

North Carolina Department of Information Technology, Broadband Infrastructure Office Comments
WT Docket No. 18-120: Transforming the 2.5 GHz Band

Introduction

We applaud the Commission's efforts to transform the 2.5 GHz Band, also known as the Education Broadcast System (EBS) spectrum. The Notice of Proposed Rule Making (NPRM) goes a long way to accomplishing the objective of making EBS more prevalent and used. We propose several suggestions to the NPRM, below, that would greatly advance our state's efforts to eliminate the homework gap.

The Current State of Broadband In North Carolina

To understand our proposals and suggestions included below, it is necessary to understand the broadband availability and adoption landscape in North Carolina. Broadband availability—also sometimes referred to as access or deployment—measures the supply of broadband while broadband adoption measures its demand.

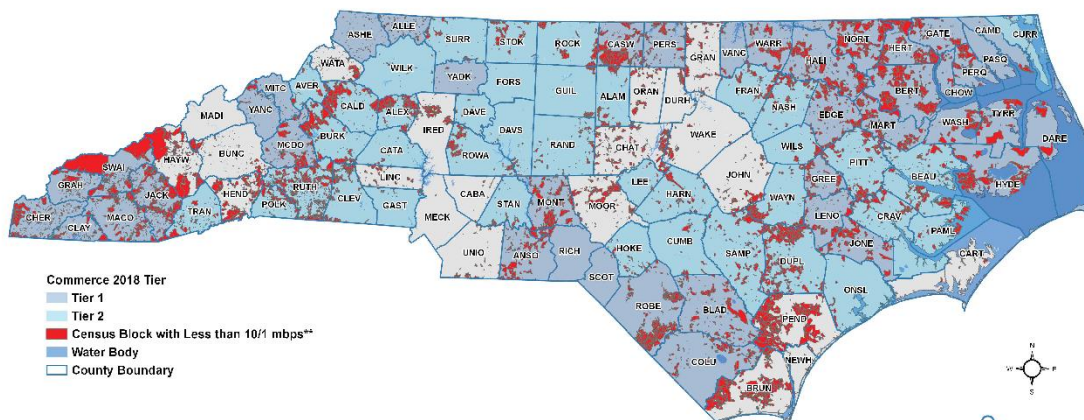
According to the latest Federal Communications Commission (FCC) data release, 93.7 percent of North Carolinians have access to broadband at the FCC minimum speed threshold of 25 Mbps download and 3 Mbps upload. Due to our office's work in rural counties around the state, our own data gathering, anecdotal evidence, and the FCC's method of data collection and analysis, we believe these values underestimate the number of North Carolina residents without broadband access.

A household cannot subscribe to a broadband service if access is not available at their location. For hundreds of thousands of households in North Carolina, a lack of access is the primary barrier to adoption. Within North Carolina, 43 of the 100 counties have a household broadband deployment rate at the FCC recommended speed threshold, equal to or above North Carolina's average of 93.7 percent.

North Carolina Broadband Service Inventory

Advertised Speeds of Less Than 10 Mbps Download and 1 Mbps Upload

Data derived from U.S. Federal Communications Commission Form 477 Data Release Dec. 2016
Note: A provider that reports deployment of a particular technology and bandwidth
in a census block may not necessarily offer that service everywhere in the block



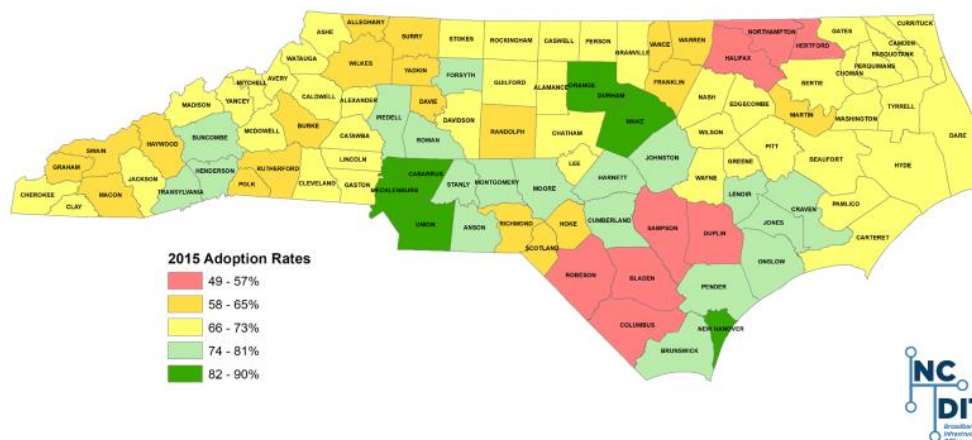
**ONLY BLOCKS WITH AT LEAST ONE
HOUSEHOLD BASED ON 2010 CENSUS DATA

**122,141 Total Households according to 2010 census household data
that have less than 10Mbps advertised download and 1Mbps advertised upload service

The state's rural areas are particularly affected by the lack of access; 95 percent of households without service live in rural communities.

North Carolina's subscription rate at 25/3 is 49.8 percent and ranks 19th in the country, according to data from the FCC's Internet Access Services 2016 report (FCC 2017). As speeds decrease, subscriptions increase. When considering all speeds, North Carolina's adoption rate of 81 percent outranks the United States average of 80 percent.

2015 Broadband Adoption Rates



The homework gap in North Carolina

The homework gap is a subset of the digital divide, commonly understood as the gulf between those who have access to computers and internet and those who do not. And both the homework gap and the digital divide can be studied through the lens of broadband adoption or households who subscribe to broadband service.

In a 2015 study entitled, "The Numbers Behind the Broadband 'Homework Gap'," the Pew Research Center found that households with K-12 students are more likely to adopt broadband than households without students. The study found that 82.5 percent of surveyed households with K-12 students adopt broadband, while roughly 73.5 percent of households without K-12 students adopt broadband. But among households with K-12 students, adoption rates in low-income households fall about 20 percentage points behind average income households, and Pew found they make up a disproportionate portion of the 5,000,000 households in the homework gap.

In addition, the homework gap disproportionately impacts low-income black and Hispanic households who are about 10 percentage points more likely to fall into the homework gap than their white peers.

A recent survey conducted by our office showed that approximately 10 percent of K-12 students lack internet access at home. Considering other data collected by individual school districts that number is likely higher. Data from previous North Carolina reports mirror these findings. In a 2013 survey, 86

percent of respondents with children in the household reported having home internet service while 81 percent of respondents overall reported having internet service.

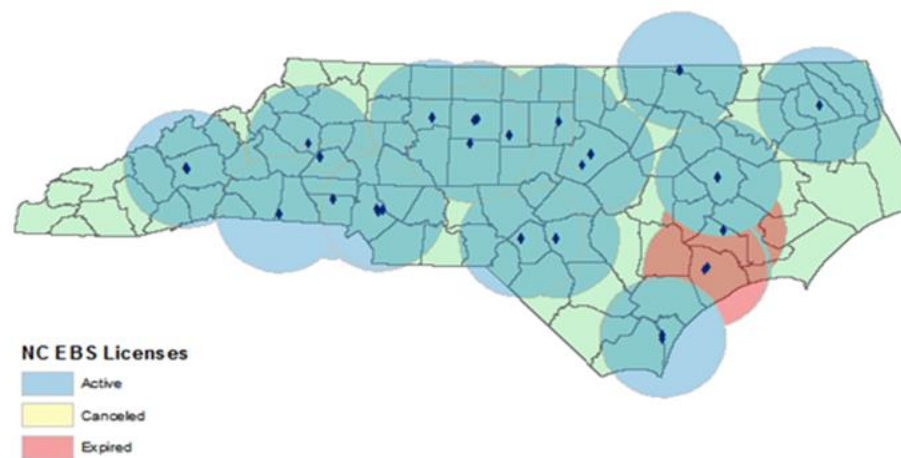
Meanwhile, school districts, schools, and teachers increasingly use digital resources and tools in and outside the classroom to supplement or replace their traditional teaching methods. A recent Teacher Working Conditions survey conducted by the North Carolina Department of Public Instruction found that nearly 75 percent of high school teachers assigned homework requiring internet access. In middle schools that number was approximately 65 percent.

Two 2013 statutes passed by North Carolina's General Assembly encourage a transition from a reliance on physical textbooks to a comprehensive digital learning ecosystem in North Carolina's K-12 schools (S.L. 2013-11 and S.L.2013-12). The Friday Institute for Educational Innovation developed a Digital Learning Plan for the State Board of Education and the Department of Public Instruction (DPI) to guide the statute's implementation. The plan identified five major components of the education system to address and support to successfully implement a digital learning environment: leadership, professional learning, digital-age content and instruction, technology infrastructure and devices, effective use of data and assessment.

There is one certainty regarding the future of education: it will require access to the internet, both in school and at home. For those without home access or digital devices, the homework gap results in digital inequities that prevent those students from participating at the same levels as their peers.

EBS in North Carolina

There are 71 active EBS licenses held by educational institutions in the state. Twenty-nine are held by the University of North Carolina General Administration. Five of those expire in 2018. Most, if not all of the licenses are leased to Sprint. Originally, the licenses were held by different campuses and assigned a market name corresponding to the Geographic Service Area (GSA) they serve. The terms of the lease agreements have not been made public.



Current EBS spectrum 2495-2690 MHz (2.5 GHz) frequency licenses in NC

Solution: How transforming EBS can close the homework gap

More and more we are seeing school districts, libraries and non-profits look to wireless technology to provide access to students outside of school.

In Montgomery County, the school district equipped school buses with mobile hotspots. The hotspots and service were purchased through the state's contract with Verizon Wireless and cost \$38 per month. These hotspots allowed those students with lengthy commutes, some up to 120 minutes, to complete homework assignments. An unforeseen benefit was the dramatic decrease in reported behavior problems on buses. Catawba County implemented a similar program sponsored by GoogleFiber, added teachers to the buses and created a mobile study hall.

Lee County schools collaborated with a cell phone company to create a pilot to provide English as a second language (ESL) students with home access. The pilot uses cache software program that allows teachers to download assignments to the students' devices. The cell phone company then provides a hotspot and a low bandwidth connection at home. During the pilot, there is no cost to the students.

The Sprint 1 Million program provided thousands of phones and hotspot devices to school districts in eight urban areas in North Carolina. The program has been embraced and we have learned a number of valuable lessons about how to administer a 'hotspots for students' program.

The Orange County and Charlotte-Mecklenburg Library systems created a "wifi to go" program that allows patrons check out mobile hotspots for use at home. The programs have been incredibly successful. Using this idea our office partnered with the State Librarian's office and received an International Museum and Library Sciences (IMLS) grant for \$250,000 to create a digital literacy instructor and playbook that includes a hotspot checkout program for K-12 students.

A statewide initiative to consolidate EBS licenses could result in increased investment by internet service providers and yield affordable home internet access to more than 100,000 students. The idea involves allowing one statewide educational institution, consortium or university to apply for all remaining available licenses in the state.

The new lease agreement would include provisions for service for K-12 students without home access, data caps, and equipment. The service could be negotiated to provide access during off school hours and weekends during the school year. The service could be subsidized through Lifeline (\$9.25/month). A radio and router would be needed at each student's home. The cost for this equipment could be a part of the agreement and provided for free, or purchased through a grant program.

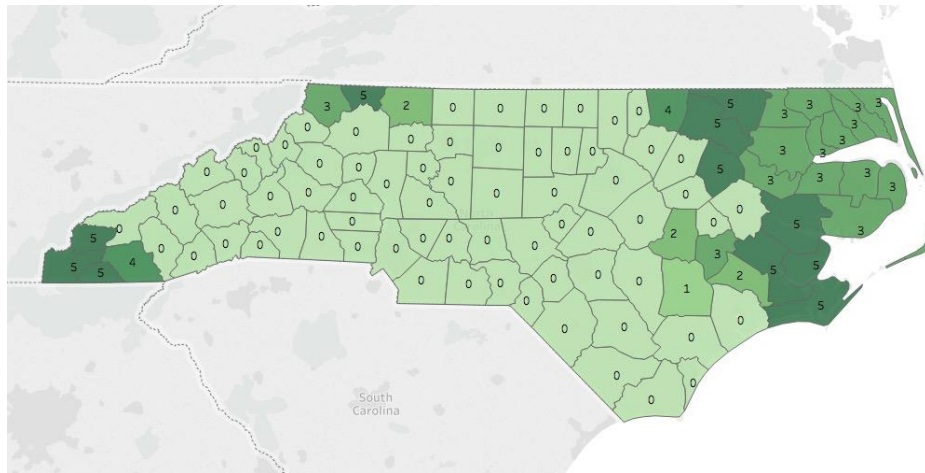
This would ensure that the licenses are used for their intended purposes and leverage the blocks of licenses in certain geographic areas to negotiate the terms of the educational use. Service providers would then be able to commercialize the remaining spectrum. This increased capacity in rural areas would create new opportunities for businesses and citizens to access broadband service.

The state would commit to working with service providers to locate vertical assets and other infrastructure to drive down the cost of deployment. It could also facilitate discussion with middle-mile fiber providers for backhaul.

The availability of the EBS spectrum could foster similar programs because it will remove a significant barrier to providing wireless access: the cost of using the spectrum. Equipment costs, such as outdoor

routers for households would be a minimal expense or could be funded through foundation grants or other sources.

This approach would enable the state to better manage the use of the spectrum for educational purposes and provide affordable internet service to students without home internet access. To achieve our state's objective to use EBS to help close the homework gap we propose that the NPRM allow a single state-wide education or government entity to be given priority, over existing license holders and new applicants, when applying for outstanding or unclaimed licenses.



Proposed Areas – Bands/Channels available

Comments & Conclusion

We are encouraged by the Commission's efforts to update EBS and ensure this spectrum is utilized for education purposes and then to efficiently and intensively to further the public interest goal of expanding the public's access to wireless networks and services.

Specifically addressing each of the Commission's proposals:

1. **Regular Geographic License Areas** - We support the idea of rationalizing the GSAs of existing EBS licensees by expanding those areas to include census tracts cover by or that intersect with existing GSAs.
2. **Opportunities to Acquire New 2.5 GHz Licenses** - We strongly encourage the Commission to open the filing window to allow state-wide educational institutions or state government entities to apply for unassigned spectrum in the 2.5GHz band. States should be given priority over all other applicants due to the fact they are in the best position to aggregate unassigned spectrum, convene stakeholders and providers, negotiate leases and develop and implement equitable solutions to the homework gap utilizing this spectrum.
 - a. We do not favor the unchecked transfer of existing licenses to non-EBS eligible entities. This would not serve the educational purpose of the program or the needs of students in North Carolina.

- b. Therefore, we do not support eliminating the educational requirement. That requirement could take another form or be satisfied in a variety of ways specified in the order. One example would be a requirement that the wireless carrier-leasee provide access to K-20 students without home access or meeting a low-income criteria.
 - c. We support the idea of a “build out” requirement. This will ensure that the spectrum is being used. If this requirement is not met another entity and/or provider would then be able to use the spectrum.
- 3. **Local Priority Filing Windows** - We recommend the Commission structure the filing window so that states have a right-of-first refusal to unassigned spectrum. We do not support the idea of an auction. We believe that process will not support the intended objectives of this program. However, if the Commission decides that an auction is the only means of utilizing the spectrum, we support adherence to the educational requirements so that providers ensure access to students without access or in need. We encourage the Commission to create an authentication and verification process to achieve this objective.
- 4. **Holding Periods For Licenses Acquired through a Local Priority Filing Window** - We encourage the Commission to adopt a 15-year limit on leases. This will ensure that providers can see a return on their investment, while allowing the licensee some ability to restructure the lease agreement to meet current needs.
- 5. **Performance Requirements for New 2.5 GHz Licenses** – We support the Commission’s proposal to establish more robust performance requirements. We would encourage an interim performance requirement of 50 percent population coverage and a final benchmark of 95 percent population coverage. We believe this is achievable and necessary to close the homework gap and ensure all students have access.

We thank the Commission for this opportunity to comment.

North Carolina Broadband Infrastructure Office

The Broadband Infrastructure Office, a division of the North Carolina Department of Information Technology, was established in early 2015 as a statewide resource for broadband availability and adoptions initiatives. The mission of BIO is to provide policy recommendations and planning guidance to community and state leaders to foster the expansion of high-speed internet access with the objective of improving global competitiveness, education, public safety, health care, and government efficiency. In keeping with the belief that organized and informed communities will bridge the digital divide, a technical and community assistance team partners with willing communities to provide on-the-ground assistance to implement those policies and plans.