list-style-type: none"> The consultants recommend the district strive for a minimum of 8 GB of memory on all future computers. Wherever possible we suggest trying to upgrade the existing computers IF it's a cost effective solution. Many times adding memory to an existing computer is NOT necessarily cost effective if you can buy a brand new laptop with a faster processor for a price of half as much as simply adding memory to an older machine.
Disaster Recovery Solution	<ul style="list-style-type: none"> There is a risk that the district's system could go down during testing and impact the ability to test the students. A UPS is in place on all equipment. The district backs up to the cloud, but it is a manual operation. 	<ul style="list-style-type: none"> The consultants recommend Barnwell 29 collaborate with their peers in other districts who also need remote disaster recovery solutions to obtain a discounted vendor contract.

		<ul style="list-style-type: none"> • A formal DR policy and plan is needed and the consultants believe the state government should have a role in providing assistance in this area. The majority of districts interviewed have an immediate need in this area. The state should recognize this risk and assist with identifying and implementing and supporting a DR solution.
Adequate replacement hardware	<ul style="list-style-type: none"> • The district has a replacement plan for hardware; however, there is not an inventory of available replacement machines should machines go down during online testing. It is imperative that the district and schools have adequate machines for testing. 	<ul style="list-style-type: none"> • Purchase and maintain a healthy supply of backup machines, batteries, keyboards and mice.
Support and Replacement Strategy	<ul style="list-style-type: none"> • The technology refresh plan is laid out in the 3 year technology plan. This plan calls for replacement of about 60 computers every year, leaving no computer more than 4 years old. • This replacement strategy relies on the use of annual state equipment money for funding. 	<ul style="list-style-type: none"> • Additional funding resources should be identified as funding for technology from the state can be unpredictable.

Teacher Readiness

Readiness Score	2.5
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Area of Focus	Observations	Recommendations
Technical Proficiency of Staff	<ul style="list-style-type: none"> The district has one Technology Coach. Teachers are comfortable with the technology they have available. Additional technology training is welcome but not readily available due to resource (people, money, and time) constraints. 	<ul style="list-style-type: none"> Additional professional development is warranted but must be accompanied by a formal plan on how and when to leverage the training resources. The teachers should be held accountable by administration to take the training and utilize the lessons learned in their job functions. Once the formal testing requirements are finalized the district needs to ensure all teachers are notified of testing requirements and any professional development promptly scheduled.
Turnover of Teachers	<ul style="list-style-type: none"> The district has a marginal turnover rate for teachers. Teachers have not expressed that technology is a reason for leaving the district. The turnover of staff directly impacts the technology staff. The tech staff uses their limited training time/budget to get teachers up to speed on how to use technology and they routinely leave the district. The new teachers coming in are unable to take training because in many cases the professional development resources (people and money and time) are exhausted. 	<ul style="list-style-type: none"> Additional professional development is needed to ensure new teachers coming in to replace outgoing teachers are properly trained. The state should explore avenues for reducing the turnover rate in this district. It is putting the district and the schools and students at a competitive disadvantage.
Level of Technical Preparedness	<ul style="list-style-type: none"> Teachers are well equipped in the classroom with technology. More seasoned teachers are reluctant to use the technology. 	<ul style="list-style-type: none"> More seasoned teachers should be surveyed to understand their reluctance to use technology in the classroom.

Availability to prepare for testing	<ul style="list-style-type: none"> • Online testing requires significantly more preparation than paper testing. The Director of Technology is the sole member of the technology department with assistance from the Technology Coach. Preparation for online testing will result in a much greater demand for his time. • There is a great deal of uncertainty about the impact of the infrastructure and the staff to properly conduct testing on the existing infrastructure with the existing hardware. 	<ul style="list-style-type: none"> • District leadership needs to mandate dedicated time is allocated to focus on preparing for state and federal testing activities. The Director of Technology needs to be involved to ensure all tasks and deliverables are completed in an efficient manner.
Other Concerns	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •

Student Readiness

Readiness Score	2.5
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Area of Focus		
Availability of Computer/Typing Classes for K-2	<ul style="list-style-type: none"> Students in grades K-2 have the opportunity go to a computer lab once a week but do NOT have formal computer literacy/keyboarding classes. 	<ul style="list-style-type: none"> Keyboarding instruction needs to start prior to the 3rd grade. Formal keyboarding activities are necessary to ensure 3rd graders are prepared for the testing requirements.
Level of Poverty/Home Exposure to Computers	<ul style="list-style-type: none"> There is a very real concern that students in this district may be at a competitive disadvantage over their peers in neighboring districts due to their high poverty rates, lack of computer proficiency at earlier ages and the lack of exposure to technology in the classroom. 	<ul style="list-style-type: none"> The fact that many of the district's students come from homes where heavy and consistent computer usage is unlikely only increases the need for formal computer literacy classes in the earlier grades.
English as a Second Language Concerns	<ul style="list-style-type: none"> The district has less than 1% ESL students. 	<ul style="list-style-type: none"> Although this has not been an issue in the past, the consultants recommend the district staff works closely with the schools to formally give the ESL students an opportunity to take a practice. Simulated testing will help identify any potential concerns in a proactive manner.
Availability of Sample Tests	<ul style="list-style-type: none"> Online practice tests are currently given at all schools. 	<ul style="list-style-type: none"> Continue to provide students the opportunity for practice testing at all schools.
Other Concerns	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">

Funding Mechanisms

Readiness Score	3.0
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Area of Focus	Observations	Recommendations
Maximizing e-Rate	<ul style="list-style-type: none"> The district is maximizing it's usage of federal e-Rate funds. The District Technology Coach proactively completes the paperwork and has full knowledge of the process. 	<ul style="list-style-type: none"> Ensure the district's strategy for utilizing current and future e-Rate funds are documented in the strategic plan.
Ability to successfully manage the grant writing process.	<ul style="list-style-type: none"> The District Technology Coach also manages the grant writing process. She has limited time available to research possible grant opportunities. 	<ul style="list-style-type: none"> We recommend collaborating with neighboring districts to share a resource to assist in this area. This is a common solution in many states.
Multiple resources knowledgeable in e-Rate and Grant Writing	<ul style="list-style-type: none"> The Director of Technology and the District Technology Coach back up each other in many areas. This presents a major risk if either of these resources should leave the district or become unavailable. 	<ul style="list-style-type: none"> Multiple district staff needs to be familiar with the e-Rate process for checks and balances and backup scenarios.
Other Concerns	<ul style="list-style-type: none"> The district is currently using some summer bond funds for technology. This has been an excellent source of funding, approved by the school board, for the district for many years. 	<ul style="list-style-type: none"> If the board decided not to take out a summer bond, for whatever reason, the district would need to identify a replacement source for technology funding.

Strategic Planning

Readiness Score	3.5
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Area of Focus	Observations	Recommendations
Technical Staff Collaborates with Administrative Staff to Determine Technology Needs	<ul style="list-style-type: none"> The Director of Technology informs the administrative staff of the district’s needs for upgraded technology. The administrative staff is extremely supportive of the recommendations that come from the director of technology. 	<ul style="list-style-type: none"> Best practices dictate that the technology staff regularly updates the school board on technology usage and needs. The Director of Technology is currently presenting at School Board meetings on a regular basis.
Thoughtful analysis into how funds will be spent	<ul style="list-style-type: none"> The district lays out a plan each year for the top priorities of the schools and teachers and students. The Director of Technology is actively involved in this process and has input into all decisions. Without this careful planning the district would not be able to operate on such a limited technology budget. The strategic planning emphasis is a critical success factor for the district and should be commended. 	<ul style="list-style-type: none"> Continued strategic planning efforts are required. Communicating to the school board and ensuring all parties are aware of the importance of consistent funding for technology and professional development is mandatory.
Teachers needs are considered top priority	<ul style="list-style-type: none"> The district does a consistent job focusing on the needs of the teachers and their needs. 	<ul style="list-style-type: none"> No recommendations are needed in this area.
The role of technology is agreed upon by all parties	<ul style="list-style-type: none"> All ideas and suggestions are brought to the attention of the Director of Technology. This position is well respected by all areas of the district and IT is actively engaged in all decision making processes. Administrators and staff understand they must have everything approved through the Director of Technology. The district has a Technology Team in place that is comprised of 3 teachers from each school and 1 Special Ed. Teacher. 	<ul style="list-style-type: none"> No recommendations are needed in this area.

<p>Proper amount of professional development</p>	<ul style="list-style-type: none"> • Technology staff has limited time available to pursue additional professional development for teachers. • One District Technology Coach provides professional development for all teachers in the district. • The desire for more training is apparent but there isn't enough money to pay for additional training. 	<ul style="list-style-type: none"> • Survey of teachers and staff to see what kinds of professional development they would like to see. • Additional professional development resources (people, money, time) are easily quantifiable.
<p>Implementation, Distribution and Enforcement of Testing Policies.</p>	<ul style="list-style-type: none"> • The district staff is very busy. Formal policies and procedures for current testing requirements may not be up to date. 	<ul style="list-style-type: none"> • Everything dealing with online testing must be coordinated with the Director of Technology, the Testing Coordinator, and the Technology Coach.

Readiness of Technical Staff to Support Online Testing

Readiness Score	2.0
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Area of Focus	Observations	Recommendations
Number of support technical support staff	<ul style="list-style-type: none"> The Director of Technology is the only person in the department. He is heavily involved in the day-to-day support of the district technology. 	<ul style="list-style-type: none"> Formal details of roles and responsibilities are needed to help map out where additional skill sets might need to be inserted into the support model.
Technical skills and proficiency of support staff	<ul style="list-style-type: none"> The Director of Technology is extremely educated in technology and has well versed certification. 	<ul style="list-style-type: none"> Retention must be a focus for district leadership. Losing the Director of Technology could cause significant damage to the existing support model.
Availability of staff to proactively engage with the teachers and administrative staff	<ul style="list-style-type: none"> The Director of Technology faces issues daily with tackling everyday operational duties and handling issues throughout the district. 	<ul style="list-style-type: none"> Administration needs to pay attention to hours worked and burnout.
Ability of staff to assist with professional development efforts	<ul style="list-style-type: none"> The Director of Technology is stretched so thin he has no time available to assist with professional development efforts. 	<ul style="list-style-type: none"> Additional professional development resources (people, money, time) are easily quantifiable and should be made available to the technology department.

Risk of Single Point of Failure. If a key resource leaves will testing become at risk?

- The district has a risk of a single point of failure with the Director of Technology.
- The current Director of Technology is in a “Lead” role in several critical areas and there is no formal backup plan. If this key resource were to fall ill or be unavailable during the testing process it would significantly impact the ability of the district to complete the necessary testing steps.
- The consultants feel it would take more than one full-time employee to replace the current Director of Technology due to the many job responsibilities he has.

- The district must focus on cross training and documenting roles and responsibilities.
- The need for an additional technology resource is easily quantifiable.
- The Director of Technology must identify the skill sets needed to fill the needs of the district.

Additional Consultant Observations

Highlighted below are the most frequently cited strengths of the school district, which can be used as a foundation for creating a roadmap to address any areas of concern. The items in the table are rank-ordered according to the frequency with which they were mentioned in the interviews. Multiple points of engagement took place with a minimum of two analysis team members involved with every district.

Rank	Strengths	Common Themes
1	Willingness to improve	Everyone is tired of fighting fires and not having the ability to proactively address many of the things that need to be corrected. The Director of Technology has already made great strides in the district over the last three years.
2	Attitude / Enthusiasm	Extremely eager to make testing a success. Cooperative and positive attitude of management and staff. Excitement and positive attitude toward this project.
3	Work well together	Everyone works well together. Their attitude is “We're small, we'll pull together to make this happen”. Partnerships among schools, other districts and/or vendors.
4	Dedication	The Director of Technology gives up many hours with family and friends to ensure every staff member and child has the up to date technology and teachers know how to utilize the tools in their classrooms.

Commonly Cited Concerns

Listed below are the most frequently cited concerns about testing that were documented over the course of the analysis process.

Rank	Concern	Sample Answers
1	Budget	Concerns that the funds that will be necessary to procure additional infrastructure, hardware and/or professional development will be insufficient.
2	Schedule / timeline	Time it will take to plan, procure, implement, test and train staff is inadequate to prepare for Spring of 2017 given the ongoing workload of the district staff.
3	Staffing Levels and Workload	Inadequate staff to complete the workload to prepare for testing. The focus on assisting teachers and their classroom technology consumes the majority of the staff's time leaving little availability for additional tasks.
4	Lack of Professional Development	New or upgraded technology will require significant training. There are limited funds available for professional development and few resources available to conduct the training.
5	Disaster Recovery	Limited funds available for proper disaster recovery. Barnwell 29 would like to implement a cloud based disaster recovery plan if funds were available.

District's Inventory of Readiness Needs

Category	Specific Need	Detail Specific Need (As required)	Vendor	Qty	Estimated Cost (One Time)	Estimated Recurring Cost	Potential Funding Source	Date Needed
Facilities	Space/Testing Rooms	Additional Computer Labs	?	8	\$1,228,800		State	ASAP
	Air Conditioning Unit	Cooling unit for HS server room	HVAC contract	1	\$3,000		local	ASAP
	Roof/Ceiling Repair	n/a						
	Desks	New desks for computer labs	Bid	120	\$42,000		State	ASAP
	Chairs	New chairs for computer labs	Bid	256	\$10,240		State	ASAP
	Other	Wiring closet - MS	Maint	1	\$5,000		State	ASAP

Category	Specific Need	Detail Specific Need (As required)	Vendor	Qty	Estimated Cost (One Time)	Estimated Recurring Cost	Potential Funding Source	Date Needed
Infrastructure	Bandwidth	Increase district bandwidth	State	350mb	n/a		State	ASAP
	Routers	n/a						
	Switches	New switches	ANC Group	10	\$35,000		State	ASAP
	Access Points	Additional AP's	AerCor	10	\$7,000		State	ASAP
	Cabling	Add new cabling drops	Bid	90	\$15,000		State	ASAP
	Installation/Testing	Switches	ANC/AerCor	10	\$4,000		State	ASAP
	Installation/Testing	AP's	AerCor	10	\$4,000		State	ASAP
Disaster Recovery	Backup recovery	Unitrends	1	\$25,000		State	ASAP	

Category	Specific Need	Detail Specific Need (As required)	Vendor	Qty	Estimated Cost (One Time)	Estimated Recurring Cost	Potential Funding Source	Date Needed
Hardware	Laptops	Laptop carts	Dell	240	\$120,000		State	ASAP
	Desktops							
	Memory	Additional 4gb RAM for existing workstations	Dell	150	\$15,000		State/local	ASAP
	Operating System Upgrade	n/a						
	Monitors	n/a						
	Computer Carts (Cart Only)	Additional computer carts	Dell	8	\$24,000		State	ASAP
	Extra Batteries	Additional batteries for laptops	Dell	240	\$24,000		State	ASAP
	Installation/Testing	Install memory Laptops	Bid	240	\$18,000		State	ASAP
	Installation/Testing	Install memory existing workstations	Bid	150	\$4,000			

Category	Specific Need	Detail Specific Need (As required)	Vendor	Qty	Estimated Cost (One Time)	Estimated Recurring Cost	Potential Funding Source	Date Needed
Teacher Readiness	Type of training needed by grade and by topic	Additional P/D	?	52		\$52,000	TBD	ASAP
	Teacher's Knowledge of Online Testing Requirements including security	Additional P/D	?	3		\$9,000	TBD	2017
	Other	Technology Coach		1		\$70,000	TBD	2017

Category	Specific Need	Detail Specific Need (As required)	Vendor	Qty	Estimated Cost (One Time)	Estimated Recurring Cost	Potential Funding Source	Date Needed
Student Readiness	Computer Literacy Curriculum	EduTyping		210		\$5,250	State	ASAP
	Computers needed for training	n/a						
	Practice Tests		?	1	\$15,000	\$5,000	State	ASAP
	Other							

Category	Specific Need	Detail Specific Need (As required)	Vendor	Qty	Estimated Cost (One Time)	Estimated Recurring Cost	Potential Funding Source	Date Needed
Funding Mechanisms	Assistance/Training for Writing Grants		?	1	\$5,000		TBD	ASAP
	Assistance/Training to manage e-Rate	n/a						
	Other							

Category	Specific Need	Detail Specific Need (As required)	Vendor	Qty	Estimated Cost (One Time)	Estimated Recurring Cost	Potential Funding Source	Date Needed
Strategic Planning	Consulting Assistance to educate staff in the strategic planning areas	n/a						
	Formal Training of Staff	n/a						
	Other							

Category	Specific Need	Detail Specific Need (As required)	Vendor	Qty	Estimated Cost (One Time)	Estimated Recurring Cost	Potential Funding Source	Date Needed
Technical Support	Consulting Assistance to help in specific areas	Consulting assistance to help in specific areas	?	100 hrs		\$12,000	State	ASAP
	Additional resources	Level 1 Tech for district	n/a	1		\$60,000	State	ASAP
	Other							

Strategic Roadmap

This section will provide an overview of the specific action items the district should focus on to improve the readiness of each area discussed in this report. The Roadmap is broken down into measurable tasks and deliverables to

1-Month Plan

- **Repair cooling in HS server room**
- **Install layer 3 switches to allow for greater Internet bandwidth**

3-Month Plan

- **Begin acquiring netbook carts**
- **Increase Internet bandwidth to district from 100mb to 150mb**
- **Purchase and deploy additional iPad carts at ES**

6-Month Plan

- **Purchase and deploy additional netbook carts and test with MAP and Fall EOC**
- **Test iPad carts with preliminary online testing functions from DRC**

12-Month Plan

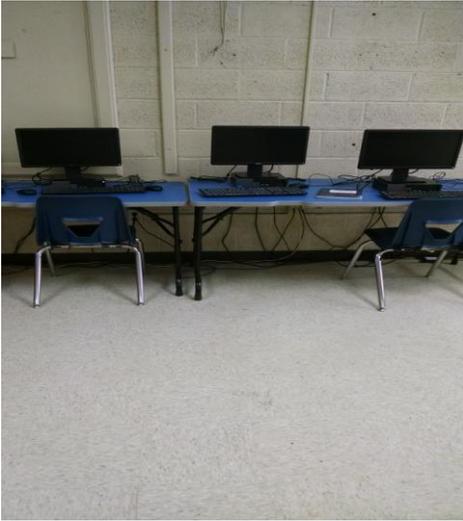
- **Purchase remainder of netbook carts**
- **Increase Internet bandwidth to 300mb**

18-Month Plan

- **Upgrade ES computer lab**
- **Propose plan for new/renovated facilities**

APPENDIX

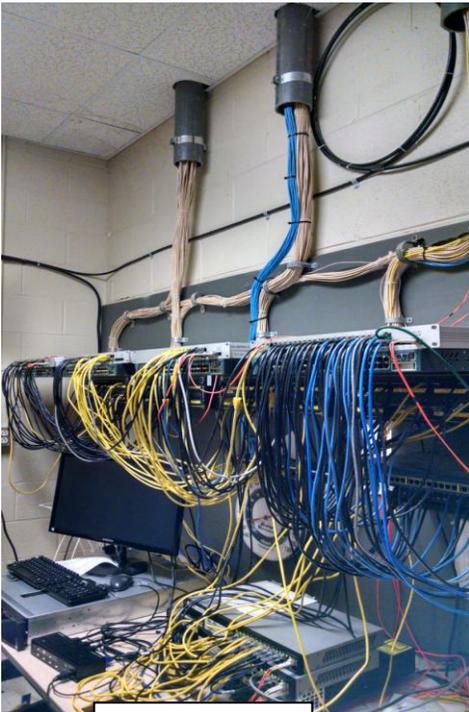
Pictures of District



Computer Lab



Data Closet



Server Room



Unsecure Data Closet