# Expanding Digital Opportunity in the Washington Metropolitan Region:

## Recommendations of the Digital Divide Task Force

## November 2001

**Metropolitan Washington Council of Governments**
**777 North Capitol Street N.E.**
**Washington, D.C.**

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## Executive Summary

The Metropolitan Washington Council of Governments (COG) Board of Directors established the Digital Divide Task Force on May 10, 2000. Its task was to examine technology access issues in the Washington metropolitan region and identify ways COG area local governments can further enhance access and use of technology by area residents and businesses, regardless of location within the region, race, income or other socioeconomic factors. Access is broadly defined to include access to the Internet, access to public and private-sponsored facilities, and access to education and training to support the optimal use of technology.

The Task Force recommended that the COG Board and area local governments endorse four principles to promote digital opportunity in the Washington metropolitan region.

- *Principle One: All citizens of the Washington metropolitan region should have access to information and information technology.*

- *Principal Two: High-speed technology infrastructure is essential for the economic development of communities and should be available throughout the Washington metropolitan region.*

- *Principal Three: Local governments should be leaders in promoting digital opportunity.*

- *Principle Four: Information on digital opportunity programs, services and resources should be readily available to local governments, businesses, the technology industry, community-based groups and citizens.*

Despite dramatic overall growth in Internet access, Internet users still tend to be white, well educated and well off, according to a recent report by the U.S. General Accounting Office. The challenge for policymakers over the long run will be to determine whether any continuing disparities in the availability and use of the Internet among different groups of Americans threaten to deepen the socioeconomic divisions within our society.

Data shows that computers in Washington area schools are a near universal phenomenon and that more than 90% of all schools in the region have Internet access. In addition, the ratio of students per instructional computer is equivalent across DC, Maryland and Virginia with an average of 5 students per computer.

Demand for broadband access is soaring among businesses. Booming electronic commerce is spurring demand for more access bandwidth among business establishments of all sizes. Not only does broadband access offer huge revenue opportunities, but it is also strategically vital. Companies seizing the broadband challenge will have the best opportunity to influence customers.

In order to address the complex nature of the Digital Divide in the Washington metropolitan area, COG's Digital Divide Task Force has developed a series of implementation strategies to address these issues.  These implementation strategies seek to address the critical role that COG can play in promoting equal access to computer and Internet technologies.  They also look to promote a climate where both government and business can utilize the digital world equally, efficiently and to its broadest potential.

- *Digital Divide Implementation Strategy 1: Formalize a Regional Technology Access and Opportunity Task Force*

- *Digital Divide Implementation Strategy 2: Expand the Digital Divide database through the use of GEO Mapping*

- *Digital Divide Implementation Strategy 3: Conduct a comprehensive digital access and opportunity school survey of the Washington metropolitan region*

- *Digital Divide Implementation Strategy 4:  Produce a regional business technology, e-commerce and e-government development plan*

- *Digital Divide Implementation Strategy 5:  Create a regional computer recycling program*

The Digital Divide Task Force recommends that the COG Board consider, in conjunction with the new COG Board chairman's policy focus for 2002, the approval of supplemental COG funding from the contingency reserve to establish a Regional Technology Access and Opportunity Task Force and secure part-time consultant staff support.  The Regional Technology Access and Opportunity Task Force would be comprised of technology leaders from the public, private and community-based sectors and would be responsible for review and prioritization of goals and implementation strategies, identification of resources and partnerships needed to advance strategies, and identification of new strategies to sustain a strong technology access and opportunity focus in the Washington metropolitan region and at COG.

**The Digital Divide Task Force**

The Metropolitan Washington Council of Governments (COG) Board of Directors established the Digital Divide Task Force on May 10, 2000.  It's task was to examine technology access issues in the Washington metropolitan region and identify ways COG area local governments can further enhance access and use of technology by area residents and businesses, regardless of location within the region, race, income or other socioeconomic factors.  Access is broadly defined to include access to the Internet, access to public and private-sponsored facilities, and access to education and training to support the optimal use of technology.

Task Force Membership:

| Task Force Member | Representing |
| --- | --- |
| Hon. James Scott, Chairman | Delegate, Virginia General Assembly |
| Hon. Phil Andrews | Council Member, Montgomery County |
| Hon. Judith Davis | Mayor, City of Greenbelt |
| Hon. William Euille | Vice Mayor, City of Alexandria |
| Hon. Mary Hill | Supervisor, Prince William County |
| Hon. Catherine Hudgins | Supervisor, Fairfax County |
| James Newman | Office of Chief Tech. Officer, District of Columbia |
| Hon. Carol Schwartz | Council Member, District of Columbia |

The Task Force presented its preliminary report to the COG Board of Directors on November 8, 2000, *Moving Toward Digital Opportunity: Initial Report of the Digital Divide Task Force*.  The report outlined why digital opportunity is a matter of regional concern; summarized significant national, state, regional and local data; highlighted findings from a COG-sponsored survey of area local governments; discussed the challenges of mapping digital infrastructure; identified several digital opportunity best practices in the Washington area and elsewhere; and identified four digital opportunity principles and associated goals.

**What is the Digital Divide?**

In The Task Force's 2000 report, they struggled with the challenge of defining what the digital divide means at the regional scale, and more importantly, what local governments can do to ensure that the Washington area and its residents remain in the forefront of access to and use of technology.  The Task Force concluded that access to information was the key.  The Task Force also elected to view the digital divide issue in a way that acknowledges the rapid pace of access to communication and information technology. Rather than focus on the different levels of communication, technology and information access, the Task Force arrived at the concept of digital opportunity – a focus on public and private sector efforts to ensure that all citizens have access to communication and information technology, and the education and training necessary to productively use technology.

The Task Force ultimately defined digital opportunity as:

> *All Washington metropolitan region residents, regardless of age, income,
> race, ethnicity, disability or geography should have access to
> communication and information technology and the skills necessary to
> participate fully in society and the Washington area's rapidly expanding
> technology-based economy.*

## Actions of the Digital Divide Task Force 2000 – 2001

On March 30, 2001, the Task Force sponsored a *Digital and Technology Opportunities
Future Search*.  The Future Search was an all-day, interactive workshop facilitated by
staff from Cook-Ross, Inc.  Targeting representatives of all relevant stakeholders, the
Future Search focused discussion on the framing question – "How do local governments
collaborate with each other, non-for-profit organizations, and the private sector to have a
voice in ensuring that all citizens have access to digital resources and the opportunities to
take advantage of them?"

Future Search participants organized themselves into five work groups during and after
the Future Search to address key issues associated with the framing questions:
infrastructure/mapping; marketing/motivation; training/measurement; collaboration; and
funding.  The proposed COG work program builds on several of the outcomes of the
Future Search and its work groups.

### Vision and Mission

In conjunction with the COG Board of Director's 1999 Strategic Plan, the Board adopted
vision and mission statements that provide a context for the work and recommendation of
COG's Digital Divide Task Force.

*COG Vision*
A world class, high performance regional organization, recognized for applying best
practices and cutting edge technologies to regional issues, making the Washington
metropolitan area the best place to live, work, play and learn.

COG Mission
Enhance the quality of life and competitive advantages of the Washington metropolitan
region in the global economy by:

- Providing a forum for consensus building and policy making
- Implementing intergovernmental policies, plans and programs; and
- Supporting the region as an expert information resource

Principles

The Task Force recommended that the COG Board and area local governments endorse four principles to promote digital opportunity in the Washington metropolitan region.

*Principle One: All citizens of the Washington metropolitan region should have access to information and information technology.*

> Goal A: Local governments should provide computer and Internet access to residents who lack access at home or work through libraries and senior and community centers, and provide appropriate training to allow users to obtain the maximum benefits of technology.

> Goal B: Local governments should seek partnerships with private sector and community-based groups to provide alternative computer and Internet access in facilities such as shopping centers, telework centers, child care centers and sports facilities.

*Principal Two: High-speed technology infrastructure is essential for the economic development of communities and should be available throughout the Washington metropolitan region.*

> Goal A: Local governments should move aggressively to track information on existing and planned high-speed technology infrastructure using their land use, zoning and regulatory authority and map this information using Geographic Information System (GIS) technology.

> Goal B: COG should seek funding and/or partnerships with the technology industry and local governments to prepare and regularly update a consolidated regional map of technology infrastructure.

*Principal Three: Local governments should be leaders in promoting digital opportunity.*

> Goal A: Local governments should expand the content of public information and services available on the Internet.

> Goal B: Local governments should ensure that public information and services are available in a variety of languages and formats suitable for persons with disabilities.

> Goal C: Public school systems should evaluate the need for computer and Internet training for school boards, superintendents, principles and teachers to ensure that students in turn receive the best instructional training on new information technology.

Goal D: Local governments should identify and evaluate technology access by residents and businesses and establish and monitor progress in attaining accesses goals.

*Principle Four: Information on digital opportunity programs, services and resources should be readily available to local governments, businesses, the technology industry, community-based groups and citizens.*

Goal A: COG's Library Directors Committee and Chief Information Officers Committee should jointly evaluate existing technology clearinghouses and explore the possibility of establishing a broader, Washington area clearinghouse.

Goal B: COG should identify existing or new regional mechanisms and the funding strategies necessary to establish an ongoing digital opportunity work program focus in the Washington metropolitan region.

## Digital Divide 2001: Where do we stand?

Despite the fact that the concept of the Digital Divide was introduced only a few years ago, the question must already be asked: Does the Digital Divide still exist?  The concept of the "Digital Divide" has become extremely popular with research and many resources devoted to it.  Also, the very nature of computer and Internet technology is based on innovation, development and change.  The pace of change that once took years now can only take months.  The overall speed at which computer and Internet technologies have infused themselves into American culture, business and education has been truly incredible.

Computers have become common in the workplace, in schools and at home.  Large corporations commonly donate used or outdated computers to local schools and nonprofits.  Also, nonprofits now typically include a technology line item in their budgets.  Many organizations and websites have been developed to both research the Digital Divide issue and offer resources and solutions.  For example, more than 20,000 digital-divide-related services are listed in a new, online national directory offered by the Benton Foundation (http://www.digitaldividenetwork.org/content/sections/index.cfm).

In terms of basic access, according to a recent Census Bureau report, more than half of American households own computers and more than 40% have Internet access.  In addition, 65 percent of children ages 3 to 17 had access to a computer at home in 2000, up from about 55 percent in 1998.  Of children in that age group, 30 percent logged onto the Internet, compared with 19 percent in 1998, the report found.  Census figures showed that 54 million households, or 51 percent, had one or more computers in 2000, up from 42 percent in 1998. It was the first time computer ownership surpassed 50 percent, the report said. (*New York Times*. September, 2001).  Ninety-five percent of the 16,090 public libraries and branches across the country now offer Internet access to the public, up from 76 percent in 1998, according to the American Library Association

("Technology Counts 2001: The New Divides." *Education Week on the Web*). Every indicator suggests that these numbers will continue to grow exponentially.

Despite dramatic overall growth in Internet access, Internet users still tend to be white, well educated and well off, according to a recent report by the U.S. General Accounting Office. Results of the February 2001 study confirm findings released in October 2000 by the National Telecommunications and Information Administration. Compared with the general population, Internet users are more likely to have an annual income of $35,000 or greater, they are more likely to be white than African-American or Latino, and they are more likely to have a college degree. The report also found evidence that broadband access is more prevalent in metropolitan markets and wealthy areas than other locations. However, more women and rural residents are using the Internet, and despite generally low usage numbers, minorities are as likely as whites to subscribe to high-speed Internet access. ("Defining the Digital Divide." *Government Technology*)

"Some of these findings suggest the existence of a "digital divide" at this time. However, it is often the case that individuals with greater education and income are the first to adopt new technologies, and individuals in rural areas are the last to be reached by the deployment of new telecommunications infrastructure. Since the Internet is still in a relatively early stage of commercial deployment, these socioeconomic and geographic differences in Internet usage are not surprising and may not be long lasting. The challenge for policymakers over the long run will be to determine whether any continuing disparities in the availability and use of the Internet among different groups of Americans threaten to deepen the socioeconomic divisions within our society." ("Telecommunications: Characteristics and Choices of Internet Users." *Government Accounting Office*)

## The Digital Divide in Education: Computer and Internet Access in the Washington Metropolitan Region – 2001

One aspect of the Digital Divide that is of great interest to the Digital Divide Task Force and local governments in the Washington, DC region concerns education and the availability and equitable distribution of computers and Internet access in local schools. One of the most studied aspects of the Digital Divide, in fact, has been the presence of computers and Internet access in K – 12 schools. It is safe to say that, since the development of the Digital Divide concept in the 1990's, the majority of resources addressing this issue have been focused on schools. In addition, the majority of Digital Divide research has been done on access to technology in schools.

A review of data released by Education Week on the Web titled "Technology Counts 2001: The New Divides" provides up to date, comprehensive information on the breadth of computer and Internet access in schools in Washington, DC, Maryland and Virginia. Overall, the data shows that computers in Washington area schools are a near universal phenomenon and that more than 90% of all schools in the region have Internet access. In addition, the ratio of students per instructional computer is equivalent across DC, Maryland and Virginia with an average of 5 students per computer. This ratio also varies

little between high and low poverty schools as well as schools with high minority enrollment. And finally, at least 60% of schools in DC, Maryland and Virginia connect to the Internet through a T1 Line or cable modem.

## Access to Technology in Schools: 2001

| | Maryland | Washington, DC | Virginia |
|---|---|---|---|
| **Students per instructional computer in ... (2000)** | | | |
| Statewide | *5.6* | 5.8 | *4.7* |
| High-poverty schools | 5.6 | 5.5 | 4.0 |
| Low-poverty schools | 5.8 | 5.2 | 4.8 |
| High-minority-enrollment schools | 5.7 | 5.4 | 4.3 |
| Low-minority-enrollment schools | 5.8 | 6.1 | 4.8 |
| **Percent of schools with Internet access (2000)** | | | |
| Statewide | 94 | 91 | 97 |
| High-poverty schools | 95 | 88 | 95 |
| Low-poverty schools | 94 | 100 | 97 |
| High-minority-enrollment schools | 96 | 90 | 95 |
| Low-minority-enrollment schools | 92 | 100 | 97 |
| Low-minority-enrollment schools | 77 | 100 | 87 |
| **Of those schools with Internet access, the percent that connect through a T1 or cable modem (2000)** | | | |
| Statewide | 61 | 86 | 67 |
| High-poverty schools | 41 | 89 | 75 |
| Low-poverty schools | 66 | 88 | 66 |
| High-minority-enrollment schools | 56 | 88 | 77 |
| Low-minority-enrollment schools | 66 | 100 | 67 |

Source: "Technology Counts 2001: The New Divides." *Education Week on the Web*.
Please see Appendix A for the complete data set.

**The Digital Divide in Education: Quality vs. Quantity**

These data suggest that the basic issues regarding the Digital Divide in education have been met across the Washington metropolitan region very successfully.  Computer availability and Internet access are nearly universal in regional schools.  So, if computers and Internet access are well on their way to becoming a universal phenomenon, is the Digital Divide concept no longer relevant?  If we dig deeper, we can see that current issues regarding the Digital Divide in 2001 are ones of quality instead of quantity.

"To be sure, inequities in the availability of computer technology and Internet access still exist. But rather than one single, gaping divide, what the nation's schools are grappling with is more a set of divides, cutting in different directions like the tributaries of a river. And, increasingly, those inequities involve not so much access to computers, but the way computers are used to educate children." ("Technology Counts 2001: The New Divides." *Education Week on the Web*.)

Although computers and Internet access are nearly universal in Washington, DC regional schools, there are many questions that still need to be answered.  For example, what is the quality of the equipment in schools?  Data shows that only 50% of the computers in schools are Pentium level.  The majority of software and operating systems out today require at least a Pentium level computer and 64 megabytes of memory to run correctly. How many computers are available in classrooms?  How often do children actually use computers on a day to day basis?  What is the level of technology training teachers have received?  Do schools have the technical expertise on staff to keep all the technology running?  How are computers actually used in the classroom?  Are they mainly used for fun and games or are students able to use them to their full potential?  How integrated are they into the day-to-day class instruction and lesson plans and to what degree are they used for creative means, such as web-page design, versus rote lessons?  To what degree have schools made computers accessible to handicapped children? We must also remember that the data presented are just averages, which could be hiding wide disparities between schools as to the breadth and depth of their access.

These unanswered questions demonstrate the need to continue to address the Digital Divide in local schools.  Much research and analysis still needs to be completed to gauge the depth of technology infusion and utilization in Washington regional schools.  Without this knowledge, fair and equitable access and use of technology cannot be assured.

**The Digital Divide in Local Business: Broadband Availability**

Another area of interest to the Digital Divide task Force is the availability of broadband services to local businesses—especially small and minority owned businesses.  Equal access to broadband services across all commercial districts in the region will be crucial to the regional economy.

Demand for broadband access is soaring among businesses. Booming electronic commerce is spurring demand for more access bandwidth among business establishments

of all sizes.  Not only does broadband access offer huge revenue opportunities, but it is also strategically vital. Companies seizing the broadband challenge will have the best opportunity to control customers. Business and residential customers have somewhat different broadband needs and requirements.  Since businesses typically have substantial two-way traffic, they generally prefer symmetrical connections (equal upstream and downstream speeds).  Security is also essential for commercial customers. Companies must avoid compromising sensitive data. For electronic commerce to prosper, online financial transactions must be secure. (Sim Hall.  "Winning the Broadband Race." *Outside Plant Magazine*)

Although major companies often have high-speed access via traditional T1 facilities, newer broadband technologies are bringing affordable, high-speed data services to smaller businesses and branch offices.  DSL can be used to address a larger portion of the business market during the next five years than other emerging broadband technologies.  Most urban businesses are reachable by DSL services. Customers reasonably near central offices in non-metropolitan areas can also be reached.  DSL is expected to capture the majority of business revenues for new broadband services during the next five years.  Cable broadband access is generally confined to residential customers.  For the most part, cable companies have not wired commercial districts for service.  Relative lack of security and difficulty in delivering symmetrical bandwidth also hinder the marketing of cable-modem services to businesses.   Despite lacking robust voice features, cable modem services will attract many low-end commercial customers by simply offering more bandwidth at a lower price.  Wireless broadband access and fiber optic transmission technologies are also on the horizon.

What is unclear is the extent to which local business throughout the region have proper and equal access to commercial broadband services and, if they do, whether they have the knowledge to fully utilize it.  Therefore, greater research is needed to explore business broadband availability in the Washington metropolitan region.  In addition, local government must do its part to enact policies that promote digital opportunities for local business and provide easily accessible information and tools they can use.  Several states, such as New York (http://www.oft.state.ny.us/ecommerce/the_plan.htm), have taken steps to develop a comprehensive plan to promote technology use by local business, promote e-commerce development, and provide local government online services and information for both residents and business.  It would be an important step to develop a similar e-commerce and e-government development plan for the Washington metropolitan region.

## Implementation Strategies to Address the Digital Divide

In order to address the complex nature of the Digital Divide in the Washington metropolitan region, COG's Digital Divide Task Force has developed a series of implementation strategies.  These implementation strategies speak to the critical role that COG can play in promoting equal access to computer and Internet technologies.  They also look to promote a climate where both government and business can utilize the digital world equally, efficiently and to its widest potential.

Digital Divide Implementation Strategy 1: Formalize a Regional Technology
Access and Opportunity Task Force

The Digital Divide Task Force recommends that the Task Force be reconstituted and
formalized as the *Regional Technology Access and Opportunity Task Force*, which would
be housed at COG and be part of COG's formal committee structure. The Regional
Technology Access and Opportunity Task Force would be made up of local government
officials, educators and business leaders from throughout the regional. Their mission
would be to serve as a central point to gather regional technology information, conduct
research related to the Digital Divide, and develop policy recommendations on a range of
Digital Divide issues. Their primary goal would be to promote digital opportunities and
access throughout the region.

If the implementation of the Regional Technology Access and Opportunity Task Force
were to be approved by the COG Board of Directors, it would require appropriate
funding for a dedicated staff person or consultant to support it. Once constituted, the
Task Force would develop a list of priorities for future initiatives. Implementation of
these strategies may require additional funding. Following are a list of potential projects
to be considered by the Task Force:

Digital Divide Implementation Strategy 2: Expand the Digital Divide database through
the use of GEO Mapping

A comprehensive technology database will be a critical tool for the Regional Technology
Access and Opportunity Task Force. It is proposed that COG could expand its Digital
Divide database through the effective utilization of GEO Mapping. Through the use of
information services like iMapData, Inc., GEO Mapping could be an effective planning
tool for addressing technology-related issues. Please see Appendix B for an example of a
technology GEO Map.

Digital Divide Implementation Strategy 3: Conduct a comprehensive digital
access and opportunity school survey of the Washington metropolitan region

The Digital Divide facing public schools in the region currently relates to the quality of
the technology, Internet access and teacher training available. While, on the surface, it
appears that computers and Internet access are nearly universal at regional schools, it is
unclear whether current data is merely masking wide disparities among schools. It is also
unclear whether the quality of the equipment or of the technology instruction provided to
students is adequate. With this in mind, one of the first projects considered by the
Regional Technology Access and Opportunity Task Force will be to conduct a
comprehensive survey of every K – 12 school in the Washington metropolitan region to
comprehensively assess their technology infrastructure and utilization. This information
would be critical for any future decisions regarding computer and internet use and
instruction in schools and to ensure equal access. The data would also help in allocating
technology resources to those schools most in need.

Digital Divide Implementation Strategy 4: Produce a regional business technology, e-commerce and e-government development plan

The Digital Divide is not an education-only issue.  Another area requiring emphasis is computer and Internet access for local businesses—especially small and minority-owned businesses.  The focus for another project for the Regional Technology Access and Opportunity Task Force could be the development of a regional plan to promote the use of technology among businesses and to promote e-commerce.  This plan would suggest methods and policies that would promote and address the technology needs of regional business in general, and small and minority-owned businesses in particular.  In addition, the plan would suggest the best methods to expand e-commerce in the Washington region.  Finally, local governments themselves must provide online services and information for both residents and business.  Local governments could be provided with information and technical support to expand their online resources.

Digital Divide Implementation Strategy 5:  Create a regional computer recycling program

A final proposed project for the Regional Technology Access and Opportunity Task Force would be to create a regional computer-recycling program.  Computer hardware continues to be very much in demand by schools and nonprofits throughout the region.  Additionally, computer hardware is becoming obsolete at an ever-increasing rate.  All of This obsolete hardware can produce significant environmental consequences by filling up landfills and introducing toxic substances used to construct computers into those landfills.  It would be prudent for the Washington metropolitan region to develop a region-wide recycling program which would refurbish usable computers for donation to local schools and nonprofits and provide a vehicle to properly dispose of unusable hardware in an environmentally friendly way.

Using a *Federal Express* model, a large central facility could be acquired to serve as a regional computer hardware processing center.  Computers would be brought directly to this facility. In addition, donation trucks, similar to those used by Goodwill, would be available for computer drop-offs at selected sites around the region.  These donation trucks would drop off the computers at the central processing facility.  Once at the facility, hardware would be separated according to its usability.  Usable components would be refurbished, possibly using teenage volunteers from local high schools, and made available for donation to schools and nonprofits.  Unusable components would be packaged for sale or donation to local recyclers equipped to handle these components.  This computer-recycling program would be advertised to the general public.  NBC4 has already approached COG with a proposal to promote just such a program.

## Conclusions and Next Steps

The Digital Divide presents a new focus and new opportunities for COG.  The issues associated with it are complex and cut across many traditionally separate disciplines including human services, environmental planning, the regional economy, information

planning, education and technology infrastructure.  A focus by COG on this emerging area of innovation and change will require a new mindset and new resources in order to address all of its varying facets.

The proposals listed above present a menu of possible avenues for COG.  At a minimum, it is recommended that the Regional Technology Access and Opportunity Task Force be created.  This would be a natural developmental stage for the current Digital Divide Task Force.  The Regional Technology Access and Opportunity Task Force would determine which of the other proposals would be pursued.  If the implementation of the Regional Technology Access and Opportunity Task Force were to be approved by the COG Board of Directors, it would require that a dedicated staff person or consultant be hired to support it.  A budget appropriation by the Board would be needed to fund this position.  Implementation of the other proposals, as designated by the task Force, would also require their own dedicated resources.

The Digital Divide Task Force recommends that the COG Board consider, in conjunction with the new COG Board chairman's policy focus for 2002, the approval of supplemental COG funding from the contingency reserve to establish a Regional Technology Access and Opportunity Task Force and secure part-time consultant staff support.  The Regional Technology Access and Opportunity Task Force would be comprised of technology leaders from the public, private and community-based sectors and would be responsible for review and prioritization of goals and implementation strategies, identification of resources and partnerships needed to advance strategies, and identification of new strategies to sustain a strong technology access and opportunity focus in the Washington metropolitan region and at COG.

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**Appendix A: Access to Technology in Schools: 2001**

> ## Access to Technology
> Note: N/A - Data not available

*Source:* "Technology Counts 2001: The New Divides." *Education Week on the Web.*

| | Maryland | Washington, DC | Virginia |
|---|---|---|---|
| **Students per instructional computer in ... (2000)** | | | |
| Statewide | *5.6* | **5.8** | *4.7* |
| High-poverty schools | **5.6** | 5.5 | **4.0** |
| Low-poverty schools | **5.8** | 5.2 | **4.8** |
| High-minority-enrollment schools | **5.7** | 5.4 | **4.3** |
| Low-minority-enrollment schools | **5.8** | 6.1 | **4.8** |
| **Students per instructional computer located in ... (2000)** | | | |
| Classrooms | **17.6** | **14.6** | **10.7** |
| Computer labs | **12.1** | **21.0** | **15.2** |
| Libary/media centers | **71.6** | **90.4** | **77.2** |
| **Percent of instructional computers that are ... (2000)** | | | |
| 286,386, or Apple IIS | **22** | **20** | **18** |
| 486 or non-Power Macs | **25** | **36** | **26** |
| 586, Pentium II, or Power Macs | **53** | **44** | **56** |
| **Students per instructional multimedia computer in ... (2000)** | | | |
| Statewide | **9.5** | **11.3** | **7.1** |
| High-poverty schools | **16.8** | **13.8** | **5.9** |
| Low-poverty schools | **10.1** | **9.7** | **7.9** |
| High-minority-enrollment schools | **14.3** | **13.0** | **6.6** |
| Low-minority-enrollment schools | **9.2** | **6.1** | **7.9** |

| Students per Internet-connected computer in ... (2000) | | | |
|---|---|---|---|
| Statewide | 9.0 | 12.6 | 7.5 |
| High-poverty schools | 11.8 | 14.3 | 7.0 |
| Low-poverty schools | 9.3 | 16.5 | 8.3 |
| High-minority-enrollment schools | 11.8 | 14.9 | 8.1 |
| Low-minority-enrollment schools | 8.6 | 16.3 | 8.0 |
| **Percent of schools with Internet access (2000)** | | | |
| Statewide | 94 | 91 | 97 |
| High-poverty schools | 95 | 88 | 95 |
| Low-poverty schools | 94 | 100 | 97 |
| High-minority-enrollment schools | 96 | 90 | 95 |
| Low-minority-enrollment schools | 92 | 100 | 97 |
| **Percent of schools with Internet access from one or more classrooms (2000)** | | | |
| Statewide | 75 | 83 | 85 |
| High-poverty schools | 61 | 90 | 83 |
| Low-poverty schools | 77 | 75 | 85 |
| High-minority-enrollment schools | 71 | 85 | 81 |
| Low-minority-enrollment schools | 77 | 100 | 87 |
| **Among schools with at least one classroom connected to the Internet, the percent of classrooms with Internet access (2000)** | | | |
| Statewide | 72 | 50 | 89 |
| **Of those schools with Internet access, the percent that connect through a T1 or cable modem (2000)** | | | |
| Statewide | 61 | 86 | 67 |
| High-poverty schools | 41 | 89 | 75 |
| Low-poverty schools | 66 | 88 | 66 |

| High-minority-enrollment schools | 56 | 88 | 77 |
|---|---|---|---|
| Low-minority-enrollment schools | 66 | 100 | 67 |
| **Percent of schools that make computers available to ... (2000)** | | | |
| Students after school hours | 97 | 100 | 88 |
| Parents/community members | 64 | 60 | 61 |

## Capacity To Use Technology
Note: N/A - Data not available

| | Maryland | Washington, DC | Virginia |
|---|---|---|---|
| **State regularly conducts data collection on technology in schools (2001)** | | | |
| | Yes | N/A | Yes |
| **Requirements for initial teacher licensure include ... (2001)** | | | |
| Technology training | Yes | N/A | Yes |
| Passing a technology test | N/A | N/A | N/A |
| **State requires technology training as part of teacher recertification requirements (2001)** | | | |
| | N/A | N/A | Yes |
| **State has time requirements for technology-related professional development for all teachers (2001)** | | | |
| | N/A | N/A | N/A |
| **State offers professional or financial incentives to use technology (2001)** | | | |
| Teachers | N/A | N/A | N/A |
| Administrators | N/A | N/A | N/A |
| **Percent of schools where the majority of teachers are "beginners" when it comes to using technology (2000)** | | | |
| Statewide | 24 | 83 | 21 |

| High-poverty schools | 36 | N/A | 37 |
|---|---|---|---|
| Low-poverty schools | 23 | N/A | 19 |
| High-minority-enrollment schools | 26 | N/A | 18 |
| Low-minority-enrollment schools | 28 | N/A | 22 |
| **Percent of 4th graders whose language arts teachers feel at least "moderately prepared" to use ... (1998)** | | | |
| Computers | 86 | 90 | 93 |
| Software for teaching reading | 59 | 63 | 68 |
| Software for teaching writing | 62 | 60 | 71 |
| **Percent of 8th graders whose language arts teachers feel at least "moderately prepared" to use ... (1998)** | | | |
| Computers | 88 | 87 | 94 |
| Software for teaching reading | 50 | 68 | 60 |
| Software for teaching writing | 59 | 72 | 74 |

## Use of Technology

Note: N/A - Data not available

| | Maryland | Washington, DC | Virginia |
|---|---|---|---|
| **State standards for students include technology (2001)** | | | |
| | Yes | N/A | Yes |
| **State tests students on technology standards (2001)** | | | |
| | N/A | N/A | Yes |
| **Percent of 4th graders whose language arts teachers use computer software for reading instruction at least once or twice a week (1998)** | | | |
| Statewide | 24 | 37 | 30 |
| Poor | 32 | 41 | 35 |
| Nonpoor | 19 | 23 | 28 |

| **Percent of 8th graders whose language arts teachers use computer software for reading instruction at least once or twice a week (1998)** | | | |
|---|---|---|---|
| Statewide | **6** | **20** | **6** |
| Poor | **12** | **29** | **8** |
| Nonpoor | **4** | **10** | **7** |
| **Percent of 4th graders who use a computer for schoolwork at least once or twice a week (1998)** | | | |
| Statewide | **34** | **32** | **32** |
| Poor | **40** | **33** | **33** |
| Nonpoor | **30** | **27** | **32** |
| **Percent of 8th graders who use a computer for schoolwork at least once or twice a week (1998)** | | | |
| Statewide | **38** | **36** | **38** |
| Poor | **25** | **32** | **31** |
| Nonpoor | **42** | **42** | **40** |
| **Percent of schools where at least 50% of teachers use a computer daily for planning and/or teaching (2000)** | | | |
| Statewide | **63** | **50** | **84** |
| High-poverty schools | **47** | **33** | **71** |
| Low-poverty schools | **66** | **67** | **85** |
| High-minority-enrollment schools | **50** | **N/A** | **85** |
| Low-minority-enrollment schools | **68** | **N/A** | **84** |
| **Percent of schools where at least 50 percent of teachers use the Internet for instruction (2000)** | | | |
| Statewide | **55** | **32** | **75** |
| High-poverty schools | **27** | **25** | **44** |
| Low-poverty schools | **43** | **13** | **67** |
| High-minority-enrollment schools | **36** | **19** | **49** |

| Low-minority-enrollment schools | 43 | 100 | 68 |
|---|---|---|---|
| **Percent of schools where at least 50 percent of teachers have school-based e-mail addresses (2000)** | | | |
| Statewide | 58 | 20 | 86 |
| High-poverty schools | 50 | N/A | 86 |
| Low-poverty schools | 64 | N/A | 86 |
| High-minority-enrollment schools | 45 | N/A | 85 |
| Low-minority-enrollment schools | 67 | N/A | 87 |

## **Appendix B – Technology GEO Mapping for the Washington Metropolitan Region**



Fiber-Based High-Speed Technology Infrastructure
Transmission Lines in the Washington Metropolitan Region