

GO Committee #4  
February 24, 2014

Worksession

MEMORANDUM

February 20, 2014

TO: Government Operations and Fiscal Policy Committee

FROM: Dr. Costis Toregas, Council IT Adviser 

SUBJECT: Capital Improvements Program - FiberNet

The following are expected to attend:

Sonny Segal, Chief Information Officer, Department of Technology Services  
Dieter Klinger, Chief Operating Officer, Department of Technology Services  
John Castner, FiberNet Project Manager, DTS  
Ivan Gallic, Acting Cable and Communications Administrator, DTS  
Gary Thomas, ITPCC Staff  
Dennis Hetman, Office of Management and Budget

**Summary of Staff Recommendations:**

1. **Agree** with the Executive's recommendation of \$4,242,000 for the FiberNet program.
2. **Review** the Service Level Agreement framework to be provided so that the mechanism through which scarce resources are allocated to the multiple users of FiberNet to meet growing needs is understood.
3. **Review** and **discuss** the many benefits and current and future uses of FiberNet so that the rationale and unique contribution of this shared asset is understood and supported by policy makers in all agencies.

**Background**

FiberNet provides broadband connectivity amongst hundreds of user sites for Montgomery County Government, Montgomery County Public Schools, Montgomery College, the Maryland-National Capital Park and Planning Commission, the Housing Opportunities Commission, and the Washington Suburban Sanitary Commission. Beyond voice, data, and video transmission between civilian agencies, FiberNet is also the communications backbone for the Public Safety Radio and Mobile Data Systems, thus being an important link in the County's emergency communications system.

**CIP Request**

© 1-2 are the Executive’s request for the FiberNet program in the FY15-20 CIP. In order to provide context for the Committee deliberations, Council staff asked several questions; Executive branch answers follow.

1. *Provide a graphic representation of FiberNet sites, and summary of current and planned benefits of FiberNet.*

**DTS is developing an online interactive map on dataMontgomery and will be able to give a demonstration of a preliminary version at the GO session.**

Council staff comment: The answer to the important question of benefits will help further the appreciation of FiberNet and help solidify its financial support; DTS should be prepared to provide a listing and presentation during the Committee worksession in order for the Committee to have an outcomes-based, rather than a required-inputs, discussion on this important budget item.

2. *There is an unencumbered balance of \$4.172m; in addition to the requested \$4.242m, this would require an aggressive spending pattern for 2015 well higher than previous years; please explain any major construction or purchasing programs that would absorb such a level of resources in a single year.*

**Major projects currently planned and underway are the following:**

<b>FY14</b>	<b>ATMS Camera Additions</b>	<b>\$500,000</b>
	<b>FiberNet Hub retermination project (5 hubs FY14)</b>	<b>\$1,300,000</b>
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	<b>Plant Relocate Projects</b>	<b>\$175,000</b>
<b>FY15 Total</b>		<b>\$4,240,000</b>

Council staff comment: DTS should be prepared to provide detail on these projects during the worksession. The current format of the CIP submission and the table above do not provide an adequate level of definition for these requirements.

3. *Given the ARRA additions, the need for Hub Integration and a configured NOC has been discussed. Please provide summaries for these two efforts and link them to the requested fund allocations.*

**Five hubs are targeted for reconfiguration during FY14. FY14 hub reconfiguration tasks include the following Hubs A, B, C, H and J. Of these five, A, C and H currently are in the planning, design and logistical phases of the project. Hubs B and J will follow along after these. The funding for the hub reconfigurations is split between fiscal years 2014 and 2015. The amount in each year is \$1.14 million. As a consequence of SmartGrowth, FiberNet will incur an unplanned for expense in the relocation of our Crabbs Branch Hub in the amount of \$160,000 in FY14.**

**To leverage existing County resources and minimize overall costs, DTS initiated a discussion with the Department of Transportation's Traffic Management Center (TMC) to establish a FiberNet NOC in the TMC. There is agreement in concept between the TMC and FiberNet to locate a FiberNet Network Management System console and competent staff within the TMC to provide 24x7 coverage of FiberNet.**

**Comprehensive plans, memorandum of understanding, and specific staffing resources are still do be determined and finalized. In addition, once the details are confirmed, operational funding will need to be identified and budgeted. TMC and FiberNet staff work very closely together already, this effort when implemented will create a joint operations management framework in support of FiberNet.**

4. *Provide a sample SLA framework and a status update for SLA deployments to current and future FiberNet users.*

**The SLA document is in draft format and will be sent to ITPCC members shortly for review and approval. This document may be made available if requested. In the meantime, Network Services and DoT continue to support FiberNet's participating agencies on a best effort basis.**

Council staff comment: Understanding the press of resources, getting beyond a best-effort basis is a requirement heard from user agencies. The Committee would appreciate a copy of the draft SLA so their budget decision on the overall CIP request is made with appropriate knowledge.

5. *Were there any shifts from outsourced external telecommunications services to FiberNet provision in 2014? Are there any planned in 2015 and 2016? And what is the level of cost savings for such shifts by agency?*

**Question is under review by participating agencies at this time.**

Council staff comment: Please provide update during the worksession.

### **Additional suggestions for leveraging FiberNet**

In the April 2013 Committee discussions of the Executive's supplemental request for FiberNet, two suggestions were made by Council staff and discussed by the Committee. One dealt with using FiberNet as a major economic development driver, and the other with deploying governmentally-provided Wi-Fi zones to the County's underserved areas for broadband:

Many jurisdictions are not in the advantageous position the County is in (with a fully paid-up high speed broadband system that crisscrosses the County). This can form the foundation of a competitive advantage in the economic development race and give the County a way to both attract and retain major employers and hi-tech firms. FiberNet is currently considered a government-only network, but there are ways to view the connectivity in a broader light. In addition, through public/private partnerships, it is possible to go beyond the governmental mandate and consider offering a broadband support mechanism for a variety of end uses. Eventually, ecosystems of companies and their employees could locate and thrive in the County, driven by the major investment already made in FiberNet.

In addition, FiberNet by definition is present in most, if not all, the developed areas of the County. It is possible to consider its use as a feeder system for public space Wi-Fi that could again boost economic development and the tourism industry and have other salutary effects on residents, visitors, and businesses alike. Many cities have used fiber networks to build out entire Wi-Fi mesh networks that allow users to have connectivity for governmental service delivery and other purposes. Corpus Christi, TX recently deployed such a system over their entire 150 square mile area, and at a cost below \$5m, providing a challenging, efficient, and effective strategy for growth. The County should be more aggressive in expecting results from FiberNet investments well beyond the technological achievements (which themselves are impressive).

Although not explicitly mentioned in the CIP submission this year, these are both important initiatives that merit support and implementation consideration.

# Fibernet (P509651)

Category General Government  
 Sub Category Technology Services  
 Administering Agency Technology Services (AAGE05)  
 Planning Area Countywide

Date Last Modified 12/23/13  
 Required Adequate Public Facility No  
 Relocation Impact None  
 Status Ongoing

	Total	Thru FY13	Est FY14	Total 6 Years	FY 15	FY 16	FY 17	FY 18	FY 19	FY 20	Beyond 6 Yrs
<b>EXPENDITURE SCHEDULE (\$000s)</b>											
Planning, Design and Supervision	3,046	3,026	20	0	0	0	0	0	0	0	0
Land	4	4	0	0	0	0	0	0	0	0	0
Site Improvements and Utilities	13,041	12,691	175	175	175	0	0	0	0	0	0
Construction	19,868	3,984	3,877	12,007	3,965	2,375	2,345	1,322	1,000	1,000	0
Other	25,098	21,273	100	3,725	102	1,723	1,600	100	100	100	0
<b>Total</b>	<b>61,057</b>	<b>40,978</b>	<b>4,172</b>	<b>15,907</b>	<b>4,242</b>	<b>4,098</b>	<b>3,945</b>	<b>1,422</b>	<b>1,100</b>	<b>1,100</b>	<b>0</b>

	Total	Thru FY13	Est FY14	Total 6 Years	FY 15	FY 16	FY 17	FY 18	FY 19	FY 20	Beyond 6 Yrs
<b>FUNDING SCHEDULE (\$000s)</b>											
Cable TV	49,221	29,892	3,916	15,413	3,748	4,098	3,945	1,422	1,100	1,100	0
Contributions	86	86	0	0	0	0	0	0	0	0	0
Current Revenue: General	750	0	256	494	494	0	0	0	0	0	0
G.O. Bonds	4,074	4,074	0	0	0	0	0	0	0	0	0
PAYGO	6,926	6,926	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>61,057</b>	<b>40,978</b>	<b>4,172</b>	<b>15,907</b>	<b>4,242</b>	<b>4,098</b>	<b>3,945</b>	<b>1,422</b>	<b>1,100</b>	<b>1,100</b>	<b>0</b>

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<b>OPERATING BUDGET IMPACT (\$000s)</b>											
Maintenance				864	580	27	37	62	70	88	
<b>Net Impact</b>				<b>864</b>	<b>580</b>	<b>27</b>	<b>37</b>	<b>62</b>	<b>70</b>	<b>88</b>	

### APPROPRIATION AND EXPENDITURE DATA (000s)

Appropriation Request	FY 15	4,242
Appropriation Request Est.	FY 16	4,098
Supplemental Appropriation Request		0
Transfer		0
Cumulative Appropriation		45,150
Expenditure / Encumbrances		40,978
Unencumbered Balance		4,172

Date First Appropriation	FY 96
First Cost Estimate	
Current Scope	FY 15 61,057
Last FY's Cost Estimate	58,967

### Description

This project provides for the planning, design, and installation of a County wide fiber optic cable-based communication network with the capacity to support voice, public-safety, traffic management, data, Internet access, wireless networking 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 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, Public Safety Communications System 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 throughout the service life.

### Capacity

FiberNet II is a state-of-the-art multiservice wide area network (WAN) platform with the capacity to deliver 100 megabit/second, one and ten gigbit per second WAN links to ITPCC participating agencies. These links make possible thousands of Internet sessions, data transfers, voice calls and most importantly critical Montgomery County Government public safety, traffic management and resident facing services.

### Estimated Schedule

At the end of FY13, FiberNet reached 340 locations. Based on the current funding schedule, FiberNet is scheduled to reach 467 locations by the end of FY14; 487 locations by the end of FY15; 507 locations by the end of FY16; and 523 locations by the end of FY17. Today, the Traffic Management network reaches over 200 traffic cameras and 830 traffic signals with plans to add 200 pedestrian safety beacons. By the end of FY17, FiberNet is expected to have a total of more than 1,750 sites on the network serving a wide variety of facilities from pedestrian beacons to major campus networks or building complexes.

### Cost Change

Cost increases will fund a study to determine FiberNet's next generation of technology (\$123,000 in FY16), cover foreseen cost overages in current construction of approximately 60 CIP sites (\$200,000 in FY16, \$170,000 in FY17), and fund level of effort system maintenance FY19 & FY20 (\$1,100,000 each year). These cost increases are partially offset by FY18 cost savings of approximately \$603,000 attributable to having FiberNet reach its nominally terminal network size.

### Justification

## Fibernet (P509651)

FiberNet is a critical infrastructure asset serving every agency in Montgomery County. As of June 30, 2013, 340 sites are on-net and receiving critical services over FiberNet. In FY07, the Department of Technology Services (DTS) completed the re-engineering of FiberNet (now referred to as FiberNet II) to directly support high speed connections. This provides a core network that is technologically more robust and less expensive to operate on a per-site basis than any commercial service or its predecessor FiberNet I. The Interagency Technology Policy Coordination Committee (ITPCC) focus remains to be completing the MCPS and HOC sites targeted in the ARRA grant, performing hubsite upgrades, adding new sites and constructing inter-jurisdictional connections to enable cost-effective future technology partnerships. MCG, MCPS, MC, M-NCPPC, HOC and WSSC require substantially increased communication services and bandwidth in order to deliver services to their clients, students and staff. As locations are connected to FiberNet, the County will be able to provide communications services to those facilities more cost-effectively by using FiberNet than by using leased telecommunications services. 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, June 2002; FiberNet Strategic Direction, Interagency Telecommunications Advisory Group (ITAG), Nov 2003; and the FiberNet service level agreement, Jan 2005.

### **Other**

DTS is responsible for project management, network operations, and maintenance of electronics, while the Department of Transportation (DOT) is responsible for installation and maintenance of the fiber optic cable. Comcast, at DTS's direction, provides dark fiber used to connect several locations to FiberNet. On-net sites include MCG departments/offices, public safety sites, Montgomery College campuses, MCPS elementary, middle, and high schools plus several administrative facilities, M-NCPPC sites, HOC sites and WSSC sites including the headquarters building in Prince Georges County. The municipalities of Takoma Park, Gaithersburg and Rockville are on FiberNet as well as several cultural centers including the American Film Institute (AFI), the Fillmore, Strathmore, Bethesda Performing Arts, the Convention Center, Olney Theatre, and Black Rock. Currently FiberNet is focused on completing the ARRA Grant-funded sites, which includes the remaining MCPS elementary schools and 21 HOC properties. Funding for these projects is included in the FY15-FY20 CIP. In June 2012, the ITPCC approved a Policy Guideline for Special Allocation of FiberNet Resources. This proposed policy governs special fiber resource allocation decisions for FiberNet for all participating ITPCC agencies. ITPCC has approved a special allocation request by Montgomery College for creation of a College Fiber Network that would permit MC communications traffic to be routed over dedicated optical fibers within FiberNet's physical plant on electronics owned and operated by the College. In December 2012, the County and MC entered into a separate Memorandum of Understanding (MOU) to address the use and expansion of FiberNet by the College. Agency FiberNet MOUs and Service Level Agreements (SLAs) will be updated and revised as needed to reflect the ongoing FiberNet operating network.

### **Fiscal Note**

The ARRA Grant terminated on August 31, 2013. This grant represented a tremendous cost savings to Montgomery County. The County has received the benefit of over \$11.1 million dollars in fiber construction and networking equipment for a matching contribution of \$2.6 million. The matching contribution was funded as part of the FY12 and FY13 FiberNet CIP and was composed of cash and in-kind matches. FiberNet maintenance is supported by a grant contained in the Comcast franchise agreement, one of the County's cable service providers. The original grant amount of \$1.2 million/yr is increased by the CPI each year. In the renewed Comcast franchise, the County expects to receive operating support and franchise fee revenues which can be used to support FiberNet maintenance and operations. Capital support received from the Verizon and RCN franchises can be used to support construction of FiberNet through the FiberNet CIP. In FY14 Current Revenue General funding was shifted from the Information Technology: College (P856509) project to complete FiberNet expansion to College sites in accordance with the terms of the MOU.

### **Coordination**

DTS, Department of Transportation, Advanced Transportation Management System Project, Montgomery County Public Schools, M-NCPPC, MC, HOC, WSSC, Comcast, Public Safety Radio System, Information Technology Policy Coordination Committee (ITPCC), ITPCC CIO Subcommittee, Interagency Technology Advisory Group (ITAG), CIO Howard County, Inter-County Broadband Network Program Office

FY15 Fibernet CIP Council Staff Questions

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