

Worksession

**MEMORANDUM**

February 10, 2020

TO: Government Operations and Fiscal Policy Committee  
FROM: Dr. Costis Toregas, Council IT Adviser  
SUBJECT: Capital Improvements Program – FiberNet (P509651)

The following are expected to attend:

Gail Roper, Chief Information Officer, Department of Technology Services (DTS)  
Joe Webster, Chief Broadband Officer, DTS  
Mitsuko Herrera, ultraMontgomery Program Director, DTS  
Alison Dollar, Office of Management and Budget (OMB)

**Staff Recommendation:**

1. **Request** that OMB provide a pathway that reduces the dependence of FiberNet (a project on which many departments and agencies depend as a mission-critical asset) on Cable Plan revenues and develops a broader base of revenues. A preliminary draft with options and an Executive recommendation should be submitted by Fall 2020.
2. **Explore** source of funds for FY21 and FY22 expenditures as it appears that the current proposal does not draw down from the Unencumbered balance but requires new revenues from the Cable plan.
3. **Endorse** the Executive's recommendation of **\$6,152,000** for the FiberNet program in FY21 and recommend its full funding to the Council.

**Summary**

FiberNet CIP provides for the planning, design, and installation of a Countywide electro-optical fiber communications network with the capacity to support voice, public safety, traffic management, data, Internet access, wireless networking (including public WiFi), 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. Video transmission includes distribution of public, education, government access channel and selected

cable programming. FiberNet is the communications backbone for the Public Safety Radio and Technology Services Public Safety Mobile Data Systems (collectively, Public Safety Communications System (PSCS)), DOT's Advanced Traffic Management System (ATMS), and other technology implementations (including 800 MHz IP public safety radio).

Based on the current funding schedule, FiberNet is scheduled to reach 526 locations by the end of FY20. The Traffic Management network reaches over 220 traffic cameras and 880 traffic signals, and backup power to keep traffic signal operations during large-scale power outages has been added at 428 traffic signals. By the end of FY22—and including sites connected by private carriers and institutional partners—FiberNet is expected to have a total of more than 1,845 sites on the network serving a tremendous variety of facilities from pedestrian beacons to public schools to fire stations to wine and liquor stores, to major campus networks and large multi-story office buildings.

The primary focus of the FY21-22 CIP will be to upgrade edge and core equipment to expand capacity within FiberNet and to edge locations, upgrade hub-site HVAC and back-up power supplies, to leverage inter-jurisdictional connections and Ashburn data center connections, and to enable cost-effective future technology public-private partnerships with major research and educational institutions, regional broadband service providers, and large employers.

## **Background**

There are three “families” of FiberNet infrastructure that have been created over the years at a cost that is estimated at \$90 million:

FiberNet I is a legacy network still used to support specific public safety and traffic communications, with a plan to phase out at or prior to completion of the Public Safety System Modernization (PSSM) project. The PSSM system is in the final stages of implementation and should be completed by FY21.

FiberNet II is being used to support all County communications services, including MC311, e-mail, Internet and local cable channel video. The technology is based on Multiprotocol Label Switching (MPLS) technologies and is a state-of-the-art multiservice wide area network (Metropolitan WAN) platform with the capacity to deliver 100 megabit/second, one and ten gigabit per second WAN links to Interagency Technology Policy and Coordination Committee (ITPCC) participating agencies.

FiberNet III is in the pilot and planning phase. When implemented, FiberNet III equipment will allow faster, higher capacity, more reliable means of optical networking. FiberNet III planning anticipates significantly increased bandwidth requirements necessitating implementation of dense wave division multiplexing (DWDM) that enables multiple 10 gigabit channels per fiber strand, dramatically increasing utilization of fiber assets. DWDM solutions are currently being piloted for Montgomery College, WSSC, and Montgomery County E911 requirements. Selected FiberNet Hub sites are also being equipped with DWDM capabilities in response to the emerging needs of the participating agencies.

FiberNet's outside physical plant has a practically unlimited useful life. Upgrades and replacements to electronic components in the core and at user sites will be required periodically throughout the service life. Each generation of FiberNet electronic components has an estimated useful life of at least 10 years. Using optical technology, all three generations of FiberNet can be run on the same outside physical plant.

FiberNet reaches more than 580 locations with broadband capacity and is overseen by the CIOs of all major agencies operating as the CIO subcommittee of the ITPCC. New technologies such as DWDM have been introduced to improve the effectiveness of the system and derive more usefulness from the same physical plant.

FiberNet is fully funded through Cable Fund revenues, and the FY21 request is \$6,152,000 (©1-3). There are additional amounts for the FY21 FiberNet program relating to operational requirements, both within DTS and DOT budgets; these will be reviewed in the Operating Budget request that will be delivered to the Council on March 15, 2020.

The ITPCC includes FiberNet in its work program; ITPCC chair Andrew Kleine gave a report on the status of this important asset at the GO Committee worksession on March 25, 2019.

**CIP Request**

The Executive’s request for the FiberNet program in the FY21-26 CIP is on © 1-3.

The following table reflects the financial allocations being made to the FiberNet program in FY21-26. The allocations proposed as part of the FY19-24 CIP program are also given, to enable a direct comparison of changes to the program requirements over time. In addition, the estimated expenditure of \$4.3 million in FY20 is shown to compare it against planned expenditures in the FY19-24 plan of \$3.7 million.

	<b>FY19</b>	<b>FY20</b>	<b>FY21</b>	<b>FY22</b>	<b>FY23</b>	<b>FY24</b>	<b>FY25</b>	<b>FY26</b>
CIP Request FY21-26*	N/A	N/A	\$6,152	\$5,772	\$3,888	\$3,496	\$3,496	\$3,496
CIP Request FY19-24	\$3,840	\$3,750	\$3,569	\$3,496	\$3,496	\$3,496	N/A	N/A
Estimated expenditure		\$4,294						

\*FiberNet costs (in \$000s)

FiberNet depends 100% on funds derived from the Cable Plan. While this may continue to be an appropriate strategy as in prior years, it may become less sustainable in future years if the franchise fee revenue should diminish significantly because of cable usage trends and national legislative and regulatory changes. The Office of Management and Budget has developed a fiscal forecasting model that includes a built-in assumption of a 4% annual drop in revenues. Current actual figures support this assumption.

To avoid a situation where the mission-critical nature of FiberNet services could be interrupted from revenue losses in the Cable Plan, the Executive should develop a long-term plan to gradually reduce the total reliance of the FiberNet implementation on cable fees, and provide a broader revenue source that could help transition the support platform to a less diminishing base.

## Strategic Questions

Council Staff asked specific strategic questions to provide Councilmembers with a better understanding of this important investment in communications, and strategies needed for its successful completion. These questions, and the responses from the Executive, are below.

1. There is a 50% additional outlay to be spent in FY21 over the amount spent in FY20. What project(s) is driving this increase in the upcoming year?

Answer: OBP is spending a portion of the Unencumbered Balance and the planned new funding. The FiberNet III planning is nearing completion. Once ITPCC is briefed, FiberNet will attempt to fast track purchase and deployment of new equipment to meet demand for cloud and educational bandwidth.

**Council Staff comments:** There is a large unencumbered balance of \$7.5 million that must be spent on physical plant construction or maintenance. This balance is an opportunity to rethink underserved areas of the County (such as the Ag Reserve) with broadband services.

As FiberNet governance is vested in the CIO subcommittee of the ITPCC, it is imperative that this Committee be re-energized and exert leadership; it has not met for several months, and a similar situation exists for the Principals Committee of the ITPCC that must approve the workplan for FiberNet reflective of the requirements of all agency users.

2. On page 10-4, the Fiscal Note says that FiberNet funding may be supplemented from the General Fund. Why is this not the year to begin that supplemental process?

Answer: The County continues to receive restricted capital PEG/I-Net funding and will continue to appropriate this restricted funding on FiberNet and other eligible projects. The County will continue to explore opportunities to transition FiberNet operating expenditures to the General Fund as needed and resources allow.

**Council Staff comments:** Every year that goes by without making decisions regarding a more reliable revenue source for this mission-critical resource is time wasted. The fact that restricted capital is received every year is no reason not to plan and prepare the way for a revenue source switch. Council Staff suggests that OMB provide a pathway that reduces this dependence of FiberNet (a project upon which many departments and agencies depend as a mission-critical asset) on Cable Plan revenues and develops a broader base of revenues. A preliminary draft with options and an Executive recommendation should be submitted by Fall 2020.

3. The entire amount requested is coming from the Cable Plan that has been declining. In order to provide for the increase in FY21, other elements of the Cable Fund must be reduced. Before the Committee can provide guidance on this CIP element, an understanding of how the Cable Plan allocation is proposed to be changed should be known.

Answer: See answer to Question 1. The increased CIP request consists of approximately the same level of FY21 funding projected in the FY20 Approved Cable Communications Fund plus additional spending of the Unencumbered Balance. No other elements of the Cable Communications Fund will need to be reduced to support this request. Please see Comparison table below.

	A	B	D	E	F	G	H	I	J	K	L	M
1	<b>FibertNet CIP (509651)</b>											
2	<b>FY19-24 Approved / FY21-26 Recommended Comparison</b>											
3												
4		<b>Total</b>	<b>Thru FY18</b>	<b>Rem FY18</b>	<b>FY19</b>	<b>FY20</b>	<b>FY21</b>	<b>FY22</b>	<b>FY23</b>	<b>FY24</b>	<b>FY26</b>	<b>FY26</b>
5	<b>FY19-24 Approved</b>	\$82,995	\$53,089	\$8,259	\$3,840	\$3,750	\$3,569	\$3,496	\$3,496	\$3,496	\$0	\$0
6												
7		<b>Total</b>			<b>Thru FY19</b>	<b>FY20 Est</b>	<b>FY21</b>	<b>FY22</b>	<b>FY23</b>	<b>FY24</b>	<b>FY25</b>	<b>FY26</b>
8	<b>FY21-26 Recommended</b>	\$89,987			\$59,393	\$4,294	\$6,152	\$5,772	\$3,888	\$3,496	\$3,496	\$3,496
9												
10	<b>Difference FY21-FY26</b>						\$2,583	\$2,276	\$392	\$0	\$3,496	\$3,496
11	<b>Total Difference</b>	\$6,992						\$5,251			\$6,992	
12												
13	<b>Difference Thru FY20</b>		-\$5,251	Represents implementation delays								
14	<b>Difference FY21-FY23</b>		\$5,251	Reflects planned use of prior approved funding in FY21-23								
15	<b>Difference FY24-FY26</b>		\$6,992									
16	<b>Total Project Difference</b>		\$6,992	Only project increase is due to the addition of new funding in FY25 and FY26								

4. FiberNet III is referenced. Please provide a breakdown of FiberNet and FiberNet III support requirements and how each will diminish or grow over the 6-year CIP.

Answer: FiberNet support requirements are being reviewed and will be provided as part of the County Executive's Recommended Budget on March 15, 2020. FiberNet III equipment costs are listed in the Planning, Design and Supervision cost element in the PDF. Costs after 6 years could be less.

5. How is the unencumbered balance of \$7.5 million handled in project planning? Is it in addition to the FY21 and FY22 requests?

Answer: See answer 1 and 3. It is planned to be spent between FY21 and 23.

**Council Staff comments:** The Executive states that the \$7.5 million unencumbered balance will be spent between FY21 and FY23. The expenditure display on ©1 shows total planned expenditures of \$15.8 million; they are shown to come from new Cable Fund revenues, and not drawdowns from a dedicated General Fund account of Cable unencumbered funds. The Committee should continue to review FiberNet expenditures and the size of the investment made to ensure alignment of actual DTS and ITPCC practices against the goal of putting the unencumbered balance to good use.



# FiberNet

(P509651)

<b>Category</b>	General Government	<b>Date Last Modified</b>	01/08/20
<b>SubCategory</b>	Technology Services	<b>Administering Agency</b>	Technology Services
<b>Planning Area</b>	Countywide	<b>Status</b>	Ongoing

## EXPENDITURE SCHEDULE (\$000s)

Cost Elements	Total	Thru FY19	Est FY20	Total 6 Years	FY 21	FY 22	FY 23	FY 24	FY 25	FY 26	Beyond 6 Years
Planning, Design and Supervision	12,450	2,159	1,291	9,000	2,500	2,500	1,000	1,000	1,000	1,000	-
Land	1,961	4	353	1,604	302	302	250	250	250	250	-
Site Improvements and Utilities	17,535	16,650	85	800	500	100	50	50	50	50	-
Construction	15,719	1,503	2,320	11,896	2,350	2,370	2,088	1,696	1,696	1,696	-
Other	42,322	39,077	245	3,000	500	500	500	500	500	500	-
<b>TOTAL EXPENDITURES</b>	<b>89,987</b>	<b>59,393</b>	<b>4,294</b>	<b>26,300</b>	<b>6,152</b>	<b>5,772</b>	<b>3,888</b>	<b>3,496</b>	<b>3,496</b>	<b>3,496</b>	-

## FUNDING SCHEDULE (\$000s)

Funding Source	Total	Thru FY19	Est FY20	Total 6 Years	FY 21	FY 22	FY 23	FY 24	FY 25	FY 26	Beyond 6 Years
Contributions	1,611	1,611	-	-	-	-	-	-	-	-	-
Current Revenue: Cable TV	77,107	46,769	4,038	26,300	6,152	5,772	3,888	3,496	3,496	3,496	-
Current Revenue: General	256	-	256	-	-	-	-	-	-	-	-
G.O. Bonds	8,866	8,866	-	-	-	-	-	-	-	-	-
PAYGO	2,147	2,147	-	-	-	-	-	-	-	-	-
<b>TOTAL FUNDING SOURCES</b>	<b>89,987</b>	<b>59,393</b>	<b>4,294</b>	<b>26,300</b>	<b>6,152</b>	<b>5,772</b>	<b>3,888</b>	<b>3,496</b>	<b>3,496</b>	<b>3,496</b>	-

## APPROPRIATION AND EXPENDITURE DATA (\$000s)

Appropriation FY 21 Request	6,152	Year First Appropriation	FY96
Appropriation FY 22 Request	5,772	Last FY's Cost Estimate	82,995
Cumulative Appropriation	68,938		
Expenditure / Encumbrances	61,406		
Unencumbered Balance	7,532		

## PROJECT DESCRIPTION

FiberNet CIP provides for the planning, design, and installation of a countywide electro-optical fiber communication network with the capacity to support voice, public-safety, traffic management, data, Internet access, wireless networking (including public WiFi) 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. Video transmission will include distribution of public, education, government access channel and selected cable programming. FiberNet is the communications backbone for the Public Safety Radio and



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Public Safety Mobile Data Systems (collectively, Public Safety Communications System (PSCS)), DOT's Advanced Traffic Management System (ATMS), and future technology implementations (including 800 MHz IP public safety radio). FiberNet's outside physical plant has a practically unlimited useful life. Upgrades and replacements to electronic components in the core and at user sites will be required periodically throughout the service life. Each generation of FiberNet electronic components have an estimated useful life of at least 10 years. FiberNet I is a legacy network still used to support specific public safety and traffic communications, with a plan to phase out at or prior to completion of the Public Safety System Modernization. FiberNet II is being used to support all County communications services including 311, e-mail, Internet and local cable channel video. FiberNet III is in the pilot and planning phase. When implemented, FiberNet III equipment will allow faster, higher capacity, more reliable means of optical networking. Using optical technology, all three generations of FiberNet can be run on the same outside physical plant.

## **ESTIMATED SCHEDULE**

At the end of FY19, FiberNet reached 476 locations. Based on the current funding schedule, FiberNet is scheduled to reach 526 locations by the end of FY20. The Traffic Management network reaches over 220 traffic cameras and 880 traffic signals, and backup power to keep traffic signals operations during large scale power outages have been added at 428 traffic signals. By the end of FY22 - and including sites connected by private carriers and institutional partners - FiberNet is expected to have a total of more than 1,845 sites on the network serving a tremendous variety of facilities from pedestrian beacons to public schools to fire stations to wine and liquor stores, to major campus networks and large multi-story office buildings. The primary focus of the FY21-22 CIP will be to upgrade edge and core equipment to exponentially expand capacity within FiberNet and to edge locations, upgrade hub-site HVAC and back-up power supplies, and to leverage inter-jurisdictional connections and Ashburn data center connections, to enable cost-effective future technology public-private partnerships with major research and educational institutions, regional broadband service providers, and large employers.

## **COST CHANGE**

Cost increase due to the addition of FY25 and FY26 to this ongoing level-of-effort project.

## **PROJECT JUSTIFICATION**

FiberNet is a critical infrastructure asset providing communication services and applications to every agency in Montgomery County. As more services are offered electronically (e-applications, e-payment, e-document, e-storage, e-learning), and more services require cloud-access, it is critical that every County location has robust access to FiberNet, and that FiberNet be secure, reliable, and always-on. The FiberNet CIP also supports and expands the ATMS system and networks that monitor, control and collect information along the transportation system, which includes traffic signals, traffic surveillance cameras, lane control systems, traffic adaptive system, back-up power monitoring, and Bus Transit Signal Priority. By leveraging FiberNet, the ATMS has diverse network paths to eliminate single points of failure.

## **FISCAL NOTE**

The FiberNet CIP originally was funded by the General Fund. As restricted-use Cable Fund PEG/I NET capital grant funding grew, the Cable Fund became the primary funding source for FiberNet. Cable revenues are declining as cord cutting increases, and may be negatively impacted by federal government efforts to restrict the authority of local governments to collect revenue for use of public assets by communications providers. Funding for future FiberNet CIPs may need to be supplemented by the General Fund. FiberNet operations and maintenance (O&M) activities are a critical component of FiberNet's utility but are not funded by the FiberNet CIP. Federal regulatory actions, or the outcome of renegotiations when the Comcast and Verizon franchises expire in 2021, may negatively impact the Cable Fund. In FY16 funds were also used to support government and educational ultraMontgomery broadband initiatives.

## **DISCLOSURES**

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Expenditures will continue indefinitely.

## **COORDINATION**

DTS, Department of Transportation, Advanced Transportation Management System Project, Montgomery County Public Schools, MNCPPC, MC, HOC, WSSC, PSCS , Information Technology Policy Coordination Committee (ITPCC), ITPCC CIO Subcommittee, and Interagency Technology Advisory Group (ITAG); and supports ATMS, Traffic Signal System Modernization (TSSM) and Traffic Signal CIPs.