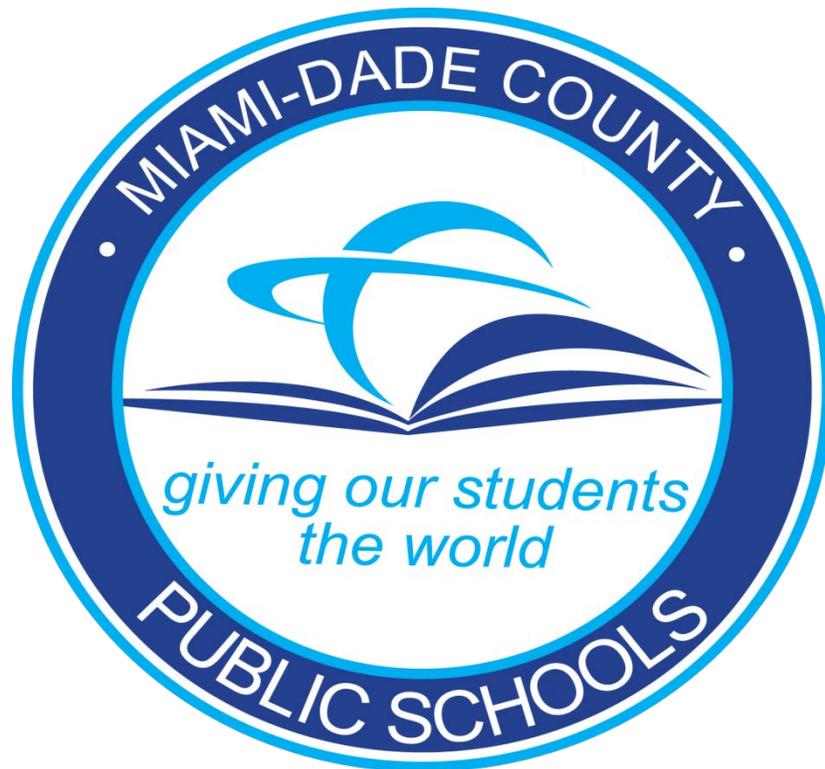


Miami-Dade County Public Schools



TECHNOLOGY PLAN

2014 - 2017

E-Rate Requirements Addressed

TECHNOLOGY PLAN

2014 - 2017

(*E-Rate Requirements Addressed*)

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1.0 INTRODUCTION / *Executive Summary*

Executive Summary

The 2014-17 Technology Plan, also referred to as “The Plan,” identifies the technology requirements of Miami-Dade County Public Schools (M-DCPS) over the next three years, starting with the 2014-15 school year. The Plan also ensures District alignment, improves service quality, and reduces costs. Most importantly, The Plan supports and promotes student achievement by deploying the most efficient and effective technologies; thus, providing students with access to secure and high-quality resources anywhere and anytime.

The Plan generally follows the specific guidelines recommended and published by the State of Florida Department of Education in its publication “*District Technology Plans: Essential Components and E-Rate Plan Criteria*.”¹ It must also be noted that the Federal Communications Commission (FCC) released on September 28, 2010 its “6th Report and Order (FCC 10-175)”² affecting E-Rate guidelines, including the removal of “Budget” as one of the five required Essential Components. This Plan, however, retains its “Budget” discussion to substantiate M-DCPS awareness of its financial responsibility when participating in the E-Rate program.

Certainly, major changes are in the horizon as the FCC has embarked in an initiative to overhaul the E-Rate program, as detailed throughout this document. This project has been dubbed “E-Rate 2.0” as well as “The Modernization of the E-Rate Program.” Thus, in the absence of new directives, we must follow current program guidelines.

The Plan itself, including its development and writing, did not encumber any additional funds, as staff developed it. Furthermore, by developing this Plan, the District complies with its need to provide the details necessary to meet federal and state requirements to participate in the federally funded E-Rate program. The Plan presents the roadmap necessary to support the District’s efforts to succeed in reaching its Goal of Student Achievement and its four complementary Pillars.³ As a result, The Plan:

- Guarantees stakeholder inclusiveness,
- Promotes equitable distribution of resources,

¹ Florida Department of Education, “District Technology Plans: Essential Components and E-Rate Plan Criteria”

² <http://www.usac.org/res/documents/about/pdf/fcc-orders/2010-fcc-orders/FCC-10-175.pdf>

³ District Strategic Framework 2011-14 Miami-Dade County Public Schools available at <http://osp.dadeschools.net/0910plan.pdf>

Executive Summary (continued)

- Creates a more efficient process for acquiring technology,
- Enforces uniformity in Information Technology standards,
- Ensures cost-effective infrastructure
- Enhances monitoring of IT projects,
- Establishes measurable indicators,
- Provides a plan for infrastructure development, and a mechanism for directing the District's technology future.

The Plan has been created by *GUARANTEEING STAKEHOLDERS INCLUSIVENESS* through discussions with key District administrators and thorough evaluations of the applications in use and the needs of stakeholders. As such, a clear direction emerged leading to the development of The Plan. The needs were identified and then refined as costs, timing, and resources were determined. As such, this process *PROMOTES EQUITABLE DISTRIBUTION OF RESOURCES* throughout the District.

It is evident that The Plan *CREATES A MORE EFFICIENT PROCESS FOR ACQUIRING TECHNOLOGY* by providing the flexibility necessary to complement the existing Districtwide strategic planning effort and any future changes in direction. Particularly, for instance, the FCC has currently embarked in a planned review of the E-Rate program, commonly referred to as "the Modernization of The E-Rate Program" and the delivery of "E-Rate 2.0." This will inevitably bring changes to the way funds are distributed, and thus impact technology purchases.

The Plan provides stakeholders and thus the School Board with the choice to approve or reject projects based on Districtwide priorities and platform standardization, as Information Technology (IT) processes can be refined and/or modified to accommodate and meet evolving District needs. The outcome is to *ENFORCES UNIFORMITY IN INFORMATION TECHNOLOGY STANDARDS*.

It is understood that emerging technologies, not currently known or available, can / and should / be considered, as deemed appropriate or needed. As well, The Plan supports the District's and Instructional Technology's integration of the most efficient and effective technologies to facilitate learning. Therefore, The Plan will exploit current and future technologies to implement and support the most efficient and *COST-EFFECTIVE INFRASTRUCTURE*.

Executive Summary (continued)

The technology-based innovations in core subject areas and the 24/7 access to online applications for remediation, acceleration, and enrichment truly extend learning and provide the needed “Links” to drive student achievement. As such then, The Plan ENHANCES MONITORING OF IT PROJECTS.

Furthermore, it is obvious that technology will be an integral part of any transformation agenda and will continue to impact all aspects of the educational environment. This will enhance the students’ learning experiences and raise their academic achievement, thus allowing for the *ESTABLISHMENT OF MEASURABLE INDICATORS*.

The numerous software applications available to students, coupled with professional development opportunities for teachers that Instructional Technology provides, clearly support the Superintendent’s continued innovation and use of technology to revolutionize learning for students and teachers.⁴ The Plan PROVIDES FOR INFRASTRUCTURE DEVELOPMENT AND A MECHANISM FOR DIRECTING THE DISTRICT’S TECHNOLOGY FUTURE.

⁴ Superintendent’s Memorandum “Progress Within the Strategic Framework” to The Honorable Chair and Members of The School Board of Miami-Dade on May 12, 2010

2014 - 2017 TECHNOLOGY PLAN

2.0 M-DCPS DISTRICT MISSION and VISION / General

The Technology Plan was created to ensure District alignment of its basic Vision and Mission, in coordination with Information Technology Services (ITS) while following the District's initiative,⁵ and in cooperation with Instructional Technology. This initiative should help to improve service quality and reduce costs. Most importantly, the Plan strives to provide the infrastructure and support necessary to facilitate student achievement.

2.1 MISSION Statement

M-DCPS, in its Mission Statement brings together its "Core Values" of Excellence, Integrity, Equality, and Citizenship by acknowledging that, "We provide the highest quality education so that all of our students are empowered to lead productive and fulfilling lives as lifelong learners and responsible citizens."⁶

The guiding principle of the Technology Plan is to achieve the integration of technology into the instructional program to improve learning outcomes and prepare students for the future. Thus, it can further be stated that, the District's **Mission** is to maximize the use of appropriate current and future technologies to collect, maintain, and deliver high quality information to effectively empower the District. As such, it aims to meet its Goal of improving student achievement and its four complementary Pillars.

The Plan is financially supported by a combination of local, federal, state, and other funding sources – including funds received by participating in the E-Rate federal program, and the bond initiative recently passed by Dade's voters.

Technology is more than an enabling tool for learning and back-office support; it is the foundation of knowledge management and an essential means for delivering and experiencing learning. Consequently, the focus of the Technology Plan is to ensure the cost-effective and efficient delivery of evolving technologies, meant to underpin 21st-century public education by collaborating not only with teachers, but also with parents, staff, and administrators.

⁵ [District Strategic Framework 2009-14 Miami-Dade County Public Schools](http://osp.dadeschools.net/0910plan.pdf) available at <http://osp.dadeschools.net/0910plan.pdf>

⁶ <http://www.dadeschools.net/discover/mission.htm>

Together, these stakeholders will help build, revise, and manage the technology roadmap continuously. This process will effectively contribute to the achievement of Districtwide Goal and Pillars as The Plan supports the District's and Instructional Technology integration of the most efficient and effective technologies to facilitate learning.

The continued and expanded use of technology and telecommunications in the classroom, intended to address national, state, and local standards, is an indispensable component in preparing our students for their future. To encourage them to use technology as a communication and information tool, meant to support critical-thinking and problem solving, will provide the information necessary to succeed in a technology-rich society.

In order to accomplish these objectives, the District is committed to integrating technology into all curriculum initiatives and to providing teachers and administrators with the necessary staff development. Thus strictly adhering to the elements required by the E-Rate program, as outlined in the SLD website and discussed throughout this Plan.⁷

The success of M-DCPS and its technology initiatives, in the end, will be determined not only by the quality of its designs – as outlined throughout this Plan – but also by the quality and effectiveness of their implementation throughout the District. Successful implementation requires efficient work structure and processes. The District will undoubtedly benefit by smartly investing in sufficient technology resources that will ultimately ensure committed, competent, and empowered teachers including well-designed student learning opportunities and learning environments

2.2 VISION Statement

The District's **Vision** recognizes that all learners, and those supporting the learning process, are consumers of technology who access information, communicate, collaborate, construct knowledge, and are prepared for the workforce of this new millennium. M-DCPS is committed to provide educational excellence for all. Further, the District recognizes that the future of our community depends upon its members successfully leveraging technology to achieve their own personal goals.

In order to secure the District's alignment, Information Technology System (ITS) relies on a clear and concise framework to implement the District's Vision technology. The Plan was developed by ITS staff and it envisions many substantial and complex changes in the way M-DCPS aims to utilize technology.

⁷ <http://www.usac.org/sl/>

To achieve the seamless integration of technology into teaching and learning requires the active participation of all stakeholders. School-site administrators, teachers, Region and District administrators, especially those with curriculum responsibilities, parents, business, and community leaders share a collective responsibility. They must ensure that students graduate with the skills necessary to lead successful personal and professional lives, and become contributing members of the community.

Ensuring the success of these proposals requires a serious commitment, at all levels, to address these challenges. Specifically, there must be a conscientious effort to pay attention to establishing a culture of change, providing adequate staff development, empowering all members of the learning community, encouraging risk-taking, focusing on results and communication, and sharing successes and shortfalls.

M-DCPS strongly supports the current FCC's national initiative "to revamp the Universal Service Fund as part of a national Broadband plan."⁸ The FCC said it envisions transforming the Universal Service program over the next decade to pay for high-speed Internet access instead of the traditional voice services that it currently finances. While M-DCPS is supportive of the initiative to fully fund Broadband services, it strongly opposes doing so at the expense of eliminating voice services as an eligible component of the E-Rate program.⁹

The proposal initially recommended that a Connect America fund be created inside the Universal Service program to subsidize Broadband, and [other] wireless networks.¹⁰ M-DCPS responded to this notice as well as a subsequent notice, also regarding "A National Broadband Plan."¹¹ Finally, the latest FCC initiative to "Advance Broadband Availability Through Digital Literacy Training" was posted on March 12, 2012, and again M-DCPS provided a response.¹²

Many of these opportunities for contact and support are currently not eligible for E-Rate funding. As such, M-DCPS initiative #5, as outlined later in this document, (*Establish specific corrections to the current system that maintains a distinction between on-campus and off-campus connectivity*) specifically notes that, "a system that maintains a distinction between on-

⁸ See FCC's Public Notice #DA 09-2376

⁹ See FCC's Public Proceeding #13-184, April 7, 2014 / M-DCPS Confirmation # 201447197516

¹⁰ <http://www.eschoolnews.com/e/esntoday/esntoday030810.htm>

¹¹ See FCC's Public Notice #GN Docket No. 09-51 / M-DCPS Confirmation # 201079964109

¹² See FCC's Public Notice #WC Docket No. 12-23 / M-DCPS Confirmation # 201242348697

campus and off-campus connectivity is at odds with the basic trends of connectivity. We should be accepting a fundamental change in education that, from the perspective of the user of technology in learning – the teacher and student interaction – all connectivity must be considered as taking place on-campus.”¹³

3.0 GENERAL INTRODUCTION / BACKGROUND – *The District*

The Miami-Dade County Public School System (M-DCPS) is the nation’s fourth largest school district with a culturally diverse body of 352,790 students in grades PK-12 in 460 schools taught by 19,397 teachers.¹⁴ In addition, there are 56,021 students enrolled in the District’s Adult-Vocational education program.

TABLE #1 below provides a cultural breakdown of our students.

K-12 Student Demographics ¹⁵

Student Population	Enrollment	% (rounded)
Hispanic	235,251	67%
Black, non- Hispanic	82,876	24%
White, non-Hispanic	28,369	8%
Other	6,294	1%

M-DCPS is administered independently of the metropolitan and city governments. However, the Miami-Dade metropolitan government is responsible for collecting taxes to support the District.

The District Superintendent is appointed by the School Board and is responsible for the overall school administration. The Superintendent’s website addresses an array of important District demographics and programs intended to support its diverse student and community population.¹⁶

¹³ See FCC’s Public Proceeding #13-184, April 7, 2014 / M-DCPS Confirmation # 201447197516

¹⁴ M-DCPS Statistical Highlights 2012-13 (August 2013)

¹⁵ M-DCPS Statistical Highlights 2012-13 (August 2013)

¹⁶ <http://superintendent.dadeschoolsnetwork.net/districtoverview.html>

3.1 District Profile

M-DCPS is the fourth largest school system in the nation. Responsibility for the administration of the schools is vested in the District Superintendent, appointed by the School Board. Further, the District is sub-divided into four administrative Regions (North Region Office; Central Region Office; South Region Office; and Educational Transformation Office [ETO]). Each Region Office is directed by a Regional Superintendent and designated administrative staff reporting centrally to the District Superintendent.

The cultural diversity of the student body at M-DCPS can be further analyzed: the student population is made up of approximately 352,790 students (picture-in-time) in grades PK-12 in 460 schools taught by 19,397 teachers. A myriad of countries are actually represented in our student population, leading to a true cultural diversity.¹⁷

3.2 District Demographics – E-Rate Related

The following graph is intended to provide a bird's eye view of the District's alignment to the E-Rate program, based on the program participation by funding levels. M-DCPS has been involved with this funding source since its inception in 1998.

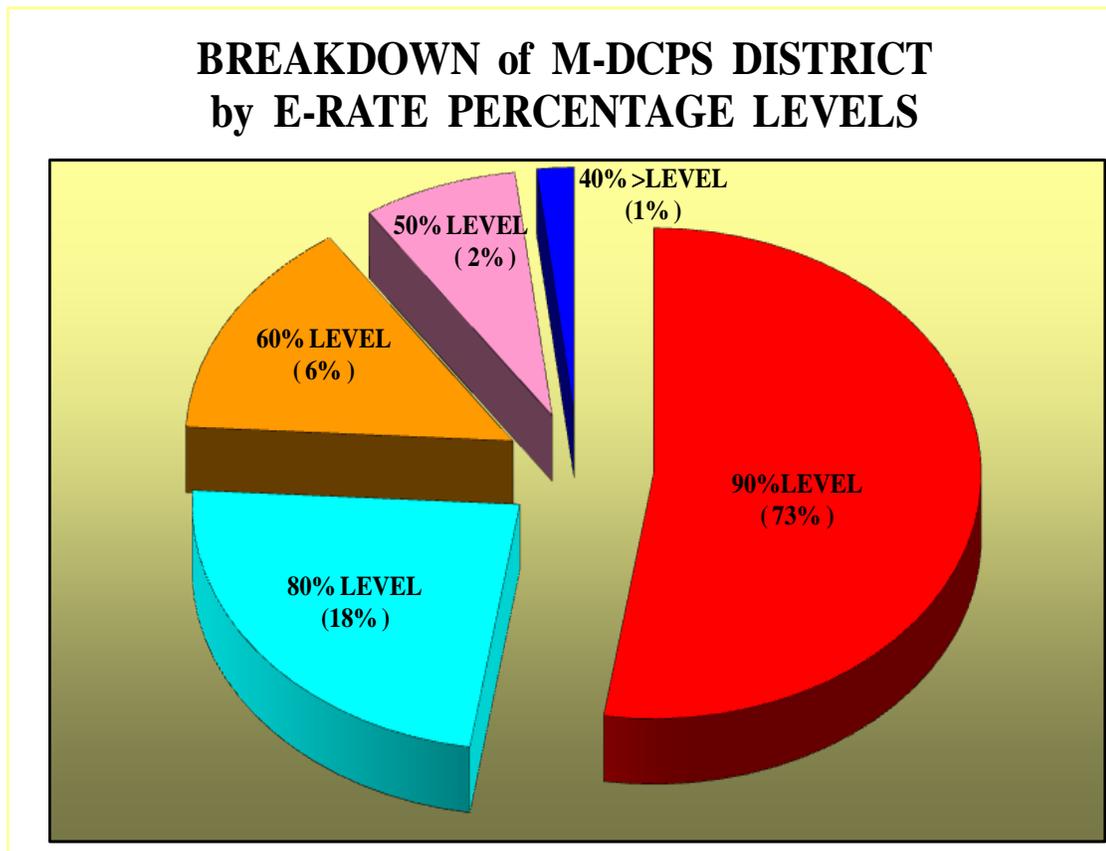
The District's ability to keep up with requirements and needs, as noted in previous Technology Plans, has been directly linked to the success achieved in seeking and receiving E-Rate funds. This success has led to a mindset of strong adherence to program rules and Audit success throughout the years.

Below, Graph A – "*M-DCPS District General Demographics Leading to the E-Rate Percentages by School – Grouped by Funding Bands*", closely resembles the same levels of poverty found throughout the District. The guidelines, for E-Rate program participation, require that the data be drawn from the NSLP (National Schools Lunch Program) participation applications / also known as the F&R (Free and Reduced) lunch data. As well, our own District's website is replete with detailed information on this subject.¹⁸ The graph describes the District's breakdown in terms of the designated E-Rate funding levels, 90% being the designation given to the poorest schools and 20% given to the least needy schools.

¹⁷ Miami-Dade County Public Schools Statistical Highlights. 2012-13 (August 2013)

¹⁸ <http://www.dadeschools.net>

Graph “A” – M-DCPS District General Demographics Leading to the E-Rate Percentages by School – Grouped by Funding Bands. **FY17 (2014)**



4.0 M-DCPS TECHNOLOGICAL TRAJECTORY

At Miami-Dade County Public Schools, Technology Plans have always been in place – long before they became an E-Rate program requirement. Of course, these have always been submitted for/and approved throughout the years. These Plans have consistently been used as the basis for E-Rate program participation and subsequent application requests.

In fact, as noted in all Federal Audits conducted in the past, M-DCPS has always used and adhered to the practice of first identifying needs, preparing a strategic technology plan, and using it as the District’s roadmap for the proper acquisition of technology, based on needs – but with the vision to enhance education through the use of technology.

As a result, with the assistance of the E-Rate program funding, M-DCPS has successfully implemented a Districtwide vision, consolidating critical servers at the Information Technology Services (ITS) hub, and deploying administrative systems in a concerted shift from legacy applications to Internet-based models. Additionally, M-DCPS has been able to eliminate “stand-alone” schools by integrating them into a Wide Area Network (WAN), as well as successfully upgrading the data networks.

4.1 M-DCPS Technological Background Analysis and Current Status

Since 1998, the inaugural E-Rate program year, M-DCPS has consistently received funds from this federal program. Through the use of these funds, Miami schools initially established a Wide Area Network (WAN) that connects every classroom to the Internet. The District followed an incremental infrastructure upgrade to PRI / T1 technology, thus making all schools capable of supporting and bringing web-enabled instructional applications, connectivity to the classroom, and Distance Learning.

Subsequently, the success of this application then led to the conversion to the NMLI (Native Mode LAN Interconnection) services for the District's telecommunications infrastructure were purchased with the support of E-Rate funds to allow for better utilization of telephone services at schools.

The upgrading of the voice network was also a major accomplishment made possible with the assistance of E-Rate funds. M-DCPS managed the complete upgrade of PBX systems throughout the District, over a two-year period. A feat, considering the change over involved over 300 schools.

Recently, all schools were retrofit with wireless connectivity throughout campuses. These advancements provide teachers, parents, and students, much needed first class communications and educational resources. As well, Currently, M-DCPS is moving from exclusively using NMLI services to the latest in telecommunications technology – just made available in 2014, known as ASE (AT&T SWITCHED ETHERNET).

Most importantly, the Information Technology Services (ITS) team proactively maintains the integrity of the District's network. The District utilizes firewall protection, anti-virus software, and intrusion detection systems technology to prevent the most commonly known potential threats or unwanted network incursions.

Our practices in this area have become a model and “Best Practices” for other school districts nationwide to follow. In fact, The Council of the Great City Schools (CGCS), in its June report “*Managing for Results in America's Great City Schools*” bestowed M-DCPS with its Top Ranking in Technology.¹⁹

These measures, currently in place, have also ensured that M-DCPS remains actively compliant with state and federal guidelines, to include CIPA (Children's Internet Protection Act) compliance – and beyond.

¹⁹ NEWS ALERT, M-DCPS, Thursday June 17, 2010 / Memo # 10-JS/191/HD.

4.2 Projections

Today, ITS projects maximize federal funds, including E-Rate dollars. In fact, most of the strategic initiative costs are focused on much needed wiring replacement and network expansion to support the Districtwide online applications, including curriculum.

To maximize federal funding, the network will be expanded incrementally over the next three (3) years. To keep the one-time costs to a minimum, and reduce the support and maintenance costs, The Plan specifies centralized purchasing, configuring, and maintaining new servers and equipment, through Capital, E-Rate, and Grants.

The current Technology Plan aims to align overall educational service improvement objectives with the four criteria (Elements) as indicated by the SLD, and ensure proper E-Rate program compliance.²⁰ Furthermore, it recognizes that, the technology-based innovations in core subject areas and the 24/7 access to online applications for remediation, acceleration, and enrichment; truly extend learning and provide the needed 'Links' to drive student achievement.

This Plan embraces and extends the requirements stated in these criteria for a technology plan that qualifies for a USAC program discount plan. This Plan makes clear and concrete connections between the proposed computing and communications and the plans for continued professional development, curriculum reform, and educational services improvements.

Further, The Plan clarifies that, "The numerous software applications available to students coupled with professional development opportunities for teachers that Instructional Technology provides, clearly support the Superintendent's continued innovation and use of technology to revolutionize learning for students and teachers."²¹ This document should guide the reader by addressing the specific E-Rate requirements and SLD guidelines of an effective Technology Plan.

4.3 Current Plan Coverage

M-DCPS has been following the technological guidelines specified in the current Technology Plan, as approved and validated by the State of Florida Department of Education, and following the guidelines as set forth by the E-Rate federal program.

²⁰ <http://www.usac.org/res/documents/sl/training/2013/Ensuring-Program-Compliance.pdf>

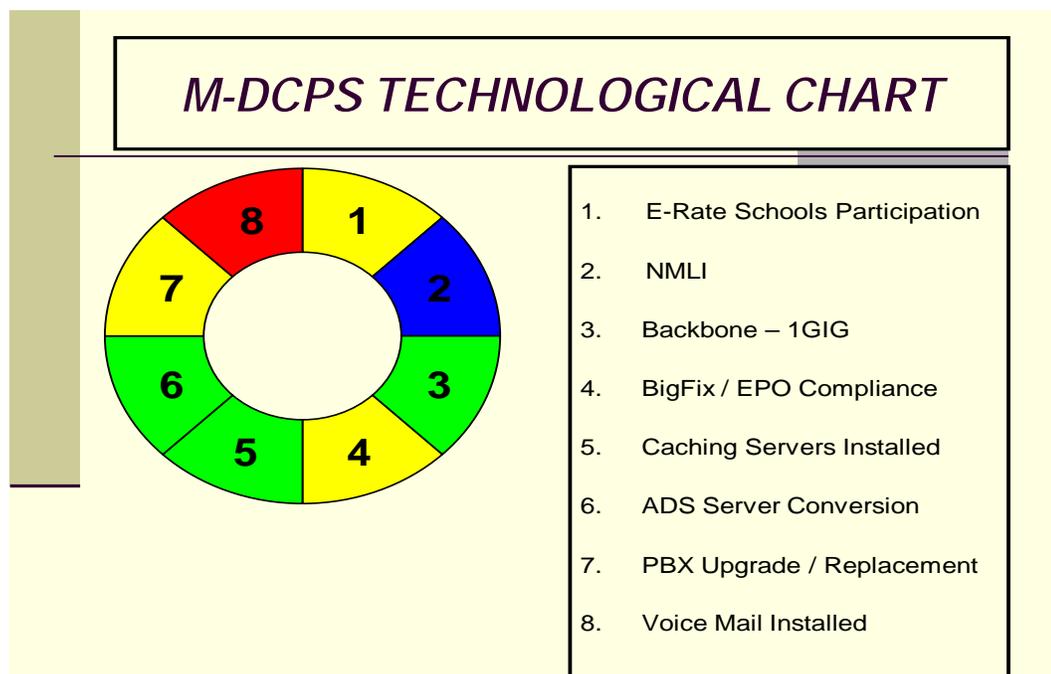
²¹ Superintendent's Memorandum "Progress Within the Strategic Framework" to The Honorable Chair and Members of The School Board of Miami-Dade on May 12, 2010.

Further, M-DCPS strictly adheres to all E-Rate program requirements, ensuring successful performance in Federal Audits as carried out by the USAC independent auditors. Any proposed changes to the federal E-Rate program, once approved, will be incorporated into the District’s guidelines.

4.4 M-DCPS Technological Tracking Status Report By School

Information Technology Services monitors and produces the monthly District’s *Technological Status*²² report (also referred to as the “Donut Chart”) which tracks technological projects specifically supporting this Plan. This process also allows for the effective tracking of E-Rate program requirements, such as Children Internet Protection Act (CIPA) Compliance (See Category 5 below.). It provides information, by school, about the following areas in the field of technology:

Chart “A” – M-DCPS Technological Chart



Category 1 – E-RATE PARTICIPATION (2/5 YEAR RULE) – The E-Rate program guidelines, starting with Funding Year 8 (2005-2006), stipulate that Priority Two funds (generally referring to the purchase of Field Equipment) for any given school can only be requested twice in five years. As an example, M-DCPS accepted funds in Year 8 (2005-2006) for the purchase of equipment in 90% schools. This uses up one year for those schools involved. In Funding Year 10 (2007-2008) M-DCPS requested funds to purchase equipment for ALL 90% and 80% schools in the District.

²² http://pdfs.dadeschools.net/technology/all_regions.pdf

Category 2 – SCHOOL WAN BANDWIDTH CAPACITY – This represents the total bandwidth (Mbs) capacity provided to the site for Wide Area Network access. Every site has at least one T-1 Frame-relay circuit (1.5Mbs). Most sites also have a Metro Ethernet connection over fiber of either 100Mbs or 10Mbs connected to a different router at ITS.

Category 3 – WAN BANDWIDTH UTILIZATION PERCENTAGE – This represents the usage of available bandwidth during normal business hours (8:00 a.m. – 3:00 p.m.; Monday – Friday) for the past quarter. This usage is for general Internet traffic, email, and all other District applications.

Category 4 – FIREWALL AND DOMAIN CONTROLLER – TippingPoint Intrusion Prevention Systems (IPS) provides stateful access control rules based on source and destination IP and port and protocol as a traditional firewall would. The IPS can also provide application control for Peer-to-Peer, spyware, instant messaging, and other unwanted applications. TippingPoint goes beyond what any traditional firewall can provide, giving protection against vulnerabilities in applications and operating systems. Microsoft Windows Active Directory domain controllers provide District sites with local authentication to District servers and network resources. The local domain controllers ensure that all school resources are available in case of a network outage and allows for faster Active Directory searches.

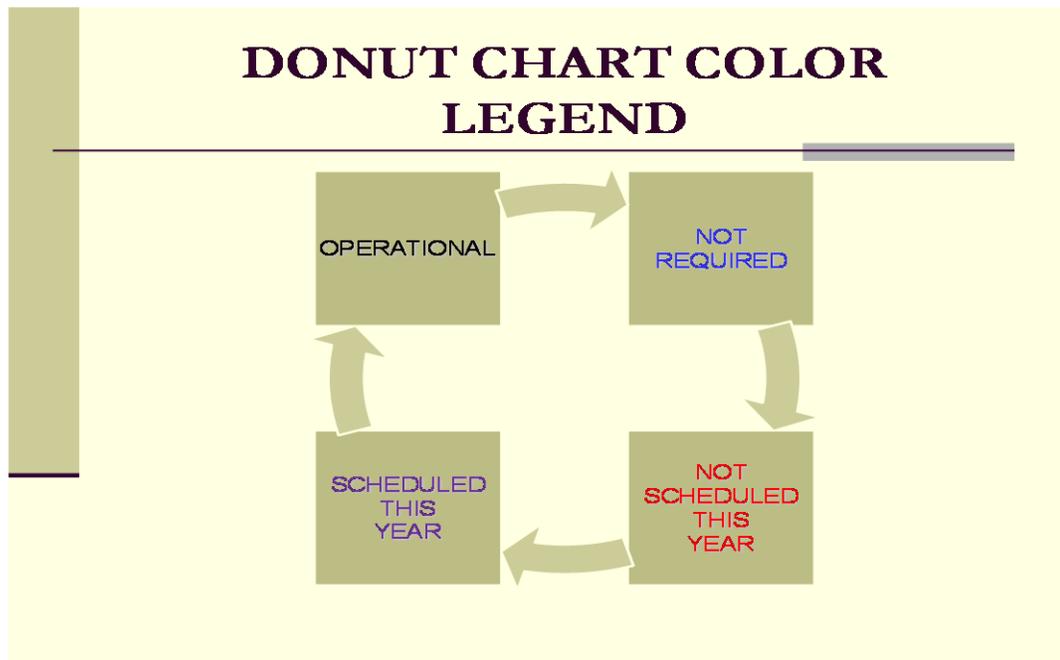
Category 5 – CIPA (Children Internet Protection Act) and PC COMPLIANCE TO DISTRICT STANDARDS – The compliance indicated in segment 5 of the Donut Chart is first a measure of total CIPA Compliance as required by the E-Rate program. Further, this category measures whether the desktop computers and servers at the school are compliant with District standards for patch management and virus protection. To comply with the patch management requirement the computers must be running BigFix. To comply with the virus protection requirement, all District computers must be running Sophos Anti-virus.

Category 6 – BACKBONE / 10GB – References the data communication infrastructure between the main distribution frame - MDF and the intermediate distribution frames - IDFs. Data communication switching equipment is interconnected using fiber cable wiring providing servers, computers, printers, storage devices and other peripherals with network, mainframe and Internet access with transmission speeds of up to 10GBps – 10 gigabits per second or a data transfer rate equal to ten billion (10,000,000,000) bits.

Category 7 – ITS CAMPUS-WIDE WIRELESS INSTALLED – Technology is rapidly moving away from the traditional wired infrastructure. The portability of wireless ensures agile content delivery to meet the needs of our dynamic student population. Laptops and tablets (also discussed as BYOD (Bring Your Own Device) are now becoming the norm for staff and students in addition to PDA devices.

Category 8 – PBX UPGRADE / REPLACEMENT – ITS identified a plan to replace equipment installed almost a decade ago leveraging Federal funding dollars provided by the Schools and Libraries Division (SLD) E-Rate. The Plan, if fully approved would provide state-of-the-art telecommunications services and equipment such as Voice over Internet Protocol (VoIP) capability, voicemail with automated attendant, and a host of new features that have matured over the last five to seven years. In addition, the newer equipment will provide improved remote monitoring and diagnostics that will reduce operating expenditures and increase reliability.

Chart “B” – Donut Chart Color Legend



5.0 E-RATE PROGRAM REFERENCE – *Rationale*

The “**E-Rate**” (Education Rate) is the name commonly used to describe the Universal Service Fund for Schools and Libraries program. In turn, the FCC (Federal Communications Commission) established the **SLD** (Schools and Libraries Division) to administer this federal program. A major overhaul of the Communications Act of 1934, amended in 1996, provided the statutory basis for enactment of this federal funding source.

The intent of this program is to provide deeply discounted services for Internet access, telecommunications, and local area network installations, known as internal connections. The amount of the discount ranges from 20% to 90%, based on each individual school's free and reduced lunch level of participation. Program "Funding Years" run concurrent with school calendar years.

The law does stipulate, however, that schools must demonstrate maintenance of effort. Thus, ineligible services, such as terminals and workstation computers and printers, software, electrical capacity, among others, must be budgeted in sufficient quantities to justify the infrastructure upgrade requested through this program.²³

The rationale is to ensure that a school district has thoroughly reviewed the impact that technology will have on educational goals and to ensure that the technology requests made are aligned with those goals and also that there is additional funding and planning associated with non-eligible services to make effective use of the technology deployed. As noted, this Plan supports the District's and Instructional Technology's integration of the most efficient and effective technologies to facilitate learning.

5.1 Technology Plan – An E-Rate Program Requirement

While the presence of a well-defined Technology Plan is a program requirement, it is also noteworthy that the SLD gives additional clarification and rationale by stating, "it is only necessary that the approved plan include a sufficient level of information to justify and validate the purpose of a Universal Service Program request. It does not have to include the specific details and information called for within the program's FCC Forms 470, 471, 486, and 500.

The information provided on those forms should build on the foundation provided by the approved Technology Plan, by documenting specific implementation details and operational steps that are being taken under the plan. That information will be considered a refinement of the Plan, as long as the requested services can be supported by the Plan."²⁴

] M-DCPS has participated in the E-Rate program, as stated, since its inception. Thus, it recognizes that the key to success in the implementation of the E-Rate program, while strictly adhering to all SLD guidelines, is to also have a comprehensive and up-to-date Technology Plan.

²³ For additional information, you may log on to <http://www.sl.universalservice.org>

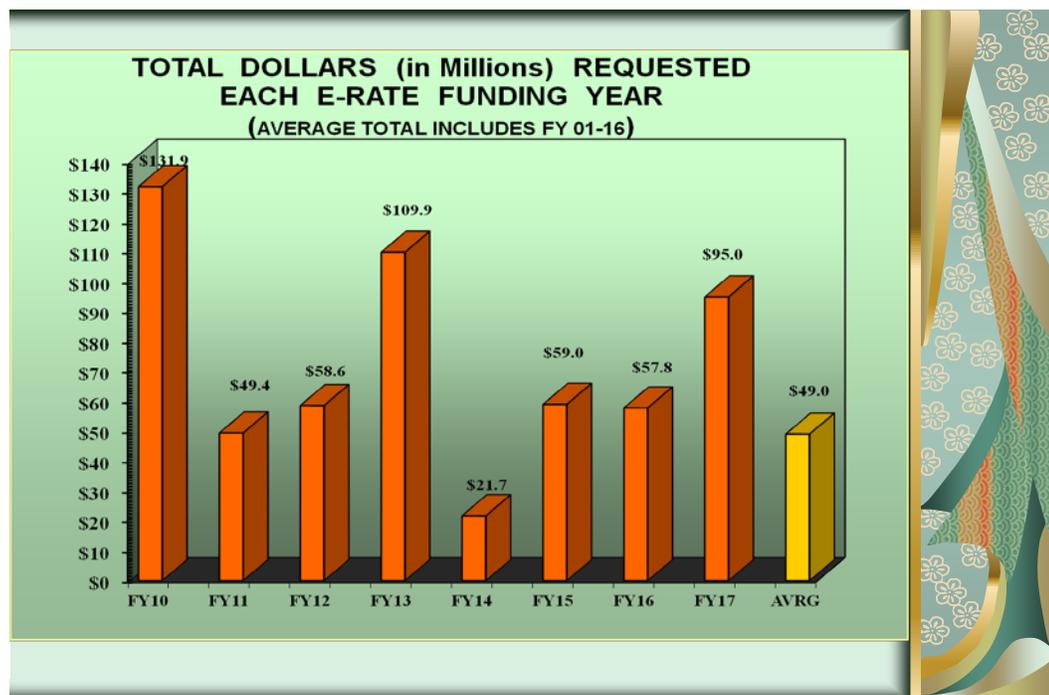
²⁴ See SLD Website at: <http://www.sl.universalservice.org/apply/step2.asp>

As such, this then becomes the roadmap to implement the needs of the District at-large in a comprehensive approach. Thus, M-DCPS remains committed to the E-Rate program participation as a key element, both technically and economically, to bring the latest technology to the teaching environment of our school children.

This program is pivotal in meeting M-DCPS current and future needs. E-Rate currently (2014-2015) provides a funding source that pays for 84% of all eligible telecommunication expenses in the District. An annual average of over \$50 million in funding assistance has been requested through this program since its inception in 1998.

The graphs shown below, however, only address the last eight years of the program's 17-year existence. This is done to provide uncluttered data. If previous data is required, it is available as part of the E-Rate Department's stored documents.

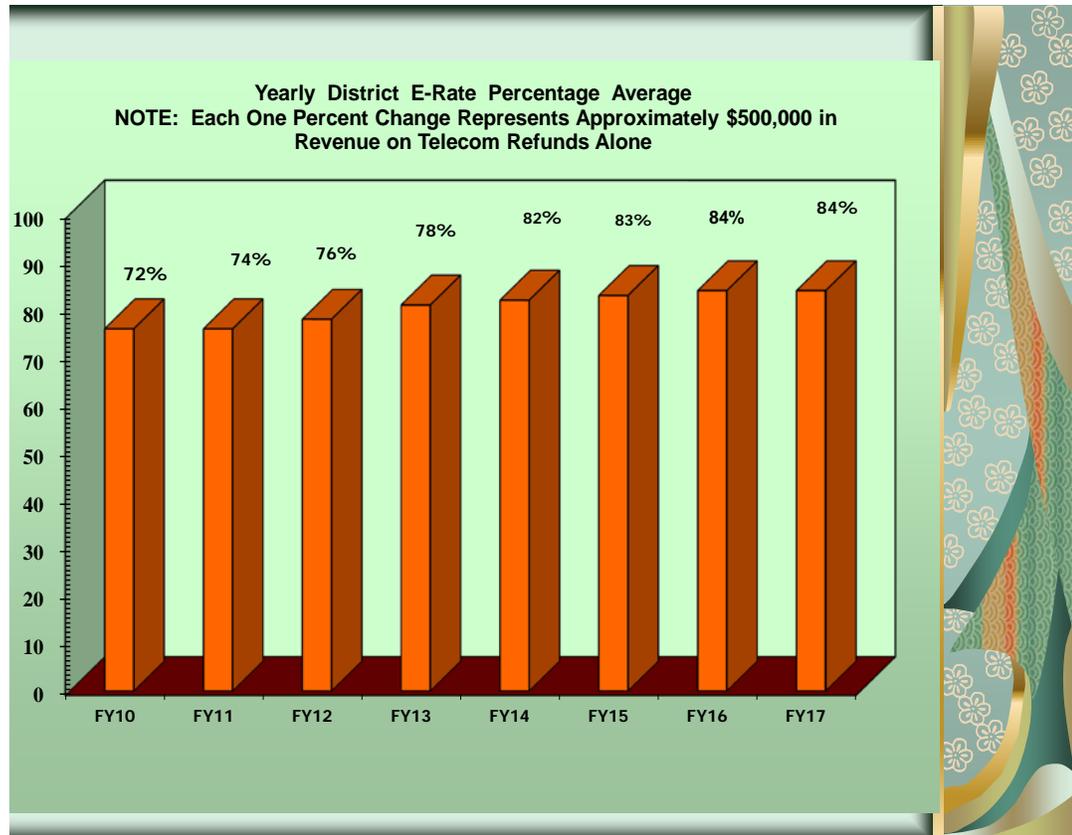
Graph "B" – Average of Funds Requested by M-DCPS During its E-Rate Program Participation Since 2007 to Present.



These funds noted above have also been used to establish a Districtwide vision, consolidating critical servers at the Information Technology Services (ITS) hub; deploying administrative systems in a concerted shift from legacy applications to Internet-based models; and developing a Wide Area Network (WAN) that connects every classroom to the Internet.

In fact, this process has served to convert the Internet into an educational tool available to all students in the District, primarily through the wise deployment of investments of E-Rate funds. Most recently, E-Rate funds were used to support a Districtwide initiative to provide Wireless Connectivity at all 235 (90%) eligible schools.

Graph “C” – M-DCPS Districtwide Average of the Free and Reduced Lunch Program Participation by Funding Year.



It must be noted at this time that the FCC is seeking to re-write the E-Rate program. In fact, the FCC has sought specific comments from the E-Rate stakeholders in multiple Notices, and in particular in its latest (April 2014) Proceeding 13-184, “Modernizing the E-Rate Program for Schools and Libraries.”²⁵ This quest has come to be known as the “E-Rate 2.0 Initiative.” Consequently, it must be stated that M-DCPS aims to continue participating in the E-Rate program and will comply with any program changes not currently known and/or approved in this Technology Plan.

²⁵ See FCC Website at <http://apps.fcc.gov/ecfs/comment> ; WC DOCKET No. 13-184

To this end, M-DCPS has been systematically involved in responding to all FCC requests for information and ideas. M-DCPS' latest proposal²⁶ for program change specifically supports the following initiatives:

1. Equitable Distribution of Funds by establishing a yearly per-student funding budget;
2. Funding should be consistent and predictable;
3. School Districts should be allowed to determine how E-Rate funds are distributed internally, based on local needs;
4. There should be a fusion of Priority One and Priority Two in the current system
5. Establish specific corrections to the current system that maintains a distinction between on-campus and off-campus connectivity – eliminating restrictions based on “space”;
6. Continued support of Maintenance Services;
7. Increase current funding cap;
8. Maintain current E-Rate funding levels, based on the existing percentage matrix breakdown (i.e., 90%; 80%, etc.);
9. Retain eligibility of voice services.

5.2 Technology Plan / Alignment To District's Strategic Framework and Pillars

Clearly then, M-DCPS' participation in the E-Rate program continues to strive to serve and support the needs of our District. That is, to ensure that The Plan would support the District's priorities, staff's second guiding principle focused on aligning The Plan to the District's Strategic Framework.” More specifically, M-DCPS uniquely prioritizes its Main Goal as “Student Achievement: Preparing for Success in the Third Millennium” associating the following four Pillars to support it. The Pillars are:

1. Student, Parent and Community Engagement
2. Education
3. Financial Efficiency and Stability
4. School/District Leadership

²⁶ See FCC Submission, Confirmation # 201447197516 dated April 7, 2014

5.3 Technology Plan – *M-DCPS Development Process*

The Plan is the result of a comprehensive collection of data that analyzes and sets strategic initiatives based on the District’s clear Goal and Pillars for using telecommunications and the latest available technology to improve education. The overall objective for the planning and research process is to develop recommendations and strategies for using technology to improve student learning and staff productivity in a cost-effective manner.

6.0 TECHNOLOGY PLAN / *E-Rate Program Required Elements*

As outlined in the SLD website, “Schools, School Districts, and Libraries that want to apply for SLD support [...] must first prepare a technology plan. An approved technology plan sets out how information technology and telecommunications infrastructure will be used to achieve educational goals, and specific curriculum reforms...” Consequently, “To qualify as an approved technology plan for a discount, and to meet the requirements of the FCC’s Fifth Report and Order (FCC 04-190, released August 13, 2004), the plan must contain the following five elements”²⁷

- 1) The plan must establish “**clear goals and a realistic strategy for using telecommunications and information technology**” to improve education or library services;
- 2) The plan must have “**a professional development strategy**” to ensure that members of the staff know how to use these new technologies to improve education or library services;
- 3) The plan must include “**a needs assessment of the telecommunication services, hardware, software, and other services needed**” that will be needed help to improve education;
- 4) The plan must include an “**evaluation process**” that enables the school or library to monitor progress toward the specified goals and make mid-course corrections in response to new developments and opportunities as they arise.

Note that, *the E-Rate program used to require that districts provide for sufficient “**budget resources**” to acquire and maintain the hardware, software, professional development, and other services that will be needed to implement the strategy. FCC’s Sixth Report and Order²⁸ adopted September 23, 2010, has dropped this requirement.*

²⁷ <http://www.usac.org/si/applicants/step02/technology-planning>

²⁸ http://www.usac.org/_res/documents/about/pdf/fcc-orders/2010-fcc-orders/FCC-10-175.pdf

6.1 Technology Plan / Adherence to the Four Required Elements

The primary intent of this document is to outline and discuss the E-Rate Requirements, including and addressing the *four required elements* of a Technology Plan, as outlined by USAC in its website²⁹ and the Florida Department of Education. The intent is to meet the specified guidelines of the E-Rate program in order to qualify for any requested E-Rate funds. In fact, "The Federal Communications Commission (FCC) requires applicants to base requests for services to be purchased with Schools and Libraries support discounts on an approved technology plan."³⁰

The Federal Communications Commission released a Report and Order on Universal Service (Section 254(h) of the Telecommunications Act of 1996) on May 8, 1997, better known as the Snowe-Rockefeller-Exon-Kerrey amendment. It states that, "schools and libraries should have access to telecommunications services for educational purposes at discounted rates."³¹ This effectively was the beginning of the E-Rate program.

This FCC Order later allowed the FCC to create the Universal Services Administrative Corporation (USAC) to administer the funds and program guidelines. The Schools and Libraries Division (SLD) of USAC later became the unit directly responsible for E-Rate. This program's focus and intent was, and remains, to provide discounts to assist most schools and libraries to obtain affordable telecommunications and Internet access.

7.0 ALIGNING THE TECHNOLOGY PLAN TO E-RATE REQUIREMENTS

The Plan's content addresses specific goals, which include all facets of the business operations of the District; most specifically, as it relates to the advancement and deployment of the latest technology available and eligible. The District's Goal and four Pillars directly impacted the strategic planning process by providing the framework of the District's needs.

In turn, ITS projects, organized into functional goals, are intended to ensure the most benefit to the District in the most cost-effective and timely manner. The Plan process was initially discussed with the stakeholders, and then carefully aligned with the District's Strategic Framework. As well, The Plan also was intentionally drafted to address the E-Rate Program requirements. Details of these Elements follow:

²⁹ <http://www.usac.org/sl/applicants/step01/default.aspx>

³⁰ <http://www.usac.org/sl/applicants/step02/technology-planning>

³¹ http://www.fcc.gov/Bureau?common_Carrier/Public_Notices/1997/da971374.html

7.1 Define Goals for Using Telecommunications and Information Technology to Improve Education

E-Rate Required Element #1. ESTABLISH CLEAR GOALS

The Plan must establish clear **“goals and a realistic strategy for using telecommunications and information technology”** to improve education or library services.

The District’s Goal regarding “Student Achievement” was considered when determining The Plan’s direction. That is, to “Prepare learners of all ages to use technology appropriately to access information, collaborate, construct knowledge, and to prepare students to lead successful personal and professional lives.”

Specifically, a strategic M-DCPS IT goal is to focus on much needed wiring replacement and network expansion to support the deployment of effective Districtwide online applications, including curriculum. Further, it is also a goal at ITS to strategically maximize federal funding, especially through the continued participation in the E-Rate program, and to do so, The Plan is geared to encompass the three years it is intended to cover. Conversely, the E-Rate filing of funding requests will be incrementally submitted to accommodate The Plan’s timeline.

Other goals of The Plan include keeping one-time costs to a minimum and reducing the support and maintenance costs. Additionally, one of the strategies to achieve is to commit to centralized purchasing, as well as to configure and maintain the new servers and equipment purchased. In fact, all these goals are targeted to be the main drivers that include a strong focus on information technology investments that support District education.

7.2 Outline Realistic Strategies for Using Telecommunications and Information Technology to Improve Education

The Plan carefully reviewed the District Pillars (“Student, Parent, and Community Engagement; Education; Financial Efficiency and Stability; School/District Leadership”) and determined specific goals to achieve a successful Plan direction. More specifically, as it relates to the Education District Pillar, The Plan expects to: 1. “develop and maintain the infrastructure that will provide access to high-quality educational programs; 2. maintain high standards of connectivity that facilitate online access anywhere and anytime; and 3. provide instruction based on the students’ assessments and needs.”

The District's technological needs, as addressed in The Plan's strategic direction for the accomplishment of the Financial Efficiency and Stability District Pillar seeks to, implement and manage enabling technologies for streamlining business processes to substantially improve operational efficiency, enforce government standards, and improve the quality and timeliness of services."

The District uses the ***Technology Resources Inventory***,³² an annual survey conducted by the Florida Department of Education to determine technology needs. As well, M-DCPS, as a member of the Council of the Great City Schools (CGCS) benefits from the Key Performance Indicator (KPI) report³³ produced yearly.

Some examples of the detailed information available from these reports, combined, include:

- BYOD Policies at schools
- Connection type and connection speed of equipment/services.
- Method of evaluating teacher and student technology competence and literacy
- Number of administrative computers
- Operating system on computers
- Personnel IT costs
- Quantity and types of computers, including mobile devices, and peripherals in schools
- System down-time as it relates to Student Information System (SIS); Human Resources (HR); Payroll; Enterprise Resource Planning (ERP) systems.
- Teacher professional development that includes technology components
- Technology programs being offered
- Technology skill level and use by teachers
- Use of technology for communication

³² <http://www.flinnovates.org/survey>

³³ <https://kpi.actpoint.com/signin>

7.3 Indicate Types of Services Required (Intent and Use) to Meet Goals and Strategies

The District WAN currently consists of multiple sites connected via mostly NMLI (Native Mode LAN Interconnection) services and some T1 Frame Relay circuits. Staff within Information Technology Services (ITS) continuously monitors the network to ensure efficient and stable connectivity. Various hardware and software tools are deployed to this endeavor. As well, it must be noted that previous efforts to deploy NMLI services throughout the District were successful. Currently, however, the District has embarked in a program to downgrade NMLI services to a minimum, eliminate T1 services where possible, and enhance the network with the more robust and latest technology known as ASE (AT&T SWITCHED ETHERNET).

ITS proactively maintains the integrity of its network. The District utilizes firewall, anti-virus software, and intrusion detection system (IDS) technology to prevent the most commonly known potential threats or unwanted network incursions. Virus cures are updated on servers and workstations on a regular basis. The anti-virus software is available free of charge to all locations and can be downloaded through the District's Portal.

Additionally, the District utilizes a number of commercially available tools to monitor its network infrastructure. Further, each District facility contains a LAN (Local Area Network) that controls traffic flow within the facility. The WAN connects the LAN together with telecommunications links and routers.

In fact, the District's initiatives have earned it an enviable reputation nationwide, and specifically by having been reported in CIO Magazine's "TOP 100" List as "exemplifying the highest level of operational and strategic excellence in Information Technology."³⁴ The *Miami Herald* has recognized M-DCPS' technological tenacity, as well as cost consciousness, by reporting how "M-DCPS converted the District's system to a virtual one, saving \$440,000 a year"³⁵ in the process.

Additionally, as E-Rate applications are processed and funded, the District has upgraded, as necessary, all telephone PBX switches. The one crucial exception is the "995 Network" – the telephone system that supports the School Board Administration Building (SBAB) complex, as well as the Information Technology Services (ITS) buildings. The life expectancy of this network system has been surpassed.

³⁴ Superintendent's Memorandum # 041 to acknowledge recognition. Sent to The Honorable Chair and Members of The School Board of Miami-Dade on July 15, 2010.

³⁵ The *Miami Herald* publication, Monday, July 12, 2010 "***Ahead in the Clouds***"

The District is working on allocating funds to meet this challenge, and our technical staff has determined that there are two veritable alternatives. One solution is the complete replacement of the current telephone system, a cheaper alternative but still in the Millions; the other is the transition to Voice Over IP (VoIP), a merging solution that converts voice into data and uses a high speed Internet connection to send and receive calls. The investment required to implement VoIP is considerably greater, as it necessitates replacement of existing telephone sets and other platform services, including electrical changes.

However, there are three basic reasons that favor the move to VoIP: 1. M-DCPS would be moving into 21st-Century technology; 2. It would turn ownership of the equipment/services to the service provider and solve maintenance issues; and 3. The current FCC's considerations for modernizing the E-Rate program may include the elimination of voice services eligibility and thus, ultimately lead to such a conversion in the end.

In the data world, M-DCPS expects to upgrade connectivity beyond the multiple T1s and on to NMLI, DS3 or wireless technology, as appropriate. All school sites are currently connected to the WAN via T1 lines, at the least. Where appropriate and validated by the ITS on-site survey, these connections will be upgraded to include multiple T1, NMLI, DS3 lines or wireless services, whichever is most economical to meet the bandwidth requirements.

The core network is continuously upgraded to maximize Districtwide connectivity requirements and to develop an increased capacity for centralized management through evolving technologies.

7.4 Identify Additional Specific Resources to Support the Achievement of Goals to Improve Teaching and Learning

The District's Internet Portal³⁶ provides access to essential information and services for students, teachers, principals, and parents. Since its inception, the Portal has provides materials in the form of:

- Multiple resources, including educational materials and training software programs
- Encyclopedias, maps, and reference materials
- Mathematics and Science software for students
- Access to the Portal material on a 24/7 basis

³⁶ <http://www.dadeschools.net/employees/employees.htm>

- District policies, including detailed information regarding CIPA compliance
- Assessment tools with practice tests for FCAT, such as Online textbooks; Digital Resources such as Discovery Learn videos; NBCLearn videos; gradebook; Employee section to obtain HR information such as paystubs; Administrative communication
- Lesson planning tool with comprehensive lesson plans correlated to the M-DCPS Competency-based curriculum (CBC), the Florida Sunshine State Standards, and national standards in all core curriculum areas
- An array of other professional development tools, including free email service and free website hosting for all schools
- Planned future expansion of the District's Data Warehouse capabilities
- Other future components of the Portal will be made available, as anticipated, with the support of E-Rate funds, based on eligibility guidelines, to possibly later include online student scheduling, electronic gradebooks, electronic textbooks, and data warehousing capability for school-site administrators

M-DCPS is supported by WLRN Instructional Television (ITV) which has developed Instructional Television Fixed Service (ITFS) services to all the public schools. At present all schools receive 20 channels of Instructional Television. Schools purchase television programming as needed. WLRN has developed ITFS delivery for educational programming to correctional institutions and the Juvenile Justice System.

WLRN televises staff development programming that can be received at schools and is often scheduled on a cable channel to be received at home. Through a 20-channel delivery system that consists of ITFS and two cable channels, WLRN has sufficient capacity to meet future demands.

M-DCPS is engaging in an aggressive plan to upgrade facilities and build new school sites throughout the District. This includes an assessment of the number of students per classroom, based on the latest prerequisite for class sizing,³⁷ as outlined by the new state laws.

³⁷ The *Miami Herald* publication, Friday, July 23, 2010, ***“The Miami-Dade School District Will Use Technology to Help Meet Class Size Rules”*** / For additional information regarding this article, you may access it at: <http://www.miamiherald.com/2010/07/23/1743181/carvalho-well-meet-class-size.html#ixzz0uVRMG2nZ>

7.5 Anticipate the Possible Uses of Future Technologies

M-DCPS, as part of its continuous evaluation process, recognizes the potential benefits afforded by future technology, not currently available in the market. However, based on the analysis of these future introductions, the District may find it in its best interest to pursue upgrading its services. Clearly, while continually adhering to E-Rate guidelines and best practices, and as new technology and opportunities for advancing education delivery to the classroom become available.

Specifically, as technology use becomes commonplace, and initiatives such as Bring Your Own Device (BYOD) require expanded bandwidth access, our needs for cyberspace highways proliferate. As such, this blueprint will eventually have an exponential impact on the need to secure additional Broadband sizing to schools and throughout the District overall.

Consequently, ITS staff has ensured the proper growth needed through the FIRN Network by becoming the first “customer” requesting two (2) 10000 Mbps Ethernet Bandwidth circuits through the “FIRN Secure Internet Bundle Service” just made available by AT&T in March 2014. This service is purchased thru the State of Florida’s Department of Management Services (DMS). The new offering provides greater bandwidth capacity than the original bandwidth initially available, but at less than half the cost.

8.0 DESCRIBE PROPOSED PROFESSIONAL DEVELOPMENT STRATEGY

***Required Element #2.* PROFESSIONAL DEVELOPMENT STRATEGY**

The plan must have “**a professional development strategy**” to ensure that staff knows how to use these new technologies to improve education or library services

Miami-Dade County Public Schools (M-DCPS), the fourth largest school district in the country, educates approximately 350,000 students with a culturally diverse body of students representing over 150 countries. Using E-Rate funded resources, Miami-Dade teachers use technology to support their entire curriculum, which has helped to increase student engagement, promote cultural understanding, and expand the minds of M-DCPS’ youth.

Specifically, the “Training Needs” and “Pedagogy” for integrating technology into classroom practice through curriculum development, and teacher training, exemplify the District’s commitment to support all staff through training initiatives. In fact, the goal was that all staff increase their abilities so that their delivery of instruction and other services will provide

the maximum benefit to the community. M-DCPS is always striving to excel in the area of Professional Development, including an extensive library of documents available in its own website.³⁸

Further, as documented in the District's website addressing this area, "Professional Development (PD) delivers rigorous, research-based, field-tested learning experiences, programs, and resources for teachers, principals, administrators, and support personnel in order to increase student achievement.

These opportunities help staff succeed in their job, stay current on latest research in their field, and prepare for advancement. PD also organizes various external stakeholder professional development sessions / workshops to enable them to engage in implementing strategic priorities. PD plays a vital role in achieving the District's goals by ensuring comprehensive development opportunities that tap stakeholders' potential and enhance the knowledge and skills needed for growth."³⁹

8.1 Specific Training Goals / Strategies for All Personnel

Staff Development capitalizes on the technology proficiencies desirable by several different groups of employees: instructional staff, such as teachers, media specialists, and school-site administrators; non-instructional staff, such as treasurers, administrative assistants, and others who help with the operations side of the District; and, technical staff who ensure state-of-the-art technology systems and support the educational and operational District functions.

Further, it is the intent of M-DCPS to:

- Expand staff development opportunities to ensure all teachers and administrators become personally proficient users of technology.
- Continue to provide professional development at all proficiency levels through the Division of Instructional Technology and Media Support Services, Information Technology Services, FDLRS (Florida Diagnostic & Learning Resources System), and WLRN.
- Increase the number and variety of online professional development opportunities for all teachers and administrators.
- Define technology proficiency levels for educators.

³⁸ See Professional Development District Website at: <http://prodev.dadeschools.net/default.asp>
Also, Access, <https://employeeportal.dadeschools.net/Applications/Weekly%20Briefings.aspx>

³⁹ <http://prodev.dadeschools.net/default.asp>

- Integrate the appropriate use of technology into all content area staff development offerings.
- Provide intensive, targeted, and sustained technology integration training to teachers.
- Offer technology leadership training to principals.
- Align professional development activities to student competencies and improve student achievement through the effective use of technology in elementary and secondary schools.

8.2 Coordination of Professional Development Activities, Training Opportunities, and the Intended Targets

The Office of Academics and Transformation is tasked with the general coordination of the District's technology integrated curriculum professional development. The intended target, and a primary goal, has always been to provide access for teachers, parents, and students to the best teaching practices and curriculum resources available. This initiative is supported by the District's Internet Portal, (See <http://www.dadeschools.net>.) providing access to essential information and services for staff, students, teachers, principals, and parents.

Many of the District's training initiatives are in fact not optional, as these may be required to perform their job tasks and responsibilities under new technological improvement initiatives, including in-service. As an example, the newly developed ERP/HR 2.0 system training is mandated for selected staff. Other technical courses, as well, are required of technical staff. These courses are also included in the District's efforts for professional development.

However, in the cases where programs are offered on a voluntary basis, the participants may receive credits toward certification requirements, salary supplements, time off from work to attend, and a myriad of other incentives. This process leads to an active participation by all.

As well, opportunities outside the District's training initiatives abound. Staff is generally encouraged to attend national and state conferences, and other training venues.⁴⁰ For example, ITS tracks staff's participation in general training opportunities, including reading materials, disseminated electronically throughout the organization.

8.3 Training Initiatives Available to Teachers and Staff

⁴⁰ <http://prodev.dadeschools.net/default.asp>

The Technology Learning Center offers over 50 different courses for both PC/Windows and Apple/Macintosh, including: school scheduling, Word processing, use of spreadsheets and databases, desktop publishing, on-screen presentations, networking, telecommunications, Web development and Internet applications.⁴¹ The catalog of training courses is also available electronically.⁴²

9.0 ASSESSMENT OF TELECOMMUNICATION SERVICES / HARDWARE / SOFTWARE / OTHER SERVICES NEEDED

Required Element #3. INCLUDE AN ASSESSMENT OF THE TELECOMM SERVICES, HARDWARE, SOFTWARE, AND OTHER SERVICES NEEDED

The plan must include “**an assessment of the telecommunication services, hardware, software, and other services needed**” that will help to improve education or library services.

This Plan is in itself AN ASSESSMENT OF TELECOMMUNICATIONS SERVICES / EQUIPMENT NEEDS for the District over the next THREE years. More specifically, The Plan discusses the process for selecting and managing strategic actions so that outcomes lead to significant, measurable improvements in academic performance and operational efficiency. This clearly and precisely aligns with our District Goal and its four Pillars. In fact, The Plan focuses on continued enhancement and expansion of advanced infrastructure systems for communication, computing, and networking throughout the District.

Identification of appropriate hardware to meet the goals of the District’s instructional and technological programs, as identified through needs assessments, is an on-going task. Reviews are made of existing and new and emerging technologies in order to determine how best to meet the educational needs of M-DCPS.

As well, this is done by ensuring that national standards are emphasized to support District instructional guidelines. This includes adherence to the Children’s Internet Protection Act (CIPA), a requirement of the E-Rate federal program.

9.1 Assessment of Services - General

⁴¹ <http://tlc.dadeschools.net>

⁴² <http://tlc.dadeschools.net/catalog.asp>

The current M-DCPS telecommunication network infrastructure originally had centered on the deployment of NMLI communication circuits. Strategically, the network architecture is designed using divergent and physically separate paths to maintain optimal business continuity. While the majority of locations are served by 10Mb circuits ongoing network analysis identifies locations that require upgrades to 100Mb circuits.

The goal is to provide schools with opportunities to maximize their instructional potential through the provision of a superior infrastructure foundation. An infrastructure must be flexible and robust to allow for convergence of voice, video, and data services while improving management of its service, support, and maintenance, in order to leverage current and emerging bandwidth intensive applications and technologies.

To this end, current available products provide further opportunities to enhance the network. More specifically, M-DCPS is moving to ASE (AT&T Switched Ethernet) services. This product basically replaces all previous types of communication circuits, including NMLI services.

Additionally, the District had accelerated the expansion of wireless networking technology and currently, all schools are successfully retrofitted for wireless access throughout campuses. Prior efforts concentrated mostly wireless connectivity to isolated areas within schools such as computer labs and media centers.

Campus-wide expansion of wireless connectivity had become a top priority in support of learning objectives. While traditional wired network infrastructures support MDCP's vast number of instructional desktop computers, the proliferation of inexpensive Netbook and PDA style endpoints as tools for administration and, more importantly, the delivery of instructional content, require infrastructure improvements that move beyond traditional limits. Strategically, development of standards including design, hardware selection, management, security, and maintenance are in place and are subject to periodic review to ensure delivery of "state-of-the-art" functionality.

9.2 Emerging Technologies

The District seeks emerging technologies that provide opportunities to build out network infrastructures which support higher bandwidth performance over longer distances at lower costs. M-DCPS has developed design criteria based on industry standards and best practices. The purpose is to outline current and future infrastructure requirements for new school construction, renovation, and retrofit projects.

M-DCP's data infrastructure adheres to industry standards and requires wiring vendor staff be certified with respect to installation and maintenance of CAT5, CAT5-E, CAT6, and multiple types of Fiber Optic cable/connector and interconnection devices. To that end, the District is currently upgrading infrastructure switch hardware to Gigabit Ethernet. In addition, all locations benefit from individualized Active Directory Servers (ADS) facilitating efficient network access and secure single sign on (SSO).

An Interactive Voice Response (IVR) system enhances communication between administration, school, and community providing multi-lingual support for electronic grade and attendance reporting. The system also plays a pivotal role in emergency employee communications in times of interruption to business continuity.

Improvements to the District's telecommunication infrastructure circuits, enhancement of wired and wireless media at individual locations, and upgrades to routing and switching hardware is a continuous process. Through these efforts M-DCPS can continue to provide the delivery of technical support required to maximize student achievement and reduce, or hopefully eliminate, the technical divide throughout the District.

9.3 Outline Current Services, Equipment, and Software

Infusion of instructional technology into the entire curriculum requires a flexible approach that reflects instructional needs as well as diversity in equipment configurations. The District recommends a distributed model for instructional technology consisting of wiring capable of supporting current technology and a school-wide local area network which connects all classrooms. The distributed model includes,

- Interactive whiteboard with sound, printer, and multimedia peripherals (such as, scanners, digital cameras, and CD-ROMs)
- Computer labs equipped with computers connected to the Internet and subject-specific software

All schools minimally have one T-1 connection to the M-DCPS WAN for Internet use, providing desktop-to-Internet access throughout the schools. LANs are also used to access integrated learning systems for programmed learning software that uses a diagnostic / prescriptive approach as well as other software.

All schools have a wireless network, with a separate channel for guest users. As well, all classrooms also have access to WLRN's ITFS system. The ASE (AT&T Switched Ethernet) services initiative, currently taking place, further enhances connectivity at every school in the District.

9.4 Determine Expected Services, Equipment, and Software

The recently voter-approved Bond Referendum will successfully fund, through the 2018 school year construction needs as planned, approved, and monitored by the 21st Century Bond Advisory Committee.⁴³ The Capital Improvement Plan projects at M-DCPS⁴⁴, as a result, will meet service needs and requirements based on sorely needed District construction initiatives.

Addressing current and future needs makes for a comprehensive Plan that supports the E-Rate program requirement to continuously assess and evaluate the District's needs and ever-changing regulations – at the federal, state and local levels. This practice helps to make The Plan a dynamic living document as it is updated regularly based on data driven results. Thus, The Plan targets and encompasses the following initiatives:

- Best practice research both within the District and nationally
- Emerging technologies
- Federal, state, and local regulations/legislations
- Initiatives implemented within the District
- New standards and/or specifications

9.5 E-Rate Planned Initiatives

Specifically, one of the District initiatives to support its infrastructure improvements, as well as continued growth and expansion efforts, was to participate in the federal E-Rate program, actually since its inception in 1998. Subsequently, M-DCPS established the E-Rate Management organization, responsible for the deployment of all required documents to participate in this program.

The E-Rate Management team provides support to all eligible sites in the District seeking funds to purchase affordable services / equipment as outlined by the E-Rate program. They are: Telecommunications; Internet Access; Internal Connections; and Maintenance Requirements of Eligible Services. This organization evaluates, processes, tracks, and completes all required documents to request funds. As well, this department assists in the assessment of the telecommunication services needed Districtwide, ensuring the proper evaluation process necessary to enable the individual schools to monitor progress toward their specified technical goals.

⁴³ http://bondsfor schools.dadeschools.net/GOBAC_Committee.asp

⁴⁴ <http://facilities.dadeschools.net/capital/index.asp> (Five Year Capital Plan)

The E-Rate organization at M-DCPS processes applications seeking refunds of the telecommunications services Districtwide averaging over \$8.5 million yearly. Furthermore, this Team requests an average of an additional \$53 million in technology improvement products, to be used at the schools and eligible administrative entities, yearly.

This group, therefore, is directly responsible for keeping up with the guidelines and requirements of the Technology Plan. The funds available, as a result of the E-Rate program, significantly impact our District's ability to keep pace with the ever-evolving technology required to support the needs of Miami-Dade's Public School teachers, the parents, and the children we ultimately serve.

Specific services regularly requested through the E-Rate Management organization at M-DCPS for all E-Rate eligible sites throughout the District, and/or considered for deployment, as needed, may include the following types of equipment and/or services:

- Local Telephone Services, known as POTS (Plain Old Telephone Services)
- Frame Relay
- Megalink T1
- T1/PRI
- NMLI, Core Components, and Associated Wiring
- ASE (AT&T Switched Ethernet)
- ADSL
- ATM
- ATS – Managed Networks
- ISDN
- Lightgate
- Long Distance Services
- Paging Services
- Cellular Services
- FIRN Bandwidth
- Voice Over IP (VoIP)

Types of Equipment and Services *(continued)*

- Internet Access Products and Services
- Video Conferencing
- Video Services and Infrastructure Components
- Computing Infrastructure and Components
- Diversity of Capacity and Load Balancing With Fault Tolerance for Internet Access
- Network / Information Security Protection Services and Components
- Mainframe Equipment and Eligible Components
- PABX Systems and Components (Wired and Wireless)
- Electronic Key Systems and Components
- UPS Systems
- Smart Ring
- Crisis Link
- Watch Alert
- Wireless Networks, Components, and Wiring
- Client Server Systems
- All Software and Software Licenses Requirements
- All Network Equipment, Including Servers, Routers, and All Other Required Components
- All Network Connectivity Devices Required
- LAN and WAN Components
- Category 5 and/or 6 (Current Cabling Industry Standard)
- Fiber Cabling As Required to include Vertical Cavity Surface Emitting Laser Technology (VCSEL)
- Gigabit Switching to Desktop Technology
- Firewall Protection Devices and Systems

Types of Equipment and Services *(continued)*

- Interactive Voice Response System (IVR)
- Project Management and Eligible Associated Professional Services
- Centralized Management of Wireless Networks
- District Portal Services, to include but not be limited to:
 - Districtwide Student EMail Services
 - Emergency and Non-Emergency Outcalling
 - Grade Reporting
 - Parent Help Desk
 - Parent Academy
- Maintenance Services Required for Eligible Services and Required Associated Components
- Services and Components Required to Support the Operational Needs of WLRN and Other School-Based TV and Transmission Services, to include but not be limited to:
 - Antenna
 - Cable TV Access
 - Distance Learning
 - Educational Development
 - Homework Hotline Services
 - Information Systems
 - Interactive TV
 - Laptop Computers for Testing
 - Programmed Audio Services
 - Satellite Dishes; Satellite Services
 - Structure Cabling
- Other Emerging Technologies

9.6 Review of Non-Instructional Facilities, Including WLRN

All eligible administrative facilities, including WLRN, are addressed each funding year. The E-Rate program recognizes these locations as NIFs (Non-Instructional Facilities). The eligibility requirement for this type of

locations is described in the SLD's E-Rate website.⁴⁵ Generally, however, funding limits imposed by the program are not sufficient to approve and fund these NIF facilities at the District's average (historically at or below the 80% mark).

Specifically, non-instructional facilities on school and library property are eligible to receive discounts on telecommunications and Internet access services (Priority One Services). However, further clarification indicates that, "Support is not available for internal connections in non-instructional buildings of a school or School District or in separate administrative buildings of a library, unless those internal connections are essential for the effective transport of information to an instructional building of a school or to a non-administrative building of a library."⁴⁶

The District, through the E-Rate Management Team, recognizes that these priorities and eligibility of equipment/services may change yearly based on program rule changes.

10.0 DETERMINE BUDGET TO SUPPORT ELEMENTS OF PLAN

Required Element #4. BUDGET RESOURCES

The plan must provide for sufficient "**budget resources**" to acquire and maintain the hardware, software, professional development, and other services that will be needed to implement the strategy.

As noted in the USAC website⁴⁷, Element #4 was required only "Prior to Funding Year 2011. Plans had to include a sufficient budget to acquire and support the non-discounted elements of the plan..." Currently, this is no longer a requirement. Nonetheless, it is expected that The Plan will still be useful to M-DCPS in determining an annual work plan for implementing activities and for anticipating the resources and budgetary support needed from year to year. In fact, the purpose of The Plan, as it relates to E-Rate participation, focuses on the planned processes identified in order to more effectively meet its funding needs through the required funding applications. The staging and phasing of planned implementations, as outlined, are intended to meet and support at least a three-year planning process.

⁴⁵ <http://www.usac.org/sl/applicants/step05/default.aspx>

⁴⁶ <http://www.usac.org/sl/applicants/step06/educational-purposes.aspx>

⁴⁷ <http://www.usac.org/sl/applicants/step01/default.aspx>

10.1 Budget to Support Non-Discounted Elements of Plan

Regardless of current E-Rate plan changes no longer forcing budget commitments, M-DCPS, each year, presents its complete Budget Analysis and Plan to the Board, as required, for subsequent approval. As a result, the District always sets aside sufficient funds within its budgets to acquire and maintain the hardware, software, professional development, and other services needed to implement the strategy for improved educational services.⁴⁸ These equipment components are intended to support the funding applications referred to in the E-Rate guidelines as “Priority Two” funding requests. Telecommunications Services are known as “Priority One” funding requests.

10.2 E-Rate Program Participation as Part of Budget Plan

Specifically, as it relates to E-Rate funds, M-DCPS has participated in the program since its inception. Generally, the District requests sufficient funds for Telecommunication Services to meet the needs of all E-Rate eligible schools and Non-Instructional Facilities (NIFs).⁴⁹ The fact that funds historically fall short of the nationwide total requests is an E-Rate program limitation since the program’s inception. It is the result of imposing a funding cap at \$2.25 billion (without even any provisions for cost-of-living adjustments [COLA]), coupled with the demands, nationwide, for expanded E-Rate funding support.

Furthermore, planned and/or projected changes to the E-Rate program by the FCC could potentially impact, even more, the availability of funding support through this program. The FCC’s intent to support Broadband Services, for instance, is one such initiative that may soon be considered an eligible service, but not necessarily by increasing the E-Rate funding cap. Note that other planned changes currently being considered by the FCC – and as discussed earlier in this could change the program significantly and lead to other changes to this Plan.

10.3 M-DCPS Policy on E-Rate Priority One Expenses

It must be noted that, **“M-DCPS does not take into account any E-Rate funding, as a source of revenue, when establishing and seeking Board approval for each year’s school budget.** Consequently, all E-Rate eligible Priority One, Telecommunication expenses are paid in full, on a monthly basis, to our telecommunications common carrier.

⁴⁸ For detailed information on Budgets, see <http://financialaffairs.dadeschools.net> .

⁴⁹ See Page 11 of this document, “Graph A – Average of Funds Requested by M-DCPS During its E-Rate Program Participation Since 1998 to Present.”

This expense is also outlined, and always carried at full cost (100%), in the Budgets presented to the Board for approval yearly. However, it must be noted that, M-DCPS does seek E-Rate funding support for these types of services through the application process each E-Rate Funding Year, but relies on the FCC Forms 472 Billed Entity Applicant Reimbursement (BEAR) process, as outlined in the SLD website⁵⁰ for recovery of funds for these expenditures.

10.4 Show Cost Allocation on E-Rate Priority Two Expenses and Ancillary Costs

All Priority Two associated costs (District's portion of the expenses), are generally paid at the District's aggregate percentage, and directly to the vendors. As well, all the associated ancillary requirements necessary to actually make the requested E-Rate services work, for example, electrical components, computers and terminals, certain equipment software, professional development, and other such identified components) must be paid by the District. This is a required practice of the E-Rate program.

In the case of M-DCPS, the E-Rate portion paid by the program is sought by the vendors from the SLD. In the cases where there are associated charges that are not E-Rate eligible, M-DCPS either pays for these expenses on a separate Purchase Order and Invoice or ensures that these charges are outlined in a separate line item of the Purchase Order itself.

10.5 Provide Comprehensive Existing Budget to Support E-Rate Related Purchases

It must be noted that all funds requested are generally not all approved. This is based on program funding caps and the limited funds running out before all levels of funding (according to poverty guidelines first) are met.

Prior to the start of each Funding Year, Budget meetings are held to develop a more comprehensive approach to funding all approved E-Rate application requests – as it relates to the applicant's cost participation (specifically either the 10% of the total cost not paid by E-Rate, or the actual percentage required). As a result, Capital Department will work with the Field Services and the E-Rate departments to coordinate work activity and payment of the aforementioned costs. Specific details are outlined yearly, starting with the proposed Budget Plans.⁵¹

⁵⁰ <http://www.usac.org/sl/tools/required-forms/form472-instructions.aspx>

⁵¹ <http://financialaffairs.dadeschools.net/ES10-11/index.asp>

11.0 OUTLINE EVALUATION PROCESS WITHIN PLAN

***E-Rate Required Element #5.* PROVIDE ONGOING EVALUATION**

The plan must include an “**ongoing evaluation process**” that enables the school or library to monitor progress toward the specified goals and make mid-course corrections in response to new developments and opportunities as they arise.

The “evaluation [process] is a core organization competence” and follows the ISTE Standards.⁵² These standards are the roadmap to teaching effectively and growing professionally in an increasingly digital world.

Plan success is determined based on multiple criteria and feedback. In fact, the stakeholders meet regularly to monitor the status of each of the outlined projects, and hence The Plan. As well, another criterion to determine success is obviously the analyses of ROI (return on investment) and metrics regarding expenditures, and on-time performance.

Further, the division of project deliverables into phases assures that stakeholders will have timely products that can be reviewed and evaluated to assess the required and expected performance of the products/services.

11.1 Provide for Mid-Course Corrections

Evaluations provide information which can be used to make mid-course corrections. As part of the projects’ evaluation process, modifications can be made to ensure that all goals are met, and/or adjusted accordingly. This process secures the successful completion of the projects and avoids “unmet goals.”

New needs, including emerging technologies and innovations, as presented at conferences and even as identified through publications, can be turned into proposed projects in this format.

11.2 Outline Cycle Process

There is an established methodology to initiate and even modify projects as outlined in the Standards and Procedures and safeguarded by staff in the PMO (Program Management Office). Conversely, any particular project that is later deemed not required, or canceled, will be documented to preserve a record of the actual project.

⁵² <http://www.iste.org/AM/Template.cfm?Section=NETS>

12.0 CONCLUSION

The Plan recognizes that the purpose of developing and implementing a technology plan is not necessarily just to produce a plan, a guideline, or a blueprint; but, rather to produce a document, a process, intended to achieve the following RESULTS:

- Ensure achievement of high academic standards by all students.
- Develop our students so that they are able to successfully compete in the global economy.
- Recruit, develop, and retain high-performing, diverse, and motivated faculty and staff.
- Actively engage all family and community members to become our partners in implementing this Plan, to actively and positively raise and then maintain high student achievement.
- Reform business practices to ensure efficiency, effectiveness, and high ethical standards.

Technology is THE tool for improving - *and ultimately transforming* - both teaching and learning. Used as a tool routinely, it will prepare students to move from school to career settings with skills necessary to succeed economically in today's workplace. Used as a tool effectively, it will also impact student achievement and prepare them for the future.

With this in mind, there must be such a Plan, in place, with a clear vision of how the integration of technology might benefit students while building a technology-rich environment. Technology continues to evolve at a pace that is astonishing and unprecedented, and the District must be prepared and able to embrace these changes.

M-DCPS envisions all learners, regardless of student demographics, to use technology anywhere / anytime, to access information, communicate, collaborate, and construct knowledge. Students would thus be prepared to succeed in the workforce of the new millennium.

This Plan secures the District's course of action as it embarks in its mission to ensure the most effective technology and continue to bring the world to students, teachers, and staff. Such an experience will ultimately provide limitless opportunities for learning, both within and outside the classroom, regardless of time, space, and physical barriers.