NORTH CAROLINA
State Board of Education
Department of Public Instruction

# Report to the North Carolina General Assembly

## School Connectivity Initiative

*SL 2007-323 (HB1473), Section 7.28.(d)*

# Legislative Update (2023)

Data Provided for State Fiscal Year 2022-2023

E-rate Cycle Year 2022

Prepared by:

Office of School Connectivity, North Carolina Department of Public Instruction

The Friday Institute for Educational Innovation, North Carolina State University

Date Due: January 15, 2024

DPI Chronological Schedule, 2023-2024

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# Executive Summary

The North Carolina School Connectivity Initiative (SCI) provides sufficient and reliable Internet access to every public school classroom across the state. Through the SCI, the NC Department of Public Instruction (NCDPI) also provides all PSUs with cooperative purchasing agreements, training, support, network engineering, content filtering, identity management and firewall services. North Carolina has been building this program for 17 years and is recognized as a national leader in providing equitable connectivity for public schools.

North Carolina utilizes the Federal Communications Commission's (FCC) E-rate program to the fullest extent possible and is a leading recipient of FCC funding on a per-student basis. This report details the significant accomplishments achieved over the State Fiscal Year 2023 (SFY23) and calendar years 2022 through 2023 (CY22 to CY23). Due to the schedule in which the FCC allocates funding, multiple calendar years are reported for some data. Included are financial and operational performance data, opportunities for improvement, risks, mitigation strategies, and recommendations for legislative action. Key graphs used in this report are available online and interactively at https://go.ncsu.edu/SCIreport courtesy of the Friday Institute for Educational Innovation at NC State University.

## Key Characteristics of The Program

- Schools and NCDPI recover Universal Service Fees paid by North Carolina residents in their telecommunications bills. These fees are distributed to schools through the E-rate program. Every school has a fiber internet connection, and every classroom has Wi-Fi access, all because of the SCI and the E-rate program. Over the last decade, the public schools in the state have averaged $75 million in funding commitments from the FCC E-rate program. Despite North Carolina being a leader in utilizing the FCC E-rate program, in 2022 the state recouped only 43% of the fees collected by the FCC from North Carolina residents and businesses. See https://go.ncsu/edu/2022USF for more details.
- Aggregate K-12 Internet capacity is about 550 Gbps (billion bits per second) with the average peak network utilization just under 60%. Every school has enough bandwidth to support digital teaching and learning, with the capacity to grow, without overpaying for excess network capacity.
- Managed firewall, content filtering, and identity management services are provided at no cost to the PSUs, to protect students and school business systems.
- E-rate training programs for pertinent PSU staff are provided. Leadership training is provided through a partnership with the UNC School of Government for PSU Chief Technology Officer/Technology Leaders.

- The initiative provides network operations support, on-site technical assessments, and assistance is provided to PSUs to ensure the impact of the investment in infrastructure is maximized.
- In Fiscal Year 2023, each dollar of state funding spent on E-rate eligible goods and services delivers $2.46 in value to the PSUs.
- Through analysis and modeling of E-rate filing scenarios performed by the Friday Institute, SCI continues to optimize E-rate Internet access applications to maximize the amount of E-rate funding the state receives.
- Internet utilization at every PSU increased significantly post-pandemic. Federal pandemic-related programs, such as the Emergency Connectivity Fund (ECF), provided PSUs funding to ensure every student and teacher had a device for remote learning and expand the use of digital teaching and learning methods. These devices and methods returned to the physical classroom, causing increased utilization. SCI provided policies, guidance, and resources to have sufficient room for unexpected growth such as this.
- In 2020, SCI predicted an increased need of $4.6M per year in response to the FCC increasing the per-student E-rate budget by 12% in line with the Consumer Price Index. The General Assembly provided this funding and enabled SCI to meet the 15% increase in the amount requested by PSUs. In 2025 the FCC will again adjust the per-student budget for equipment based on inflation. The state should prepare for a modest increase in the required recurring appropriations in that year. Additionally, the FCC is considering making cybersecurity products E-rate eligible, which could have an appreciable effect on the amount of E-rate funds requested by public schools. If it is in the intent of the General Assembly to continue to fund the non-E-rate portion for procurements by PSUs, made under NCDPI SCI rules, then increased appropriations commensurate with new FCC rules will be required. The Friday Institute is available to model all scenarios and make recommendations which will maximize the impact of all state funding.

## Considerations and Recommendations

Detailed within this report are several recommendations for legislative actions that are necessary for SCI to remain viable at the current service levels:

1. Improve E-rate Project Allocation Flexibility

   Renew the intent of SL2017-57 SECTION 7.11.(d) to permanently permit these School Connectivity funds allocated to PSUs (PRC 073 and PRC 036) to carry-over to the next funding year. The federal E-rate cycle spans 18 months. PSU's make requests in March that may not be approved by the FCC until June or even later. PSUs must then wait for SCI funds to be allotted in August (at the earliest, due to OSBM and agency annual budget certification) before placing orders with vendors. As a result of COVID, vendors continue to struggle with supply chain and labor issues to deliver on time, and PSUs cannot pay invoices until delivery is complete.

If the PSU cannot receive the products in time, they experience financial challenges in managing state and local funds to prevent the loss of E-rate funding. This creates significant opportunity for audit exceptions and lack of transparency. The allocations of state funds are made for specific, approved projects, based on the actual cost the schools will incur, as filed with the FCC. The state should consider a new PRC specifically for allotments leveraged against E-rate with regulations concerning the timeframe in which the funds must be used. With the potential addition of cybersecurity to the E-rate program, this becomes even more of an issue.

2. Fund Cybersecurity for Shared Resources Already in Place and Utilized

The 2024 Biennium Budget provided additional funding for e-mail security in the SCI program. Unfortunately, there is currently no statewide program for e-mail security, and it is unlikely that e-mail security will ever be E-rate eligible. Today, the NC K-12 Cybersecurity Program is funded by one-time COVID-related funding that is set to expire in 2024. Current K-12 statewide cybersecurity shared resources that may be impacted include managed firewall, managed endpoint security, network enumeration and asset discovery services, web content filtering, and identity and access management. These shared resources are already in place, used by most PSUs, and at risk of being turned off or diminished in their capacity in 2024. Additionally, pending the currently outstanding FCC rulemaking process, many of these services may become E-rate eligible within the next year or two. Providing funds for these cybersecurity services paves the way for the state to capture even more E-rate funding and maximize economies of scale.

North Carolina has been recognized as a leader in school connectivity for a decade. Few states have had the foresight, wherewithal, and support of their General Assembly to build and operate such an initiative. With the advent of the K-12 Cybersecurity Program, North Carolina is again leading the way for the nation. We know of no other state that is protecting public schools in such a centralized and coordinated manner as North Carolina with a rich set of statewide cybersecurity services. North Carolina is a unique leader in terms of its ability to marshal all available resources and realize maximum value from the economies of scale obtained. This centralized coordination enables a high degree of local control while still ensuring equitable access to the internet for every single student in North Carolina public schools.

3. Add Additional Staff to the SCI Team to Support Charter Schools

With the addition of new charter schools each year, the amount of time required to manage the E-rate submissions, reviews and audits is unsustainable. In particular, charter schools often cannot justify the cost of an E-rate consultant and NCDPI is required to help the schools complete various forms and tasks in order to receive E-rate funding. With the addition of cybersecurity to the E-rate program, this problem will be exacerbated.

The state should fund two additional consultants to focus specifically on the needs of charter schools related to E-rate, internet access and cybersecurity.

4. Articulate a Clear Policy for SCI Funding for School Bus Wi-Fi

A study should be conducted to better understand the value of School Bus Wi-Fi. The FCC intends to make Wi-Fi on school buses eligible for E-rate in the coming year. The current SCI state appropriation was not selected arbitrarily. In fact, much detailed analysis went into the calculations to determine what amount of state funding would result in the maximum amount of E-rate funding and benefit to the state. Those calculations were completed when the FCC modernized E-rate rules in 2014 and then again in 2019 when the FCC increased the per-student budget from Category Two. As the FCC rules for school bus Wi-Fi are still being debated by the FCC, we have no way to calculate the exact amount of funding that would be required for the state to maximize E-rate receipts for school bus Wi-Fi. What is known is that the current appropriation will be fully consumed meeting the demand for classroom Wi-Fi and school fiber connections.

There is limited (and even contradictory) evidence supporting the educational value of school bus Wi-Fi. The State Board should initiate a rigorous evidence-based study of the impact of school bus Wi-Fi before taking a position. For now, school bus Wi-Fi should remain a local decision. There are some instances where it may provide excellent educational value, but that should remain a local decision to implement and fund until such a point the value of a statewide program can be established. The State Board should clearly articulate a policy that states SCI funds will not be allotted for E-rate applications for school bus Wi-Fi so that schools may plan accordingly.

5. Minor SCI Policy Adjustments to Improve Efficiency

Any nationwide program like FCC E-rate is bound to have corner cases and unintended consequences which may create loopholes or inefficiency. SCI does an outstanding job ensuring efficient use of funds, still there is always room for improvement.

The State Board and NCDPI should empower the SCI team to work with the Friday Institute to create a concrete list of actionable policy changes, to be approved by the State Board, which will ensure equity in the program, regardless of future changes the FCC may make to the E-rate program. This will be especially important as the FCC is set to make rule changes around school bus Wi-Fi and cybersecurity which could have a meaningful impact to SCI funds.

## Background

The School Connectivity Initiative was launched in earnest with the publication of the Developing Regional Education Networks report in May 2006. In the 17 years since the inception of the SCI program, NC public schools have sought $2.1 billion in network infrastructure and services of which $1.5 billion was committed by the

Federal Communications Commission (FCC) E-rate[1] program. During this time, the telecommunications and computing markets have shifted dramatically, and the regulatory environment has been in near-constant flux. The NC legislature has called for and invested in a digital transition in public schools.

| | | |
|---|---|---|
| 2006 | Developing Regional Education Networks report published |  |
| 2007 | NC Legislature Funds SCI with $12M, recurring |  |
| 2008 | NC Legislature adds $10M for a total of $22M, recurring | |
| 2009 | All 115 PSUs connected to NCREN |  |
| 2010 | Inaugural class of 34 CeCTO students graduate |  |
| 2012 | NC Education Cloud Identity and Access Management plan published |  |
| 2013 | MCNC completes final phase of BTOP-GLF fiber expansion |  |
| 2014 | First E-rate modernization order, paving the way for E-rate to provide Wi-Fi to all classrooms |  |
| 2015 | NC Digital Learning Plan published. NC legislature adds $12M recurring to SCI. |  |

[1] https://www.fcc.gov/consumers/guides/universal-service-program-schools-and-libraries-e-rate

| | | |
|---|---|---|
| 2017 | NC reaches $1B in E-Rate disbursements | |
| 2018 | Modern Wi-Fi is available in every classroom in NC | |
| 2021 | NCDPI establishes new contracts for Internet, Firewall and Filtering with substantial cost savings and improved service | |
| 2022 | NC reaches $300M in E-Rate procurement value for Wi-Fi since modernization (2015 to 2022) | |
| 2023 | NC reaches $2B in total E-rate procurement value with $1.5B being committed by the FCC | |

*Figure 1: SCI Milestone Timeline*

Figure 1 illustrates how the SCI program has exhibited extraordinary productivity and adaptability over its history. Within its first year, it connected all 115 districts to the NC Research and Education Network using an opt-in approach. It established the Certified Educational Chief Technology Officer (CeCTO) training program through the UNC School of Government and developed and implemented the NCEdCloud Identity and Access Management (IAM) service. Through MCNC and the Golden Leaf Foundation, the program enabled the delivery of competitive fiber connectivity to rural NC schools and libraries, and adapted to the NC Digital Learning Plan, FCC E-rate modernization orders, and the growth of student device proliferation. From 2009 to 2023, the K-12 contracted Internet bandwidth grew from approximately 1 Gbps to 550 Gbps.

## Performance Overview

The vision of the SCI is to ensure all NC PSUs have equitable access to secure and reliable high-speed Internet access, sufficient to meet their instructional and professional needs, through efficient use of federal and state funding.

It is our mission to maximize the state and local use of the federal E-rate program to obtain the greatest discounts or reimbursements possible. This is accomplished with cooperative purchasing agreements (CPAs) and common shared services which enable PSU local control while leveraging economies of scale.

## E-rate Utilization Rate by North Carolina

In SFY2023 or the 2022 E-rate filing cycle (January 2022 through September 2023):

- 183 PSUs submitted 382 requests for E-rate that were funded by the FCC. A total contract value of $80M was sought with $61M of that being provided by the FCC E-rate program.
- 92% of all funding requests were approved by USAC. This is significantly down from the typical 95% to 97%. This is likely the result of staff turnover challenges in many charter schools and small PSUs. The state should consider adding additional staff resources to the SCI team, even if only on a two-year time-limited basis, until more charter schools have experience with E-rate and the system can stabilize from the influx of work created by COVID. We can expect more reviews and federal reviews and audits related to COVID and the Emergency Connectivity Fund in the coming year.
- The average E-rate discount for NC public schools is about 75%. This is not expected to change in the near future.

These results are directly attributable to the work of SCI's regional E-rate coordinators providing:

- Direct assistance within PSUs for E-rate planning and filing
- Individualized support through multiple levels of FCC reviews, audits and appeals occurring throughout the year
- Multiple regional training events open to all E-rate eligible entities, including public libraries
- Planning, filing, and audit support of multiple state Internet consortia applications
- Assistance from The Friday Institute in data analytics and the development of algorithms to determine the optimal E-rate filing strategy to maximize E-rate discounts.

## Financial Summary

The School Connectivity Initiative resulted in $92 million in expenditures, supported by $36.5 million in legislative funding.

Table 1 summarizes SFY2023 total SCI expenses, the portion paid by E-rate, and the portion paid by state funding. The FCC groups E-rate eligible expenses into two broad categories. Category One includes external connectivity expenses that deliver Internet and interconnect individual schools via fiber, and Category 2 consists of internal connectivity expenses that provide the wiring, switches, and wireless access points within each school building.

| (all values in millions, rounded) | Total Cost | E-rate Portion | State Portion |
|---|---|---|---|
| Category 1 Consortium Internet | $10.4 | $7.5 | $2.9 |
| Category 1 School Fiber Connections (WAN) | $28.8 | $20.0 | $8.8 |
| Category 2 Classroom Connections (Wi-Fi) | $40.3 | $27.2 | $13.2 |
| **E-Rate Eligible Totals** | **$79.5** | **$54.7** | **$24.8** |
| Identity and Access Management | $1.7 | not eligible | $1.7 |
| Client Network Engineering | $1.8 | not eligible | $1.8 |
| Program Administration NCDPI, FFL, FI | $1.2 | not eligible | $1.2 |
| Firewall Services | $2.9 | not eligible | $2.9 |
| Content Filtering Services | $5.3 | not eligible | $5.3 |
| **E-rate Ineligible Totals** | **$12.9** | | **$12.9** |
| **Grand Totals** | **$92.5** | **$54.7** | **$37.8** |

*Table 1: Financial Summary SFY23 (unaudited)*

Each year approximately 85% of SCI expenditures are eligible for FCC E-rate discounts. Every E-rate-eligible purchase goes through multiple reviews by the Universal Services Administrative Company (USAC), a subcontractor to the FCC, to ensure the most cost-effective and technically sufficient solution is selected through an open and competitive bidding process. For most PSUs, SCI's E-rate Coordinators are involved in filings and at various levels during the review and audit processes. The SCI team is responsible for all filings and work related to NCREN (NC Research and Education Network) which provides internet connectivity from the various PSUs to the public internet.

For every $1 of state funding spent on E-rate-eligible goods and services, North Carolina schools received $2.46 in total value.

## Consortium Internet

SCI offers all PSUs fiber-based Internet access to a single centralized location, often the district central office, through the NC Research and Education Network, (NCREN) operated by MCNC. This opt-in service is provided at no cost to all PSUs. For over a decade, all 115 districts have, and continue to, opt-in to this service.

Charter schools may opt-in to this service at no cost or receive an annual $5,000 allocation for Internet service. 178 charter schools use the state-provided internet service through NCREN.

On behalf of all PSUs, SCI establishes NCREN Internet access through a contract with the NC Department of Information Technology (NCDIT). Cost containment is achieved by actively monitoring each PSUs actual internet usage and only procuring the capacity needed, based on industry-standard metrics, and observed bandwidth usage.

For SFY2023, NCDPI applied for Internet access at a cost of $10.725 million with an E-rate funding commitment of $8.28 million, making the worst-case cost to the State $2.25 million assuming all PSU connections are fully covered by E-rate. The actual cost to the state can go higher if PSUs increase bandwidth beyond what was predicated at the time of the annual E-rate filing. For SFY2023, the actual cost for Internet was $10.379 million with E-rate providing $7.491 million leaving $2.888 million to be covered by SCI.

In CY2022, NCDPI bid the consortium internet contract and, while capacity increased, costs decreased on a per-Megabit per second basis. For the current fiscal year, SFY24, total Internet access is expected to cost $13.2 million with an expected E-rate commitment of $10.3 million, leaving the State to cover $2.9 million in a worst-case scenario, assuming no PSU increased their bandwidth above the amount filed with the FCC in February 2023. Anticipating bandwidth demand in the post-COVID world has become increasingly complex.

## School Fiber Connections (Wide Area Network, WAN)

To distribute Internet access from a district central location to each school, districts use private service providers, such as Spectrum, AT&T, CenturyLink, or Conterra, to provide a fiber-based Wide Area Network (WAN). These WANs (Wide Area Network) aggregate all the district schools to a central location for upstream connection to NCREN and the public Internet. Each of these connections are eligible for E-rate discounts of up to 90%. Any PSU with multiple campuses may have a WAN that is funded by SCI.

With over 2,600 school buildings in NC and dozens of service providers in the state, it is not feasible for SCI to provide WAN services in the same manner as Internet service. Therefore, each district is responsible for the procurement, management, and E-rate filings for their WAN. The SCI E-rate coordinators provide each PSU guidance and assistance with each step. Upon FCC approval, the service provider bills E-rate directly for the discounted portion and invoices the PSU for the remaining cost of the service. SCI provides an allotment to the PSU to cover this discounted invoice, resulting in a net-zero cost to the PSU for E-rate eligible expenses. In fiscal year, SFY2023, PSUs received approximately $28.8 million in WAN services with E-rate covering approximately $20 million, leaving just $8.7 million for SCI to cover. These

funds provide fiber connections to approximately 2,500 school buildings. Despite significant increases in bandwidth year after year, the cost to the state remains about the same as last year. See Appendices A and B for details on a per-PSU basis.

## Classroom Connections (Wi-Fi)

With Internet service delivered to the individual school building, additional network infrastructure is necessary to distribute access to individual classrooms. Funding inside the school building is considered Category Two in E-rate terminology and has different rules than the funding used to provide fiber to the school building itself. Unlike Internet and WAN funding, this classroom connection funding is capped by the FCC on a per-student basis of $167 per student over five years (2021 to 2025).

The procurement process is similar to that of the WAN: PSUs make the purchases, the vendor bills E-rate and then invoices the PSU for the balance (the non-E-rate portion), and finally, SCI allocates to the PSU an amount equal to the non-E-rate portion as committed by the FCC.

In July 2014, the FCC issued an E-rate Modernization Order establishing a five-year per-student "budget" to expand funding for robust classroom Wi-Fi. In response, SCI established Cooperative Purchasing Agreements providing numerous options for each PSU to select a vendor of their choice. The CPAs provide deep discounts that would not be available to most PSUs if they were to obtain services and equipment on their own. SCI continues to maintain and re-bid these contracts as necessary to meet state procurement laws and E-rate rules.

SCI has an established and tested methodology to track each PSU's use of E-rate funds and to budget for each funding year. If every PSU applies for every dollar allowed under the current 5-year E-rate budget cycle, PSUs could procure $267 million of classroom connectivity equipment, with E-rate providing $200M and SCI providing the remaining $67 million. Over the next two years, for every $1 of state funding, the PSUs would receive $4 of equipment, on average, for Category Two procurements.

As of November 2023, all public schools combined have requested and committed $155 million for Category Two. That represents 58% of the total available Category Two budget for all NC public schools. Given that this is year three of a five-year budget cycle, NC is perfectly on track to consume 95% or more of the available Category Two federal funds if the current expenditure patterns continue. The SCI program aims to enable schools to refresh their network equipment on a about-a-six-year basis. Rules in the program ensure useful equipment is not replaced before its expected lifetime is reached.

Note that the $67 million state portion is not evenly split over the 5 years. This can create challenges as there is no way to predict which districts will file for Category Two each year. Large, low-discount districts can cause a funding shortage if they request is disproportionate amount of Category Two funding in any one single year.

*A detailed analysis and tracking tool for Category Two has been developed by the Friday Institute and is available at: https://go.ncsu.edu/2024cat2budgets*

The following figure is a screen shot of the Category Two Budget Dashboard which highlights (yellow) the districts with the most remaining Category Two funding as of November 2023.

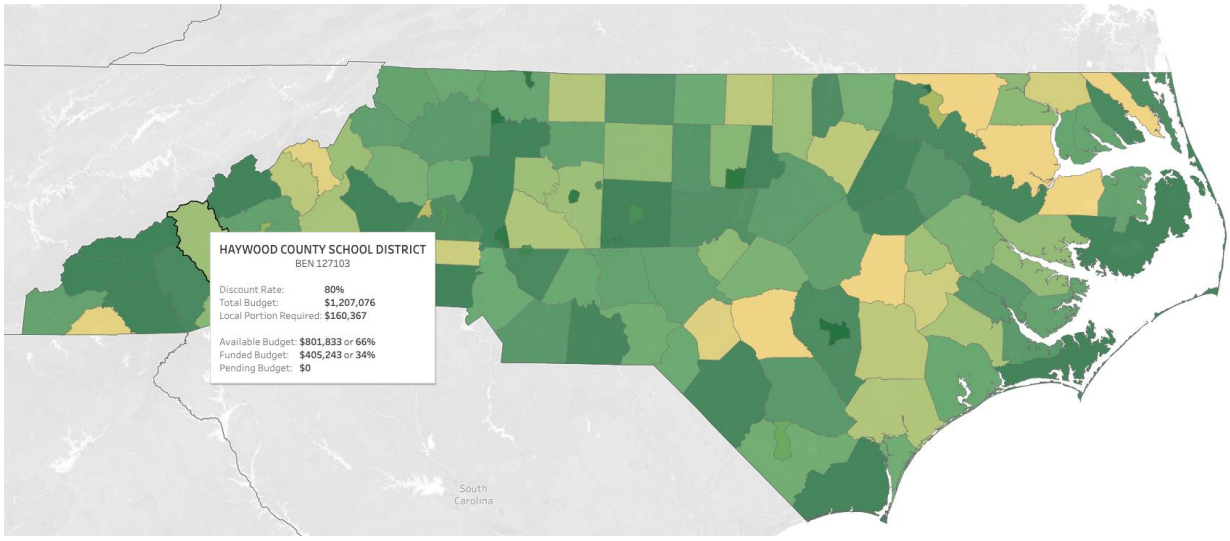


*Figure 2. A screenshot of the Category Two budget tracking tool which can help PSUs and the state plan for maximum usage of the E-rate program.*

A detailed accounting of Category Two funding for E-rate year 2022 (SFY23), which includes calendar years 2022 and 2023 is provided below. This data is broken out by E-rate discount, which is based on district rurality and the percentage of students eligible to participate in NSLP (National School Lunch Program). **Pre-discount** is the full contract value of the equipment and services. **Requested** is the portion of the total cost requested from the FCC. **Committed** is the amount that the FCC agrees to provide. **Disbursed** is the actual amount that the PSUs received from the FCC. Sometimes projects require less funding than expected. PSUs can only be reimbursed for actual expenses incurred thus the disbursed amount may be slightly less than what the FCC committed.

NCDPI must ensure that state funds are allotted based on actual expenses, not committed. Some for-profit E-rate consultants charge their clients based on the amount committed, and thus may request more funds than necessary. While the FCC will not pay for expenses that have not been invoiced, this is a potential issue for the SCI program. Excessive requests of Category Two results in reversion of SCI funds which could otherwise be used by other districts. NCDPI must ensure that allotted SCI funds only match invoiced expenses, otherwise inequitable distribution of funding will occur.

| | Discount % | Requests | Pre-Discount | Requested | Committed | Disbursed |
|---|---|---|---|---|---|---|
| **Charters** | 20% - 29% | 3 | $64,582 | $13,730 | $13,730 | $13,730 |
| | 40% - 49% | 32 | $518,765 | $207,506 | $207,506 | $129,561 |
| | 50% - 59% | 16 | $576,552 | $288,276 | $288,276 | $188,160 |
| | 60% - 69% | 11 | $181,971 | $109,183 | $109,183 | $59,212 |
| | 80% - 89% | 19 | $316,497 | $263,689 | $263,689 | $222,884 |
| | Charters Total | 81 | $1,658,365 | $882,383 | $882,383 | $613,547 |
| **Districts** | 50% - 59% | 5 | $2,403,634 | $1,201,817 | $1,201,817 | $1,073,274 |
| | 60% - 69% | 12 | $4,748,419 | $2,849,052 | $2,849,052 | $2,842,057 |
| | 70% - 79% | 9 | $1,152,931 | $807,051 | $807,051 | $803,306 |
| | 80% - 89% | 111 | $28,776,480 | $23,377,638 | $23,377,638 | $21,138,129 |
| | Districts Total | 137 | $37,081,464 | $28,235,558 | $28,235,558 | $25,856,765 |
| **Grand Total** | | **218** | **$38,739,829** | **$29,117,941** | **$29,117,941** | **$26,470,312** |

*Table 2. E-rate Year 2022, State Fiscal Year 2023 Category Two by discount rate.*

The FCC will reevaluate the Category Two program and reset the budgets in 2026. The original budget in 2015 was $150 per student. In 2021 the budget was adjusted to $167 per student, over a 5-year period, based on inflation. On average, the E-rate discount is 74% across the state.

The Friday Institute closely monitors the usage and produces the dashboard mentioned above annually. As seen in the table above and compared to last year's Legislative Report, the total contract value for Category Two decreased by $14.9 million or 27% year over year.

Preliminary data for E-rate Year 2023 (State Fiscal Year 2024), which is the current cycle, shows $67.7 million in total contract value with SCI expected to provide $18.6 million of that amount. The current fiscal year (the subject of *next year's* Legislative Report) may prove to be challenging, as the demand for Category Two in state fiscal year 2024 is much higher than SFY23. Fiscal Year 2024 Category Two expenditures are on target to be 25% higher than Fiscal Year 2022 and 74% higher than Fiscal Year 2023. This is an example of why it may be necessary to make at least some portion of the SCI appropriation non-reverting. The state will eventually, over the 5-year budget, expend all the Category Two funding; however, it will not and cannot be evenly spaced over the five years while allowing local flexibility in procurement.

| Year | Requests | Pre-Discount | Requested | Committed | Disbursed | Utilization % |
|---|---|---|---|---|---|---|
| 2021 | 398 | $53,562,313.03 | $39,124,687.49 | $39,124,687.49 | $36,018,008.77 | 92% |
| 2022 | 228 | $38,944,035.46 | $29,215,763.07 | $29,215,763.07 | $26,622,990.11 | 91% |
| 2023 | 337 | $67,668,137.63 | $49,114,873.38 | $49,114,873.38 | $12,765,609.00 | 26% |
| | **963** | **$160,174,486.12** | **$117,455,323.94** | **$117,455,323.94** | **$75,406,607.88** | |

*Table 3. Category Two E-rate utilization in the current 5-year budget cycle (as of December 4, 2023).*

See Appendix C for more data regarding historic E-rate utilization and trends.

## E-rate Ineligible Expenses Detail

While most SCI expenses are leveraged against E-rate, there are several items that are not E-rate eligible:

- Firewall Services: PSUs may opt-in to the SCI firewall service offered at no charge to the PSUs through a contract with NCDIT. This firewall service enforces network policies designed to protect school networks. In SFY23, 87 districts and 136 charters utilized this service at a cost of $2.93 million in state funding.
- Content Filtering Services: PSUs may opt-in to the SCI Content Filtering Service offered at no charge to the PSU through a contract with NCDIT. Each PSU's acceptable use policy is enforced on school-issued student devices regardless of the device's location on or off campus. This type of filtering is required by E-rate and the Children's Internet Protection Act but is not E-rate eligible. Currently, NCDIT is billing NCDPI for 87 districts and 142 charters for this service at a cost of $5.34 million in state funding.
- Identity and Access Management (IAM): The 2015 appropriations act expanded the SCI budget by $12M annually effective SFY2017 and included IAM services. Processing logins for every student and staff member daily, IAM automates the provisioning and management of accounts for every student and school employee, over 1.8 million accounts. Integration of those accounts with cloud-based applications and services allows for more consistent security across applications and across PSUs. NCDPI manages the NCEdCloud IAM service through a contract with an identity services provider at an annual cost of $1.5M. Note that this contract was just bid in 2023 for the first time in ten years, and it is likely that the cost will be significantly higher in fiscal year 2025. The need for enhanced and more modern identity management will likely lead to higher costs going forward.
- Client Network Engineering (CNE): Network infrastructure requires knowledge and skill to deliver reliable and secure access. PSUs are responsible for technology planning and the daily operation and maintenance of their

infrastructure, but they need assistance at times. SCI contracts with MCNC to assist PSUs with high-level troubleshooting, network design consultation, and related training events through its CNE team. For 2023, CNE directly supported 112 PSUs with 308 specific engagements. SCI is invoiced quarterly for services provided by MCNC and the actual expenses incurred for each PSU engagement at a cost not-to-exceed $1.8M annually. A critical focus in 2023 was migrating to the new managed-firewall service, which includes advanced threat protection to better secure the K-12 community. In 2023, CNE team led 198 complex migrations to new state-of-the-art firewalls. The SCI team often receives reports of the MCNC CNE team's dedication to supporting the schools, sometimes in the most trying of situations.

- Program Administration: Program administration includes SCI staff salaries and operational costs, licenses, NCDIT program management fees and contracts with E-rate consulting firms and the Friday Institute. For most of SFY23, four, regionally based NCDPI staff members and a manager provided technical consulting, E-rate training, and related support at a combined compensation and benefit expense of $763,932. A Friday Institute contract provides for strategic planning, design, forecasting, modeling, and documentation support at an annual budget of up to $280,000, billed monthly based on actual effort. Total Program Administration costs are less than 1.3% of the total value delivered to PSUs or 3% of State appropriations for the program.

## K12 Internet Utilization and Capacity Analysis

*The following diagrams are available in an interactive dashboard at https://go.ncsu.edu/SCIreport*

NCREN provides for bulk purchase of Internet for all K-12 schools. NCREN peers with several major commercial carriers as well as Internet2. North Carolina schools all receive excellent Internet access, no matter how remote. By combining the purchasing power of the entire state, the cost is spread out among all the schools, enabling even the most remote or economically disadvantaged schools to have the same quality Internet access as the most urban or wealthy schools.

Between May 2022 and May 2023, contracted bandwidth increased from 420 Gbps to 515 Gbps. As of September 2023, the total contracted bandwidth is over 530 Gbps. Contracted bandwidth represents the maximum sustainable transmission rate between all K-12 schools, in aggregate, and the public Internet. The average daily usage is significantly below the peak. This is because the network must be prepared to handle high utilization spikes, such as may be seen during end-of-grade testing. By aggregating the access across all PSUs, the amount of capacity required per student is lowered as compared to a network design in which each PSU connects to the Internet separately. This is because the likelihood that all PSUs will be at peak capacity on the *same day* is extremely low. This allows SCI to procure reasonable, and sufficient bandwidth, while giving each PSU the appearance of having unlimited capacity.

Note that the data represented in the graph below is only downstream, from the Internet to the school; a similar graph for upstream traffic also exists. Per common industry practice, the highest 5% of usage readings have are discarded and not used in the billing calculation. This ensures that MCNC is not aggressively billing based on transient spikes but rather the long-term average based on the lower 95% of the usage readings, taken only during weekdays from 7 AM to 5 PM.

The graph below clearly shows the impact of the return from COVID. Summers are excluded from this data.


*Figure 3: Statewide Contracted Bandwidth, Peak, and Average Utilization for all PSUs using NCREN.*

As the pandemic waned, students returned to schools with thousands of new student devices creating increased demand. It is likely that many schools that were not fully engaged in digital teaching and learning prior to the pandemic will have, by necessity, embraced it and will continue to use digital teaching techniques henceforth. Despite a massive increase in bandwidth capacity over the last ten years, the actual cost of the Internet has remained flat. One key point of distinction is that the aggregated Internet cost of NCREN includes not only peering with the public Internet providers, but also the cost of circuits (fibers) from the various PSUs to the NCREN backbone.

The following diagram shows the growth of district (excluding charter schools) contracted bandwidth, color-coded by circuit speed. The green portions of the bars represent the circuits at 100 and 250 Mbps, while the blue bars represent the 30 and 40 Gbps circuits. There are 14 unique capacity levels in use across LEAs on NCREN. This granular billing ensures that schools are only being charged for their actual need and helps conserve funding. Over time, slower-speed circuits are migrated to higher-speed circuits, as demand dictates.

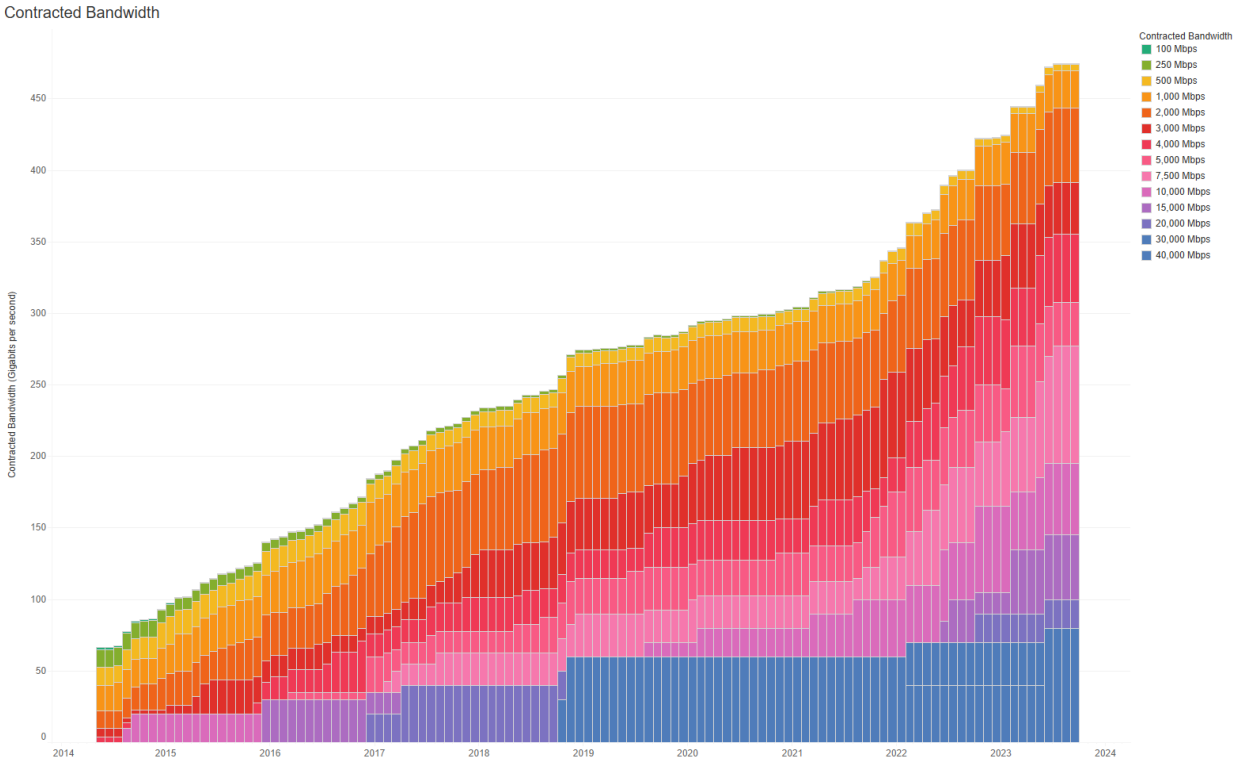


*Figure 4: Aggregate Contracted Bandwidth 2015 through 2023, districts only.*

The following diagram shows the relationship between district size and peak Internet utilization. The size of the LEA, along the x-axis, is logarithmic in scale to spread out the data for better readability. This graph shows that the larger the LEA, the lower the peak utilization. Larger districts typically have more variety in activities that may or may not require the internet at the same time. Larger districts also typically have staggered school schedules. Contrasted with smaller districts, where there is a higher likelihood that all students are in class at the same time, the utilization is spread across a smaller number of hours in the school day.

The graph is color-coded by circuit speed. Rural districts are represented with open circles while urban districts are represented with filled circles. While rural districts tend to be smaller, the graph shows there is not a particular bias for rural districts to have slower connections than urban ones. In fact, most districts with the highest usage are rural. This is probably because students at these schools are most likely to not have internet access at home, thus they rely on the school internet connection more than their urban counterparts.

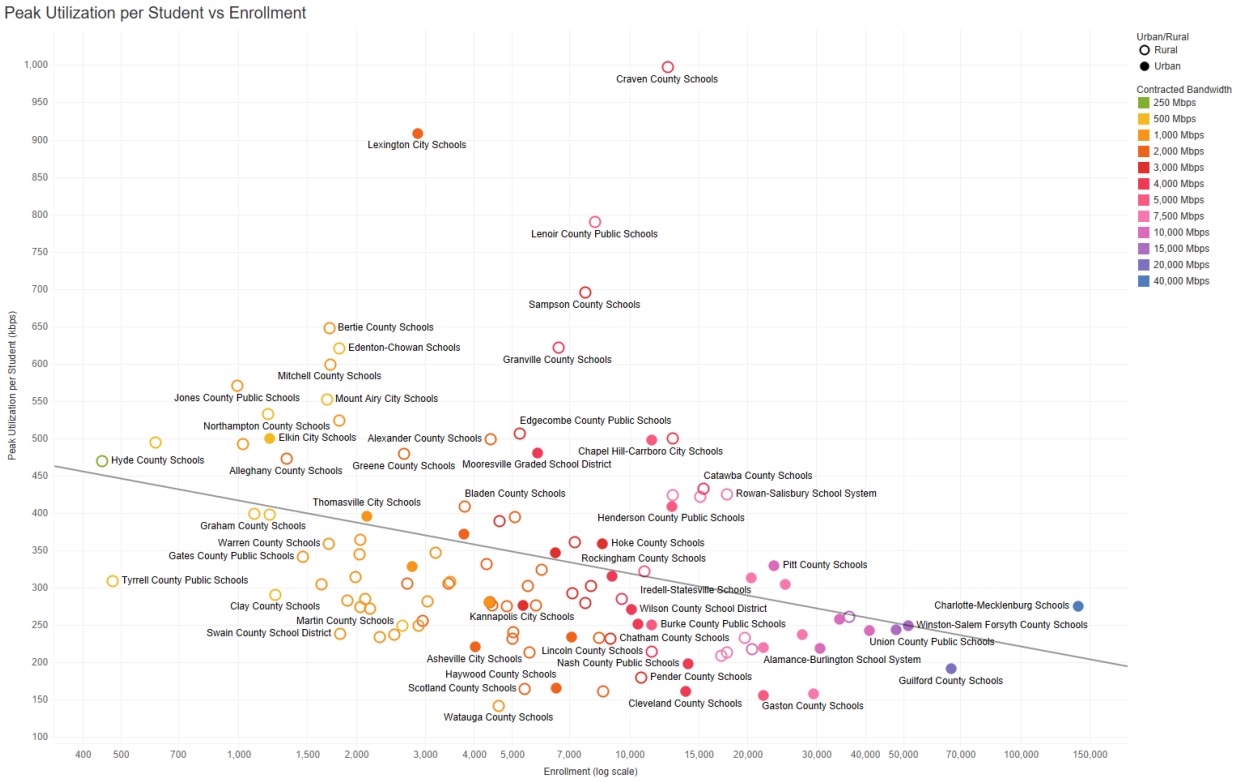


*Figure 5: Peak Per-Student Utilization versus enrollment, color-coded by contracted bandwidth. September 2023, districts only. Open circles are rural districts, while filled circles are urban.*

The gradient of color shows that the contracted bandwidth increases with the number of students in the district.

## Equity in Access

The final graph related to utilization and capacity is a high point for North Carolina and speaks to the success of the School Connectivity Initiative. The x-axis shows the percentage of students eligible to participate in the National School Lunch Program and the y-axis shows the average utilization per student. The graph is color-coded by contracted bandwidth per student.

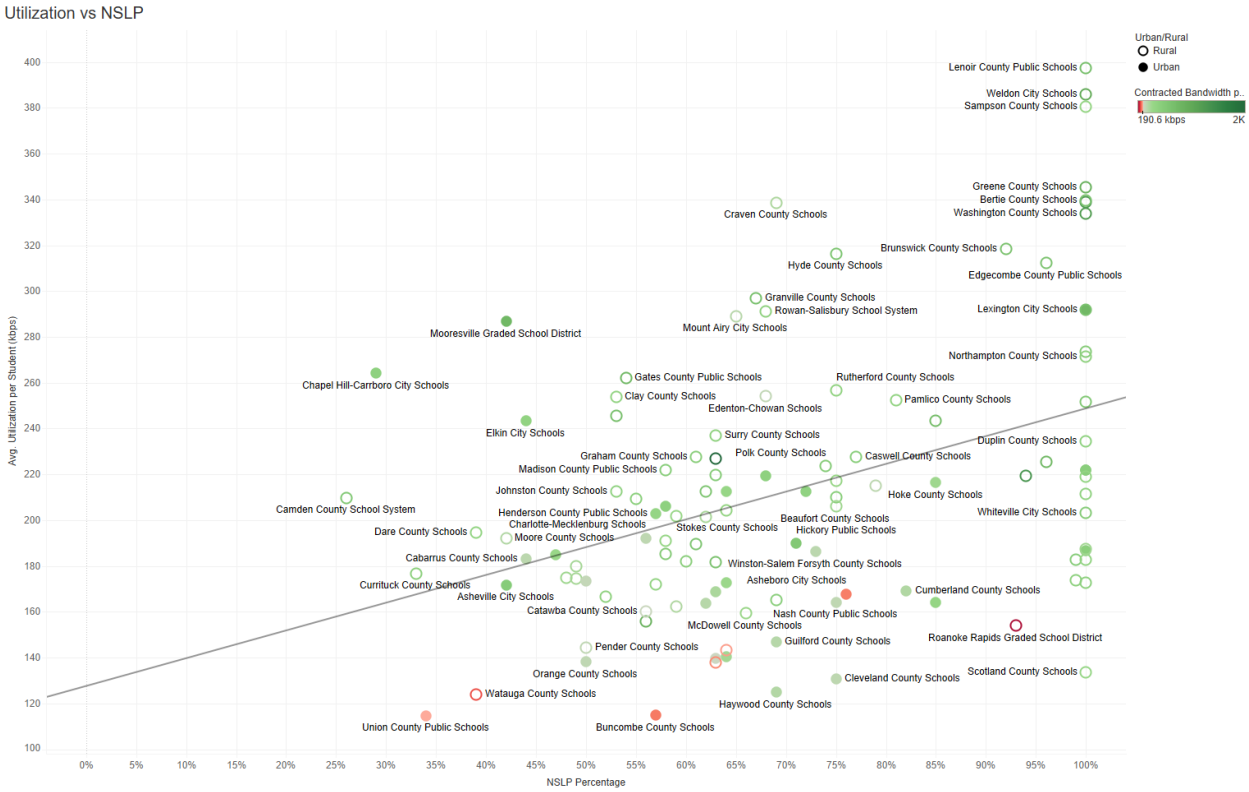


*Figure 6: Average Per-Student Utilization versus NSLP% by District, color-coded by bandwidth per student (September 2023)*

The y-axis is measured in kilobits per second, per student. One megabit is 1,000 kilobits. This graph visualizes the average usage on a per-student basis allowing for a more accurate comparison between PSUs.

There is no correlation between district wealth level (as measured by NSLP percentage) and utilization. This implies there is no bias in the way Internet access is provided to the PSUs by the SCI program. The wide variation of usage per student is likely a function of the teaching methodologies used in the school, school schedules, and the student's likelihood to have home internet access.

Also apparent is the value of procuring Internet access centrally by NCDPI. The cost per Mbps varies widely in the state, because of geography, topology, and service provider used for the circuits from the PSU to the NCREN backbone. By aggregating the purchasing power and procuring Internet centrally, at the state level, districts located in difficult-to-service areas are not disadvantaged compared to those in locations with multiple service providers and competition.

Readers are encouraged to visit https://go.ncsu.edu/SCIReport to view the interactive version of Figures 4, 5 and 6 for more details. All PSUs, including charter schools, are shown in the interactive dashboard on the website.

## Cost Containment

A per-student capacity goal of 1 Mbps per student has been proposed by various national coalitions and the FCC. On the contrary, SCI employs a capacity management process based upon data-driven predictions and demonstrated need through continuous utilization monitoring. This has proven to be a much more efficient and cost-effective approach than simply using an arbitrary Mbps per student target. We estimate that to blindly provide every student with 1 Mbps of internet access, despite data showing no justification for this, the state would expend an additional $20 million of which at least $5 million of that would not be covered by E-rate.

## Considerations and Recommendations for 2023

### Improve SCI Allocation Flexibility

Issue: The federal E-rate cycle spans 18 months. PSU's make requests in March that may not be approved by the FCC until June or even later. PSUs must then wait for SCI funds to be allotted in August (at the earliest, due to OSBM (Office of State Budget and Management) and agency annual budget certification) before placing orders with vendors. As a result of COVID, vendors continue to struggle with supply chain and labor issues to deliver on time, and PSUs cannot pay invoices until delivery is complete. If the PSU cannot receive the products in time, they experience financial challenges in managing state and local funds to prevent the loss of E-rate funding. This creates significant opportunity for audit exceptions and lack of transparency. The allocations of state funds are made for specific, approved projects, based on the actual cost the schools will incur, as filed with the FCC.

Recommendation: SCI recommends the legislature renew the intent of SL2017-57 SECTION 7.11.(d) on a recurring basis to prevent these funds from reverting. The state should also consider a new PRC specifically for allotments leveraged against E-rate with regulations concerning the timeframe in which the funds must be used. With the potential addition of cybersecurity to the E-rate program, this becomes even more of an issue.

### Fund Cybersecurity for Shared Resources Already in Place and Utilized

Issue: The 2024 Biennium Budget provided additional funding for e-mail security through the SCI program. Unfortunately, there is currently no statewide program for e-mail security, and it is unlikely that e-mail security will ever be E-rate eligible. Today, the NC K-12 Cybersecurity Program is funded mostly by one-time COVID-related funding that is set to expire in 2024. Current K-12 statewide cybersecurity shared resources that may be impacted include managed firewall, managed endpoint security, network enumeration and asset discover services, web content filtering, and identity and access management.

Recommendation: SCI recommends that the shared resources already in place, used by most PSUs, and at risk of being turned off or greatly diminished in their capacity in 2024, be funded on a recurring basis. Pending the currently outstanding FCC

rulemaking process, many of these services may become E-rate eligible within the next year or two. Providing funds for these cybersecurity services paves the way for the state to capture even more E-rate funding and maximize economies of scale of the SCI program and the K-12 Cybersecurity Program. Without additional funding, many schools may resort to reduced function cybersecurity solutions which may leave them vulnerable to attack and increase cybersecurity insurance premiums.

## Additional E-rate Advisors for Charter Schools

Issue: With the addition of new charter schools each year, the amount of time needed to manage the E-rate submissions, reviews and audits is unsustainable with the current staff at DPI. In particular, charter schools often cannot justify the cost of an E-rate consultant and DPI is required to help the schools complete various forms and tasks to receive E-rate funding. With the addition of cybersecurity to the E-rate program, this problem will be exacerbated.

The amount of effort required to file for E-rate for a charter school is almost the same as a large district; there is a significant step function in effort before the first E-rate dollar is received. NCDPI can help minimize the impact to charter schools by consolidating the effort of many charters across a small team or vendor which offers E-rate consulting services. Charter schools could also benefit from more advice in determining their technology needs and could benefit from staff skilled in Wi-Fi and network architecture as they select products for Category Two.

Recommendation: SCI recommends the state fund two additional staff members or contractors to focus specifically on the needs of charter schools related to E-rate, internet access, network architecture and cybersecurity.

## Articulate a Clear Policy for SCI Funding for School Bus Wi-Fi

Issue: The FCC has proposed that Wi-Fi on school buses be eligible for E-rate. The current state appropriation for SCI is based on detailed modeling of expected expenses based on the rules set forth by the FCC in the E-rate modernization order of 2014. Currently, there is no funding in SCI to provide the non-E-rate portion of the cost of school bus Wi-Fi in the SCI appropriation. Some districts utilized FCC Emergency Connectivity Funding during COVID to provide school bus Wi-Fi, with varying degrees of success. A conservative estimate for the worst-case cost of School Bus Wi-Fi would mean an additional $5 million state appropriation would be needed. However, it is not clear that the educational value of school bus Wi-Fi has been demonstrated to warrant a statewide program.

Regardless of the state's position on bus Wi-Fi, the changes in FCC rules will require additional resources and time from the SCI team to ensure that PRC 073 and PRC 036 funds are not allotted for the purpose of bus Wi-Fi since that would result in a shortage for funds used for classroom Wi-Fi and school fiber connections.

Recommendation: School bus Wi-Fi should remain a local decision. There are some instances where it may provide excellent educational value, but its use should remain a local decision to implement and fund. The State Board should clearly articulate a policy that SCI funds will not be allotted for E-rate applications for school bus Wi-Fi so that schools may plan accordingly before they begin expending funds in the 2024 E-rate cycle starting in July 2024.

## Technology Deficit Created by the FCC Emergency Connectivity Fund (ECF)

Issue: Since 2021, many North Carolina public schools have utilized the FCC ECF program. This program was a one-time extension of the E-rate program, with substantially different rules than are normally used. The program was funded by a one-time Congressional appropriation rather than Universal Service Fund fees used to cover the costs of E-rate.

The Friday Institute has analyzed the ECF data on a nationwide basis and developed an interactive dashboard: https://go.ncsu.edu/nationwideECF

From this analysis we have discovered that NC public schools will receive approximately $180 million of one-time funding from this program. Of that, approximately $140 million will be used to procure laptops and tablets. Unlike normal E-rate funds, ECF can be used for student devices, and NC schools have taken advantage of this fact. However, this is one-time funding and in three years when the ECF-funded laptops begin to fail, they will need to be replaced. With COVID there was an accelerated move to digital resources and as such the state needs to plan for the sustainable use of digital teaching and learning.

Recommendation: Form a team comprised of NCDPI, PSUs, Fiscal Research, the Friday Institute, and other technology and policy experts to devise potential funding models, cooperative purchasing agreements, and best practices for PSUs to enable sustainable digital teaching and learning. The state should investigate the creation of statewide cooperative purchasing agreements with educational discounts, for a specific range of devices commonly used in K-12 education. Funding for student laptops and tablets should not be part of SCI; however, the state may wish to build a similar program using the successful framework set forth by SCI. The allotment strategies, economies of scale and deep vendor discounts offered by the SCI could provide a meaningful template for other technology procurement in the state.

## Minor Policy Adjustments and Efficiency Improvements for SCI

Issue: No matter how well-planned, a nationwide program like FCC E-rate results in some corner cases and unintended consequences which may create loopholes or inefficiency. SCI does an outstanding job ensuring efficient use of funds, still there is always room for improvement.

An example of a corner case is the use of Category Two funding for cabling in leased buildings that do not have at least five years remaining on their lease. Should state

SCI funds be used to purchase cable that has a twenty-year life span, knowing it will be abandoned in less than five year?

Another example of an inefficiency is regarding how PRC funds are allotted. If a PSU requests an amount of funding from the FCC higher than required, they may be allocated more funding in a PRC than needed. Even if the school only spends the appropriate amount of funding from the PRC, commensurate with their invoiced charges, the remaining funds are lost since SCI funds revert. It is admittedly very hard to exactly predict the cost of an installation, so some loss is expected. However, with additional rules and data analysis this loss could be minimized. Once cybersecurity is E-rate eligible, the complexity will compound.

Recommendation: Additional rules should be established by the State Board after careful review and input from the various stakeholders. All schools seek the best outcomes possible for their students, but some practices may inadvertently result in inequitable distribution of SCI funds, with no ill intent. NCDPI should empower the SCI team to work with the Friday Institute to create a concrete list of actionable policy changes which will ensure equity in the program, regardless of future changes the FCC may make to the E-rate program. This will be especially important as the FCC is set to make rule changes around school bus Wi-Fi and cybersecurity which could have a meaningful impact to SCI funds.

## Supporting Documentation

An interactive dashboard that illustrates PSU Internet utilization, as well as statistics about the costs of E-rate-related services, may be found at:

http://go.ncsu.edu/SCIReport

An interactive map showing Internet utilization may be found at:

https://portal.mcnc.org/reporting/ncren_utilization_map

An interactive data dashboard of for NC Category Two budgets, as well as national ECF funding and Universal Service Fee utilization may be found at:

https://go.ncsu.edu/2024cat2budgets

https://go.ncsu.edu/nationwideECF

https://go.ncsu.edu/2022usf

The balance of this report includes supporting data as follows.

| APPENDIX | DATA |
|---|---|
| A | Fiscal Year 2023 LEA PRC 073 allotments and shared services distributions |
| B | Fiscal Year 2023 Charter School PRC 036 allotments and shared services distributions |
| C | North Carolina E-rate Funding History Report |

## Appendix A: Fiscal Year 2023 LEA Allotments and Shared Services

Presented below are details of the direct funding received by districts from SCI through PRC 073 allocations and the direct costs paid by SCI for each shared service (Content Filtering, Firewall, and Internet services) for SFY23. Districts request E-rate funds for WAN and Wi-Fi during spring for service/delivery within the funding year between July 1 and June 30. SCI issues allocations during each fiscal year to cover the costs for eligible expenses that E-rate does not.

$$UPDATE THIS IS 2022 DATA AS A PLACEHOLDER

| PSU | PSU Name | District WAN | Category 2 Wi-Fi | Content Filtering | Firewall | Internet | Total |
|---|---|---|---|---|---|---|---|
| 10 | Alamance-Burlington Schools | 51,675 | 270,959 | 73,226 | 35,530 | 175,604 | 606,994 |
| 20 | Alexander County Schools | 28,496 | 71,498 | 21,008 | 9,946 | 39,989 | 99,994 |
| 30 | Alleghany County Schools | 17,280 | 11,447 | | | 44,607 | 28,727 |
| 40 | Anson County Schools | 19,890 | 13,422 | | | 39,989 | 33,312 |
| 50 | Ashe County Schools | 22,080 | 19,521 | | 9,946 | 39,989 | 41,601 |
| 60 | Avery County Schools | 14,760 | 1,562 | 21,008 | 9,946 | 39,989 | 16,322 |
| 70 | Beaufort County Schools | 13,987 | 14,766 | 34,319 | | 64,775 | 28,753 |
| 80 | Bertie County Schools | 11,849 | | 21,008 | 9,946 | 39,989 | 11,849 |
| 90 | Bladen County Schools | 37,261 | 18,019 | 38,414 | 20,211 | 96,279 | 55,280 |
| 100 | Brunswick County Schools | 85,618 | 62,918 | | | 114,209 | 148,536 |
| 110 | Buncombe County Schools | 106,920 | 361,517 | 53,960 | | 125,922 | 468,437 |
| 111 | Asheville City Schools | 52,860 | 79,965 | 23,716 | | 56,231 | 132,825 |
| 120 | Burke County Schools | 73,416 | 177,718 | 55,820 | 35,530 | 104,334 | 251,134 |
| 130 | Cabarrus County Schools | 128,102 | 238,940 | 100,666 | 35,508 | 168,579 | 367,042 |
| 132 | Kannapolis City Schools | 11,708 | 39,650 | 55,820 | 20,211 | 104,334 | 51,358 |
| 140 | Caldwell County Schools | 80,425 | 96,292 | | 20,211 | 71,789 | 176,717 |
| 150 | Camden County Schools | 20,495 | 24,861 | 12,307 | 9,946 | 27,416 | 45,356 |
| 160 | Carteret County Public Schools | 33,934 | 29,811 | 38,414 | 20,211 | 78,825 | 63,745 |
| 170 | Caswell County Schools | 10,036 | | 12,307 | 9,946 | 27,416 | 10,036 |
| 180 | Catawba County | 96,048 | 72,633 | | | 137,027 | 168,681 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Schools | | | | | | |
| 181 | Hickory City Schools | 49,236 | | | | 68,297 | 49,236 |
| 182 | Newton Conover City Schools | 7,300 | 25,097 | 21,008 | 9,946 | 51,348 | 32,397 |
| 190 | Chatham County Schools | 23,864 | | 38,414 | 20,211 | 90,522 | 23,864 |
| 200 | Cherokee County Schools | | 16,864 | 21,008 | 9,946 | 105,732 | 16,864 |
| 210 | Edenton-Chowan Schools | 12,810 | 8,118 | 12,307 | 9,946 | 27,416 | 20,928 |
| 220 | Clay County Schools | | 13,870 | | | 95,234 | 13,870 |
| 230 | Cleveland County Schools | 24,300 | | 55,820 | 20,211 | 104,334 | 24,300 |
| 240 | Columbus County Schools | 23,506 | 12,983 | 21,008 | 9,946 | 39,989 | 36,489 |
| 241 | Whiteville City Schools | 7,300 | 5,878 | | | 39,989 | 13,178 |
| 250 | Craven County Schools | 10,000 | | 55,820 | 35,530 | 104,334 | 10,000 |
| 260 | Cumberland County Schools | 141,817 | | 134,152 | 65,701 | 215,046 | 141,817 |
| 270 | Currituck County Schools | 35,435 | 80,377 | 21,008 | 9,946 | 39,989 | 115,812 |
| 280 | Dare County Schools | 28,457 | 49,142 | 38,414 | 20,211 | 63,854 | 77,599 |
| 290 | Davidson County Schools | 72,785 | | 55,820 | 20,211 | 109,686 | 72,785 |
| 291 | Lexington City Schools | 5,417 | 25,339 | 21,008 | 9,888 | 49,933 | 30,756 |
| 292 | Thomasville City Schools | 3,698 | 12,384 | 13,353 | 9,888 | 29,721 | 16,082 |
| 300 | Davie County Schools | 1,940 | 35,812 | 26,582 | 18,856 | 60,089 | 37,752 |
| 310 | Duplin County Schools | 21,892 | | 57,299 | 20,211 | 137,290 | 21,892 |
| 320 | Durham Public Schools | 104,400 | 235,038 | 73,226 | 35,530 | 133,927 | 339,438 |
| 330 | Edgecombe County Public Schools | 22,283 | | 38,414 | 20,211 | 71,789 | 22,283 |
| 340 | Winston Salem/Forsyth County Schools | 115,172 | 394,817 | | | 275,297 | 509,989 |
| 350 | Franklin County Schools | 54,827 | 36,187 | 38,414 | 20,211 | 82,145 | 91,014 |
| 360 | Gaston County Schools | 90,221 | | | | 187,441 | 90,221 |
| 370 | Gates County Schools | 22,342 | 2,954 | 12,307 | 9,946 | 27,416 | 25,296 |
| 380 | Graham County Schools | 3,000 | 9,340 | 7,955 | 4,800 | 18,856 | 12,340 |
| 390 | Granville County Schools | 25,543 | 74,639 | 55,820 | 20,211 | 104,334 | 100,182 |
| 400 | Greene County | 12,336 | 4,567 | 21,008 | 9,946 | 46,343 | 16,903 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Schools | | | | | | |
| 410 | Guilford County Schools | 327,718 | 516,702 | 144,020 | | 271,334 | 844,420 |
| 420 | Halifax County Schools | 10,112 | 5,460 | 21,008 | | 46,343 | 15,572 |
| 421 | Roanoke Rapids City Schools | 12,480 | | 12,307 | 9,946 | 27,416 | 12,480 |
| 422 | Weldon City Schools | 5,700 | | 7,955 | 4,895 | 18,817 | 5,700 |
| 430 | Harnett County Schools | 91,020 | 151,074 | 73,226 | 35,530 | 175,213 | 242,094 |
| 440 | Haywood County Schools | 28,274 | 39,873 | | | 200,384 | 68,147 |
| 450 | Henderson County Schools | 42,372 | 77,059 | 42,302 | | 104,334 | 119,431 |
| 460 | Hertford County Schools | 7,865 | 15,303 | 12,307 | 9,946 | 27,416 | 23,168 |
| 470 | Hoke County Schools | 20,932 | 65,613 | 38,414 | 20,211 | 90,522 | 86,545 |
| 480 | Hyde County Schools | 2,889 | 4,537 | 7,955 | 4,895 | 18,817 | 7,426 |
| 490 | Iredell-Statesville Schools | 447,664 | 83,590 | 134,152 | 65,701 | 213,634 | 531,254 |
| 491 | Mooresville Graded School District | 10,445 | 123,457 | 38,414 | 20,211 | 71,789 | 133,902 |
| 500 | Jackson County Schools | 17,700 | 30,081 | | | 39,989 | 47,781 |
| 510 | Johnston County Schools | 238,680 | 236,467 | | 65,268 | 464,696 | 475,147 |
| 520 | Jones County Schools | 3,540 | | | 9,888 | 27,895 | 3,540 |
| 530 | Lee County Schools | 65,304 | 81,523 | 46,372 | 20,211 | 97,403 | 146,827 |
| 540 | Lenoir County Public Schools | 29,898 | 12,250 | | | 175,213 | 42,148 |
| 550 | Lincoln County Schools | 78,964 | 192,905 | | -766 | 76,730 | 271,869 |
| 560 | Macon County Schools | 64,500 | 36,248 | | | 114,396 | 100,748 |
| 570 | Madison County Schools | 13,440 | 26,065 | 21,008 | 9,888 | 42,653 | 39,505 |
| 580 | Martin County Schools | 13,604 | | 12,307 | 9,946 | 27,416 | 13,604 |
| 590 | McDowell County Schools | 42,828 | | | 20,211 | 71,303 | 42,828 |
| 600 | Charlotte-Mecklenburg Schools | 221,011 | 468,116 | 525,781 | | 770,084 | 689,127 |
| 610 | Mitchell County Schools | 20,112 | 15,022 | 15,096 | 9,946 | 41,333 | 35,134 |
| 620 | Montgomery County Schools | 57,974 | 34,495 | | 9,946 | 46,343 | 92,469 |
| 630 | Moore County Schools | 225,035 | 117,569 | 55,820 | | 107,963 | 342,604 |
| 640 | Nash-Rocky Mount | 78,971 | 98,330 | 55,820 | 35,530 | 104,334 | 177,301 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Schools | | | | | | |
| 650 | New Hanover County Schools | 103,021 | | | 35,530 | 152,995 | 103,021 |
| 660 | Northampton County Schools | 10,272 | | 12,307 | 9,946 | 27,416 | 10,272 |
| 670 | Onslow County Schools | 102,492 | 182,466 | 73,226 | 35,508 | 129,873 | 284,958 |
| 680 | Orange County Schools | 48,220 | 76,072 | 38,414 | 20,211 | 82,145 | 124,292 |
| 681 | Chapel Hill-Carrboro City Schools | 42,281 | 214,830 | 55,820 | 35,530 | 104,334 | 257,111 |
| 690 | Pamlico County Schools | 10,000 | 2,669 | | | 19,188 | 12,669 |
| 700 | Elizabeth City-Pasquotank Public Schools | 30,944 | 33,436 | 38,414 | 20,211 | 71,789 | 64,380 |
| 710 | Pender County Schools | 53,769 | | 38,414 | | 119,519 | 53,769 |
| 720 | Perquimans County Schools | 12,583 | 14,927 | 12,307 | 9,946 | 27,416 | 27,510 |
| 730 | Person County Schools | 27,848 | 48,026 | 38,414 | 20,211 | 71,789 | 75,874 |
| 740 | Pitt County Schools | 279,925 | 261,541 | 90,631 | 35,530 | 155,708 | 541,466 |
| 750 | Polk County Schools | 10,706 | 13,718 | | 9,946 | 27,416 | 24,424 |
| 760 | Randolph County Schools | 108,511 | 88,592 | 38,414 | 20,211 | 71,789 | 197,103 |
| 761 | Asheboro City Schools | 13,546 | 27,514 | 21,008 | 9,946 | 39,391 | 41,060 |
| 770 | Richmond County Schools | 26,471 | 28,812 | 38,414 | 20,211 | 71,789 | 55,283 |
| 780 | Public Schools of Robeson County | 45,273 | 106,248 | 90,631 | 35,530 | 152,332 | 151,521 |
| 790 | Rockingham County Schools | 40,982 | 128,856 | 55,820 | 35,530 | 109,426 | 169,838 |
| 800 | Rowan-Salisbury Schools | 145,458 | 69,231 | | | 175,604 | 214,689 |
| 810 | Rutherford County Schools | 15,912 | 51,884 | 55,820 | 35,530 | 104,334 | 67,796 |
| 820 | Sampson County Schools | 31,458 | 48,038 | 38,414 | 20,211 | 90,522 | 79,496 |
| 821 | Clinton City Schools | 8,850 | 9,890 | | 9,946 | 46,343 | 18,740 |
| 830 | Scotland County Schools | 33,846 | 56,687 | | 20,211 | 71,789 | 90,533 |
| 840 | Stanly County Schools | 118,598 | 62,883 | | 20,211 | 82,145 | 181,481 |
| 850 | Stokes County Schools | 27,862 | 38,037 | 21,008 | 9,946 | 39,989 | 65,899 |
| 860 | Surry County Schools | 53,841 | 68,163 | 38,414 | 20,211 | 71,789 | 122,004 |
| 861 | Elkin City Schools | 7,000 | 16,094 | | 9,888 | 30,767 | 23,094 |
| 862 | Mount Airy City Schools | 16,668 | 12,106 | 12,307 | 9,946 | 27,416 | 28,774 |
| 870 | Swain County | 15,000 | | | | 39,989 | 15,000 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Schools | | | | | | |
| 880 | Transylvania County Schools | 20,052 | 47,345 | 21,008 | 9,946 | 39,989 | 67,397 |
| 890 | Tyrrell County Schools | 3,000 | 4,833 | | 4,895 | 18,817 | 7,833 |
| 900 | Union County Public Schools | 489,216 | 663,293 | | | 155,708 | 1,152,509 |
| 910 | Vance County Schools | 23,921 | 20,698 | 38,414 | 20,211 | 71,789 | 44,619 |
| 920 | Wake County Schools | 663,612 | 2,102,322 | | | 762,084 | 2,765,934 |
| 930 | Warren County Schools | 27,841 | 15,469 | 21,008 | 9,946 | 39,989 | 43,310 |
| 940 | Washington County Schools | 9,530 | | 12,307 | 9,888 | 27,416 | 9,530 |
| 950 | Watauga County Schools | 39,240 | 43,271 | 21,008 | 9,888 | 39,989 | 82,511 |
| 960 | Wayne County Public Schools | 42,869 | | | 35,508 | 137,027 | 42,869 |
| 970 | Wilkes County Schools | 44,760 | 30,363 | 38,414 | | 90,522 | 75,123 |
| 980 | Wilson County Schools | 38,640 | 47,618 | 38,414 | 20,211 | 71,789 | 86,258 |
| 990 | Yadkin County Schools | 22,687 | 34,203 | 21,008 | 9,946 | 49,933 | 56,890 |
| 995 | Yancey County Schools | 17,985 | | 12,307 | 9,946 | 27,416 | 17,985 |
| | Grand Totals | $6,900,443 | $9,750,779 | $3,698,507 | $1,670,476 | $11,198,883 | $16,935,582 |

*Table A1: SCI Funding to LEAs Through PRC073 and for shared services, FY23*

## Appendix B: Fiscal Year 2023 Charter/Residential/Lab School Allotments and Shared Services

Presented below are the details of direct funding received by Charter Schools from SCI through PRC 036 allocations as well as funding to Residential and Lab schools.

The direct costs paid by SCI for each shared service (Content Filtering, Firewall, and Internet services) is provided.

Charter schools may choose to receive a $5,000 allotment in lieu of connecting to NCREN for Internet service. Charters request E-rate funds for WAN and Wi-Fi during spring for service/delivery within the funding year between July 1 and June 30. SCI issues allocations during each fiscal year to cover the costs for eligible expenses that E-rate does not.

$$UPDATE THIS IS 2022 PLACEHOLDER DATA

| PSU ID | PSU Name | WAN | Category 2 Wi-Fi | Content Filtering | Firewall | Internet | Total |
|---|---|---|---|---|---|---|---|
| 01B | River Mill Academy | | | 7,955 | 4,800 | 20,698 | 33,453 |
| 01C | Clover Garden | | 23,878 | | | 13,102 | 36,980 |
| 01D | The Hawbridge School | | | 7,955 | 4,895 | 22,664 | 35,514 |
| 01F | Alamance Community School | | 54,199 | | | | 54,199 |
| 06B | Williams Academy (Crossnore) | | | 7,955 | 4,895 | 22,664 | 35,514 |
| 07A | Washington Montessori | | | | | 10,183 | 10,183 |
| 09A | Paul R Brown Leadership Academy | | | 3,954 | 4,800 | 9,886 | 18,640 |
| 09B | Emereau: Bladen | | 28,888 | | | 13,275 | 42,163 |
| 10A | Charter Day School | | 10,345 | 8,747 | 4,800 | 28,300 | 52,192 |
| 10B | South Brunswick Charter School | | | 5,992 | 8,000 | 21,399 | 35,391 |
| 11A | Evergreen Community Charter | | | | | 22,664 | 22,664 |
| 11B | ArtSpace Charter | | 9,532 | 4,472 | 4,895 | 11,025 | 29,924 |
| 11C | Invest Collegiate - Imagine | | 3,432 | | | 22,664 | 26,096 |
| 11D | The Franklin School of Innovation | | 12,279 | 7,967 | 9,888 | 22,864 | 52,998 |
| 11K | Francine Delany New School | | | 4,479 | 4,895 | 11,050 | 20,424 |
| 12A | The New Dimensions School | | | 4,898 | 4,800 | 12,044 | 21,742 |
| 13A | Carolina International School | | 42,278 | | | 18,939 | 61,217 |
| 13B | Cabarrus Charter Academy | 5,000 | | | | | 5,000 |
| 13C | A.C.E. Academy | | 8,453 | 6,179 | 4,800 | 15,780 | 35,212 |
| 13D | Concord Lake | 5,000 | | | | | 5,000 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | STEAM Academy | | | | | | |
| 16B | Tiller School | 5,000 | | | | | 5,000 |
| 19A | Chatham Charter | | 6,333 | 5,504 | 4,800 | 12,161 | 28,798 |
| 19B | Woods Charter School | | | 7,955 | 4,895 | 22,664 | 35,514 |
| 19C | Willow Oak Montessori | | | 3,954 | 4,800 | 9,886 | 18,640 |
| 20A | The Learning Center | | | 4,472 | 4,800 | 18,708 | 27,980 |
| 23A | Pinnacle Classical Academy | 6,732 | | | | 22,664 | 29,396 |
| 24B | Thomas Academy | 5,000 | | | | | 5,000 |
| 24N | Columbus Charter School | | 2,750 | 4,953 | 5,200 | 12,065 | 24,968 |
| 26B | Alpha Academy | | | 2,618 | | 11,966 | 14,584 |
| 26C | The Capitol Encore Academy | | | 4,940 | 4,800 | 10,995 | 20,735 |
| 27A | Water's Edge Village School | | | 3,778 | 1,917 | 8,463 | 14,158 |
| 296 | Eastern NC School for the Deaf | | | 5,342 | 4,895 | 11,420 | 21,657 |
| 297 | North Carolina School for the Deaf | | | 5,342 | 4,895 | 13,102 | 23,339 |
| 298 | Governor Morehead School | | | 5,285 | 4,895 | 12,801 | 22,981 |
| 29A | Davidson Charter Academy: CFA | | 12,392 | 4,519 | 4,800 | 11,134 | 32,845 |
| 32A | Maureen Joy Charter | | 4,971 | 7,955 | | 20,698 | 33,624 |
| 32B | Healthy Start Academy | | | 7,955 | 9,559 | 20,698 | 38,212 |
| 32C | Carter Community Charter | | | 5,342 | | 12,934 | 18,276 |
| 32D | Kestrel Heights School | 15,778 | 10,110 | | | 20,698 | 46,586 |
| 32H | Research Triangle Charter | 5,000 | | | | | 5,000 |
| 32K | Central Park School For Children | 12,840 | 13,704 | 8,251 | 4,800 | 21,562 | 61,157 |
| 32L | Voyager Academy | | | 12,307 | 9,946 | 30,767 | 53,020 |
| 32M | Global Scholars Academy | | 1,549 | 5,342 | 4,895 | 12,934 | 24,720 |
| 32N | Research Triangle High School | | | 12,307 | 9,946 | 27,383 | 49,636 |
| 32P | The Institute for the Development of You | | 565 | 4,519 | 4,800 | 11,134 | 21,018 |
| 32Q | Reaching All Minds Academy | | | 4,472 | 4,895 | 11,037 | 20,404 |
| 32R | Excelsior Classical Academy | | | 5,013 | 4,800 | 12,540 | 22,353 |
| 32S | KIPP Durham College Preparatory | | | 5,342 | 4,800 | 12,934 | 23,076 |
| 32T | Discovery Charter | | | 5,235 | 4,800 | 13,342 | 23,377 |
| 33A | North East Carolina Preparatory School | | 1,889 | 7,955 | | 18,512 | 28,356 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 34B | Quality Education Academy | | 2,702 | 5,504 | 4,800 | 13,717 | 26,723 |
| 34D | Carter G Woodson School | | 254 | 4,732 | 4,895 | 11,909 | 21,790 |
| 34F | Forsyth Academy | 5,000 | | | | | 5,000 |
| 34G | Arts Based School | 5,000 | | | | | 5,000 |
| 34H | The North Carolina Leadership Academy | | 36,371 | 7,955 | 4,800 | 22,664 | 71,790 |
| 35A | Crosscreek Charter School | 5,806 | 4,531 | | | | 10,337 |
| 35B | Youngsville Academy | 5,000 | | | | | 5,000 |
| 36B | Piedmont Community Charter | 13,297 | 27,869 | 10,087 | 9,983 | 25,633 | 86,869 |
| 36C | Mountain Island Charter | | | 12,307 | 9,946 | 33,982 | 56,235 |
| 36F | Ridgeview Charter School | | | 3,954 | | 9,779 | 13,733 |
| 36G | Team CFA - Community Public Charter | | 10,225 | 3,954 | | 9,779 | 23,958 |
| 39A | Falls Lake Academy | | 12,856 | | | 20,698 | 33,554 |
| 39B | Oxford Preparatory High School | | 34,798 | | 4,800 | 18,512 | 58,110 |
| 41B | Greensboro Academy | 5,000 | | | | | 5,000 |
| 41C | Guilford Preparatory Academy | 1,076 | 570 | 4,472 | 4,800 | 11,025 | 21,943 |
| 41D | Phoenix Academy Inc | 22,572 | 2,666 | 4,634 | | 11,378 | 41,250 |
| 41F | Triad Math and Science Academy | | | 7,955 | 4,895 | 22,664 | 35,514 |
| 41G | Cornerstone Charter Academy | | 75,668 | 6,623 | 9,888 | 17,814 | 109,993 |
| 41H | The College Preparatory and Leadership A | | | 5,342 | 4,895 | 12,934 | 23,171 |
| 41J | Summerfield Charter Academy | 5,000 | | | | | 5,000 |
| 41K | Piedmont Classical High School | | | 7,955 | 4,895 | 20,698 | 33,548 |
| 41L | Gate City Charter Academy | 5,000 | | | | | 5,000 |
| 41M | Next Generation Academy | | | | | 10,226 | 10,226 |
| 41N | The Experiential School of Greensboro | | | 3,954 | 4,800 | 9,779 | 18,533 |
| 41Q | Revolution Academy | | 31,144 | | | | 31,144 |
| 42A | KIPP Halifax College Preparatory | 4,890 | 4,671 | 7,955 | | 18,512 | 36,028 |
| 42B | Hobgood Charter School | | 4,263 | 4,269 | | 10,277 | 18,809 |
| 43C | Anderson Creek Club Charter School | | 6,252 | 4,472 | 4,895 | 9,924 | 25,543 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 43D | Achievement Charter Academy | | 14,675 | | | | 14,675 |
| 44A | Shining Rock Classical Academy: CFA | | | 5,342 | 4,895 | 13,102 | 23,339 |
| 45A | The Mountain Community Sch | | | 3,954 | 4,800 | 9,779 | 18,533 |
| 45B | FernLeaf Community Charter School | | 16,062 | 3,954 | 4,895 | 9,779 | 34,690 |
| 49B | American Renaissance School | 6,984 | | 7,955 | 4,800 | 20,698 | 40,437 |
| 49D | Success Charter School | | | | 1,917 | 9,361 | 11,278 |
| 49E | Pine Lake Preparatory | | | 12,307 | 9,946 | 33,982 | 56,235 |
| 49F | Langtree Charter Academy | 5,000 | | | | | 5,000 |
| 49G | Iredell Charter Academy | 5,000 | | | | | 5,000 |
| 50A | Summit Charter | | 6,576 | | | 18,867 | 25,443 |
| 51A | Neuse Charter School | | | 7,955 | 4,895 | 18,670 | 31,520 |
| 51B | Johnston Charter School | 5,000 | | | | | 5,000 |
| 53B | Ascend Leadership Academy | | 15,655 | 4,056 | 4,800 | 24,445 | 48,956 |
| 53C | MINA Charter School of Lee County | | 33,695 | | | | 33,695 |
| 54A | Children's Village Academy | 1,050 | | 7,955 | | 21,446 | 30,451 |
| 55A | Lincoln Charter School | 7,038 | 50,478 | 12,307 | 9,946 | 33,982 | 113,751 |
| 55B | West Lake Preparatory Academy | 5,000 | | | | | 5,000 |
| 58B | Bear Grass Charter School | | 7,280 | 7,955 | 4,895 | 18,512 | 38,642 |
| 60B | Sugar Creek Charter | 1,464 | 11,162 | | | 22,664 | 35,290 |
| 60D | Lake Norman Charter | | 15,082 | 12,307 | | 27,416 | 54,805 |
| 60F | Metrolina Regional Scholars Academy | | | 4,598 | 4,895 | 11,324 | 20,817 |
| 60G | Queens Grant Community School | | 25,155 | 7,955 | 4,800 | 22,664 | 60,574 |
| 60I | Community School of Davidson | 5,400 | 10,868 | 7,955 | 4,895 | 22,664 | 51,782 |
| 60J | Socrates Academy | | 24,287 | 7,955 | 4,800 | 20,698 | 57,740 |
| 60K | Charlotte Secondary School | | | 5,342 | 4,895 | 13,102 | 23,339 |
| 60L | KIPP: Charlotte | 7,398 | 6,825 | | | | 14,223 |
| 60M | Corvian Community School | 3,683 | 35,741 | 7,955 | 4,800 | 22,664 | 74,843 |
| 60N | Aristotle Preparatory Academy | | | 4,133 | 4,895 | 10,226 | 19,254 |
| 60P | Eastside STREAM | | | 4,472 | 4,800 | 11,025 | 20,297 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Charlotte Choice Charter | | | | | | |
| 60Q | Invest Collegiate | | 64,982 | | | 11,785 | 76,767 |
| 60S | Bradford Preparatory School | | 42,051 | 10,423 | 5,743 | 26,410 | 84,627 |
| 60U | Commonwealth High School | | | | | 11,025 | 11,025 |
| 60Y | Pioneer Springs Community School | | 20,114 | 3,954 | 4,895 | 9,779 | 38,742 |
| 61J | Lakeside Charter Academy | | 7,035 | 4,472 | 4,895 | 11,025 | 27,427 |
| 61K | United Community School | | | 4,472 | 4,800 | 11,045 | 20,317 |
| 61L | Stewart Creek High School | | | | | 11,808 | 11,808 |
| 61M | Charlotte Lab School | 14,946 | 20,388 | 7,955 | 9,983 | 22,664 | 75,936 |
| 61N | Queen City STEM School | | | 7,955 | 4,800 | 22,664 | 35,419 |
| 61P | VERITAS Community School | | | 5,216 | 4,895 | 13,418 | 23,529 |
| 61Q | Mallard Creek STEM Academy | | | 5,743 | 4,800 | 14,597 | 25,140 |
| 61R | Matthews-Mint Hill Charter Academy | 5,000 | | | | | 5,000 |
| 61S | Unity Classical Charter School | 5,000 | | | | | 5,000 |
| 61T | Movement School | | 6,408 | | 8,000 | 22,664 | 37,072 |
| 61U | UpROAR Leadership Academy | | | 4,472 | 4,800 | 11,025 | 20,297 |
| 61V | Bonnie Cone Classical Academy | | 16,227 | 4,578 | | 11,808 | 32,613 |
| 61W | East Voyager Academy | | | 5,342 | 4,895 | 13,102 | 23,339 |
| 61X | Mountain Island Day Community Charter | | 45,431 | 7,955 | 4,800 | 22,664 | 80,850 |
| 61Y | Steele Creek Preparatory Academy | 5,000 | | | | | 5,000 |
| 62A | Tillery Charter Academy | | 1,524 | | | 13,007 | 14,531 |
| 62J | Southwest Charlotte STEM Academy | | | 4,634 | | 11,408 | 16,042 |
| 62K | Movement School Eastland | | 7,215 | | | 7,319 | 14,534 |
| 63A | The Academy of Moore County | | | 4,787 | 4,800 | 11,730 | 21,317 |
| 63B | Sandhills Theatre Arts Renaiss | 5,000 | | | | | 5,000 |
| 63C | Moore Montessori Community School | | | 3,954 | 4,800 | 8,833 | 17,587 |
| 64A | Rocky Mount Preparatory | | 2,278 | 7,955 | 4,895 | 18,512 | 33,640 |
| 65A | Cape Fear Center for Inquiry | | | 7,955 | 4,800 | 22,664 | 35,419 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 65B | Wilmington Preparatory Academy | 5,000 | | | | | 5,000 |
| 65C | Douglass Academy | | | 4,893 | 4,800 | 12,827 | 22,520 |
| 65D | Island Montessori Charter | | | 4,472 | 4,800 | 11,025 | 20,297 |
| 65F | Coastal Preparatory Academy | | 39,928 | 6,346 | 4,895 | 16,867 | 68,036 |
| 65G | Girls Leadership Academy of Wilmington | | 2,306 | 4,695 | 4,800 | 11,785 | 23,586 |
| 65H | Wilmington School of the Arts | | 7,464 | | | | 7,464 |
| 65Z | DC Virgo Prep Academy | | | | 4,895 | | 4,895 |
| 66A | Gaston College Preparatory | | | 7,955 | | 18,512 | 26,467 |
| 67B | Z.E.C.A. School of Arts and Technology | | | 4,472 | 4,800 | 9,924 | 19,196 |
| 68A | Eno River Academy | | 4,405 | 7,955 | 4,895 | 18,512 | 35,767 |
| 68C | The Expedition School | | 26,501 | | | 11,037 | 37,538 |
| 69A | Arapahoe Charter School | | 5,339 | 4,480 | 4,895 | 9,822 | 24,536 |
| 70A | Northeast Academy of Aerospace & AdvTech | | 38,663 | 6,346 | 4,800 | 14,357 | 64,166 |
| 73A | Bethel Hill Charter | | | 4,787 | 4,800 | 9,734 | 19,321 |
| 73B | Roxboro Community School | | 16,938 | 7,955 | 4,895 | 18,512 | 48,300 |
| 74C | Winterville Charter Academy | 5,000 | | | | | 5,000 |
| 76A | Uwharrie Charter Academy | 9,245 | | | 4,800 | 19,039 | 33,084 |
| 78A | CIS Academy | | | 3,954 | 4,800 | 9,779 | 18,533 |
| 78B | Southeastern Academy | | | 4,472 | 4,895 | 11,025 | 20,392 |
| 79A | Bethany Community Middle | | | 3,605 | 4,800 | 16,188 | 24,593 |
| 80B | Essie Mae Kiser Foxx Charter School | | | 3,954 | | 9,779 | 13,733 |
| 81A | Thomas Jefferson Classical Academy | 5,340 | 60,497 | 7,955 | 4,895 | 22,664 | 101,351 |
| 81B | Lake Lure Classical Academy | | 6,628 | 7,955 | 4,895 | 22,664 | 42,142 |
| 84B | Gray Stone Day School | | 10,595 | 7,955 | 4,895 | 20,698 | 44,143 |
| 86T | Millennium Charter Academy | 5,000 | | | | | 5,000 |
| 87A | Mountain Discovery Charter School | | | 3,778 | 1,896 | 19,222 | 24,896 |
| 88A | Brevard Academy | | | 4,519 | 4,800 | 16,633 | 25,952 |
| 90A | Union Academy Charter School | | 17,246 | 9,347 | 4,895 | 23,907 | 55,395 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 90B | Union Day School | | | | | 10,856 | 10,856 |
| 90C | Union Preparatory Academy at Indian Trail | 5,000 | | | | | 5,000 |
| 90D | Monroe Charter Academy | | 10,870 | | | 10,735 | 21,605 |
| 90F | Apprentice Academy HS of North Carolina | | 9,326 | 3,954 | | 9,886 | 23,166 |
| 91A | Vance Charter School | | | 7,955 | | 18,512 | 26,467 |
| 91B | Henderson Collegiate | 1,040 | 8,543 | 10,982 | 4,895 | 24,934 | 50,394 |
| 92B | Exploris Middle School | 7,533 | 5,243 | 4,528 | 4,895 | 11,157 | 33,356 |
| 92D | Magellan Charter | | | 4,883 | 4,895 | 12,007 | 21,785 |
| 92E | Sterling Montessori Academy | | | 7,955 | 4,895 | 22,664 | 35,514 |
| 92F | Franklin Academy | | | | | 20,881 | 20,881 |
| 92G | East Wake Academy | | | 12,307 | 9,946 | 33,982 | 56,235 |
| 92K | Raleigh Charter High School | | | 7,955 | 4,800 | 22,664 | 35,419 |
| 92L | Torchlight Academy | | | 5,351 | 4,895 | 13,702 | 23,948 |
| 92M | PreEminent Charter School | 5,000 | | | | | 5,000 |
| 92N | Quest Academy | 5,000 | | | | | 5,000 |
| 92P | Southern Wake Academy | | | 7,955 | 4,895 | 18,512 | 31,362 |
| 92R | Casa Esperanza Montessori | | 36,691 | 4,088 | 4,895 | 15,496 | 61,170 |
| 92S | Endeavor Charter | | 2,862 | 6,157 | 4,800 | 16,693 | 30,512 |
| 92T | Triangle Math and Science Academy | | | 7,955 | 4,895 | 22,664 | 35,514 |
| 92U | Longleaf School of the Arts | | 5,694 | 4,269 | 4,800 | 9,485 | 24,248 |
| 92V | Wake Forest Charter Academy | 5,000 | | | | | 5,000 |
| 92W | Cardinal Charter | 5,000 | | | | | 5,000 |
| 92Y | Envision Science Academy | | 22,245 | 7,955 | 4,895 | 22,664 | 57,759 |
| 93A | Haliwa-Saponi Tribal School | | 570 | 4,472 | 4,895 | 9,924 | 19,861 |
| 93J | PAVE Southeast Raleigh Charter | | 2,749 | 6,059 | 4,800 | 15,403 | 29,011 |
| 93L | Central Wake Charter High School | | | | | 13,187 | 13,187 |
| 93M | Peak Charter Academy | 5,000 | | | | | 5,000 |
| 93N | Pine Springs Preparatory Academy | | 40,533 | 7,955 | 4,800 | 22,664 | 75,952 |
| 93P | Rolesville Charter Academy | 5,000 | | | | | 5,000 |
| 93Q | Carolina Charter Academy: CFA | | | 7,955 | | 20,698 | 28,653 |
| 93R | Raleigh Oak Charter | | | 4,133 | 4,800 | 10,226 | 19,159 |
| 93T | Cardinal Charter | 5,000 | | | | | 5,000 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Academy at Wendell Falls | | | | | | |
| 94A | Pocosin Innovative Charter | | 3,664 | 3,137 | | 7,022 | 13,823 |
| 94Z | Northeast Regional School - Biotech/Agri | | | 4,472 | 4,895 | 9,924 | 19,291 |
| 95A | Two Rivers Community School | | 8,932 | 4,472 | 4,895 | 11,025 | 29,324 |
| 96C | Dillard Academy | | | 4,898 | 4,800 | 12,044 | 21,742 |
| 96F | Wayne Preparatory | | | 7,955 | 4,800 | 22,664 | 35,419 |
| 97D | Bridges Academy | | | 4,472 | 4,895 | 9,924 | 19,291 |
| 98A | Sallie B Howard School | 3,855 | | | | | 3,855 |
| 98B | Wilson Preparatory Academy | | | 7,955 | 4,990 | 18,512 | 31,457 |
| | Grand Totals | $307,967 | $1,404,013 | $859,602 | $650,685 | $2,659,556 | $5,881,823 |

*Table B1: SCI Funding to Charter, Residential, and Lab Schools for shared services, Fiscal Year 2023*

## Appendix C: North Carolina E-rate Funding History

Since the inception of the E-rate program, North Carolina public schools have procured $2.1 billion in services and equipment. Over $1.3 billion of that total cost has been disbursed to the schools in the form of E-rate discounts.

Table C1 below, shows North Carolina public school E-rate funding requests for all 115 districts as well as charter schools that are open, as of November 22, 2023. (Closed charters are filtered out.) This represents the entire history of the E-rate program.

The total pre-discount amount for all requested services, the amount of E-rate funding requested, the amount of funding committed by the FCC, the amount of funding ultimately disbursed, and the utilization (ratio of disbursed to committed) are provided for each year that E-rate has been available.

Since the modern E-rate rules went into effect in 2015, the average total contract value for all E-rate funding sought by public schools was $103 million per year. Of that, the FCC covers about $76 million per year, with state and local funding being responsible for about $26 million per year, on average. However, as the data shows, the procurement cycle is "lumpy" and it is impossible to predict, or even regulate how schools will seek funding from year to year.

Each year NC schools receive significant increases in capacity, both in the NCREN internet backbone and in each district's WAN. However, due to improved technology and increased competition, prices have remained stable while service levels have increased steadily. With the introduction of Category Two, whereby the FCC funds Wi-Fi networks on a per student budget calculation, we can predict a five-year total contract value by multiplying the number of students by the FCC per student budget. For the 2021 to 2026 E-rate years, the budget is $167 per student. With an estimated 1.5 million students, $250 million in procurement for Wi-Fi, cabling, and other inside-the-school network equipment is expected.

E-rate funding for fiber connections to schools is not based on a budget, but purely on prevailing rates as discovered by public bidding. So, while Category Two spending is kept in check by the per-student budget, and the fact that all schools may purchase via highly discounted NCDPI cooperative purchasing agreements, the WAN connections are not regulated. Furthermore, the presence, or lack of competition, plays a distinct role in the costs of WANs. This means that WAN costs may vary widely even between districts that are geographically adjacent. This may be an area of focus in the future if it is determined that some schools are seeking more WAN capacity than is warranted based on their actual utilization. The Friday Institute has performed detailed analysis beyond the scope of this report.

| Year | Pre-Discount | Requested | Committed | Disbursed | Requests | Utilization % |
|---|---|---|---|---|---|---|
| 1998 | $31,248,326 | $21,645,083 | $21,511,196 | $17,384,524 | 1,889 | 81% |
| 1999 | $42,380,935 | $29,274,407 | $28,605,610 | $24,662,986 | 1,596 | 86% |
| 2000 | $30,508,564 | $21,002,184 | $20,915,884 | $17,740,889 | 1,006 | 85% |
| 2001 | $30,523,010 | $20,651,680 | $20,144,577 | $16,038,416 | 1,199 | 80% |
| 2002 | $64,699,501 | $50,042,884 | $48,117,223 | $39,627,468 | 1,645 | 82% |
| 2003 | $63,794,563 | $48,166,547 | $45,339,691 | $37,042,927 | 1,733 | 82% |
| 2004 | $53,567,285 | $39,003,187 | $37,480,433 | $30,336,639 | 1,757 | 81% |
| 2005 | $69,417,671 | $52,303,301 | $51,371,153 | $43,935,035 | 1,480 | 86% |
| 2006 | $65,879,854 | $48,875,401 | $47,887,208 | $40,370,952 | 1,040 | 84% |
| 2007 | $80,792,022 | $60,984,017 | $58,100,273 | $49,841,069 | 1,418 | 86% |
| 2008 | $76,163,946 | $57,568,968 | $56,887,067 | $50,518,264 | 1,060 | 89% |
| 2009 | $84,401,239 | $63,457,778 | $61,784,681 | $53,100,467 | 1,065 | 86% |
| 2010 | $103,111,421 | $80,929,601 | $78,383,086 | $66,437,425 | 1,194 | 85% |
| 2011 | $93,713,659 | $73,263,883 | $71,739,371 | $63,832,428 | 998 | 89% |
| 2012 | $102,410,695 | $80,803,818 | $80,199,245 | $71,535,281 | 947 | 89% |
| 2013 | $88,454,499 | $67,817,838 | $67,383,173 | $60,484,292 | 824 | 90% |
| 2014 | $89,784,592 | $68,951,432 | $68,504,594 | $60,406,953 | 812 | 88% |
| 2015 | $141,914,738 | $107,275,132 | $107,253,515 | $102,747,826 | 1,680 | 96% |
| 2016 | $136,451,141 | $96,818,647 | $96,818,647 | $88,953,554 | 1,238 | 92% |
| 2017 | $89,560,596 | $59,898,790 | $59,701,049 | $55,379,235 | 982 | 93% |
| 2018 | $87,887,458 | $63,367,419 | $63,367,419 | $55,716,671 | 1,093 | 88% |
| 2019 | $90,285,212 | $69,619,304 | $69,607,213 | $65,141,129 | 1,588 | 94% |
| 2020 | $88,555,866 | $67,322,778 | $67,322,778 | $63,703,927 | 2,149 | 95% |
| 2021 | $101,635,000 | $76,881,291 | $76,881,291 | $70,146,191 | 567 | 91% |
| 2022 | $79,801,143 | $61,082,866 | $61,082,866 | $54,792,616 | 384 | 90% |
| 2023 | $109,574,549 | $82,258,773 | $82,258,773 | $15,837,667 | 497 | 19% |
| **TOTAL** | **$2,096,517,487** | **$1,569,267,008** | **$1,548,648,015** | **$1,315,714,830** | **31,841** | |

*Table C1: 1998-2023 NC public school E-rate Utilization*

Table C2 shows only Category Two funds associated with the Wi-Fi Expansion Program, which began in 2015, funded initially by the State with Race to the Top grant. Under this program, NCDPI developed statewide convenience contracts. The educational discounts offered by the vendors provided significantly lower pricing for even the small districts, enabling all schools to maximize their buying power while allowing choices from multiple vendors. In February 2020, new CPAs, with 23 original equipment vendors and 30 resellers, were established for five years. Assuming the FCC continues the Category Two program, we can expect another five-year budget cycles for 2026 to 2031 and, these contracts will need to be re-bid under FCC and state procurement regulations in 2025.

The utilization for 2022 and 2023 is low because these funding years are still in progress. Schools have until September 30 of the following year, or 180 days after the FCC commits funding to complete their procurements. This is one of the reasons that reporting E-rate data is so complex; each E-rate funding year spans three state fiscal years.

| Year | Pre-Discount | Requested | Committed | Disbursed | Requests | Utilization |
|---|---|---|---|---|---|---|
| 2015 | $43,420,879 | $35,170,639 | $35,169,921 | $34,848,226 | 577 | 99% |
| 2016 | $51,094,095 | $38,350,865 | $38,350,865 | $37,701,108 | 615 | 98% |
| 2017 | $25,482,163 | $17,432,517 | $17,234,775 | $17,081,820 | 492 | 99% |
| 2018 | $28,373,120 | $19,394,868 | $19,394,868 | $19,046,346 | 752 | 98% |
| 2019 | $30,740,604 | $22,617,750 | $22,605,659 | $22,004,160 | 1,054 | 97% |
| 2020 | $40,560,051 | $29,487,953 | $29,487,953 | $28,461,794 | 1,950 | 97% |
| 2021 | $53,735,800 | $39,272,722 | $39,272,722 | $36,161,574 | 390 | 92% |
| 2022 | $38,745,167 | $29,122,212 | $29,122,212 | $26,481,447 | 219 | 91% |
| 2023 | $67,455,759 | $48,964,970 | $48,964,970 | $11,527,146 | 324 | 24% |
| **Grand Total** | **$379,607,638** | **$279,814,495** | **$279,603,945** | **$233,313,621** | **6,373** | |

*Table C2: NC Category Two E-rate Utilization Through NCDPI Contracts (2015-2023)*

The following figure show the unpredictability of Category Two funding requests and supports the need for at least a portion of the SCI appropriations not to revert. In an optimized program, the state should expect $250 million in total E-rate procurement over the five years, 2021 to 2025. During that time, the cost to the state, in a perfectly optimized SCI program would be about $62 million. Except during the COVID year, the state has an outstanding record of utilizing Category Two funds that were approved by the FCC; this is depicted by how close the yellow Requested line is to the green Disbursed line. Schools are still in the process of submitting reimbursement request for the 2022 and 2023 years and thus the deviation is expected. The redline which shows total contract value of all procurements under Category Two gyrates wildly and has reached an all-time high in FY 2024.

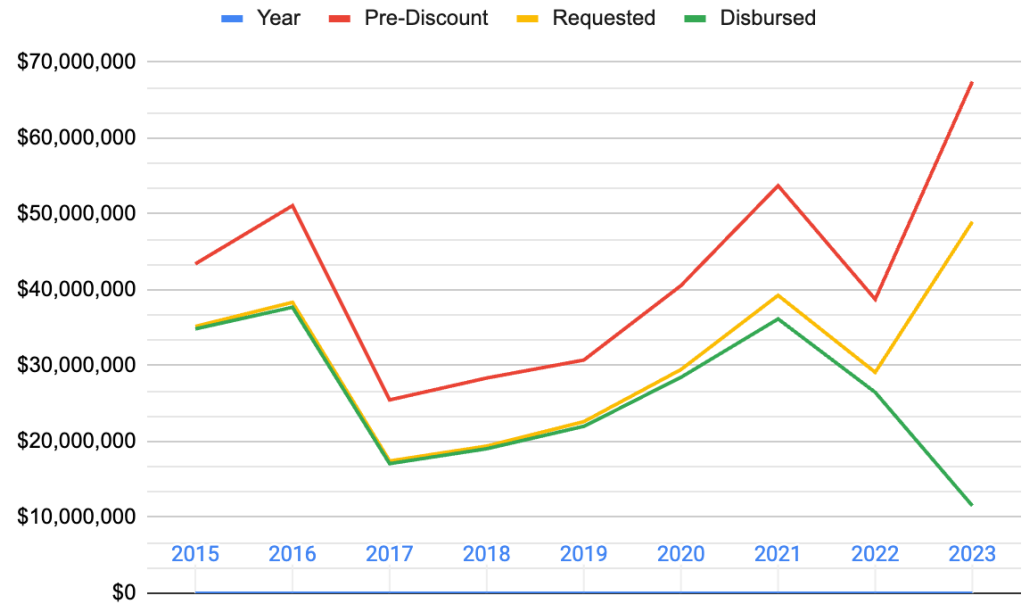


*Figure C1: NC Category Two E-rate Utilization Through NCDPI Contracts (2015-2023)*