MFP Committee #4
April 21, 2009

MEMORANDUM

April 17, 2009

TO: MFP Committee

FROM: Dr. Costis Toregas, Council IT Adviser

SUBJECT: FY10 Update for FiberNet

The following may attend:

Steven Emanuel, Chief Information Officer, Department of Technology Services (DTS)
Mitsuko Herrera, Cable Administrator, DTS
John Castner, DTS
John Cuff, Management and Budget Specialist, Office of Management and Budget (OMB)

Overview

The FiberNet project provides for the planning, design and installation of a Countywide fiber optic cable-based communications network with the capacity to support voice, data, and video transmissions among Montgomery County Government (MCG), Montgomery County Public Schools (MCPS), Montgomery College (MC), Maryland-National Capital Park and Planning Commission (M-NCPPC), Housing and Opportunities Commission (HOC), and Washington Suburban Sanitary Commission (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.

The relevant page from the FY09 CIP for FiberNet is attached on ©1. The Executive has not provided any additional requests, so the Expenditure Schedule shown in the FY09-14 CIP is used as the recommended level of funding. In addition, FiberNet receives support from two other sources: the Department of Technology Services (DTS) and the Department of Transportation (DOT). All three of these resource commitments are reflected in the Cable Plan that was the topic of the Committee's review on April 16, 2009. The recommended FY10 Cable Plan is provided on ©2-3. The following table provides details of these three contributions over time.

In $000s	Approved 2009	Recommended 2010	FY11	FY12	FY13	FY14	FY15
FiberNet Support (DTS)	1,232	1,453	1,708	1,757	1,809	1,820	1,875
FiberNet Support (DOT)	244	244	251	259	267	275	283
FiberNet - CIP	1,760	1,735	1,610	1,535	1,460	1,460	1,460
TOTALS	$3,236	$3,432	$3,569	$3,551	$3,536	$3,555	$3,618

The Executive has not provided a total budget for the annual operation of FiberNet. The PDF in the FY09-14 (reproduced on ©1) provides the following Expenditure Schedule for the CIP funded portion of the FiberNet budget.

In $000s	Approved 2009	Recommended 2010	FY11	FY12	FY13	FY14
Planning, Design and Supervision	400	375	250	175	100	100
Site Improvements and Utilities	50	50	50	50	50	50
Construction	1,260	1,260	1,260	1,260	1,260	1,260
Other	50	50	50	50	50	50
Totals	1,760	1,735	1,610	1,535	1,460	1,460

The DTS budget provides an Expenditure table for FY10 which differs from the total shown on ©1 because of the two-year projection nature of the numbers in the CIP. The table below provides a summary of the DTS expenditure pattern for FY10.

In $000s	Approved 2009	Recommended 2010	Change
Expenditures	$1,436	$1,696	+18.1%
WYs	2.4	1.7	-29.1%

Staff Comment: Since the entire FiberNet budget is now provided in the Cable Plan, it is important to organize the annual expenditures in a comprehensive manner so that all costs can be seen and related to revenues, as well as performance targets. The total FiberNet budget of $3,432,000 should be broken out by new construction, maintenance, administrative costs and other subsections helpful to manage this important asset.

FY10 Expenditure Issues

Several issues regarding the expenditure patterns and service levels were identified, and questions were provided to DTS for response. These questions, the DTS response, and Council staff comment are provided below.

1. FiberNet Sites

List the agencies and locations that make use of FiberNet and FiberNet II, and their *current usage statistics*. Please indicate which ones are on FiberNet and which ones on FiberNet II.

Response

There are five technologies in use within Montgomery County for wide area connectivity. These are FiberNet I, FiberNet II, Rockville Campus network, Verizon frame-relay and the NCRNet SONET network.[1] But for frame-relay, Table 1 presents the distribution of these technologies across the government agencies in Montgomery County.

Table 1: FiberNet Agencies by Technology

Technology	Agency	Total Sites
FiberNet I	HOC	4
	MCG	151
	M-NCPPC	4
FiberNet I Total		159
FiberNet II	HOC	2
	MC	4
	MCG	9
	MCPS	84
	M-NCPPC	8
FiberNet II Total		107
Rockville Campus	MCG	15
SONET	MCG	1
Grand Total		**282**

Average usage statistics are presented in the following table for DTS monitored sites on FiberNet II. Results are presented by interface speed and agency for the month of March, 2009. A more detailed listing by site is presented in Appendix A (©15-17). Utilization statistics are not available for sites on FiberNet I. However, when performance issues have been identified, increases in bandwidth have been adjusted.

[1] Hybrid Wireless/Broadband links may be considered a sixth technology. These links are rolled up under the primary broadband carrier technology in Table 1.

Appendix B (©18-21) lists FiberNet I sites by Agency and Department.

Table 2: Utilization by Interface Speed

Average Business Week Utilization for FiberNet II Sites by Interface Speed for March 2009		
Speed (MGb/S)	Agency	Total
10	M-NCPPC	2.25%
10 Total		2.25%
20	HOC	11.62%
	MCPS	31.86%
	M-NCPPC	16.75%
20 Total		29.58%
100	HOC	2.00%
	MCG	9.00%
	MCPS	5.54%
100 Total		5.72%
500	MCPS	80.00%
500 Total		80.00%
1000	MCG	4.08%
	Montgomery College	0.18%
1000 Total		2.52%
10000	MCG	0.01%
10000 Total		0.01%

Staff Comment: To the five technologies currently provided by DTS, there can be added several commercial services such as broadband wireless and broadband from cable modems. This multiplicity of technology supply must be constantly evaluated to make sure that the connectivity strategy is up to date and cost effective. The CIO Subcommittee of the ITPCC should be tasked with the responsibility of reviewing the entire telecommunications landscape and making sure that the FiberNet investment (now totaling more than $35m) continues to be viable and desirable. Also, the form that Public Private Partnerships (PPPs) might take to enhance service delivery and improve the cost equation should be considered at the same time.

2. Adding sites:

- **Which locations will be added to the network in FY10 if the budget is approved as recommended by the Executive?**

Response:
At this time, the following are candidate sites for FY10:

Table 3: FY10 Candidate FiberNet Sites

Participating Agency	Sub Division	Site
Montgomery County Government	Police Department	Vehicle Recovery Bldg
	Recreation Dept	Long Branch Community Center & Pool
Montgomery County Public Schools	Elementary School	Ashburton ES
		Bradley Hills ES
		Broad Acres ES
		Carderock Springs ES
		Greencastle ES
		New Hampshire Estates ES
		Olney ES
		Rolling Terrace ES
		Rosco R Nix ES
		Westbrook ES
		Wood Acres
		Wyngate ES

The sites identified are in the process of being reviewed with regard to the development of budget estimates. While costs for estimates have been authorized, actual implementation and construction will await final budget approvals.

- **<u>What is the current mechanism for identifying, prioritizing and implementing FiberNet deployments to new locations?</u>**

Response:
The current mechanism for identifying sites requires that participating agencies submit their site list for consideration. This list is solicited by the FiberNet Project Manager from the members of the Information Technology Advisory Group (ITAG) for each fiscal year. Sites are ranked using a scoring model that was adopted within the ITPCC for this purpose (reference Appendix C). Submitted sites become candidates for implementation based on their score relative to all of the other sites. Prioritization is determined based on the special needs of the participating agencies relative to their requirements.

The program strategy from inception has been to maximize the use of the annual funding. This has led to the implementation of the most cost effective sites as the highest priority. However, the

remaining site implementations to complete the current network will likely be the most expensive, and likely require multiple years to complete.

Staff Comment: This list of potential candidates should be reviewed in the context of the discussion held by the Education and MFP Committees. No decision has been reached, and DTS has been asked to research options and costs for going forward with the MCPS sites. While this is happening, construction may be delayed. The Committee may want to consider the cost savings from such a delay on the requested appropriation.

3. Promoting FiberNet

How is the use of FiberNet promoted over more expensive alternatives? And are there facilities for which "leased communications services cannot meet current or projected demand as cost effectively as FiberNet", as stated in the FiberNet CIP PDF?

Response:
The ITPCC Charter for the FiberNet Governance Group[2] governs the management of FiberNet and was *"constituted to facilitate dialog and cooperation among the agencies in support of mission objectives"*. This document continues:

> *"FiberNet is not an exclusive solution to all networking requirements, but is an important component to be deployed as appropriate in support of agency missions."*

Over the last six years, FiberNet has promoted its services as an alternative to offerings from the private sector by successfully demonstrating its capabilities for providing reliable, highly available broadband services at prices well below those available in the open market. Each agency is free to select the networking services it purchases. FiberNet has been recommended as the first consideration, and regularly offers consulting assistance to agencies faced with the decision to improve or add wide area network capabilities.

Montgomery County Public Schools represent a class of sites where FiberNet would provide broadband services for current and future demand at prices well below those available in the current market. The further forward one projects demand, the more cost competitive FiberNet becomes.

Staff Comment: Aggressive use of FiberNet could significantly reduce costs of buying commercial services for connecting sites of all departments and agencies. However, there is no explicit cost profile for providing internet, e-mail and other services to a given location; such an analysis should be encouraged across agencies, and the substitution of current contracts by FiberNet service be considered for implementation within the fiscal year.

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[2] Interagency Technology Policy and Coordination Committee Charter for the FiberNet Governance Group, adopted November 25, 2002 and signed by ITPCC Principals.

4. FiberNet Connectivity Requests

Beyond elementary schools, please list other departments, agencies or facilities that have requested connectivity to the FiberNet network.

Response:

The following entities have requested a connection to FiberNet in the last year:

- Montgomery County Government
  - Montgomery County Police
  - Montgomery County Fire & Rescue
  - Board of Elections
  - Montgomery County Sheriff's Office
  - Department of Transportation
  - Department of Economic Development
  - Regional Services Centers
- Montgomery County Public School System
- Housing Opportunities Commission
- Maryland-National Capital Park & Planning Commission
- Washington Suburban Sanitary Commission
- City of Rockville
- City of Gaithersburg
- City of Takoma Park
- American Film Institute, Silver Spring, MD
- State of Maryland
- Montgomery College

5. FiberNet SLA

Provide a management summary of how often the SLAs indicated on the January 3, 2005 document were not met in FY08 and FY09 to date, and what remediation mechanisms can help reduce such failures. If there is a document which differs from the January 3, 2005 SLA document describing user and provider responsibilities, please provide it and organize the response to this question according to this newer SLA framework.

Response:

FiberNet I

In FY08, FiberNet I was out of compliance with its Service Level Agreement regarding the backbone and public safety sites on four separate occasions. Each time the failure related to service availability within the FiberNet I central electronic equipment for public safety sites. Three times the central electronics failed to deliver communications (T1) circuits to Public Safety Radio System (PSRS) elements. There was also one fiber break that caused the loss of a PSRS 800 MgHz Tower, due to a rodent chewing through a fiber optic cable.

In FY09, FiberNet I was out of compliance with its Service Level Agreement regarding the core and public safety sites on five separate occasions. Four times the central electronics failed to deliver T1 circuits to PSRS elements. One time a power failure caused a core switch to drop, briefly interrupting services.

FiberNet I is currently experiencing stability challenges from a maintenance perspective. At this time, there are nine known problems with elements in the FiberNet infrastructure. FiberNet I continues to operate correctly, even in this degraded state. A multi-phased approach is being taken to remediate this situation. Migrating FiberNet I WAN sites to FiberNet II is part of the remediation process, along with a sequenced set of maintenance activities to resolve each of the known problems in turn.

FiberNet II
In FY08, FiberNet II was out of compliance with its Service Level Agreement regarding edge sites on one occasion. A communication card failed in a central device that needed to be replaced. The card was replaced within the prescribed response window.

In FY09, FiberNet II has not been out of compliance with the FiberNet Service Level Agreement regarding any services.

There are no other SLA documents.

Staff Comment: The referenced Service Level Agreement document is provided on ©4-15.

6. Chargeback Process
Provide the current chargeback process, and show the amount of costs for FiberNet maintenance that may be offset by applying such chargebacks to user agencies.

Response:
"Chargeback" is incorrect terminology, as there are no bills rendered to any organization or funds repaid to DTS by organizations to fund FiberNet maintenance. FiberNet operations and maintenance are funded by a negotiated amount specified in the Comcast Cable Franchise. This amount is indexed to the CPI and is obligated through the term of the franchise agreement ending in FY13. Reference Section 7(h) of the CTM/Comcast Franchise Agreement, June 1998.

The funding process was set up to ensure that there would be funding to provide ongoing operational support. The Policy Goal is to "provide fund reserves for the FiberNet network core replacement and major upgrades."[3]

Based on the original funding formula, the process is as follows:

- The cost per connected site per month is $75;
- The FiberNet Designated Fund is controlled by the Office of Management and Budget (OMB) and is valued at $2,440,000 for FY10;
- Before the beginning of each fiscal year, the FiberNet Project Manager provides to OMB the projected number of sites connected to FiberNet at the end of that fiscal year;
- Each fiscal year, OMB adds an amount equal to the projected number of sites on FiberNet time $75 times 12 months to the FiberNet Designated Fund.

[3] FiberNet Next Generation Chargeback Policy, Report to the Interagency Technology Policy and Coordination Committee, November 12, 2004, page 3.

Staff Comment: Under the severe economic climate that is expected, the Committee may want to explore the use of actual Chargeback fees, to user agencies, which provide maintenance and expansion revenue, relieve the Cable Plan from the responsibility of funding 100% of the FiberNet costs and provide a broader base of support. A transition plan can be developed and implemented in time for the FY11 budget.

7. Leased Line Costs

What is the total cost of leased lines outside of FiberNet in the recommended FY10 budget? Is that cost available by facility? By department and agency? Can there be an opportunity cost analysis done showing the incremental costs to convert to FiberNet and reduce the Operating Budget with the net savings? And what would the cost be of such a study?

Response:

The total cost for leased lines for the Montgomery County Government (MCG) is $743,000 per annum. For MCG, this cost is available at every level you have indicated. For many of these sites, the circuit is delivered to a leased site where the lengths of the lease or other conditions do not make placing fiber a feasible or economically viable option. For several sites, the circuit is used as a backup for voice or data services when FiberNet maintenance is performed.

Concerning an opportunity cost analysis, it is possible to analyze every subject MCG site and produce an analysis of the cost to place that site onto FiberNet. DTS considers transport options every time a new site is added to the County's wide area network. Currently, for broadband connectivity, DTS is evaluating the use of Comcast cable modems as a lower cost alternative to leased lines from the local exchange carrier. We believe this service will allow the County to significantly reduce the expense of leased lines.

In answering your last question, a detailed analysis of the County's sites using engineered cost estimates might cost $300,000. We estimate the same cost for the MCPS elementary schools.

DTS is unable to provide information on this topic for other participating agencies.

Reductions

The majority of the construction schedule for FY10 is taken up by wiring MCPS elementary schools (see page 5 of this memo for a listing of the sites under consideration). Since the discussion regarding options for wiring elementary schools is still under review by the Education and MFP Committees, it may be difficult this year to accomplish the construction target that was envisioned in the FY09-14 CIP. Since the Fibernet process is on-going and there is no explicit build-out schedule available before the fiscal year begins, estimating the impact of this delay is difficult, but could be a significant percentage this year.

As an example of the impact of the delay, if 60% of the construction was not undertaken in FY10, this would result in some $900,000 of savings. One option for the Committee to consider is either a reallocation of the construction funds for needed maintenance of existing plant or a return to the Cable Fund for reallocation to other purposes. At the same time, the CIOs of the agencies and MCG may want to review the historical foundation of FiberNet and ensure that the current build-out plan is in line with both technological and business models. The advent of public-private partnership models in many county governments as a way to fund, maintain and expand telecommunications infrastructure should be explored aggressively and with existing as well as new business partners of the County.

It is important to establish a project-wide budget, on both the revenue and expenditure sides. The multi-agency nature of the project makes this difficult, as is evident from the incomplete answers of DTS when asked about cost parameters of other agencies (see p.9), even though DTS is the overall lead for FiberNet management. Once the project financing and planning is organized across the County enterprise, additional budget considerations will be easier.

Recommendation

Staff recommends the adoption of the Executive's FY10 CIP FiberNet project as projected in the PDF shown in ©1. If the Committee feels that the ongoing dialog regarding Fibernet deployment between the Education and MFP Committees, as well as the discussion regarding telecommunications investments and technology choices in the Cable Fund, create sufficient reasons for more study, the construction cutback option noted above – resulting in $900,000 savings in FY10 – can be explored in more detail.

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Fibernet -- No. 509651

Category	General Government	Date Last Modified	June 03, 2008
Subcategory	Technology Services	Required Adequate Public Facility	No
Administering Agency	Technology Services	Relocation Impact	None.
Planning Area	Countywide	Status	On-going

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY07	Est. FY08	Total 6 Years	FY09	FY10	FY11	FY12	FY13	FY14	Beyond 6 Years
Planning, Design, and Supervision	2,645	818	427	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	9,740	1,701	300	50	50	50	50	50	50	0
Construction	8,978	41	1,377	7,560	1,260	1,260	1,260	1,260	1,260	1,260	0
Other	19,883	19,583	0	300	50	50	50	50	50	50	0
Total	**43,251**	**30,186**	**3,505**	**9,560**	**1,760**	**1,735**	**1,610**	**1,535**	**1,460**	**1,460**	**0**

FUNDING SCHEDULE ($000)

Contributions	73	73	0	0	0	0	0	0	0	0	0
G.O. Bonds	8,913	7,918	995	0	0	0	0	0	0	0	0
Cable TV	32,165	20,095	2,510	9,560	1,760	1,735	1,610	1,535	1,460	1,460	0
PAYGO	2,100	2,100	0	0	0	0	0	0	0	0	0
Total	**43,251**	**30,186**	**3,505**	**9,560**	**1,760**	**1,735**	**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

The increase is due to the inclusion of expenditures in FY13 and FY14 and increased contractor cost for laying fiber.

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.

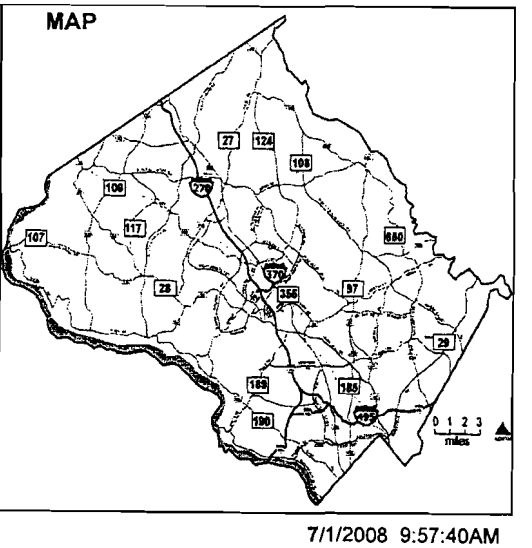
APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY96	($000)
First Cost Estimate Current Scope	FY07	39,231
Last FY's Cost Estimate		39,231
Appropriation Request	FY09	1,760
Appropriation Request Est.	FY10	1,735
Supplemental Appropriation Request		0
Transfer		0
Cumulative Appropriation		33,691
Expenditures / Encumbrances		31,296
Unencumbered Balance		2,395
Partial Closeout Thru	FY06	0
New Partial Closeout	FY07	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	Recommended FY10	% Chg From '09 Plan	FY11	FY12	FY13	FY14	FY15
BEGINNING FUND BALANCE	**3,345**	**2,502**	**3,949**	**2,069**	**-17.3%**	**911**	**767**	**490**	**514**	**467**
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 Contributian	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%**	**18,933**	**19,152**	**19,434**	**20,034**	**20,579**
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	700	-2.8%	721	743	745	788	811
Other Legal and Other Professional Svcs.	295	405	405	370	-8.6%	381	393	404	416	429
SUBTOTAL	**1,603**	**2,037**	**2,037**	**2,012**	**-1.2%**	**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	319	0.0%	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**	**948**	**15.9%**	**987**	**1,000**	**1,013**	**1,027**	**1,041**
Public Information Office										
Personnel Costs	290	349	349	581	66.5%	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**	**866**	**20.3%**	**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	124	0.0%	128	132	132	132	132
Webcasting	0	117	117	47	-59.8%	48	50	51	53	54
SUBTOTAL	**290**	**363**	**363**	**293**	**-19.3%**	**301**	**309**	**313**	**317**	**322**
SUBTOTAL	**2,325**	**2,522**	**2,522**	**2,725**	**8.0%**	**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	219	0.0%	247	255	262	270	278
SUBTOTAL	**1,219**	**1,322**	**1,322** [2]	**1,360**	**2.8%**	**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	244	0.0%	282	282	282	282	282
SUBTOTAL	**1,521**	**1,583**	**1,583** [3]	**1,629**	**2.9%**	**1,698**	**1,730**	**1,763**	**1,796**	**1,796**

FY10 CABLE COMMUNICATIONS PLAN ($000's)

	Actual FY08	Approved FY09	Estimated FY09	Recommended 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	771	-1.3%	856	890	890	926	925
SUBTOTAL	**2,534**	**2,652**	**2,652**	**2,642**	**-0.4%**	**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	1,453	17.9%	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]	1,735	-1.4%	1,610	1,535	1,460	1,460	1,460
SUBTOTAL	**3,017**	**3,236**	**3,236**	**3,432**	**6.1%**	**3,569**	**3,551**	**3,536**	**3,555**	**3,617**
TOTAL EXPENDITURES - PROGRAMS	**14,700**	**15,946**	**16,474**	**16,918**	**6.1%**	**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]	1,347	438.8%	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**	**1,724**	**-4.1%**	**321**	**310**	**292**	**292**	**342**
TOTAL EXPENDITURES	**14,941**	**17,744**	**18,272**	**18,642**	**5.1%**	**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**	**911**	**69.6%**	**767**	**490**	**514**	**467**	**567**
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)	(18,642)	5.1%	(18,166)	(18,661)	(18,920)	(19,567)	(20,012)
Annual Fund Surplus/Deficit (Rev - Expend)	**1,694**	**(1,965)**	**(1,230)**	**(1,158)**	-41.1%	**(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)**	**(1,158)**	**-41.1%**	**(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	1,360	2.8%	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	1,629	2.9%	1,698	1,730	1,763	1,796	1,796
[4]Transfer to CIP Fund	1,735	2,389	2,389	1,735	-27.4%	1,610	1,535	1,460	1,460	1,460
[5]Transfer to the General Fund-Other	0	250	250	1,347	438.8%	0	0	0	0	0
FUND TRANSFERS OUT SUBTOTAL	**4,677**	**5,824**	**5,824**	**6,409**	**10.0%**	**5,172**	**5,258**	**5,352**	**5,394**	**5,452**
Net CATV Fund Direct Expenditures	**8,928**	**10,663**	**10,663**	**10,382**	**-2.6%**	**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**	**12,233**	**2.6%**	**12,994**	**13,403**	**13,568**	**14,173**	**14,560**
TOTAL EXPENDITURES BY FUNDING SOURCE	**14,941**	**17,744**	**18,272**	**18,642**	**5.1%**	**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 included 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.

Printed on 11/6/2007

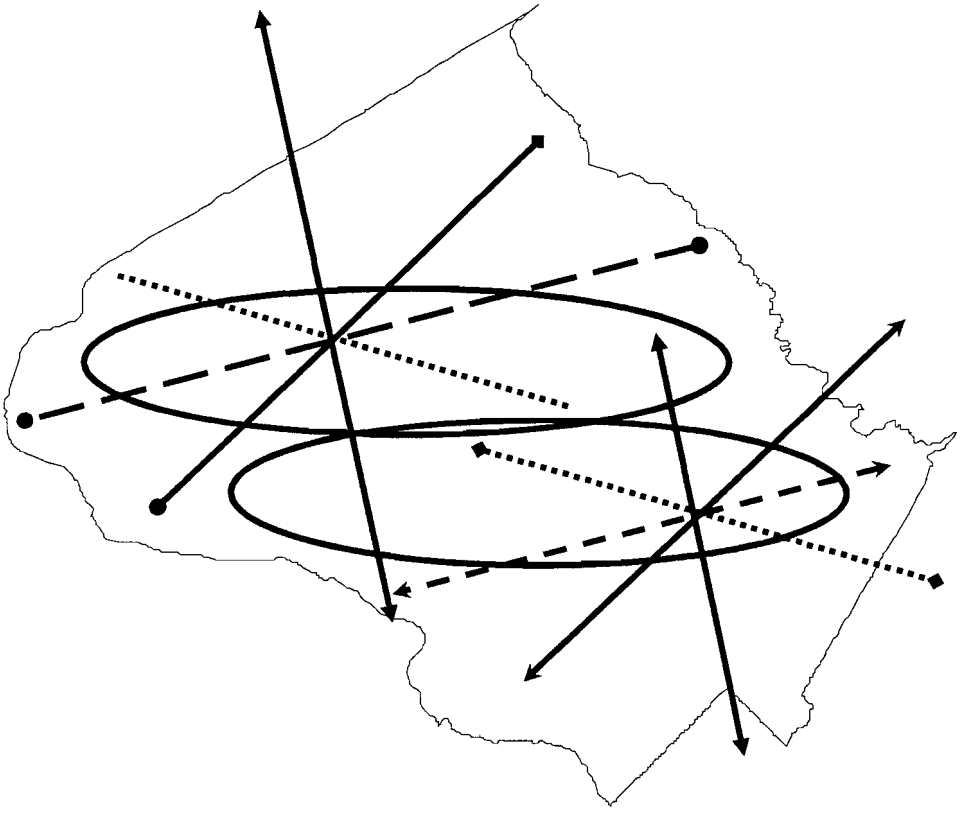
FiberNet

Service Level Agreement

For

Montgomery County Government Agencies
January 3, 2005

Montgomery County Government
Department of Technology Services
Enterprise Infrastructure Division
Network Services Group



1. Purpose

The purpose of the FiberNet Service Level Agreement (SLA) is to clearly identify services provided by FiberNet. Additionally, the SLA defines in measurable terms performance metrics and objectives that FiberNet will target for delivery to participating agency customers for these services. The FiberNet SLA is composed of this (1) document, (2) an executed memorandum of understanding (MOU) between the agency and FiberNet and (3) site specific schedules of SLA relevant information for each agency site. Appendix A is a detailed description of the services and service metrics targeted by FiberNet. The Agency/FiberNet MOU completes the FiberNet SLA by detailing the operational relationship between FiberNet and the agency. The MOU identifies individuals who may represent the agency, special agency service requirements, coordination protocols and other commitments made between the agency and FiberNet. The FiberNet SLA is further completed with the site specific SLA schedule which contains information that is necessary to support each specific agency site. An outline for the MOU and a sample Site Specific SLA are presented in Appendix B.

Performance objectives provided in this SLA can only be achieved if the FiberNet participating agencies meet all required functional specifications for their subscribed FiberNet services. Such functional specifications include relevant ITU-T, IEEE standards and Internet Activities Board RFCs adopted by FiberNet in its equipment choices.

2. Service Description

2.1 FiberNet.

The FiberNet is the Montgomery County edge-to-edge information transfer infrastructure. FiberNet provides the communications infrastructure and services needed to interconnect Montgomery County Agency telecommunications and data networking equipment. The FiberNet includes all hardware, software, optical, electro-optical and support services purchased, contracted and installed in support of this service infrastructure. A current list of all FiberNet services and assets may be requested from DTS/EID by contacting the EID, Network Services Manager or the FiberNet Project Manager.

The following sections describe the basic components of FiberNet.

2.2 ATM Core Network.

FiberNet's core network is composed of GDC (AHEAD) ATM switching equipment. The core network implements an ATM switching fabric operating at OC-3 speeds in the core and at the customer edge. The core backbone is implemented over a partially meshed backbone that implements three disparately routed links connecting almost every major hub location.

2.3 ATM Edge Network

FiberNet edge sites may be connected with either an ATM Integrated Access Device (IAD) or a router with an ATM uplink module. Most FiberNet sites are connected across an ATM OC-3 link to a nearby hub location. Circuit provisioning is performed on a site by site basis by the systems integrator. Virtual circuit type and specification for each site is specified in the site specific SLA Schedule.

2.4 Ethernet Edge Network

FiberNet edge sites may be connected by any of the following Ethernet standard encapsulations 10BaseT, FastEthernet and Gigabit Ethernet. Though FiberNet has the capability to attach sites with these encapsulations, in a peak load demand situation, FiberNet is unable to deliver sustained cell rates of more than three megabytes with its current infrastructure.

2.5 FiberNet Video Services

FiberNet supports several video encoder/decoder standards. These are MPEG2 and JPEG. These video formats may be run over ATM or IP. The responsibility for acquiring, deploying, configuring and operating such equipment is the responsibility of the participating agency. In the future FiberNet will support only TDM and Ethernet encapsulations.

2.6 TDM Carrier Services

FiberNet supports subrate and full rate TDM services for voice and data. Though not the preferred way of delivering such services, FiberNet will continue to support these services even as it considers moving to the next generation of FiberNet technology.

3. Format of this Document

The remainder of this document is divided into two appendices. Appendix A presents general operational details concerning the FiberNet SLA. Appendix B lays out a Participating Agency MOU outline and a site specific SLA form.

APPENDIX A: Basic SLA

1. DESCRIPTION.

The FiberNet Core and Access network provide LAN, Internet, video and telecommunications services for both low speed and high speed Montgomery County Agency customers. FiberNet has been engineered to support mission-critical public safety applications, eGovernment with Internet access requirements, as well as routine daily services such as e-mail, TDM carrier, video, mainframe, client/server and file transfer applications.

FiberNet is a *common-carrier-like* user network providing:

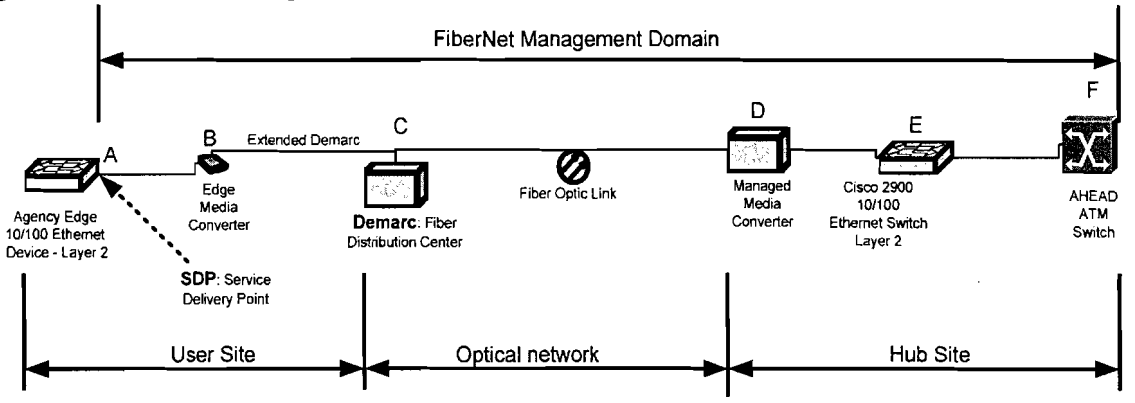
- Transport and routing of data between Montgomery County Agency local area, wide area, and metropolitan area networks.
- TDM carrier services
- A common access point to the Internet.
- Network operations and control of all FiberNet backbone assets.
- 24-hour Network Operations Centers (NOCs) in Annapolis, Md., which is available to the FiberNet user community to report problems
- Assistance with all FiberNet services. Requests for assistance should be directed to the FiberNet Project Manager. See Table 3.5 for information concerning points of contact.
- Performance monitoring and reporting on FiberNet to ensure that performance goals are met as specified in this agreement.

2. RESPONSIBILITY.

2.1 FiberNet Responsibility

MCG/DTS as the facility manager and asset custodian is responsible for the performance of all FiberNet backbone switches, routers, backbone fiber, ancillary equipment and facilities including lateral cable and customer access circuits and mediating electronics. For the purposes of this document the term FiberNet includes all assets, responsibilities and functions performed by the facility manager up to the ***service delivery point*** (SDP) reference Figure #1 Letter A. The SDP is that point at which the customer agency assumes operational responsibility for the delivered service. With respect to access circuits, FiberNet's responsibility extends up to the agency SDP and no further. Equipment may include Integrated Access Devices, media-converters, video codecs, switches as well as inline channel service unit/data service units (CSU/DSU) or modem(s). For the purpose of this document the demarcation point (demarc) connotes the delivery point for fiber optical cable into the site reference Figure #1 Letter C. Unless otherwise informed or arranged, FiberNet is responsible for extending the demarcation point to the agency SDP when the demarc is not proximate to the SDP. Please reference Figure #1 Letter B. FiberNet will be considered to own and operate all equipment with its Management Domain (Figure #1 A-F). Equipment past the SDP is considered to be owned and operated by the participating agency.

Figure #1 FiberNet Management Domain



FiberNet relies on several organizations for optical fiber installation and maintenance. These are MCG/Department of Public Works (DPWT), COMCAST and FiberGate. COMCAST and FiberGate are Montgomery County cable franchisees providing "in-kind" assets to the county for inclusion in the I-Net fiber plant. DPWT maintains the FiberNet backbone and most of the county feeder and drop cable connections. DPWT is committed to keeping the network up and operational on a best efforts basis. Their focus is related to the support of public safety particularly the county's traffic management system which uses the same optical cable plant as FiberNet. A similar statement may be made concerning COMCAST and FiberGate. Though cable breaks are rare, these happen and are disruptive. FiberNet's recent experience has been that cable repairs are made within twelve hours of their discovery. FiberNet has experienced outages of several weeks in the case of the AFI. Restoral of this path was complicated by major

near-site construction and the realization that the circuit was not in use plus the high probability of future damage as long as there was construction activity in the area.

2.2 County Participating Agency Responsibility

FiberNet agency sites are responsible for the operation and performance of all equipment and circuits within their user environment. This responsibility includes the customer premise equipment attaching at the FiberNet SDP.

2.2.1 Access and Availability

FiberNet measures and reports network availability statistics on a weekly basis. These statistics capture the percent of time services are available to the FiberNet user community. FiberNet's target availability for edge sites is roughly 99.99% based on the type of site. This is a very high availability measure and to reach it FiberNet has engineered network redundancy and process measures into the system to recover from faults quickly.

Site-access and site-availability are critical items within this SLA. Site-access refers to the FiberNet demarc and SDP location within a building, shelter or other location. It identifies who we contact and how we physically gain access to the demarc and SDP. Site-availability refers to the hours of the day during which a FiberNet field technician may gain access the site. The Site Specific SLA is specific as to directions to site location, escalated points of contact and special conditions that may pertain to a specific site, examples include working with security guards and custodial staff to gain access. Appendix B details the Site Specific SLA information required by FiberNet to provide and maintain services. This information must be furnished and it is the responsibility of the participating agency to inform FiberNet of changes as these occur.

Site access methods and availability times are important to each participating agency because these determine how and when FiberNet field technicians may gain access to a site to fix a problem. Site access methods and availability times ultimately determine the level of service FiberNet can deliver. For example, Montgomery County Police and Fire & Rescue sites are available on a 24x7 basis. Correspondingly site access and availability methods and procedures are documented, well known and reviewed for correctness by the FiberNet Program Manager. In our experience access to these facilities is managed by each participating agency differently. FiberNet technicians must know how to gain access to initiate site recovery. For example, site access and availability is specified in the Site Specific SLA for Fire & Rescue and their availability is based on a 24x7 window. Conversely, county libraries are closed on Sundays and are generally unavailable after 20:00 hours. Their availability is based on a less than 24x7 availability window. Therefore, faults that occur when a library is closed and unavailable to FiberNet field technicians do not count in that sites availability metric until the site becomes available to FiberNet field engineering.

2.2.2 Troubleshooting and Coordination

It is the responsibility of FiberNet and the Participating Agency (PA) to develop communication and troubleshooting protocols to manage faults when these occur. The FiberNet operational plan presents a model for discussing and resolving such incidents. Further specification of methods for accomplishing these tasks is developed on a case-by-case basis with the participating agency.

The FiberNet Memorandum of Understanding may be used to specify how troubleshooting and other forms of coordination will be performed.

2.3 Site Point of Contact

Agency point of contact (POC) information must be kept current. It is the responsibility of the participating agency to keep the FiberNet Project Manager apprised of changes in this information. Failure to do so may severely and adversely affect service availability for the participating agency. Failure to close a fault incident in a timely manner due to stale POC information does not adversely impact the calculation of FiberNet availability.

3. SERVICE LEVELS OBJECTIVES.

3.1 Network Delay and Packet Loss

The term delay is used to define the average round-trip transmission time between respective backbone customer access edge devices. The term packet loss is used as a way to measure the amount of data lost (if any) as it traverses the core of the network.

For the purpose of this SLA, delay and packet loss numbers are calculated by averaging five-minute sample measurements taken during a calendar month between FiberNet access edge devices in each FiberNet hub. Each sample contains 330-byte Internet Control Message Protocol (ICMP) packet. These are aggregated and averaged over the month to indicate round-trip-times within FiberNet. The processing of ICMP packets by device IP stacks is performed at a lower priority than end-user (customer) network traffic. Therefore, the measurements do not provide an absolute value, but are used as an indicator to monitor for deviations in the FiberNet backbone performance. Table #1 defines latency and packet loss objectives for FiberNet. This statistic is reported on a monthly basis.

Network Latency and Packet Loss		
Regional Area	**Delay (Milliseconds)**	**Objective Loss %**
FiberNet access edge-to-access edge	20	0.01

3.2 Service Availability

Service availability is a target FiberNet metric computed to indicate what percentage of time its services are operational for use by the agency site. Service availability is the ratio of available minutes during the service availability window to the total number of minutes within the window. The service availability window is the total number of minutes in a week that a site has designated as its operational window and is specified in the site specific SLA. FiberNet distinguishes between scheduled and unscheduled outages. Scheduled outages do not count against the service availability metric. Scheduled outages referred to as ***Authorized Service Interruptions*** (ASI) are managed by FiberNet in accordance with its Change Management Policy. FiberNet recognizes as service availability affecting events those faults and outages that are not scheduled within FiberNet change management process. Examples of these include equipment failure, optical cable breaks and human error. Excluded are outages caused by power failures or acts of nature. All other FiberNet faults affecting service availability will decrement the service availability metric.

3.2.1 FiberNet Backbone Availability

The FiberNet backbone service availability is not related to participating sites in any way. Rather it is based on the highly redundant and resilient engineering design implemented in building the FiberNet ATM Core. The FiberNet backbone operates on a 24x7 availability window and it is designed to operate a five nines of availability (99.999%).

3.2.2 FiberNet Site Availability

Service availability for FiberNet sites is based upon the service availability window specified in the Site Specific SLA. FiberNet has specified several site categories for computing service availability metrics. These are designed to recognize the different types of sites participating in FiberNet. Public safety sites receive priority treatment, after backbone sites, and are designed to achieve the highest level of availability. Other sites are targeted to achieve the availability metrics shown in the Service Availability table below.

Service Availability	
Service	**Availability (% of time)**
Backbone and Access Core	99.999
Customer Access:	
Public Safety Sites:	
Critical Systems	99.999
Non-critical systems	99.9
Non Public Safety Sites:	
24x7 Sites	99.9
Availability for these sites depends upon the reliability and power protection engineered into the client edge site. FiberNet does not provide UPS support for its participating agency edge site equipment. All FiberNet core equipment is protected by multiple power protection schemes to keep the hub operational.	99.70
Non 24x7 sites	99.50
*** FiberNet availability times are not affected by Authorized Service Interruptions (ASIs), customer equipment problems, acts of nature including power failures beyond the sizing of a FiberNet provided UPS, etc.**	
*** Under the normal change management process all authorized service interruptions (ASI) will be announced and cleared with the at-risk user community at least 14 days in advance of any scheduled maintenance that involves a FiberNet and to which a customer's circuit is connected. In some cases, however, an urgent ASI may be required and customers will be notified as far as possible in advance of any scheduled maintenance actions. Notice of scheduled maintenance will be provided to the Primary Point of Contact by the FiberNet Program Manager.**	

3.3 Service Restoration

Service restoration time indicates how quickly FiberNet expects to resolve and repair faults in the network. These metrics have been developed based upon FiberNet's experience with the current ATM based core and edge infrastructure. Restoral times are highly dependent upon site access and availability. The elements in the site specific SLA need to be complete, correct and current for each site to achieve its required level of service availability. It is the responsibility of the participating agency primary point of contact to keep this information current. The FiberNet Program Manager maintains this information. Please refer to the Point of Contact section shown below for this information. The following table shows for each type of site its target service restoral times. Many faults can be corrected by remotely accessing the equipment and clearing a problem from the operator's console. Service restoration times are designed to set the client's expectation when remote access to the site is required to fix the problem.

SERVICE RESTORATION TIMES	
Site Types	Target restoral times:
24 x 7 sites - where the problem is not optical fiber related	Minimum Time To Repair: 4 Hours Mean Time to Repair: 6 Hours Maximum Time to Repair: 8 Hours
Business work week sites restoral times are related to when the site is available for access by a FiberNet field service technician.	Target restoral time is within 8 hours from the time the fault is discovered. Problems that are correctable by remote action should be fixed remotely. If the facility is closed or otherwise inaccessible to FiberNet field services, the outage clock stops until the site is available.
<u>Fiber break restoral times are indeterminate for SLA purposes.</u> FiberNet relies on DPWT, COMCAST and FiberGate for dark fiber services. Each of these entities performs to a "best effort" standard which is not time specific.	**<u>Best effort</u>**

3.4 Circuit Provisioning

FiberNet engineering services performs circuit provisioning services on a scheduled basis. Requests for new circuits within the existing infrastructure are processed on a first in-first out basis. Emergency provisioning requests will be considered and if qualified for such processing will be completed within 24 hours. Such requests are limited to software configuration changes only. Component required provisioning requests are constrained by equipment availability. Such requests will be managed on a best-efforts basis. FiberNet will develop an estimated implement schedule for such requests and will inform the requestor of the estimate. Should the estimate meet the requestors need the circuit provisioning will be performed and the requestor will be kept informed of its progress.

Circuit Provisioning	
Service	**Days**
Emergency services – software configuration changes only	next business day
Non-emergency services – software configuration changes only	three business days
Equipment required provisioning	best efforts
Provisioning services include actions required to define a network path or in some basic way configure an existing service. **New circuits and services requiring newly installed equipment and pathing are perfomed on a best effort basis.**	

3.5 FiberNet Management Points of Contact

FiberNet	*Individual or Help Desk*	*Telephone*	*Email*
Systems Integrator			
FiberNet NOC	Network Management	**1-800-482-0004**	Call for fault alerting and problem status only all other concerns and questions should be directed to the FiberNet Project Manager.
Project Manager	Missy Owens	410-247-7724	**mowens@arinc.com**
DTS/EID Management			
FiberNet Project Manager	**Bob Lawrence**	**240-777-2992**	**bob.lawrence@montgomerycountymd.gov**
Manager, Network Services	John Castner	240-777-2964	**john.castner@montgomerycountymd.gov**
Chief, EID	Barbara Garrard	240-777-2977	**barbara.garrard@montgomerycountymd.gov**
EID/DTS/Network Services Group	DTS/EID		**#dts_EIDNetworkServices@montgomerycountymd.gov**

APPENDIX B:

Outline for FiberNet SLA Memorandum of Understanding

- Title: Agency Name and FiberNet Memorandum of Understanding
- Agency/FiberNet Purpose
- Authorized Agency Representative
- Special Operations Concepts and Considerations
  - Troubleshooting and Fault Resolution Procedures
  - Network Operations Center Integration and Services
  - Special considerations
- FiberNet Support
  - Chargeback commitment
  - Personnel sharing
- Authorized Individuals and Signatures
  - Agency
  - FiberNet

Appendix B (continued)

Site Specific SLA

Site Information

Site Name		Site #
Agency		
Address		

Point of Contact

Name	**Phone Number(s)**	**Email**	**Address**
Primary:			
Secondary:			

Service Matrix

Service Delivered	**Protocol**	**Service Delivery Point**	**Note**
Voice			
Video			
Data			

Service Availability Information

Site Access Method	**Site Availability Schedule**

Service Availability Window

check all that apply	**Day**	**Scheduled Hours of Operation**	**Daily Hours of Operation**
	24x7		**168**
	Sunday		
	Monday		
	Tuesday		
	Wednesday		
	Thursday		
	Friday		
	Saturday		
		Weekly Service Availability Window	

Appendix A:

FiberNet II Site Utilization by Interface Speed for March 2009

Speed (MGb/S)	Agency	Title	% Util
10	M-NCPPC	Cabin John HQ, 7400 TUCKERMAN L	4.00%
		Cabin John Ice Rink, 10610 WEST	2.00%
		Cabin John Indoor Tennis, 7801	1.00%
		Cabin John Maintenance Yard,770	2.00%
	M-NCPPC Average		2.25%
		20 Average	**2.25%**
20	HOC	HOC Data to Gaithersburg	3.00%
		HOC Data to Kensington	12.00%
		HOC Gaithersburg	0.12%
		HOC Internet VPN	23.00%
		HOC Kensington	20.00%
	HOC Average		11.62%
	MCPS	Argyle MS, 2400 Bel Pre Rd., Si	17.00%
		Benjamin Banneker MS, 14800 Per	35.00%
		Briggs Chaney MS, 1901 Rainbow	18.00%
		Cabin John MS, 10701 Gainsborou	22.00%
		Churchill HS, 11300 Gainsboroug	80.00%
		Col. E. Brooke Lee MS, 11800 Mo	20.00%
		Earle Wood MS, 14615 Bauer Dr.,	35.00%
		Eastern MS, 300 University Boul	25.00%
		Einstein HS 11135 Newport Mill	45.00%
		Farquhar MS, 16915 Batchellors	10.00%
		Forest Oaks, 651 Saybrooke Oaks	20.00%
		Gaithersburg MS, 2 Teachers Way,	10.00%
		Gaithersburg HS 314 South Frede	15.00%
		Herbert Hoover MS, 8810 Post Oa	12.00%
		John Poole MS, 17014 Tom Fox Av	10.00%
		Julius West MS 651 Great Falls	30.00%
		Kennedy HS 1901 Randolph Rd Sil	70.00%
		Lakelands MS, 1200 Main Street,	6.00%
		Loiderman MS, 12701 Goodhill Ro	20.00%
		Luxmanor ES 6201 Tildenlane Ro	5.00%
		Magruder HS, 5939 Muncaster Mil	75.00%
		MCPS Bethesda Chevy Chase HS, 4	50.00%
		MCPS Bethesda Maint Depot 10901	6.00%
		MCPS Blair HS, 51 University Bl	90.00%
		MCPS Blake HS, 300 Norwood Road	80.00%
		MCPS Food Services, 16644 Crabbs	10.00%
		MCPS Lincoln Center 580 North S	70.00%

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		MCPS Paint Brach, 14121 Old Col	90.00%
		MCPS Parkland MS, 4610 West Fra	35.00%
		MCPS Rocking Horse Center, 4910	6.10%
		MCPS Shady Grove Trans, 16651 C	60.00%
		MCPS Sligo MS, 1401 Dennis Aven	20.00%
		MCPS Spring Brook HS, 201 Valle	65.00%
		MCPS Spring Mill Center, 11721	12.00%
		MCPS Takoma Park MS, 7611 Piney	18.00%
		MCPS Thomas Pyle MS, 6311 Wilso	10.00%
		MCPS Walt Whitman HS, 7100 Whit	50.00%
		MCPS Walter Johnson HS, 6400 Ro	60.00%
		MCPS Westland MS, 5511 Massachu	10.00%
		Montgomery Village MS, 19300 Wa	5.00%
		Neelsville MS 11700 Neelsville	3.00%
		New Richard Montgomery HS 250 R	65.00%
		Newport Mills MS, 11311 Newport	15.00%
		North Bethesda MS, 8935 Bradmoo	12.00%
		Northwood HS 919 University Blv	53.00%
		Parks MS, 19200 Olney Mill Road	10.00%
		Poolesville MS, 17501 Willard R	45.00%
		Quince Orchard HS 15800 Quince	1.00%
		Redland MS, 6505 Muncaster Mill	25.00%
		Ridgeview Middle School, 16600	20.00%
		Robert Frost MS, 9201 Scott Dri	20.00%
		Rockville HS 2100 Baltimore Rd,	45.00%
		Sargent Shriver ES, 12518 Green	8.00%
		Sherwood HS, 300 Olney-Sandy Sp	75.00%
		Silver Spring Intl MS., 313 Way	25.00%
		Tilden Holding School 6300 Tild	8.00%
		Tilden MS, 11211 Old Georgetown	15.00%
		Weller Road ES 3301 Weller Rd.	5.00%
		Wheaton HS 12601 Dalewood Dr Si	90.00%
		White Oak MS, 12201 New Hampshi	25.00%
		Wootton HS 2100 Wootton Parkway	75.00%
	MCPS Average		31.86%
	M-NCPPC	Brookside Gardens, 1800 GLENALL	3.00%
		MRO Internet	10.00%
		MRO Intranet	40.00%
		Parkside, 9500 BRUNETT AVE., SI	14.00%
	M-NCPPC Average		16.75%
		20 Average	**29.58%**
100	HOC	HOC Data	3.00%
		HOC Lakeforest, 101 Lakeforest	1.00%
	HOC Average		2.00%
	MCG	Bethesda WiFi	5.00%
		DOT Lakeforest Transit Center(c	11.00%
	MCG Average		9.00%
	MCPS	Argyle MS, 2400 Bel Pre Rd., Si	8.00%

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		Earle Wood MS, 14615 Bauer Dr.,	5.00%
		Forest Oaks, 651 Saybrooke Oaks	3.00%
		Gaithersburg MS, 2 Teachers Way,	5.00%
		Gaithersburg HS 314 South Frede	15.00%
		Lakelands MS, 1200 Main Street,	4.00%
		MCPS Food Services, 16644 Crabs	5.00%
		MCPS Lincoln Center 580 North S	2.00%
		MCPS Shady Grove Trans, 16651 C	5.00%
		Quince Orchard HS 15800 Quince	11.00%
		Redland MS, 6505 Muncaster Mill	3.00%
		Ridgeview Middle School, 16600	3.00%
		Shady Grove MS, 8100 Mid-County	3.00%
	MCPS Average		5.54%
		100 Average	**5.72%**
500	MCPS	Cogent ISP at 51 Monroe	80.00%
	MCPS Average		80.00%
		500 Average	**80.00%**
1000	MCG	1300-QUINCE-ORCHARD	0.06%
		DLC Warehouse	0.22%
		Internet Router Hub D, G0/1	2.00%
		NCR backbone	10.00%
		ORCH_RIDGE CE	12.00%
		Shady Grove, 16641 CRABBS BRANC	0.20%
	MCG Average		4.08%
	Montgomery College	Montgomery College Calhoun Place	0.50%
		Montgomery College Germantown C	0.10%
		Montgomery College Rockville Ca	0.10%
		Montgomery College Takoma Park	0.00%
	Montgomery College Average		0.18%
		1000 Average	**2.52%**
10000	MCG	Recovery Point	0.01%
	MCG Average		0.01%
		10000 Average	**0.01%**

Appendix B:

Utilization statistics are not available for the sites on FiberNet I. These are mostly Montgomery County Government sites. These are presented in the following table:

FiberNet I sites as of March, 2009

Agency	Department	LOCATION NAME
HOC	HOC	101 Lakeforest Blvd- 1st quarter 2008
		HOC Lakeforest
		Scenery Drive
		Silver Spring Office
MCG	Court System	SILVER SPRING COURT HOUSE (STATE)
	DED	ROCKVILLE TECHNOLOGY INCUBATOR
	DLC	LIQUOR CONTROL WAREHOUSE
	DOCR	DETENTION CENTER (MCDC)
		MCCF - redundant link
		MONT. CO. CORRECTIONAL FACILITY (MCCF)
		PRE-RELEASE & Reentry Services
		PRE-RELEASE CENTER - WIRELESS TO NRC BUILDING
		PRE-TRIAL SERVICES
	DPL	ASPEN HILL LIBRARY
		BETHESDA REGIONAL LIBRARY
		CHEVY CHASE LIBRARY
		DAMASCUS LIBRARY
		DAVIS/SPECIAL NEEDS LIBRARY
		FAIRLAND LIBRARY
		GAITHERSBURG REGIONAL LIBRARY
		GERMANTOWN LIBRARY
		KENSINGTON PARK LIBRARY
		Library Book Receiving
		LITTLE FALLS LIBRARY
		LONG BRANCH LIBRARY
		NOYES CHILDRENS' LIBRARY
		OLNEY LIBRARY
		POOLESVILLE LIBRARY
		POTOMAC LIBRARY
		QUINCE ORCHARD LIBRARY
		ROCKVILLE REG LIBRARY/BUSINESS RESOURCE CENTER * MOVED *
		SILVER SPRING LIBRARY
		TWINBROOK LIBRARY
		WHEATON REGIONAL LIBRARY
		WHITE OAK LIBRARY
	DOT	COLESVILLE HIGHWAY SERVICE DEPOT
		DOT PARKING MAINTENANCE / MNCPPC
		EQUIPMENT MAINTENANCE OPERATIONS CENTER - BLDG 1

		FACILITIES & SERVICES - 101 ORCHARD RIDGE
		GAITHERSBURG MAINTENANCE DEPOT
		Garage #7, Silver Spring
		PARKING GARAGE #11
		PARKING OPERATIONS (PARKING GARAGE #61)
		SEVEN LOCKS FACILITIES AND SERVICES
		SEVEN LOCKS HIGHWAY SERVICES BLDG B/LAB
		SEVEN LOCKS REPAIR/MAINTENANCE SHOP
		SEVEN LOCKS TECH CENTER BLDG C
		SILVER SPRING SERVICE DEPOT - B
		SILVER SPRING SERVICE DEPOT - D
		SILVER SPRING SERVICE DEPOT - H
		Silver Sprint Meter Shop
		SWS TRANSFER FACILITY
		TRANSIT SERVICES - BLDG 2
		TRANSIT SERVICES - Customer Care Site #1
		TRANSIT SERVICES - Customer Care Site #2
		WSSC- Brink Rd -MD 27
		WSSC- Glenmont
	DTS	RADIO REPAIR SHOP
	Fire & Rescue Service	Dover Road Logistical Center (need to get landlord's permission to enter the bldg.)
		FIRE INVESTIGATORS - FIRE and EXPLOSIVES
		FIRE STATION 1
		FS 35 CLARKSBURG
		STATION 6 - BETHESDA
		STATION 8 - WASH GROVE
		STATION 1 - SILVER SPRING
		STATION 10 - CABIN JOHN
		STATION 11 - GLEN ECHO
		STATION 12 - HILLANDALE
		STATION 13 - DAMASCUS
		STATION 14 - UPPER MONTGOMERY
		STATION 15 - BURTONSVILLE
		STATION 16 - SILVER SPRING
		STATION 17 - LAYTONSVILLE
		STATION 18 - KENSINGTON
		STATION 19 - SILVER SPRING
		STATION 2 - TAKOMA PARK
		STATION 20 - BETHESDA
		STATION 21 - KENSINGTON
		STATION 23 - ROCKVILLE
		STATION 24 - HILLANDALE
		STATION 25 - KENSINGTON
		STATION 26 - BETHESDA
		STATION 28 - GAITHERSBURG/WASHINGTON GROVE
		STATION 29 - GERMANTOWN
		STATION 3 - ROCKVILLE
		STATION 30 - CABIN JOHN

		STATION 31 - ROCKVILLE (USAR)
		STATION 33 - ROCKVILLE
		STATION 4 - SANDY SPRING
		STATION 40 - SANDY SPRING
		STATION 5 - KENSINGTON
		STATION 7 - CHEVY CHASE
		STATION 9 - HYATTSTOWN
		STATION R1 - BETHESDA/CHEVY CHASE RESCUE SQUAD
		STATION R2 - WHEATON RESCUE SQUAD
	HHS	401 HUNGERFORD - WIRELESS BACK-UP
		DENNIS AVENUE HEALTH CENTER
		ELECTIONS SUPERVISOR
		GERMANTOWN HEALTH SERVICES
		HHS - 1301 PICCARD DRIVE
		HHS - 1335 PICCARD DRIVE
		HHS 7-1 Metropolitan
		HHS CAMPUS LOCATION
		HHS- New Hampshire Ave
		HHS OFFICES BUILDING
		JUVENILE ASSESSMENT CENTER (JAC)
		SILVER SPRING GOVERNMENT CENTER
		SILVER SPRING HEALTH CENTER
	Municipality	Chevy Chase Village Town Hall
		CITY OF GAITHERSBURG
		TAKOMA PARK CITY HALL
	Other	AFI SILVER THEATER
		Black Rock Arts Center
		NET.WORK.MARYLAND
		Silver Spring WiFi
		STRATHMORE ARTS CENTER
	Police Dept	BETHESDA POLICE STATION
		DISTRICT #6 POLICE STATION
		GERMANTOWN POLICE STATION
		POLICE EVIDENCE WAREHOUSE
		POLICE HEADQUARTERS
		ROCKVILLE POLICE STATION
		SILVER SPRING POLICE STATION
		SPECIAL INVESTIGATIVE DIVISION
		SPECIAL OPERATIONS DIVISION
		WHEATON /GLENMONT POLICE STATION
	Public Safety	APSCC/AECC - DATA CONTROL
		BERKSHIRE TOWERS BLDG A
		GERMANTOWN - TOWER/LOOP
		HAMPSHIRE GREEN
		KENWOOD G&CC - TOWER
		NRC - ROCKVILLE PIKE (WHITE FLINT)
		PSCC (aka new ECC)
		QUINCE ORCHARD - TOWER/LOOP

		SEVEN LOCKS, DIVISION FACILITY SERVICES
		SHADY GROVE - VOICE CONTROL
		TAKOMA PARK (PEPCO) - TOWER
	Public Safety Training	OBSERVATION DRIVE TRAINING FACILITY
		PUBLIC SAFETY TRAINING ACADEMY
	Recreation	Potomac Community Center- 1st quarter 2008
		Bauer Dr Community Center- 1st quarter 2008
		Damascus Community Rec Center
		Damascus Senior Center
		Fairland Rec Center
		Germantown Indoor Swim Center
		Germantown Rec Center
		Germantown REC Upper County ADMIN Offices
		Gilchrist Center
		HOLIDAY PARK SENIOR CENTER
		Plum Gar Rec Center
		RECREATION DEPARTMENT HEADQUARTERS
	Regional Service Center	BETHESDA/CHEVY CHASE REGIONAL SERVICE CENTER
		MIDCOUNTY GOVERNMENT CENTER
		UPCOUNTY GOV. SERVICE CENTER
M-NCPPC	Park	M-NCPPC - Cabin John Head Quarters
		M-NCPPC - Cabin John Ice Rink
		M-NCPPC - Cabin John Indoor Tennis Complex
		M-NCPPC - Cabin John Maintenance Yard

Appendix C:
ProForma FiberNet Cost Benefit Scoring Model

The FiberNet Cost Benefit Scoring Model is used to determine whether or not a participating agency site will be considered for connectivity to FiberNet. The purpose of the model is to identify candidate sites and then rank them relative to each other. Once the ranking is performed, other non-quantitative factors may enter into the decision making process.

The model is divided into three distinct sections.

Section #1
The first section is composed of lines 1 through 21. The participating agency is required to complete this part of the form. It contains basic information about the site, including the number of persons working at the site and the number of clients served. Additionally, the agency is asked to project current and future bandwidth requirements.

Section #2
The second section is composed of lines 22 through 26. The participating agency is asked to identify an alternate bandwidth solution and its price. The alternate solution will be compared to the cost to place the site on FiberNet in Section #3.

Section #3
The third section is composed of lines 27 through 34. Scoring of the site is performed in this section. If the cost to place the site onto FiberNet is less than the cost to purchase services from the private sector, then the site is a candidate site for the relevant fiscal year. The next step is to create a score for the site. The cost to place the site onto FiberNet divided by the number of agency staff plus served clients. The quotient becomes the score for the site. Lower valued scores are preferred over higher valued scores.

FiberNet Cost Benefit Model and Priority Score Calculations

1	**Requestor Information:**		Agency Supplied Information
2	Requesting Agency	MCG/DPWT	
3	Department (if applicable)	RideOn	
4	Requestor Name	Jason Galey	
5	Requestor Title	RideOn Operations	
6	Requestor Contact Numbers		
7	Requestor eMail		
8	**FiberNet Cost Benefit Model Parameters**		
9	Is the building owned or leased?	leased	
10	If leased, how long is the property expected to be held in years?	10	
11	What are the projected bandwidth requirements:		
12	This Date	1.54 Mgb/sec	
13	Five Years from This Date	4.5 Mgb/sec	
14	Special Considerations: Cost estimate is for 10 years of Verizon TLS service		
15	Service Location	4925 Nicholson Lane, Rockville Md.	
16	Desired production date	29-Jul-07	
17	**FiberNet Priority Scoring Model Parameters**		
18	What is the number of:		
19	Agency Staff working in the Site	20	
20	Clients or others using the Site	0	
21	Total Served Population	20	
22	10 year Life Cycle Cost of services from third party other than FiberNet:		May be provided by Agency if they have a cost estimate.
23	Other		
24	Comcast		
25	Verizon	$93,600	
26	Total 3rd Part Cost Estimate	$93,600	
27	**Calculation FiberNet Priority Score**		FiberNet Performed Calculations
28	FiberNet Cost Estimate	$107,000	
29	3rd Party Cost Estimate (Line 26)	$93,600	
30	If FiberNet Cost Estimate <= 3rd Party Cost Estimate then FNCBM = 1; otherwise FNCBM = 0	**FALSE**	
31			
32	**Compute FiberNet Cost/(Staff+Clients)=**	**5350**	
33	**FiberNetCBM Score (Line 30) (TRUE=1;FALSE=0)**	**FALSE**	
34	**FiberNet Priority Score = Line 32 * Line 33**	**0**	

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