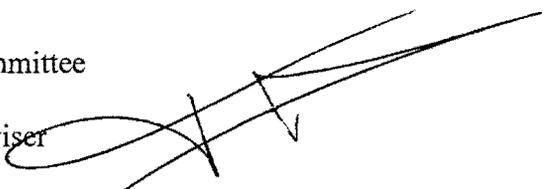


MEMORANDUM

June 18, 2009

TO: Management and Fiscal Policy Committee

FROM: Dr. Costis Toregas, Council IT Adviser 

SUBJECT: FiberNet, Kennedy Cluster Broadband Pilot, and Stimulus Broadband Strategy

Expected to attend:

Mitsuko R. Herrera, Cable Communications Administrator, DTS
John Castner, FiberNet Project Manager and ITAG Chair, DTS
Representatives from MCPS CIO Office and technology user community

Summary of staff recommendations to the MFP Committee:

1. **Discuss expansion strategy for FiberNet in FY10, given budget reductions and the ongoing Council dialog regarding school connectivity, and agree as to how Council input is provided to the ITAG so that Council intent is known before the biannual CIP plan is developed.**
2. **Endorse Kennedy Cluster pilot concept and request exploration of mesh WiFi network technological and other options that can provide cost-effective services to students' families on a pilot basis.**
3. **Identify Committee and Council priorities for stimulus broadband applications so they may be included in effort to garner federal funds.**
4. **Request that the Cable Office develop a Communications Plan that lays out a strategy for each communications technology, establishes priorities and provides an inventory of users and programming requirements of each. This plan should include Cable TV, FiberNet, wireless communications and other major County telecommunications investments. As a first step, community input can be solicited from a "Montgomery Connects" Communications Fair in winter 2009.**

1. FiberNet (overview, current uses, future potential)

The investment in FiberNet resources exceeds \$30m and guarantees connectivity to all County agencies in a secure and inexpensive manner. The DTS Enterprise Technology Strategic Plan provides good context for this valuable infrastructure resource on ©1-3. At a time when all technology services are changing at a dramatic pace, and when new, cost-effective telecommunications options appear almost daily, it is important to take a critical, comprehensive look at the long-term investment made and make sure there is consensus from all stakeholders as to a clear path forward. The Interagency Technology Policy and Coordination Committee (ITPCC) has a major effort under way this fall to sharpen the focus on this vital resource and provide a strategic direction and overall guidance. In accordance with the requirements of the Interagency FiberNet Governance Charter (Nov. 2002), the FiberNet Interagency Technical Advisory Group (ITAG) is charged with the responsibility for developing the biennial CIP submission for the requested FiberNet CIP project that will be ultimately recommended by the Executive by January 2010 for FYs11-16.

The ITAG is actively engaged in this process and will consider all of the items raised in the FY10 budget process by the MFP Committee and full Council. Current status, options and, ultimately, a recommended project will result through consultation with the interagency representatives, OMB, Council staff, and Cable Office representatives as appropriate. This will result in the ITPCC recommended FiberNet project for FYs11-16 that will be reflected in the Executive's Recommended FY11-16 CIP.

It is important to consider an explicit mechanism through which Council priorities for broadband use in the County are provided to the ITAG. One such process could be the development of a survey form to be provided to each Council Committee, detailing what is possible through FiberNet, how FiberNet currently serves issues of interest to each Committee, and soliciting additional targets or funding ideas. In this manner, the Council would better appreciate Fibernet services and be in a position to support their development and use. **The Committee should explicitly agree to such a process or decide to receive Executive branch recommendations, then weigh in with suggestions.**

The expansion of FiberNet in FY10 was reduced given current fiscal conditions, something that makes it more important than ever to be strategic about investing in and using this resource. FiberNet is primarily funded through two major sources: CIP and the Cable Plan. ©4 reflects a consolidated view for the FiberNet budget, organized for clarity. The CIP FiberNet description is on ©5, while the approved Cable Plan is on ©6-7.

Over the last few months, the Committee has addressed issues of effectiveness of broadband in the classroom (jointly with the ED Committee), costing of the FiberNet service, chargebacks to the general fund (currently zeroed out given the tough fiscal conditions), and the use of other technologies, either complementary or competitive, to fiber (WiFi, microwave, coaxial cable, and others). Once the ITPCC develops a current vision for FiberNet, the Committee should be in a better position to explore funding options and strategies. In the current worksession, the current **strengths** of the FiberNet **technology**, current **funding** issues which surfaced during the budget discussions, and the **expansion schedule** for FY10 will be reviewed.

In the interim, it is important for the Committee to understand the connectivity situations of various MCPS locations, which have been discussed in the context of the FiberNet funding discussions. As ©8 shows, today all 26 high schools, 38 middle schools, and 13 of the 113 elementary schools are connected via FiberNet. The balance of elementary schools (118) is provided connectivity through two other technologies: Verizon frame relay and Comcast cable modems. The Department of Technology Services has a transition plan that will bring all elementary schools to full broadband connectivity shown on ©9 and ©10. There is currently no explicit funding plan for this strategy.

The State of Maryland has developed an “Educational Technology Plan for the New Millenium”, which addresses the issue of classroom connectivity and its benefits. The executive summary of this report is provided on ©11-12 as additional background.

2. Kennedy cluster WiFi pilot status

In the fall of 2008, the Committee requested the exploration of the potential to expand the benefits of Broadband connectivity beyond County-owned facilities in the context of the Kennedy cluster effort. The specific charge to DTS was to look at ways in which the learning benefits from a “connected, on-line classroom” could continue once the student left the school grounds. DTS has been exploring this potential and reports the following:

***Kennedy Cluster Project** The Kennedy Cluster Project is an interagency, multi-disciplinary project designed to close the achievement gap between low-income children of color and their peers. Expanded computing capability and broadband access are part of the Project's elements. At the request of MFP, DTS has been working with other agencies to find a viable means to bring affordable, residential broadband services to the homes within the Kennedy Cluster.*

The Kennedy Cluster Project includes both the residential area served by Kennedy High School as well as the neighborhood area along the Hewitt-Be1 Pre Corridor. DTS has worked with MCPS and others to develop a map of the project area (©13 is a map of Kennedy Cluster and Neighborhood Focus Area around the Hewitt-Be1 Pre Corridor). DTS is continuing to work with these agencies to determine the number of households with school-aged children that are located within the project boundaries. DTS has determined that FiberNet cannot be used to provide residential broadband services within the Project area. Federal law and the County's cable franchise agreements limit the ability of the County to use FiberNet to provide broadband services to the general public. Where the County uses an alternative broadband service provider to offer Wi-Fi service hot spots within Bethesda and Silver Spring, these are amenity-level service offerings. They offer bandwidth under 1 MBPS, typically have no more than 40 to 50 users at any one time, and no customer support or service guarantee is provided. Moreover, the geographic distance of the Project area and current location of County broadband facilities would require installation of a significant number of wireless

access points to provide current Wi-Fi technology, thus making a County operated Wi-Fi solution economically impracticable.

DTS will continue discussions with commercial providers to determine if a commercial discounted wireless or cable modem-based residential broadband solution is available. DTS will also continue to investigate whether any portions of the Kennedy Cluster Project would be good candidates for federal stimulus broadband grants, but the difficulty of sustaining a long-term subsidized service without additional federal funding may render this proposal infeasible.

Staff Comment: There are additional alternatives that form best practice in other parts of the country that DTS should explore, and which may yield positive results. One such alternative is the use of mesh wifi networks, which are low cost and can be deployed quickly. The city of Corpus Christi has deployed such a network recently throughout its entire geographic area and reports good performance characteristics. The use of such a mesh network would allow a small part of the County to be supported with wireless internet signal in a targeted area. Using software platforms that can provide access only to participants of the pilot, concerns of the Cable franchisee community can be minimized. Most importantly, the impression that the County is not able to find a solution that assists low-income residents while other parts of the County are supported can be avoided.

Another alternative is the robust use of Public Private Partnerships to accomplish this goal; in this manner, economic development funds could perhaps be targeted towards small locally-based businesses with expertise in telecommunications, and explorations around the development of a long-term, sustainable model for providing broadband services in County neighborhoods that may be seen as difficult to serve can be accomplished.

It is clear that additional discussions need to be pursued, and the **perspectives of the Committee as to the desired end result are important to be stated clearly.** Funding for this pilot can include ARRA funds, educational and community support foundations, and private investments that could be attracted by a Partnership approach; such options should also be made part of the exploration. Staff suggests that the Committee **endorse this pilot effort** and encourage DTS, the Department of Economic Development, MCPS, and other stakeholders to **work together and shape a good solution for action.**

3. Federal broadband stimulus

The American Recovery and Reinvestment Act will make \$4.7 billion in competitive grants available to expand broadband access, education, and training. The Cable Office has taken a lead role in shaping the County response to this opportunity, and will provide an update to the Committee regarding:

- the grant program itself (©14-16);

- a consortium that has been developed (including Montgomery County), called the One Maryland Broadband Consortium, to take advantage of the grant opportunity (©17-18); and
- current active ideas/proposals for using this stimulus grant program in the County (©19-20).

The Committee should **identify priority communications and broadband ideas and projects** that could be funded through this generous federal program, so that Executive staff can incorporate such projects in the application currently being finalized.

4. The need for a Communications Plan

The multiplicity of communications platforms and the different roles that departments and agencies play makes it important and necessary to organize the County investments around a transparent and accessible Communications Plan. Discussions have been initiated in a variety of areas:

- organizing community-based news and delivering it via Cable
- creating robust and secure telecommunications networks for public safety use
- improving the County web site and the use of social networking tools such as Face Book and Twitter
- ensuring broadband connectivity to all County facilities across all agencies
- empowering County residents with wireless and shared wired capacity to end the digital divide and provide a boost to economic development efforts.

Developing a written plan is not the only way to organize County investments and ensure strategic guidance is exercised. The Committee discussed the potential for a Communications Conference or “Fair” in the winter of 2009 that would bring together citizens, communications providers, PEG stakeholders, and others around an education, sharing, and shaping event which could culminate in a sharp vision of how the County can make use of modern technologies to enhance the communications patterns in the County and help provide more efficient services, a strong economic development environment, and an engaged citizenry. Such an event could be titled “Montgomery Connects!” and deployed with much support from all stakeholders as a first step towards the development and endorsement of a community-oriented communications strategy.

Reference material

1. The Department of Technology Services prepared a memo providing background information on the items for discussion on June 22, 2009; it is included on ©21-27.
2. The entire DTS Enterprise Technology Strategic Plan is at <http://www.montgomerycountymd.gov/dtstmpl.asp?url=/Content/DTS/stratPlan.asp>
3. The *Maryland Educational Technology Plan for the new Millennium* can be found in its entirety at <http://www.marylandpublicschools.org/NR/rdonlyres/9242FEDD-09F7-4BB0-8F1F-AE6FAE562EA8/13485/TechPlanFinalfromPrinter73007.pdf>

Goal:
Continue to pursue innovative ways to enhance the PBX platform in a healthy evolutionary mode, which will prevent the need for an expensive replacement in the future.

FiberNet Strategic Plan

Montgomery County Government (MCG) is its own telecommunications carrier. In serving a community of over 950,000 residents, the County Government consumes voice/video/data services in extremely large quantities. In 1995 the County determined that cost savings could be realized and a future-proof network could be created by building its own facilities based fiber optic network. Leveraging work that the Department of Transportation (DoT) had already begun in building a fiber optic network for the Advanced Traffic Management System, The Department of Technology Services (DTS) was given the mission of building an electro-optical network on top of the fiber plant that DoT had already placed. FiberNet was born.

Today, FiberNet is the electro-optical backbone for MCG. FiberNet provides communications services for all County agencies including the Government (MCG), Public Schools (MCPS), Montgomery College, Maryland National Park and Planning Commission (MNCPPC), Washington Suburban Sanitary Commission (WSSC) and the Housing Opportunities Commission (HOC). FiberNet has become a big success and every agency wants to participate to the fullest extent possible. Governance is vested in the Information Technology Policy Coordinating Committee (ITPCC) with technical approval delegated to its CIO Subcommittee. DTS provides technical leadership and is operationally responsible for FiberNet.

The alternative to FiberNet would have been and continued to be the purchasing of telecommunications services from the local commercial market. Many state, county and municipal governments operate in this mode. These other agencies are discovering that as applications become more information rich, initiatives to improve services may be frustrated easily by the high cost of carrier leased lines or other tariffed offerings including special pricing agreements. Montgomery County Public Schools (MCPS) is currently seeing the bandwidth requirements for applications growing and the inability of sites, not on FiberNet, to deliver services.

In several cases the carriers are not maintaining their physical plants (underground and overhead wiring, old copper capabilities, etc.) making even simple connections unreliable and data services, problematic. MCPS has this problem with many elementary schools as does the County Government with several small offices. In a recent conversation with representatives from a commercial service provider, prices were quoted several thousand of dollars per month for a 10 MegaBit/second link. MCPS has over one hundred sites still to be added to FiberNet. Although a long term contract would bring this price down, it is possible to see the order of magnitude associated with providing such services through a local exchange carrier still costing hundreds of thousand dollars per month. MCPS and the

[REDACTED]

FiberNet Team are looking for alternatives and near term solutions have already been identified.

FiberNet is an integral component of the County's Public Safety Communications Network. Given these systems critical importance to the County's residents, having the County own and operate the underlying transport infrastructure ensures a higher level of service availability and control than would be achievable in a leased carrier system. Additionally, in the time of a real emergency the County is in a position to regulate network access to make sure that calls go through and applications operate. On an open public or commercial network, there is no pre-emption or prioritization for emergencies.

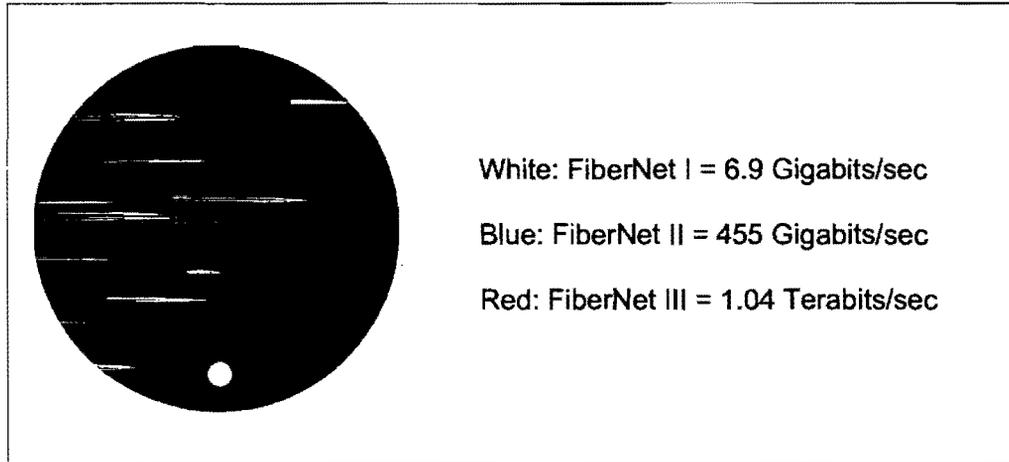
Strategically, FiberNet is working to leverage its resources, increase its footprint, improve security and provide voice/video/data services at lower cost. Tactical successes include:

- Leveraging the County's telephony platform by delivering dial tone to Housing Opportunities Commission (HOC);
- Becoming the Internet Service Provider for Maryland National Capital Park and Planning Commission (M-NCPPC) and HOC, providing Internet Service Provider (ISP) carrier services for the City of Gaithersburg and the American Film Institute;
- Replacing the County's legacy ATM network (FiberNet I) with a state-of-the-art Metro-Ethernet network (FiberNet II);
- Re-architecting the FiberNet core so that no or minimal equipment needs to be purchased to add a new site. Only the cost of fiber or other transport media needs to be considered when adding the location;
- Creating MCG WiFi Hotspots in Silver Spring, Bethesda, recreation centers and County cafeterias;
- Connecting to State of Maryland networks directly;
- Connecting to local government networks directly without going via the Internet;
- Adding a backup Internet Service Provider for the County.

Current initiatives include migrating all County departments onto FiberNet II; other participating agencies are already on the next generation solution. A major effort continues to be increasing FiberNet's footprint by adding MCPS elementary schools and County Government sites including the Smart Growth initiative. DTS is always looking for economically justifiable alternatives to the high cost of fiber. FiberNet has engaged the Washington Metropolitan Area Transit Authority (WMATA) to consider sharing assets and facility access to improve network reliability and availability for the County's Public Safety Radio System (PSRS). It is expected that this effort will produce positive results and increase the availability of this extremely important system.

FiberNet will be an integral part of the next generation Public Safety Radio System (PSRS). FiberNet has started a proof of concept trial to determine the feasibility of using cable modems to create a virtual private network to replace services leased from Verizon by MCPS and MCG. This is a recent initiative. If successful, it will permit high speed connections to elementary schools and leased County facilities at a fraction of the cost available from commercial carriers. MCPS is excited at the prospect and so is the FiberNet team.

Figure 7 - Raw Aggregate Backbone Bandwidth



FiberNet is built for the future. Raw bandwidth coupled with an intelligent network infrastructure is the hallmark of FiberNet II and the keys to future proofing the County's IT information transport requirements. A simple graphic captures the past, present and future of FiberNet. The figure above captures the raw aggregate bandwidth across all the FiberNet I backbone links. A second image encapsulates FiberNet I and is a proportionate analog for FiberNet II's aggregate backbone bandwidth today when compared to FiberNet I. Finally, the larger image is a graphical analog for FiberNet III's backbone capacity after a nominal capital improvement to FiberNet II.

FiberNet II is an *intelligent network* capable of making routing decisions in the network core. The Internet is designed based on this principle; FiberNet I model, is not. FiberNet II exists, is in use and is based on technologies that are being used by large service commercial providers. Funds are currently being accumulated in a capital reserve to move to FiberNet III when the time arrives.

FiberNet is an integrative system that makes inter and intra governmental IT services and communications easier to implement and most of all easier to secure. Ultimately, FiberNet's strategic goal is to deliver mission critical applications over a reliable and robust communications infrastructure at lower prices than those achievable in the open market. The current configuration of FiberNet II is designed to sustain the County's bandwidth requirements for the next ten years.

Goal:

Continue to migrate to the next generation of FiberNet, Communicate and integrate FiberNet advantages within all new and enhanced programs requiring inter-department, inter-agency and inter-jurisdictional voice and data transmission needs

FY10 CABLE COMMUNICATIONS PLAN (\$000's) FY10 Approved

	<i>Approved FY08</i>	<i>Actual FY08</i>	<i>Approved FY09</i>	<i>Estimated FY09</i>	<i>Approved'd FY10</i>	<i>%Chg Fr '09Plan</i>	<i>+/- From '09Plan</i>	<i>FY11</i>	<i>FY12</i>	<i>FY13</i>	<i>FY14</i>	<i>FY15</i>
FIBERNET INSTITUTIONAL NETWORK												
1. FiberNet Support (DTS)												
Personnel Costs - FiberNet Operation (DTS)	231	231	281	192	192	-31.7%	(89)	447	600	752	793	860
Operations - 24/7 Operation (DTS)	860	711	860	911	950	10.5%	90	950	826	706	706	700
Capital - Equipment Upgrade (DTS) (from CIP)	91	91	91	129	311	241.8%	220	311	331	351	321	315
SUBTOTAL	1,182	1,033	1,232	1,232	1,453	17.9%	221	1,708	1,757	1,809	1,820	1,875
2. FiberNet Support (DOT)												
Personnel Costs - FiberNet Maintenance (DOT)	51	51	46	46	46	0.0%	0	36	44	52	60	68
Operations - Fiber Maintenance/Repair/Splicing (DOT)	198	198	198	198	198	0.0%	0	215	215	215	215	215
SUBTOTAL	249	249	244	244	244	0.0%	0	251	259	267	275	283
3. CIP-FiberNet												
FiberNet I to FiberNet II Service Migration	200	200	300	300	100	-66.7%	(200)	0	0	0	0	0
Engineer FiberNet I T-1 800 MHz Solution	0	0	0	0	150	100.0%	150	50	0	0	0	0
Fiber Relocation - Roads and Utility Poles	50	100	50	183	263	426.0%	213	250	250	225	225	225
Network Relocation - Bldg Renovation/Relocation	0	0	0	0	66	100.0%	66	0	0	0	0	0
FiberNet - Network Site Expansion	1,485	1,435	1,410	1,277	200	-85.8%	(1,210)	1,310	1,285	1,235	1,235	1,235
SUBTOTAL	1,735	1,735	1,760	1,760	779	-55.7%	(981)	1,610	1,535	1,460	1,460	1,460
SUBTOTAL	3,166	3,017	3,236	3,236	2,475	-23.5%	(761)	3,569	3,551	3,536	3,555	3,617

Under federal law and applicable franchise agreements, the County must provide at least \$1,637,000 in capital and operating support for FiberNet. The County must also spend at least \$2,190,000 on FiberNet and PEG capital equipment purchases.

Fibernet -- No. 509651

Category **General Government**
 Subcategory **Technology Services**
 Administering Agency **Technology Services**
 Planning Area **Countywide**

Date Last Modified
 Required Adequate Public Facility
 Relocation Impact
 Status

May 12, 2009
No
None.
On-going

EXPENDITURE SCHEDULE (\$000)

Cost Element	Total	Thru FY08	Rem. FY08	Total 6 Years	FY09	FY10	FY11	FY12	FY13	FY14	Beyond 6 Years
Planning, Design, and Supervision	2,645	1,147	98	1,400	400	375	250	175	100	100	0
Land	4	4	0	0	0	0	0	0	0	0	0
Site Improvements and Utilities	11,741	10,962	479	300	50	50	50	50	50	50	0
Construction	7,342	41	435	6,866	1,260	566	1,260	1,260	1,260	1,260	0
Other	20,825	20,525	0	300	50	50	50	50	50	50	0
Total	42,557	32,679	1,012	8,866	1,760	1,041	1,610	1,535	1,460	1,460	0

FUNDING SCHEDULE (\$000)

	Total	Thru FY08	Rem. FY08	Total 6 Years	FY09	FY10	FY11	FY12	FY13	FY14	Beyond 6 Years
Cable TV	31,471	22,323	282	8,866	1,760	1,041	1,610	1,535	1,460	1,460	0
Contributions	86	86	0	0	0	0	0	0	0	0	0
G.O. Bonds	8,900	8,170	730	0	0	0	0	0	0	0	0
PAYGO	2,100	2,100	0	0	0	0	0	0	0	0	0
Total	42,557	32,679	1,012	8,866	1,760	1,041	1,610	1,535	1,460	1,460	0

DESCRIPTION

This project provides for the planning, design, and installation of a Countywide fiber optic cable-based communication network with the capacity to support voice, data, and video transmissions among Montgomery County Government (MCG), MCPS, Montgomery College (MC), M-NCPPC, HOC and WSSC facilities. FiberNet is also the communications backbone for the Public Safety Radio and Public Safety Mobile Data Systems (collectively, PSCS), and future technology implementations. Fibernet has an estimated useful life of at least 20 years. Upgrades and replacements to electronic components in the core and at user sites will be required periodically.

COST CHANGE

Reduce funding and expenditures in FY10 to slow down pace of construction.

JUSTIFICATION

FiberNet is a critical infrastructure asset serving every agency, the fiber plant for ATMS, and the dedicated and redundant communications links for the PSCS/800 MHz system. As of September 1, 2007, 244 user sites are on-net and receiving critical services from FiberNet. In FY07, DTS completed the re-engineering of FiberNet (now referred to as FiberNet II) to directly support Ethernet connections. This provides a core network that is technologically newer, faster and less expensive on a per-site basis. The focus for FY09 and FY10 is transitioning many sites and services from the original FiberNet to FiberNet II, infrastructure improvements, and deployment of new sites. DTS, in cooperation with ITPCC and its ITAG workgroup, continues to refine the master implementation schedule. MCG, MCPS, MC, M-NCPPC, HOC and WSSC will require substantially increased communication services and bandwidth among their facilities. The County will provide fiber optic services to those facilities for which leased telecommunications services cannot meet current or projected demand as cost effectively as FiberNet. Studies include: Fibernet Master Plan; RAM Comm. Mar 1995; Fibernet Eval. Rpt., TRW, Sept 1997; Fibernet Proj. Cost Est., ARINC, Apr 1998; Fibernet Proj. Cost-Benefit Analysis, ARINC, Oct 1998; Fibernet Strategic Plan, PrimeNet, Jun 2002; Fibernet Strategic Direction, ITAG, Nov 2003; Fibernet service level agreement, Jan 2005.

OTHER

DTS is responsible for project management, network operations, and maintenance of electronics; DOT for installation and maintenance of the fiber optic cable. Comcast, at DTS's direction, also provides fiber used in Fibernet. Sites installed to date include MCG departments/offices, PSCS sites, MC campuses, MCPS high schools/middle schools/administrative facilities, M-NCPPC sites, HOC sites. Sites have been, and will continue to be, installed in a priority order based on the expected cost savings/avoidance; current and future connectivity needs; and availability of fiber optic cable to an area.

FISCAL NOTE

Fibernet maintenance is supported by a grant from the franchise agreement with the County's cable service provider. The original grant amount of \$1.2 million/yr is increased by the CPI each year. For this reason the Operating Budget Impact is \$0.

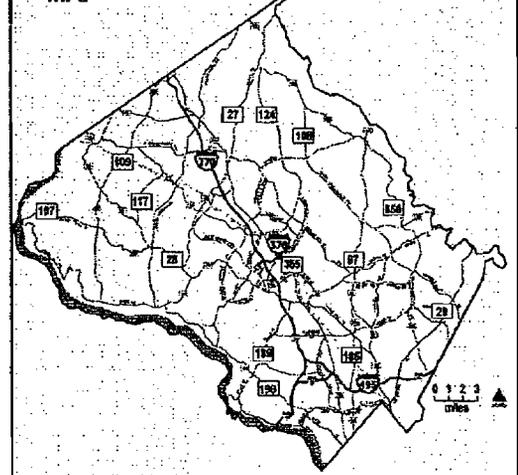
APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY96	(\$000)
First Cost Estimate		
Current Scope	FY07	39,231
Last FY's Cost Estimate		43,251
Appropriation Request	FY10	1,041
Supplemental Appropriation Request		0
Transfer		0
Cumulative Appropriation		35,451
Expenditures / Encumbrances		33,204
Unencumbered Balance		2,247
Partial Closeout Thru	FY07	0
New Partial Closeout	FY08	0
Total Partial Closeout		0

COORDINATION

Department of Technology Services
 Department of Transportation
 Advanced Transportation Management System Project
 Montgomery County Public Schools
 M-NCPPC
 Montgomery College
 HOC
 WSSC
 Comcast
 Public Safety Radio System
 Information Technology Policy Coordination Committee (ITPCC)
 ITPCC CIO Subcommittee
 Interagency Technology Advisory Group (ITAG)

MAP



FY10 CABLE COMMUNICATIONS PLAN (\$000's)

	Actual FY08	Approved FY09	Estimated FY09	Approved FY10	% Chg From '09 Plan	FY11	FY12	FY13	FY14	FY15
BEGINNING FUND BALANCE	3,345	2,502	3,949	2,069	-17.3%	462	318	42	65	18
REVENUES										
5% Franchise Fee	10,664	10,584	10,955	11,280	6.6%	11,618	11,967	12,326	12,696	13,077
G'Burg PEG Contribution	200	201	182	187	-7.0%	193	198	204	210	217
PEG Support	1,938	2,811	2,020	2,080	-26.0%	2,142	2,207	2,273	2,341	2,411
PEG Capital/Equipment	1,370	255	1,932	1,990	680.4%	2,050	2,111	2,175	2,240	2,307
Verizon-Grant	200	200	200	200	0.0%	200	0	0	0	0
FiberNet Support	1,524	1,568	1,589	1,637	4.4%	1,686	1,737	1,789	1,842	1,898
Interest Earned	149	80	40	30	-62.5%	50	80	90	100	110
Tower Review Fees	94	80	120	80	0.0%	82	85	87	90	93
Miscellaneous	64	0	4	0	0.0%	0	0	0	0	0
Transfer from the General Fund	432	0	0	0	0.0%	0	0	0	0	0
TOTAL ANNUAL REVENUES	16,635	15,779	17,042	17,484	10.8%	18,022	18,385	18,944	19,520	20,112
TOTAL RESOURCES-CABLE FUND	19,980	18,281	20,991	19,553	7.0%	18,484	18,703	18,985	19,585	20,130
EXPENDITURES										
A. FRANCHISE ADMINISTRATION										
Personnel Costs - Cable Administration	575	683	683	705	3.2%	749	763	761	818	833
Personnel Costs - Charges from DTS	52	59	59	69	16.9%	69	70	72	73	75
Personnel Costs - Charges for County Atty	73	97	97	95	-2.1%	95	97	99	101	103
Operating	96	73	73	73	0.0%	73	75	77	80	82
Outside Engineering/Inspection Svcs.	512	720	720	500	-30.6%	721	743	745	788	811
Other Legal and Other Professional Svcs.	295	405	405	310	-23.5%	381	393	404	416	429
SUBTOTAL	1,603	2,037	2,037	1,752	-14.0%	2,088	2,141	2,159	2,276	2,333
B. MUNICIPAL EQUIPMENT & OPERATIONS										
Municipal Franchise Fee Sharing										
Revenues to Municipalities	716	762	789	812	6.6%	837	862	887	914	942
SUBTOTAL	716	762	789	812	6.6%	837	862	887	914	942
Municipal Capital Support (a)										
Rockville Equipment	55	98	265	276	181.6%	284	293	302	311	320
Takoma Park Equipment	185	98	265	276	181.6%	284	293	302	311	320
Municipal League Equipment	185	98	265	276	181.6%	284	293	302	311	320
SUBTOTAL	425	294	795	828	181.6%	853	878	905	932	960
Municipal Operating Support (a)										
Rockville PEG Support	65	67	67	70	4.5%	72	74	76	79	81
Takoma Park PEG Support	65	67	67	70	4.5%	72	74	76	79	81
Muni. League PEG Support	65	67	67	70	4.5%	72	74	76	79	81
SUBTOTAL	195	201	201	211	5.0%	216	223	229	236	243
SUBTOTAL	1,336	1,257	1,785	1,851	47.3%	1,906	1,963	2,022	2,082	2,145
C. COUNTY CABLE MONTGOMERY										
Administration										
Personnel Costs	325	397	397	533	34.3%	560	560	560	560	560
Operating	46	31	31	25	-19.4%	26	27	27	28	29
Technical Operations Center (TOC)	22	23	23	23	0.0%	24	24	25	26	27
Closed Captioning	348	319	319	291	-8.8%	329	338	349	359	370
VOD, Community BB, Web Services	40	48	48	48	0.0%	49	51	52	54	56
SUBTOTAL	781	818	818	920	12.5%	987	1,000	1,013	1,027	1,041
Public Information Office										
Personnel Costs	290	349	349	560	60.5%	593	604	617	629	641
Operating Expenses	17	12	12	12	0.0%	12	13	13	14	14
Contracts - TV Production	315	359	359	273	-24.0%	210	216	216	216	216
SUBTOTAL	622	720	720	845	17.4%	815	834	846	859	872
County Council										
Personnel Costs	42	57	57	74	29.8%	65	67	68	69	71
Operating Expenses	53	48	48	28	-41.7%	29	30	31	32	32
Contracts - TV Production	537	516	516	516	0.0%	531	547	547	547	547
SUBTOTAL	632	621	621	618	-0.5%	626	644	646	648	651
MNCPPC										
Personnel Costs	81	101	101	101	0.0%	103	105	107	109	112
Operating Expenses	101	21	21	21	0.0%	22	22	23	24	24
Contracts - TV Production	108	124	124	117	-5.6%	128	132	132	132	132
Webcasting	0	117	117	47	-59.8%	48	50	51	53	54
SUBTOTAL	290	363	363	286	-21.2%	301	309	313	317	322
SUBTOTAL	2,325	2,522	2,522	2,669	5.8%	2,729	2,786	2,819	2,852	2,885
D. MONTGOMERY COLLEGE										
Personnel Costs	1,000	1,103	1,103	1,141	3.4%	1,334	1,468	1,615	1,615	1,615
Operating Expenses	219	219	219	179	-18.1%	247	255	262	270	278
SUBTOTAL	1,219	1,322	1,322 ²	1,320	-0.2%	1,582	1,722	1,877	1,885	1,893
E. PUBLIC SCHOOLS										
Personnel Costs	1,234	1,339	1,339	1,385	3.4%	1,416	1,448	1,481	1,514	1,514
Operating Expenses	287	244	244	197	-19.5%	282	282	282	282	282
SUBTOTAL	1,521	1,583	1,583 ³	1,582	-0.1%	1,698	1,730	1,763	1,796	1,796

FY10 CABLE COMMUNICATIONS PLAN (\$000's)

	Actual FY08	Approved FY09	Estimated FY09	Approved FY10	% Chg From '09 Plan	FY11	FY12	FY13	FY14	FY15
F. COMMUNITY ACCESS ORGANIZATIONS (b)										
Personnel Costs	1,779	1,871	1,871	1,871	0.0%	2,077	2,160	2,146	2,336	2,429
Operating Expenses	755	781	781	691	-11.5%	856	890	890	926	925
SUBTOTAL	2,534	2,652	2,652	2,562	-3.4%	2,933	3,050	3,036	3,261	3,355
G. PEG NETWORK										
PEG Equipment Replacement	893	900	900	940	4.4%	987	1,036	1,028	1,159	1,216
Emergency Equipment Reserve	0	80	80	80	0.0%	84	88	93	97	102
PEG Network Mobile Production Vehicle	54	82	82	32	-61.0%	34	35	37	39	41
PEG Network Operating	198	275	275	215	-21.8%	236	248	260	273	287
SUBTOTAL	1,145	1,337	1,337	1,267	-5.2%	1,341	1,408	1,418	1,568	1,646
H. INSTITUTIONAL TELECOMMUNICATIONS										
FiberNet Support (DTS)	1,033	1,232	1,232	1,190	-3.4%	1,708	1,757	1,809	1,820	1,875
FiberNet Support (DPWT)	249	244	244	244	0.0%	251	259	267	275	283
FiberNet-CIP	1,735	1,760	1,760 ⁴	1,041	-40.9%	1,610	1,535	1,460	1,460	1,460
SUBTOTAL	3,017	3,236	3,236	2,475	-23.5%	3,569	3,551	3,536	3,555	3,617
TOTAL EXPENDITURES - PROGRAMS										
	14,700	15,946	16,474	15,477	-2.9%	17,845	18,351	18,628	19,275	19,670
I. OTHER										
Indirect Costs Transfer to Gen Fund	202	253	253 ¹	302	19.4%	253	253	253	253	303
Indirect Costs Transfer to Gen Fund (ERP & MCTime)	0	27	27 ¹	36	34.9%	29	18	0	0	0
Transfer to the General Fund	0	250	250 ⁵	3,236	1194.3%	0	0	0	0	0
Grants to Organizations (Friendship Hts)	39	39	39	39	0.0%	39	39	39	39	39
Consolidated Multiuse Technology Facility	0	0	0	0	0.0%	0	0	0	0	0
Verizon-Cable Service to Public Buildings	0	0	0	0	0.0%	0	0	0	0	0
COB Renovations - CIP	0	629	629 ⁴	0	0.0%	0	0	0	0	0
Park & Planning Technology Projects	0	600	600	0	0.0%	0	0	0	0	0
SUBTOTAL	241	1,798	1,798	3,613	101.0%	321	310	292	292	342
TOTAL EXPENDITURES										
	14,941	17,744	18,272	19,091	7.6%	18,166	18,661	18,920	19,567	20,012
J. ADJUSTMENTS										
Prior Year Adjustments	(480)	0	0	0	0.0%	0	0	0	0	0
CIP - Designated Claim on Fund	(610)	0	(650)	0	0.0%	0	0	0	0	0
TOTAL ADJUSTMENTS	(1,090)	0	(650)	0	0.0%	0	0	0	0	0
FUND BALANCE										
	3,949	537	2,069	462	-13.9%	318	42	65	18	118
FUND BALANCE PER POLICY GUIDANCE										
	873	860	889	911		940	971	1,000	1,031	1,062
K. SUMMARY - CABLE FUND										
Total Annual Revenues (incl. transfers from GF)	16,635	15,779	17,042	17,484	10.8%	18,022	18,385	18,944	19,520	20,112
Total Expenditures	(14,941)	(17,744)	(18,272)	(19,091)	7.6%	(18,166)	(18,661)	(18,920)	(19,567)	(20,012)
Annual Fund Surplus/Deficit (Rev - Expend)	1,694	(1,965)	(1,230)	(1,607)	-18.2%	(144)	(277)	24	(47)	100
Transfer to Cable Fund from General Fund	432	0	0	0	0.0%	0	0	0	0	0
Annual Fund S/D Excluding Trans From Gen Fund	1,262	(1,965)	(1,230)	(1,607)	-18.2%	(144)	(277)	24	(47)	100
L. SUMMARY - EXPENDITURES BY FUNDING SOURCE										
¹ Transfer to Gen Fund-Indirect Costs	202	280	280	338	20.9%	282	271	253	253	303
² Transfer to Gen Fund-Mont Coll Cable Fund	1,219	1,322	1,322	1,320	-0.2%	1,582	1,722	1,877	1,885	1,893
³ Transfer to Gen Fund-Public Sch Cable Fund	1,521	1,583	1,583	1,582	-0.1%	1,698	1,730	1,763	1,796	1,796
⁴ Transfer to CIP Fund	1,735	2,389	2,389	1,041	-56.4%	1,610	1,535	1,460	1,460	1,460
⁵ Transfer to the General Fund-Other	0	250	250	3,236	1194.3%	0	0	0	0	0
FUND TRANSFERS OUT SUBTOTAL	4,677	5,824	5,824	7,517	29.1%	5,172	5,258	5,352	5,394	5,452
Net CATV Fund Direct Expenditures	8,928	10,663	10,663	9,723	-8.8%	11,088	11,440	11,546	12,091	12,415
Required Muni. Franchise & PEG Payments	1,336	1,257	1,785	1,851	47.3%	1,906	1,963	2,022	2,082	2,145
CATV FUND DIRECT EXPENDITURES SUBTOTAL	10,264	11,920	12,448	11,574	-2.9%	12,994	13,403	13,568	14,173	14,560
TOTAL EXPENDITURES BY FUNDING SOURCE	14,941	17,744	18,272	19,091	7.6%	18,166	18,661	18,920	19,567	20,012

NOTES:

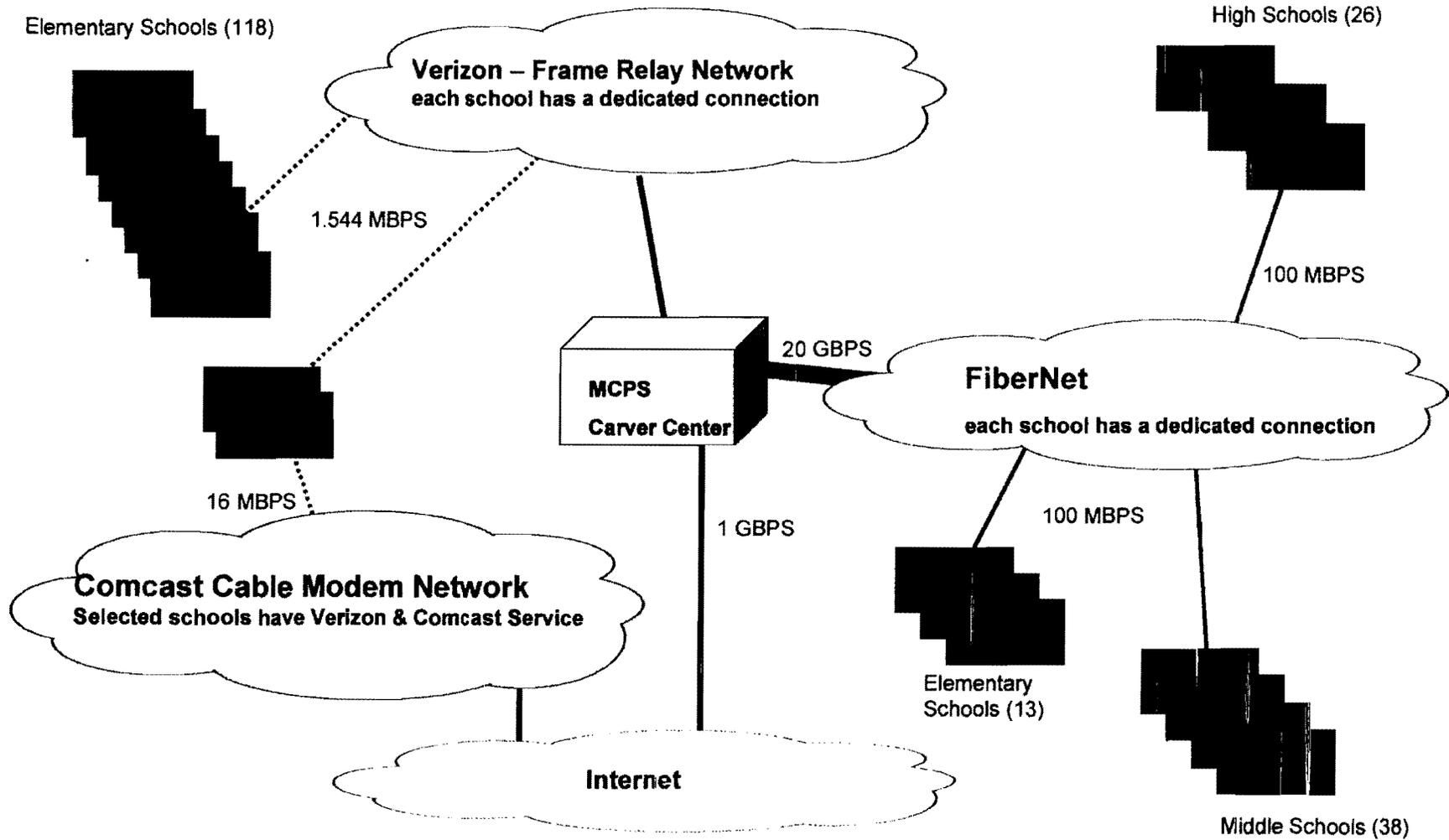
(a) Municipal franchise fee and PEG capital and operating funding required by franchise, municipal, and settlement agreements and County Code.

(b) Currently Montgomery Community Television, Inc.

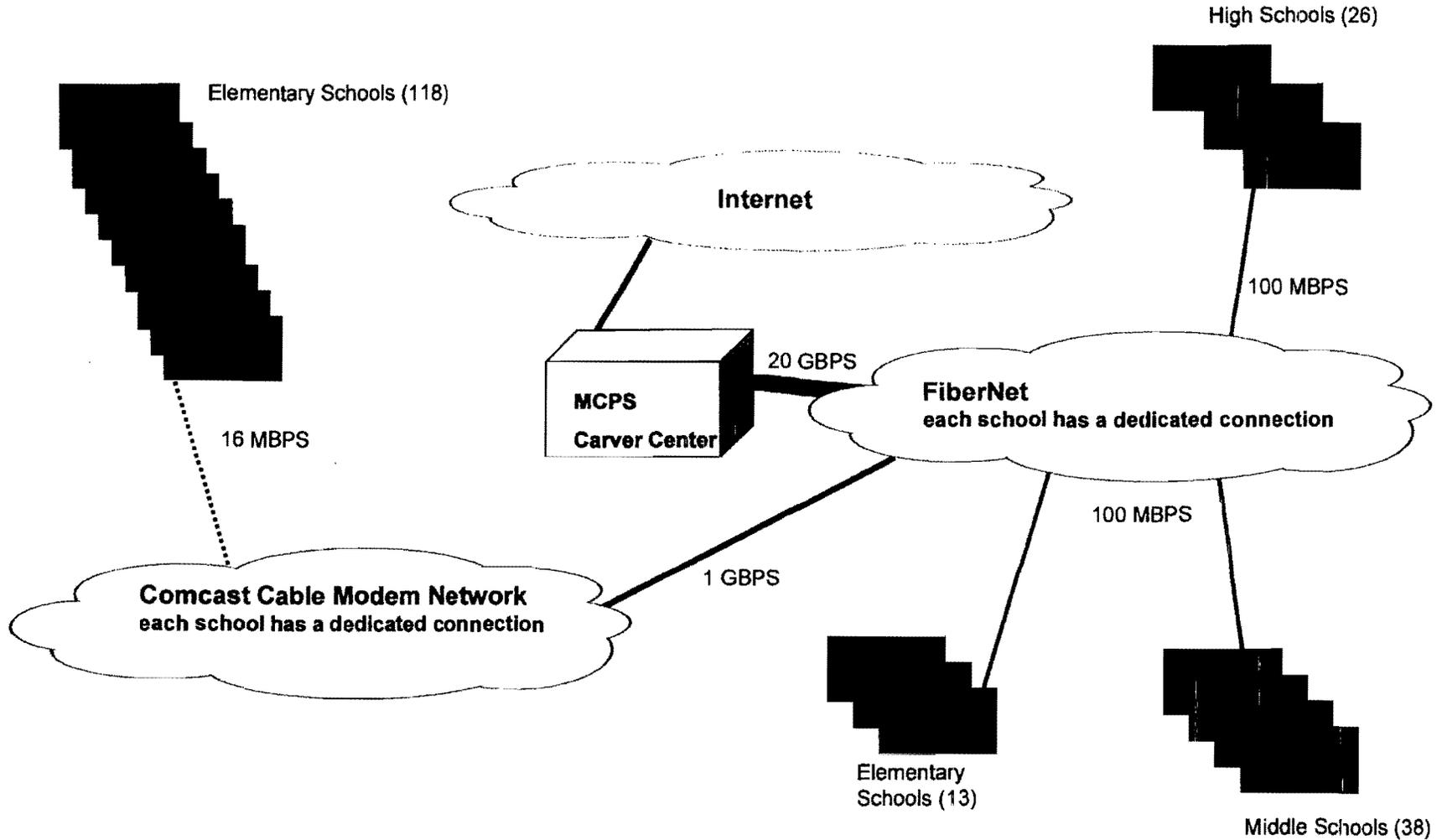
*The County is exploring the potential for development of a Multiuse Technology Facility and will include information in future Cable Communications Plans.

These projections for the Cable TV Fund incorporate assumptions of annual resources and resource usage as well as projected end-of-year reserves available based on these assumptions. This scenario assumes that operating expenditures will experience net increases as a trend. Factors contributing to the assumed rate of increase include compensation adjustments, program and productivity improvements, and cost increases driven by inflation. This scenario represents one possible fiscal future based on the incorporated set of expenditure and resource assumptions. Other scenarios would occur if the County Executive and County Council adopted a different program plan or if the future brings different trends than presumed in the incorporated assumptions. The County Executive presents these fiscal projections as a tool for thinking about the future fiscal policy implications of the recommended program of expenditures and resources.

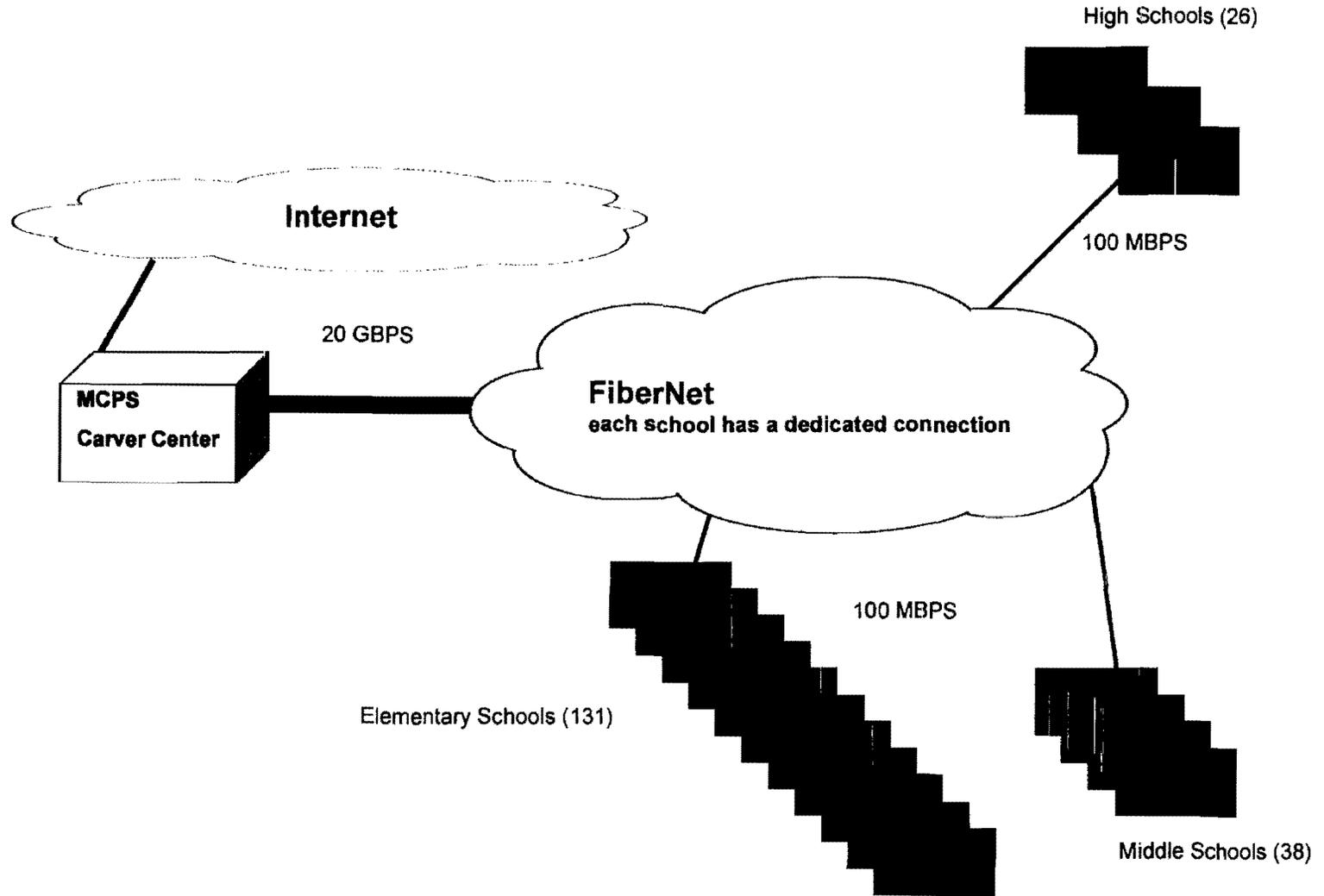
Phase 1: Current MCPS Broadband Transport



Phase 2: Interim MCPS Broadband Transport Proposal



Phase 3: Final MCPS Broadband Transport FiberNet Solution



Executive Summary

In 1995, the State of Maryland began implementation of the *Maryland Plan for Technology in Education*, a blueprint for effective utilization of technologies in schools statewide. The Plan, developed by the Committee on Technology in Education (COTE), representing the State's many stakeholders, served as the foundation for development and funding of educational technology programs on both the State and local levels. The committee revised the Plan in 1998 and again in 2002.

New technology and applications to support teaching and learning and improve administrative functions continue to be developed at a rapid rate. When the *Maryland Plan for Technology in Education* was first implemented, no one had heard of podcasting, blogging, text messaging, or connecting to the Internet via mobile phone. Now technology seems to change daily and our students are quick to embrace each new innovation. Most students are comfortable using technology in their daily lives and do so routinely. Schools need to keep pace and adapt to meet this change. Today's educators must recognize technology as an essential component of the instructional program, engage all students more fully in learning, and provide students with 21st Century work and life skills.

This revised five-year plan for 2007-2012 reflects the current context of the 21st Century in which technology is all around us and rapidly changing. The Plan continues to be guided by a core vision:

Through engaging classrooms that have current technology resources available to all students and educators as a part of their daily work, every child will reach his or her potential and achieve success. Not only will technology be available in whatever forms they take in the coming years, but rich, digital content will be available in a variety of formats. The individual learning styles and needs of every child will be addressed by using technology to differentiate instruction and provide accessible resources to all students.

To achieve this vision, attention must be given to providing educators with high-quality professional development that includes continued time and effort to learn, maintain and improve their technology skills (Turner, 2005) and give them the ability to use those skills in their professional work. Technologically savvy teachers are more apt to use technology in their everyday classroom instruction. All educators must have their own computer and other appropriate technologies available to them if they are to be expected to infuse technology into instruction.

Likewise, all students need to have access to computing devices and rich curricula and digital resources that will enable them to attain the content knowledge and skills they need to

prepare them for the future. Findings from the annual Online Technology Inventory completed by every school in the State show that technology use in our schools is not as frequent, or as effective, as it can be. Schools with the highest poverty tend to lag behind other schools in student use of technology and need to have additional resources to close the digital divide.

Administrators should be able to use technology in their daily work and provide leadership in creating a technology rich school environment. Administrative support is critical to creating a climate in which teachers continue to grow professionally in their technology knowledge and skills, and in which technology becomes a necessary, every day tool for teaching and learning.

Technology also contributes significantly to how data is used for instructional planning and student achievement. Integrated student information systems, curriculum/content management systems, and learning management systems are critical for local school systems to collect data; assess student performance; deliver curriculum and instructional resources; create collaborative work environments; and communicate information to students, staff, parents and the community. Robust systems provide administrators and teachers with critical information on every student's learning strengths and needs, allowing educators to focus strategies and resources to help each child succeed.

Because technology continues to evolve at a rapid pace, it is imperative that issues around access, infrastructure and technical support be addressed. School systems must adopt, at a minimum, a five-year refresh cycle to replace outdated equipment. Otherwise, schools will not be able to use emerging instructional software applications. Continuous upgrades need to be made to the infrastructure to address bandwidth needs as the technology becomes more and more powerful and to provide opportunities for rich applications of voice, video and data. In addition, school systems need to ensure that support staff is available to troubleshoot equipment failures and provide technical assistance to eliminate and/or minimize down time.

Finally, it is critical to continually evaluate whether or not investments in time and resources spent in integrating technology into instruction makes a difference in the classroom. Working together, the Maryland educational community and interested stakeholders can build internal capacity to understand and apply research and evaluation studies and to create a repository of effective practice.

The primary and overarching goal of the Plan has not changed – improved student learning will be achieved in all content

areas and in the technology knowledge and skills critical to students' ability to contribute and function in today's information technology society.

Five separate, but interrelated, objectives have been established to meet this overall goal:

- Objective 1: Improve student learning through technology.
- Objective 2: Improve staff's knowledge and skills to integrate technology into instruction.
- Objective 3: Improve decision-making, productivity, and efficiency at all levels of the organization through the use of technology.
- Objective 4: Improve equitable access to appropriate technologies among all stakeholders.
- Objective 5: Improve the instructional uses of technology through research and evaluation.

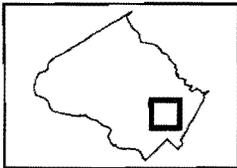
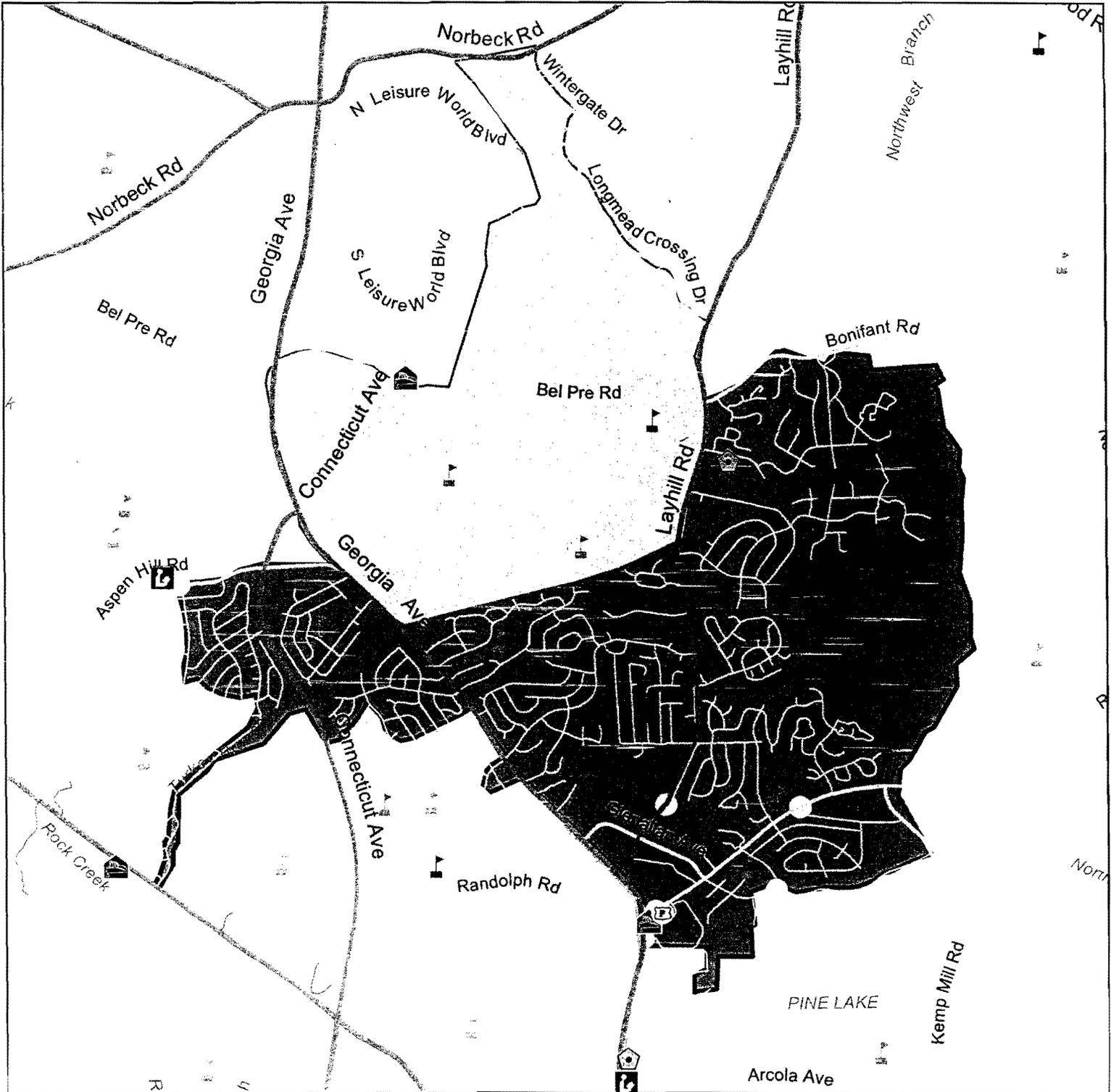
Each objective includes progress to date, specific targets and recommended actions to achieve them, assigned responsibilities and data sources to monitor progress.

The Plan also includes a Glossary to define and clarify technological and educational terms and a List of Acronyms. In addition, there are 5 Appendices:

- A. Alignment Resources (with web links to Standards and other documents)
- B. Data Sources
- C. Maryland Ed Tech Partnerships (with links to additional information)
- D. Bibliography
- E. Acknowledgements

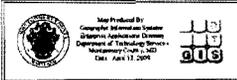


Kennedy Cluster and Neighborhood Focus Area around the Hewitt-Bel Pre Corridor



Legend

- ★ Regional Service Centers
- ⬜ Community Centers/Recreation Centers
- 🚓 Police Stations
- 🚒 Fire Stations
- 📖 Libraries
- 🎒 Elementary Schools
- 🎒 Middle Schools
- 🎒 High Schools
- ⬜ Fibernet Lit
- ⬜ Hewitt Ave-Bel Pre Focus Area
- 🟤 Kennedy Cluster Outline



Montgomery County ARRA Broadband Potential Projects & Partnerships

LIKELY ONE MARYLAND BROADBAND CONSORTIUM PROJECTS

- BROADBAND TO COMMUNITY ANCHOR INSTITUTIONS:** Provide broadband access, equipment, and support to 71 elementary schools, 5 hospitals, Montgomery College, 2 fire stations, 1 police station, 7 public housing complexes, 1 library, 2 transit centers, 1 research facility, 2 radio towers and other facilities.
 - Investigate additional facilities to add to County's broadband network:
 - Job training locations
 - Broadband training, awareness and education centers/programs
 - Public housing family resource centers
 - Health IT partners
- BROADBAND FOR HEALTH IT INITIATIVES:** Partner with healthcare providers to facilitate deployment of necessary bandwidth to support new federal Health IT initiatives.
 - Incorporate broadband facilities partnership opportunities into One Maryland proposal and/or incorporate into separate Health IT proposal.
 - Work with HHS CIO to develop potential hospital, medical facility, and pilot medical site IT partners.
- WIRELESS BROADBAND TO UNDERSERVED AND ECONOMIC DEVELOPMENT AREAS:** Provide amenity-level wi-fi hot spots in:
 - Germantown to facilitate broadband access to unserved and underserved population groups that make weekly trips from more rural areas into Germantown.
 - Wheaton redevelopment area to stimulate economic growth and job creation.
- WIRELESS BROADBAND FOR PUBLIC SAFETY:** Provide secure wireless broadband access and equipment to 80-member correctional staff at Boyds Correctional facility to facilitate public safety agency access and use of broadband service. Corrections facility staff must use laptops in multiple rooms and currently have no means to access real-time systems data outside of individual offices.
- PUBLIC-PRIVATE BROADBAND ACCESS PARTNERSHIPS:** Partner with cable modem, DSL resellers, and wireless broadband service providers to expand broadband access and education to unserved and underserved areas of the County.
 - Obtain system deployment information from wireline and wireless broadband service providers.
 - Investigate partnerships to expand service areas.
 - Work with DED to investigate partnership opportunities near future FDA-incubator site, east-Montgomery County Ft. Meade-related development, and ICC corridor.
- BROADBAND TECHNOLOGY JOB TRAINING AND ECONOMIC DEVELOPMENT:** Develop partnerships to train workers and position local small businesses to be competitive for expected job growth and business opportunities.

ADDITIONAL MONTGOMERY COUNTY POTENTIAL ARRA PROJECTS

- PUBLIC COMPUTERS WITH BROADBAND EDUCATION AND TRAINING:** Expand public computer center capacity at public libraries, public schools, community colleges, public housing, parks and recreation centers, community and youth centers, arts centers, job-training centers, and non-profit and community support organizations that facilitate greater broadband service by low-income, unemployed, aged, and otherwise vulnerable populations.
 - Draft Public Computer Request Form has been developed.
 - Determine which facilities can also support job-training, economic development, and/or other broadband education programs.
 - Libraries – Internet life skills class paired with children’s reading hour
 - Regional Service Centers – Internet job searching, resuming building, interview skills
 - Family Justice Center
 - Community and Youth Centers

- BROADBAND ACCESS, TRAINING, EDUCATION AND ECONOMIC DEVELOPMENT:** Partner with Montgomery College, and other broadband training programs to provide broadband training and education, including broadband-based small business economic development programs.
 - Position Montgomery County agencies and businesses as providers of educational programs and train-the-trainer resources.
 - Work with DED, RSC, libraries, Montgomery College and others to build on expand existing or previous programs rather than trying to develop all new programs.
 - Create partnership with private broadband providers to create targeted “S-rate” program model. It would combine federal matching broadband service discounts with broadband education and follow-up penetration and use study.
 - Older Adults
 - Low Income Households
 - Small Farms
 - Small Business

- PUBLIC SAFETY CAD:** Replace Computer Aided Dispatch (CAD) system to improve public safety agency access and use of broadband service. Broadband-based next generation CAD system will improve response times and improve officer efficiency.
 - Investigate filing a joint application with Arlington County or COG.

- BROADBAND IMPACT ON EDUCATIONAL OUTCOMES:** Partner with research, technology, or grant foundations and educational partners to request funding to design and implement a study to determine how access to broadband service, use of technology, and technology-trained teachers in the elementary classrooms improves learning outcomes and test scores.
 - Research foundation partners.
 - Research partnerships with MCPS and/or Maryland State Dept. of Education.

One Maryland Broadband Consortium – Serving Maryland One Fiber at a Time
Providing Broadband Access and Support to Community Anchor Institutions

The purpose of the One Maryland Broadband consortium is to submit a single coordinated NTIA broadband proposal on behalf of the consumers served by Maryland's local government and education entities. Consolidation of participating community proposals will enhance the competitiveness of each local project while preserving local control and accountability.

The One Maryland Broadband proposal seeks funding to build and extend local networks to leverage the demonstrated success of existing operational institutional networks located in the greater Baltimore and Washington regions in order to:

- Provide broadband access, equipment, and support to community anchor institutions such as schools, libraries, community colleges, medical and healthcare providers, and other government agencies and community support organizations that facilitate greater broadband service by low-income, unemployed, aged, and otherwise vulnerable populations.
- Improve access to and use of broadband service by public safety agencies.
- Develop models that may be replicated around the nation to use existing community networks to facilitate access to affordable broadband services to unserved and underserved consumers.
- Stimulate demand for broadband economic growth.
- Create or preserve broadband-related construction, operation and education jobs.

One Maryland is also investigating opportunities to leverage existing broadband investment in the state to facilitate Health Information Technology initiatives, Smart Grid deployment, and Intelligent Highways, as well as broadband education and training partnerships.

The One Maryland Broadband consortium currently includes:

- City of Annapolis
- Anne Arundel County
- Baltimore City
- Baltimore County
- Carroll County
- Frederick County
- Harford County
- Howard County
- Montgomery County and Participating Municipalities
- Prince George's County

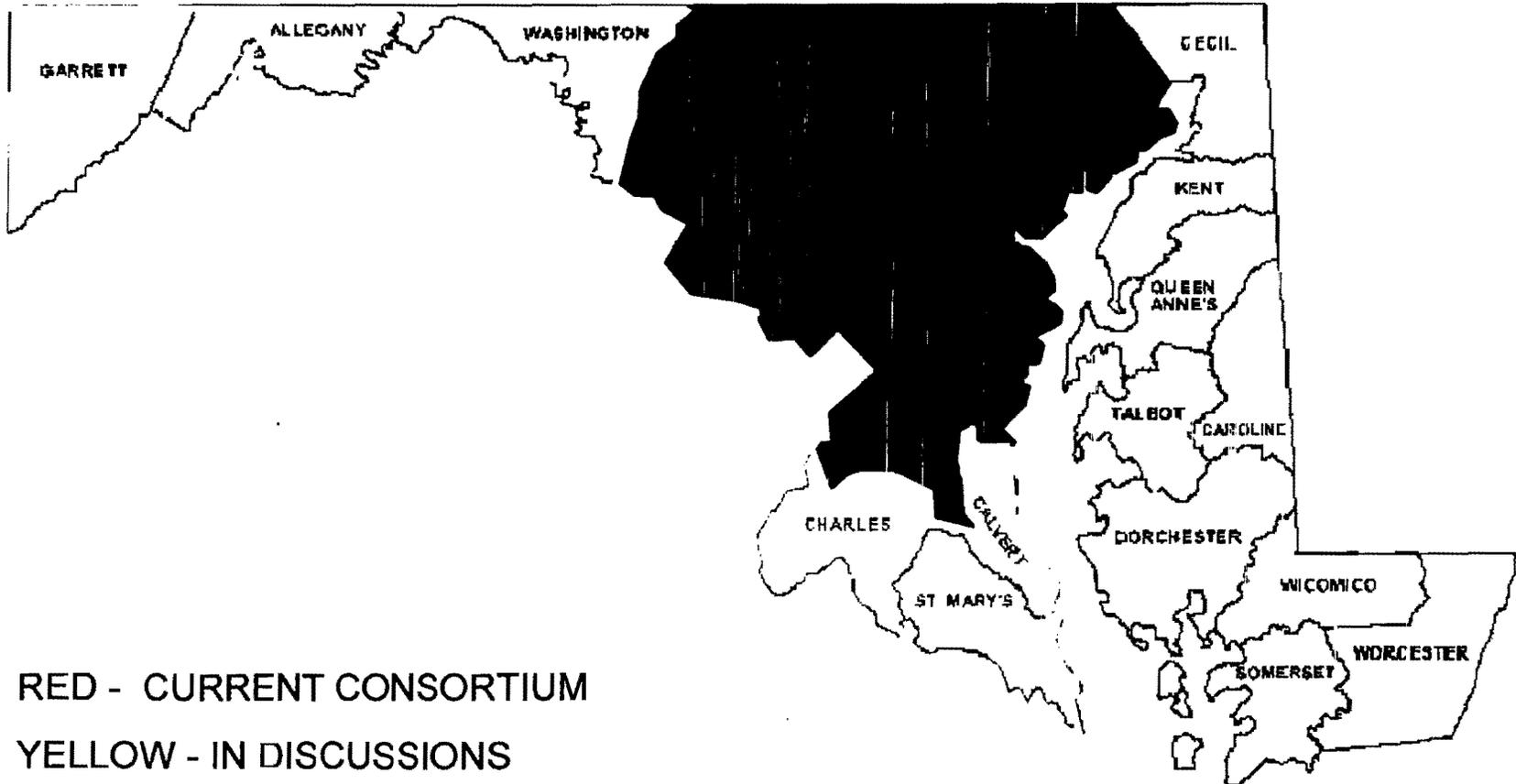
One Maryland is open to partnering with other Maryland counties, the Broadband for Communities consortium, the Sailor Network, and others. Consortium partners must have demonstrated broadband operational experience and support infrastructure, or a developed plan with sufficient internal resources.

One Maryland also working in close coordination with:

- MD Dept. of Economic and Business Development (State lead on ARRA Broadband)
- MD Dept. of Information Technology
- Network Maryland
- Governor's Grants Office
- Other Strategic Partners

One Maryland is also interested in working with the Maryland Broadband Cooperative to investigate additional RUS funding opportunities for Maryland broadband projects.

ONE MARYLAND BROADBAND



RED - CURRENT CONSORTIUM
YELLOW - IN DISCUSSIONS

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American Recovery and Reinvestment Act – Broadband Provisions

NTIA BTOP COMPETITIVE BROADBAND GRANTS

- Awarded by NTIA (Nat'l Telecom. Infrastructure Admin, Dept. of Commerce – Hon. Gov. Gary Locke, WA-D)
- NTIA will design new competitive grant system and award all grants by Sept 30, 2010.
- **GRANT PURPOSES** (\$4.7 Billion Broadband Technology Opportunity Program, BTOP)
 - **\$200 million** for expanding public computer center capacity, including at community colleges and public libraries
 - **\$250 million** for innovative programs that encourage adoption of broadband service
 - **\$350 million** for broadband mapping
 - **\$3.9 billion** for broadband education, awareness, training, access, equipment and support to—
 - “Unserved” and “Underserved” communities (FCC and NTIA will define terms);
 - Schools, libraries, medical and healthcare providers, community colleges
 - Other community support organizations that facilitate greater broadband service by low-income, unemployed, aged, and otherwise vulnerable populations
 - Job-creating strategic facilities located within a State-designated economic zone, Economic Development District (designated by Commerce Dept.), Renewal Community or Empowerment Zone (designed by HUD), or Enterprise Community (designated by Dept. of Agriculture)
 - Improve access to and use of broadband service by public safety agencies
 - Stimulate demand for broadband economic growth, and job creation
- **PERMITTED GRANT USES:**
 - Acquire equipment, instrumentation, network capability, hardware and software, digital network technology, and infrastructure for broadband services
 - Ensure access to broadband service by “community anchor institutions” (undefined)
 - Facilitate access to broadband service by low-income, unemployed, aged, and otherwise vulnerable populations to provide educational and employment opportunities to members of such populations
 - Construct and deploy broadband facilities that improve public safety broadband communications services
- **GRANT APPLICATION CONSIDERATIONS:**
 - Increases affordability of, and subscribership to service to the greatest population of users
 - Provides greatest broadband speed possible to the greatest population of users
 - Enhances service for health care delivery, education or children to the greatest population of users
 - Will not result in unjust enrichment through support for nonrecurring costs through another federal program for service in the area
 - Applicant is a socially and economically disadvantaged small business concern (SBA Sec.8A)
- **GRANT CONDITIONS:**
 - **Federal share may not exceed 80%** unless a waiver based on financial need is granted; applicant must demonstrate it will appropriate or unconditionally obligate required funds from non-Federal sources
 - Show that project would not have been implemented “during grant period” without Federal grant
 - Disclose source and amount of other Federal or State funds or pending applications for project
 - Awards will be deobligated for failure to perform or wasteful or fraudulent spending
 - Quarterly reporting on progress and jobs created or saved required and will posted to Internet
 - Public Internet data base of recipients, amounts awarded and purposes will be maintained
 - FCC “non-discrimination and network interconnection obligations” must be met
- **CONFERENCE REPORT:** Intends for NTIA to award grants based on whether they can meet broadband needs of areas to be served, whether by wireless or wireline provider or any provider offering to construct last-mile, middle-mile or long haul facilities. Also, NTIA should consider the technical differences between wireless and wireline services; hopes that grantees will be involved in aggregating demand, ensuring community involvement and fostering useful technology applications, thereby stimulating the economic growth and job creation.

American Recovery and Reinvestment Act – Broadband Provisions

RUS RURAL BROADBAND COMPETITIVE GRANTS – DISTANCE LEARNING, TELEMEDICINE AND BROADBAND

- Awarded by Sec. of Agriculture (Hon. Gov. Tom Vilsack, Iowa-D)
- **GRANT PURPOSES:** \$2.5 Billion for grants, loans and loan guarantees for broadband infrastructure (including technical assistance) through the Dept of Agriculture's Rural Utilities Service (RUS) program
 - At least 75% of area served by a grant project must be in a rural area without sufficient access to high speed broadband service in order to facilitate rural economic development, as determined by the Secretary of Agriculture.
 - Eligible rural community is defined as a place in the U.S. or its territories that has no more than 20,000 inhabitants based on the most recent U.S. Census Bureau statistics and is not in an area designated as a standard metropolitan statistical area. (From Patton Boggs summary)
- **GRANT PRIORITY TO:**
 - Projects that offer end users a choice of more than one service provider
 - Projects that provide service to the high proportion of rural residents that do not have access to broadband service
 - Projects that can commence promptly following approval
 - Projects that demonstrate that they would be fully funded or can be completed with RUS grants or loan backing
 - Project applications from current and former borrowers of RUS funds authorized under the Rural Electrification Act
- **GRANT CONDITIONS:**
 - For RUS broadband grants, legally organized entities and State or local governments who have the legal capacity and authority to own and operate broadband facilities are eligible
 - Eligibility Rules of the RUS Broadband Loan Program apply (From Patton Boggs Summary)
 - Under the RUS broadband program, applicants must comply with a 20 percent loan equity requirement. An applicant must provide verifiable credit support equal to 20 percent of the requested loan amount (From Patton Boggs Summary)
 - **Cannot receive both RUS and BTOP funding**

PUBLIC SCHOOL MODERNIZATION

- Awarded by Maryland Gov. O'Malley
- \$48 billion awarded by formula to states to restore education funding. 81.2% of state award for education funding (already allocated by Gov. O'Malley).
- **AWARD PURPOSE:** 18.2% of state award for :
 - Public safety
 - Other government services, including assistance for elementary/secondary/higher education
 - Modernization, renovation, or repair of public school facilities, including modernization, renovation, and repairs that that are consistent with a recognized green building rating system
- **PERMITTED AWARD USES:**
 - Elementary, secondary, and higher
- **PROHIBITED USES:**
 - Sports stadiums or place of religious worship modernization, renovation, or repair
 - Endowment increase

American Recovery and Reinvestment Act – Broadband Provisions

HEALTH INFORMATION TECHNOLOGY (excerpts of programs with potential broadband component)

- Office of National Coordinator for Health Information Technology (ONCHIT) will fund higher education institutions or consortiums to study HIT initiatives.
- Multidisciplinary Centers for Health Care Information Enterprise Integration (multidisciplinary research on development and use of health information technologies).
 - Research areas include:
 - Health information enterprise management
 - Health information technology security and integrity
 - Measurement of the impact of information technologies on the quality and productivity of health care
 - Human information and communications technology systems, voice-recognition systems, software that improves interoperability and connectivity among health information systems
 - Relevant health information technology to reduce medical errors
 - Software dependability in systems critical to health care delivery
 - Funds shall support:
 - HIT architecture for nationwide electronic exchange and use of health information
 - Infrastructure and tools for the promotion of telemedicine
 - Interoperability of clinical data repositories or registries
 - Technologies and best practices to enhance the protection of health information
 - Development and adoption of electronic health records (EHRs)
 - Best practices to integrate HIT, including EHRs, into providers' delivery of care
- Information Technology Professionals in Health Care
 - Provides assistance to establish or expand medical health information education programs to ensure rapid and effective utilization and development of HIT
 - Preference to existing educational and training programs and programs designed to be completed in less than six months
- HIT Regional Extension Centers
 - Provides regional technical assistance and disseminate best practices to support and accelerate efforts to adopt, implement, and effectively utilize HIT
 - U.S.-based nonprofit institution or organization eligible

PUBLIC SAFETY BROADBAND (programs with potential broadband component)

- Public Safety Broadband Opportunities in addition to BTOP grants and School Modernization awards include:
 - Byrne-Justice Grants (to help prevent, fight, and prosecute crime)
 - E.g., Communications Systems
 - Byrne Competitive Grants (to improve administration of justice) Grants
 - E.g., Courtroom technology services (remote testimony, record database)
 - Internet Crimes Against Children Task Force Program
 - E.g., Internet access, monitoring and tracking systems
 - Fire Station (modifying, upgrading, or constructing; 5% for admin; \$15 million project cap)
 - E.g., Fire Station alarm monitoring, GIS, and communications systems
 - Metro Security Cameras



DEPARTMENT OF TECHNOLOGY SERVICES

Isiah Leggett
County Executive

E. Steven Emanuel
Chief Information Officer

MEMORANDUM

June 17, 2009

TO: Management and Fiscal Policy Committee

FROM: Mitsuko R. Herrera 
Cable Communications Administrator

SUBJECT: MFP Work Session – 2009 First Quarter

The DTS Office of Cable and Communications Service will be prepared to discuss the following items and materials at the Management & Fiscal Policy Committee (MFP) Work Session:

1. FiberNet FY 2010 Construction – Elementary School Needs and Status
2. Kennedy Cluster Project – Affordable Residential Broadband Service
3. Federal Stimulus Broadband Grants – Potential Montgomery County Proposals

1) FiberNet

FiberNet is a secure fiber-optic network operated by the Department of Technology Services (DTS) to provide voice, video, and data services to 288 government and public locations including County government buildings, community college campuses, all high schools and middle schools, 13 elementary schools, libraries, performing arts centers, police and fire stations, 911 centers, and similar facilities. In FY 2010, the primary goals of FiberNet will be to:

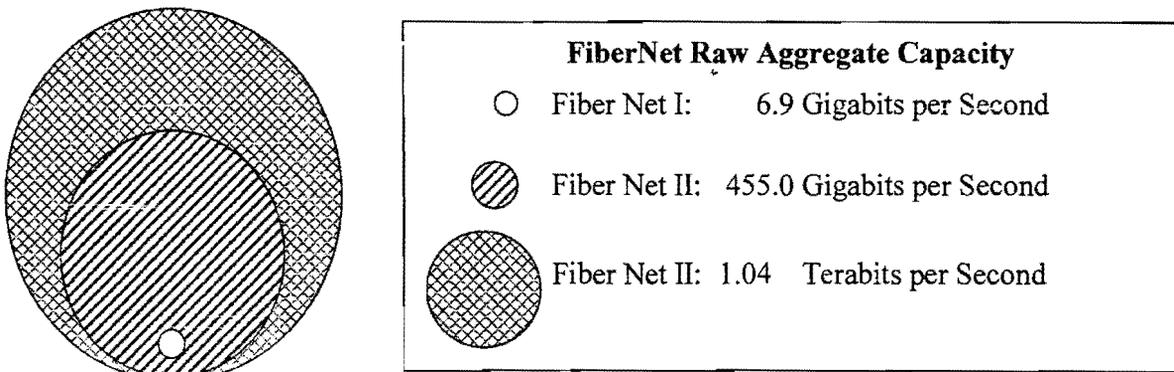
- Complete the migration of County departments from the original network, FiberNet I, to the upgraded institutional network, FiberNet II network operating system.
- Expand the footprint of FiberNet II to additional elementary school locations and accommodate Smart Growth-related network relocations.
- Initiate a proof-of-concept test to use cable modem service to create a virtual private network as an interim solution for schools and non-FiberNet County facilities.
- Engineer a solution to migrate public safety radio communications from FiberNet I to FiberNet II to permit final decommissioning of FiberNet I.

a) **FiberNet History**

In 1995, the County determined that voice, video and data services could be provided more cost-effectively by building and operating its own facilities-based fiber optic network rather than relying solely on commercially available solutions. DTS was given the mission to leverage work

begun by the Department of Transportation (DOT) to build a fiber optic network for the Advanced Traffic Management System. DTS built an electro-optical network on top of the DOT fiber plant and FiberNet I was born. A mix of General Fund and Cable Fund public, educational, and governmental capital fees were subsequently used to fund expansion of the fiber plant and installation of advanced electronics, resulting FiberNet II.

Both FiberNet I and FiberNet II use the same fiber optic cable plant. What distinguishes the two generations is the data network technology. FiberNet I uses asynchronous transfer mode (ATM) network technology, whereas FiberNet II uses metro-Ethernet local area network technology. Metro-Ethernet is more efficient, economical and considerably less complex to operate. FiberNet was designed to be future proof. As technology advances, DTS will be able to continue using the same fiber plant while cost-effectively upgrading the technology to enable more and advanced networking services over FiberNet III. See Attachment A, *DTS Enterprise Strategic Plan 2009-2012*, Excerpt – Pages 37-40.



b) FiberNet FY 2010

Due to the significant projected FY 2010 budget gap, as part of the FY 2010 budget process, MFP recommended, and the County Council approved, a 41% reduction in the FY 2010 FiberNet Capital Improvement Plan construction budget. See Attachment B, *FY10 Approved Budget* at Subection H. At its inception, FiberNet construction and operation was supported by a combination of General Fund and Cable Fund revenues. FiberNet is now funded entirely by the Cable Fund. The FiberNet budget is broken down into three categories:

- FiberNet Support – DTS
- FiberNet Support – DOT
- FiberNet CIP (Capital Improvement Plan).

i) FiberNet – Operations

The FiberNet I ATM technology has become increasingly more unstable over time. In addition to adding new locations to FiberNet II and working to migrate all but public safety radio communications from FiberNet I to FiberNet II, over the past two years, DTS Network Services has used CIP funding to finance replacement and upgrades of FiberNet electronics. See *DTS/EID Proposal: FiberNet II MCG Migration WAN Project* (March 30, 2009), available at <V:\Temporary\MCG-FiberNetII-Migration.02.pdf>, for more information. Copies can also be obtained by contacting John Castner, DTS Network Solutions and Services Manager, 240-777-2964. Under legal and accounting regulations, this work is a capital improvement that will

extend and enhance the functionality of the network and was included in FiberNet CIP Attachment C, *FiberNet FY10 Budget Analysis – Category C*. In a practical sense, however, this work is vital to permit the continued operation of FiberNet. Therefore, Attachment C at Category A, lists this work under *FiberNet Support* so that the MFP has a single snap shot of the overall operational costs associated with FiberNet. Attachment C, *FiberNet Support – DOT – Category B*, identifies the chargeback paid to DOT for facility repair to the fiber plant, such as replacing fiber damaged by falling tree branches and squirrel gnawing.

ii) FiberNet – New Construction

As noted in Attachment C, in FY 2010, DTS Network Services will attempt to engineer a solution to migrate the public safety radio communications services from FiberNet I to FiberNet II. If these services are migrated to FiberNet II, the County would realize a cost savings by eliminating all operating support for FiberNet I in future years. However, depending on available technology and technological innovation, migration may require waiting until the next generation of public safety radio. DTS will continue to implement cost-effective solutions to continue providing robust and reliable support for public safety communications services.

During the budget process, the MFP disagreed with the County Executive's recommendation to add additional support for fiber relocation costs to the FiberNet Support budget. Therefore, anticipated construction improvement costs necessitated by the State's road construction project to improve the intersection at Georgia Avenue and Randolph Road, and similar costs, will continued to be funded by the FiberNet CIP.

The remaining \$200,000 in the FiberNet CIP Budget will be used for construction and expansion of FiberNet to reach elementary schools. It takes approximately eighteen months to engineer and construct a FiberNet extension to an elementary school. The majority of this time is spent obtaining access to public utility-owned poles. Because of the construction timeline, construction or design may begin in one fiscal year and be completed in the next fiscal year.

c) FiberNet to Elementary Schools – FY 2010 Status Update

There are approximately 131 elementary schools in Montgomery County. Of these sites:

- 13 elementary schools have an operational FiberNet network connection.
- 3 additional elementary schools will operate on FiberNet by September 2009.
- 11 elementary schools will have construction in progress in FY 2010.
- 17 elementary schools will have design engineering initiated in FY 2010.
- 87 elementary schools will remain unserved by FiberNet after FY 2010.

Schools served by FiberNet have broadband capacity and operational costs of:

- 100 megabits per second (MBPS);
- Operational cost of less than \$71 per megabit.

These FiberNet ready schools can access computer programs from the MCPS central administrative center, the Carver Center, as well as databases supported by the State-operated Network Maryland. In addition, MCPS saves money by using shared administrative software licenses instead of purchasing individual software for each school. In the near future, DTS will

upgrade the MCPS elementary school data communications to 1 gigabit bandwidth, further reducing operating costs to less than \$7 per megabit.

In contrast, schools not served by FiberNet are currently receiving broadband service by purchasing commercially-available services with a broadband capacity and operational costs of:

- T-1 Telephone Line Service
 - 1.544 MBPS;
 - Operational cost of \$1,826 per megabit.
- Cable Modem
 - 16 MBPS download and 4 MBPS upload;
 - Operational cost of \$93 to \$375 per megabit.

However, the current commercial cable modem solution used by some schools requires these schools to route traffic from the school to the commercial cable operator's network, and then via the public Internet to the Carver Center. *See Attachment D-1, Phase 1: Current MCPS Broadband Transport.* This routing slows down broadband traffic, has no service level agreement (SLA), and increases security risks. Schools using T-1 lines have connection speeds so slow that common software applications, such as Google Earth, cannot be run because of inadequate bandwidth. In addition, the T-1 connections are becoming increasingly unreliable with more frequent outage periods over unreliable copper telephone plant.

Funding expansion of FiberNet would alleviate the issues created by commercially available T-1 and cable modem service. *See Attachment D-3, Phase 3: Final MCPS Broadband Transport FiberNet Solution.* But in light of the timeline to complete FiberNet construction to these sites, DTS is pursuing an interim solution – peered cable modem service. *See Attachment D-2, Phase 2: Interim MCPS Broadband Transport Proposal.* This peered solution would create a dedicated broadband connection to the cable modem service provider and then use an existing FiberNet connection to route traffic to the Carver Center. This peered solution would improve broadband speed, enable an SLA, and improve reliability. DTS is working the Office of the County Attorney to execute a contract to permit a proof-of-concept trial. If the solution is technically viable, MCPS would work with DTS to implement the solution to all elementary schools not served by FiberNet.

d) FiberNet to Elementary Schools – MD Education Technology Plan for the New Millennium, 2007-2012

The Maryland Education Technology Plan for the New Millennium is the statewide blueprint for effective use of technologies in schools. The Educational Technology Plan can be accessed at <http://www.marylandpublicschools.org/NR/rdonlyres/9242FEDD-09F7-4BB0-8F1F-AE6FAE562EA8/13485/TechPlanFinalfromPrinter73007.pdf>. *See Attachment E, for an excerpt of the Plan Objectives, Targets, and Progress-to-Date.* The Educational Technology Plan targets include:

- All students will demonstrate **mastery of technology literacy by the end of eighth grade** as specified in the:
 - Maryland Student Technology Literacy Standards;
 - School Library Media Voluntary State Curriculum;

- Technology Education Voluntary State Curriculum.
- All schools will provide:
 - 1 high performance computer per educator;
 - **3:1 student-to-computer ratio at the elementary school level.**
 - Access to a variety of other technology devices.
 - One computer projection device/display unit per instructional area.
 - Connection to a broadband speed LAN/WAN.
 - A secure computing environment to ensure safe access.
- Digital content will be incorporated into all instruction and be available before, during and after school to support teaching and learning.
 - Students and staff will have expanded access to curricula and support related to Maryland standards through **online courses, content, collaboration, and support.**
 - School systems will develop processes and strategies to provide electronic communication with educators, students, parents, and the community.
 - School systems will develop and implement data management systems, integrated student information systems, curriculum/content management systems, and learning management systems.
 - Student, school, and district data provided by the State will be available to local school systems for analysis and decision-making.
- All school systems have developed policies and procedures to address Education Article § 7-910: Equivalent Access for Students with Disabilities and COMAR 13A.05.02.13H (Accessibility of Technology-Based Instructional Products).

In order for MCPS to meet the goals of the Educational Technology Plan, FiberNet must be sufficiently funded to complete extension to all elementary schools.

2) **Kennedy Cluster Project**

The Kennedy Cluster Project is an interagency, multi-disciplinary project designed to close the achievement gap between low-income children of color and their peers. Expanded computing capability and broadband access are part of the Project's elements. At the request of MFP, DTS has been working with other agencies to find a viable means to bring affordable, residential broadband services to the homes within the Kennedy Cluster.

The Kennedy Cluster Project includes both the residential area served by Kennedy High School as well as the neighborhood area along the Hewitt-Bel Pre Corridor. DTS has worked with MCPS and others to develop a map of the project area. See Attachment F, *Map of Kennedy Cluster and Neighborhood Focus Area Around the Hewitt-Bel Pre Corridor*. DTS is continuing to work with these agencies to determine the number of households with school-aged children that are located within the Project boundaries.

DTS has determined that FiberNet cannot be used to provide residential broadband services within the Project area. Federal law and the County's cable franchise agreements limit the ability of the County to use FiberNet to provide broadband services to the general public. Where the

County uses an alternative broadband service provider to offer Wi-Fi service hot spots within Bethesda and Silver Spring, these are amenity-level service offerings. They offer bandwidth under 1 MBPS, typically have no more than 40 to 50 users at any one time, and no customer support or service guarantee is provided. Moreover, the geographic distance of the Project area and current location of County broadband facilities would require installation of a significant number of wireless access points to provide current Wi-Fi technology, thus making a County-operated Wi-Fi solution economically impracticable.

DTS will continue discussions with commercial providers to determine if a commercial discounted wireless or cable modem-based residential broadband solution is available. DTS will also continue to investigate whether any portions of the Kennedy Cluster Project would be good candidates for federal stimulus broadband grants, but the difficulty of sustaining a long-term subsidized service without additional federal funding may render this proposal infeasible.

3) American Recovery and Reinvestment Act (ARRA) – Potential Broadband Projects

The American Recovery and Reinvestment Act (federal stimulus bill) will make \$4.7 billion in competitive grants available to expand broadband access, education and training in areas like Montgomery County. A summary of potential Montgomery County grant projects, the regional One Maryland Broadband consortium project summary and map, and the general summary of broadband-related stimulus funding programs are attached as Attachment G.

The ARRA broadband grants will awarded by the federal government on a competitive basis. Grant eligibility rules and criteria are expected to be released between June 22, 2009 and July 1, 2009. Applications will be due 45 to 60 days later and it is anticipated that the first round of grants will be awarded before December 31, 2009. Presently, two additional grant rounds are planned and all funds must be awarded by September 30, 2010.

Montgomery County's efforts to obtain ARRA broadband grants are focused in 5 primary areas:

- Expansion of FiberNet to serve elementary schools.
- Deployment of wireless hot spots in Wheaton, Germantown, and for the staff of Boyds Correctional Facility.
- Expansion of public computers and broadband education.
- Expansion of residential broadband service, economic development and education, to the Agricultural Reserve, older adults, and low-income residents.
- Improving public safety use of broadband services.

Available information suggests that the federal government will favor large, regional projects that include technology and end-user education over smaller, narrower projects. In addition, projects will need to be able to demonstrate sustainability beyond federal funding, projects that can be used as national models to increase broadband access and penetration will be favored and only 80% of a project may be funded by federal grant money without a needs-based waiver.

As outlined Attachment G-1 and G-2, the County will continue to work with other local governments, the National Capitol Regional consortium under COG, and the Maryland state government to develop highly-competitive grant proposals.