

# Internet Bandwidth Allocation Policy - Version 5 Effective July 1, 2011

## Background

The K-12 Technology Committee has faced many challenges in the endeavor to meet the goal of economically funding legitimate educational traffic with appropriate and equitable bandwidth allocation for each public school District and Library System in South Carolina.

Since the first Internet Policy was created and approved in 2007, the K-12 Technology Initiative Committee has updated this document each year to make changes and/or additions that provide equitable Internet services to all public schools and libraries in SC. The following are changes made in each version of the Internet Policy:

1. **Version 1** - The original document created in 2007 established bandwidth allocations for school districts based on student headcount and placed each district in one of four bandwidth tiers (10 Mbs, 20 Mbs, 50 Mbs or 100 Mbs).
2. **Version 2** was approved in 2008 to expand to ten tiers in 10 Mbs increments to provide more flexibility to meet the needs of districts in a more affordable manner. It also added the requirement for Security Monitoring for districts and large libraries before upgrades would be approved.
3. **Version 3** was approved in August 2009 to update the Internet rates used in Cost Share calculations when the new Direct Internet Access (DIA) contract started July 1, 2009.
4. **Version 4** is proposed to be effective July 1, 2010. The proposed updates in this revision are:
  - a. **Establish new bandwidth baselines**
    - i. School Districts - based on District student headcount with an expanded Tier structure with 10 Megabits (Mbs) increments from 10 Mbs to 200 Mbs.
    - ii. Library Systems - based on PC count for the Library System.
  - b. **Establish a new Internet Cost Share Formula for schools and libraries**
    - i. Applies to those who want additional bandwidth above what the new baseline provides
    - ii. Provides Funded Baseline Cost based on the serving Local Exchange Carrier (LEC) rates to avoid penalty in high-cost areas

- iii. Uses the individual E-Rate Discount Matrix percentage for each District or Library system to calculate the amount of the Cost Share (rather than the statewide average discount percentage).

**c. District/Library System Responsibilities**

- i. All required E-Rate documents (CIPA and Technology Plans) must be current and on file with the Division of State IT (DSIT) and/or SC Department of Education (SDE).
- ii. District/Library must be in good financial standing with DSIT (no past due invoices).
- iii. Annual Block 4 Inventory Verification Documents submitted to DSIT by November 15 each year.
  - 1. Any District/Library site not listed on this inventory will be direct billed to the District/Library until the start of the next funding year. (DSIT cannot be reimbursed for sites not listed in the Block 4 section of the statewide E-Rate Applications.)
  - 2. Districts/Libraries must notify DSIT of site disconnects as soon as possible. Failure to do so could result in a charge to the District/Library for 100% of the ineligible charges paid by DSIT for an inactive location plus any audit re-payments required.
  - 3. For school or library moves or replacements, the state can only fund one circuit; therefore, simultaneous services at both the old site and the new site will only be provided for a maximum of thirty days. After thirty days, the old site will be disconnected or direct billed to the school district or library
- iv. Full cooperation with the DSIT Security Staff is required for any Dedicated Internet Access (DIA) bandwidth upgrade.

## **A. Internet Bandwidth Allocation Policy for Schools**

### **1. Tier Structure**

For 2011 we will continue to use a "Tiered" approach based on student headcount in each district (*from Free & Reduced Lunch data on the State Department of Education website posted in November before the start of the next July 1 funding year*). We will continue using the twenty tiers established in 2010 which consist of 10Mb increments between tiers.

Each Tier has an eligible baseline bandwidth provided at no cost to the district, when approved by the K-12 Technology Initiative Committee or under its designated authority.

The 2010 Tiers breakdown as follows:

<u>Tier</u>	<u>SD Student Headcount</u>	<u>Baseline DIA BW</u>	<u>DIA Service Cost</u>	
			<u>AT&amp;T</u>	<u>Spirit (Avg)</u>
1	up to 2,999	10 Mbs	\$1,430	\$2,448
2	3,000 to 9,499	20 Mbs	\$2,145	\$3,198
3	9,500 to 11,999	30 Mbs	\$3,135	\$4,288
4	12,000 to 14,999	40 Mbs	\$3,960	\$4,992
5	15,000 to 16,999	50 Mbs	\$4,785	\$5,795
6	17,000 to 18,999	60 Mbs	\$5,280	\$6,173
7	19,000 to 19,999	70 Mbs	\$5,775	\$6,601
8	20,000 to 23,999	80 Mbs	\$6,160	\$7,009
9	24,000 to 27,999	90 Mbs	\$6,435	\$7,196
10	28,000 to 30,999	100 Mbs	\$6,490	\$7,207
11	31,000 to 32,999	110 Mbs	\$7,108	\$8,833
12	33,000 to 35,999	120 Mbs	\$7,722	\$9,163
13	36,000 to 38,999	130 Mbs	\$8,294	\$9,493
14	39,000 to 41,999	140 Mbs	\$8,778	\$9,823
15	42,000 to 46,999	150 Mbs	\$9,323	\$10,318
16	47,000 to 51,999	160 Mbs	\$9,856	\$10,835
17	52,000 to 55,999	170 Mbs	\$10,425	\$11,374
18	56,000 to 59,999	180 Mbs	\$10,940	\$11,737
19	60,000 to 66,999	190 Mbs	\$11,495	\$12,309
20	Over 67,000	200 Mbs	\$11,880	\$12,683

School districts are "eligible" for the bandwidth shown above based on student headcount; however, the bandwidth will not be implemented until approved by the K-12 Technology Committee, or by designated authority to the Bandwidth/Security sub-committee, according to the "Bandwidth Qualification Process" described in Section 2 below. School Districts may present their requests or appeal to the K-12 Committee at any time.

## 2. Bandwidth Qualification Process

Due to the continued critical budget constraints expected during the 2011-2012 fiscal year, the K-12 Technology Committee must confirm that districts/libraries are taking appropriate measures to filter and/or screen traffic so that only legitimate educational traffic is carried before granting approval for any bandwidth above 10 Mbs, regardless of

the eligible Tier level. Any district/library requesting more bandwidth must demonstrate the true need by undergoing a Security and Traffic Monitoring evaluation to be conducted by the SC Chief Security Officer. (See Section C for details.) The cost of this monitoring process will be covered through K-12 funds and at no expense to the schools and libraries.

No "grandfather clause" will apply under this policy; therefore, sites that already have more bandwidth than they are eligible for under the 2011 Internet Policy will begin paying the appropriate Cost Share on July 1, 2011.

This will be accomplished as follows:

- a. District provides written request for bandwidth upgrade evaluation to SC State E-Rate Coordinator (Valarie Byrd at [vdbyrd@cio.sc.gov](mailto:vdbyrd@cio.sc.gov)).
- b. State Coordinator submits a traffic monitoring request to the SC Chief Security Officer's staff.
- c. An Intrusion Detection System (IDS) will be installed on the district or library network (if not already in place), either by the SC Chief Security Officer staff or the district/library staff. Traffic monitoring will be performed by the SC Chief Security Officer's staff to provide reports on existing bandwidth utilization and recommendations for improvements, if any, to the district. No network changes will be made by the Security Staff unless approved by the District personnel. Full cooperation with the DSIT Security staff is required for any upgrade.
- d. The recommendations and any actions taken will be shared with the E-Rate Coordinator for reporting to the K-12 Technology Committee. The District will be notified of the date when their request will be reviewed and they are welcome to attend the meeting.
- e. The utilization reports and recommendations will be reviewed by the K-12 Technology Committee to determine if the request for additional bandwidth should be approved.
- f. The SC State E-Rate Coordinator will notify the District contact of the Committee's decision and take appropriate action if orders need to be processed.

### **3. Unfunded Bandwidth**

If a district/library wants more than the funded baseline bandwidth in their Tier, they will be responsible for the difference in cost of that additional bandwidth. The amount paid by the District/Library is referred to as the "Cost Share" and is calculated as described in Item 4 below.

No "grandfather clause" will apply under this policy; therefore, Districts/Libraries that already have more than their 2011 baseline bandwidth for Internet will begin paying the Cost Share for any bandwidth above their 2011 baseline on July 1, 2011.

#### 4. Cost Share Calculations

The monthly Cost Share is the portion of the Total Cost of the bandwidth above the funded baseline for DIA service that is not covered by E-Rate funding.

The Cost Share formula is:

$$\text{Cost of Requested Tier} - \text{Cost of Funded Tier} = \text{Cost Difference}$$

$$\text{Cost Difference} * \text{District Non-Discount \% (100\% - District \%)} = \text{Monthly Cost Share}$$

**Example 1** - District A (90%) is in Tier 1 and approved for 10 Mbs DIA & wants 20 Mbs (and increase is approved by the K-12 Technology Committee):

Current 20 Mbs cost	\$3,198
Minus baseline 10 Mbs cost	<u>\$2,344</u> (Spirit Avg for 10 Mbs)
Difference	\$854 difference
Times 10% (100%-90%)	\$85.40 Monthly Cost Share

**Example 2** - District A (80%) is in Tier 1 and approved for 10 Mbs DIA & wants 20 Mbs (and increase is approved by the K-12 Technology Committee):

Current 20 Mbs cost	\$3,198
Minus baseline 10 Mbs cost	<u>\$2,344</u> (Spirit Avg for 10 Mbs)
Difference	\$854 difference
Times 20% (100%-80%)	\$170.80 Monthly Cost Share

## B. Internet Bandwidth Allocation Policy for Library Systems

The K-12 Technology Committee faces the same challenge for libraries that it has for schools in the attempt to economically fund legitimate educational traffic with appropriate and equitable bandwidth for each Library System in South Carolina.

Since we do not have headcount information for libraries, the only verifiable user component we could identify is the number of personal computers (PCs) for the Library Systems. **The quantity of computers is reported by each Library System to the State Library and must be certified as an accurate count of PCs to be used for the Internet bandwidth calculations.**

### 1. Funded Bandwidth

For 2011, DIA bandwidth for Library Systems is based on the number of computers with Internet access within the Library System. We will use 128 kilobits (kb) for each PC to calculate the total Internet bandwidth funded for each Library System.

The following chart shows the proposed bandwidths based on the number of PCs in the Library System:

<u>PC Count</u>	<u>Funded Bandwidth*</u>
0 to 12	T1
13 to 24	3 Mbs**
25 to 48	6 Mbs**
49 to 70	9 Mbs**
71 to 82	10 Mbs
83 to 160	20 Mbs
161 and above	30 Mbs

*\* Bandwidth for Hubs/Aggregation points considers total PC counts plus the bandwidth of feeder branches. This will be determined by the DSIT Network Design group based on the technology available. Any additional hardware and/or software required for the agreed upon network design will be the responsibility of the Library System.*

*\*\* Note: 10 Mb Ethernet may be provided where it is more economical than multiple T1s.*

### 2. Bandwidth Qualification Process

Library Systems must follow the same process described in **Section A. Internet Bandwidth Allocation Policy for Schools** under **Item 2 - Bandwidth Qualification Process** for any bandwidth above 10 Mbs.

### **3. Unfunded Bandwidth**

If a Library System wants more than the funded baseline bandwidth, they will be responsible for the difference in cost of that additional bandwidth. The amount paid by the library is referred to as the "Cost Share" and the process for determining if a Cost Share will apply is described in Item 3 of *Section A. Internet Bandwidth Allocation Policy for Schools*.

### **4. Cost Share Calculations**

Cost Share calculations for Library Systems will use the same formula as described in Item 4 of *Section A. Internet Bandwidth Allocation Policy for Schools*.

## **C. Security and Traffic Monitoring Activities to be performed by the SC Chief Security Officer's staff:**

- Real-time Monitoring of District/Library Networks
  - Network Entry Point Monitoring Using an Intrusion Detection System (IDS) on the District Network
  - Internal & DMZ Monitoring
- Real-time Insight, Visibility and Control Over User Critical Data & Assets
- Real-time Identification of Threats and Patterns of Suspicious Activity
- Actual Threats Identified and Prevented from Impacting User Operation
- Visibility Into the Threats Facing User Databases
- Access to Information Security Professionals and Services
  - Consulting and Training
  - Security Implementation
  - Security Policy Management
  - Security Policy Review and Formulation
  - Security System Design and Planning
  - Network Scanning to Identify Unauthorized Access
  - Incident Consulting & Law Enforcement Coordination
  - Forensic Analysis & Reporting