



**Committee:** GO  
**Committee Review:** Completed  
**Staff:** Dr. Costis Toregas, Council IT Adviser  
**Purpose:** Final action – vote expected  
**Keywords:** Broadband, FiberNet, Connectivity, Governmental I-Net

AGENDA ITEM #10  
April 27, 2021  
**Action**

## **SUBJECT**

Capital Improvements Program FY22 – FiberNet (P509651)

## **EXPECTED ATTENDEES**

None

## **COUNCIL DECISION POINTS & COMMITTEE RECOMMENDATION**

Approve as proposed by the Executive.

## **DESCRIPTION/ISSUE**

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 (PEG) access channels 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).

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 and fire stations, to wine and liquor stores, to major campus networks and large multi-story office buildings.

The primary focus of the FY21 and 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; leverage inter-jurisdictional connections and Ashburn data center connections; and enable cost-effective future technology public-private partnerships with major research and educational institutions, regional broadband service providers, and large employers.

## SUMMARY OF KEY DISCUSSION POINTS

FiberNet is fully funded through Cable Fund revenues, and the FY22 request is \$5,772,000, with an FY22 appropriation request of \$3,592,000 (©1-3). There are additional amounts for the FY22 FiberNet program relating to operational requirements, both within DTS and DOT budgets; these will be reviewed in the Recommended Operating Budget discussion for DTS on May 6, 2021.

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 more stable base.

### **This report contains:**

GO packet, March 8, 2021

© 1-5

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**Worksession**

**MEMORANDUM**

March 3, 2021

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  
Felicia Hyatt, 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, which are diminishing over time, and develops a broader base of revenues. A preliminary draft with options and an Executive recommendation was requested last year, and the request still stands.
2. **Request** a report on the ITPCC work program element regarding FiberNet III implementation at the next Committee briefing.
3. **Endorse** the Executive's recommendation of **\$5,772,000** for the FiberNet program in FY22 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).

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 and 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 implementation stage. When completed, FiberNet III equipment will allow faster, higher capacity, more reliable means of optical networking. FiberNet III will provide significantly increased bandwidth 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 FY22 request is \$5,772,000, with an FY22 appropriation request of \$3,592,000 (©1-3). There are additional amounts for the FY22 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, 2021.

The ITPCC includes FiberNet in its work program; however, there have not been recent communications from ITPCC to the GO Committee regarding its work program; an ITPCC annual review later this Spring should provide an opportunity for the Committee to receive an update.

### **CIP Request**

The Executive's request for the FiberNet program in the FY21-26 CIP is on ©1-2.

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 more stable base.

### **Strategic Questions**

The Committee may want to explore the following issues with representatives of the Executive:

1. When will the FiberNet III capability become available? And how will service be impacted?
2. What is the assumed usage of FiberNet resources by agencies other than County Government in the next year? Particularly, the MCPS effort to procure high speed broadband services to its many facilities could bring a disruption to the customer base of FiberNet.
3. Are there changes expected in Cable Franchise fee revenues, especially under a new Democrat Administration and a changed FCC direction? The FiberNet costs are currently absorbed 100% by these fees.
4. The Committee supported the deployment of a Network Operating Center (NOC) to improve the effectiveness of FiberNet. What are the operational results from this investment?
5. Under a racial equity lens, can FiberNet provide additional services to government agencies that serve underserved populations?



# FiberNet

(P509651)

<b>Category</b>	General Government	<b>Date Last Modified</b>	12/22/20
<b>SubCategory</b>	Technology Services	<b>Administering Agency</b>	Technology Services
<b>Planning Area</b>	Countywide	<b>Status</b>	Ongoing

	Total	Thru FY20	Rem FY20	Total 6 Years	FY 21	FY 22	FY 23	FY 24	FY 25	FY 26	Beyond 6 Years	
<b>EXPENDITURE SCHEDULE (\$000s)</b>												
Planning, Design and Supervision	12,600	2,386	-	10,214	3,714	2,500	1,000	1,000	1,000	1,000	-	
Land	1,306	4	-	1,302	-	302	250	250	250	250	-	
Site Improvements and Utilities	17,481	16,879	-	602	302	100	50	50	50	50	-	
Construction	12,294	1,503	-	10,791	1,245	2,370	2,088	1,696	1,696	1,696	-	
Other	46,306	43,130	-	3,176	676	500	500	500	500	500	-	
<b>TOTAL EXPENDITURES</b>	<b>89,987</b>	<b>63,902</b>	<b>-</b>	<b>26,085</b>	<b>5,937</b>	<b>5,772</b>	<b>3,888</b>	<b>3,496</b>	<b>3,496</b>	<b>3,496</b>	<b>-</b>	

<b>FUNDING SCHEDULE (\$000s)</b>												
Contributions	1,611	1,611	-	-	-	-	-	-	-	-	-	
Current Revenue: Cable TV	77,107	51,278	-	25,829	5,681	5,772	3,888	3,496	3,496	3,496	-	
Current Revenue: General	256	-	-	256	256	-	-	-	-	-	-	
G.O. Bonds	8,866	8,866	-	-	-	-	-	-	-	-	-	
PAYGO	2,147	2,147	-	-	-	-	-	-	-	-	-	
<b>TOTAL FUNDING SOURCES</b>	<b>89,987</b>	<b>63,902</b>	<b>-</b>	<b>26,085</b>	<b>5,937</b>	<b>5,772</b>	<b>3,888</b>	<b>3,496</b>	<b>3,496</b>	<b>3,496</b>	<b>-</b>	

<b>APPROPRIATION AND EXPENDITURE DATA (\$000s)</b>			
Appropriation FY 22 Request	3,592	Year First Appropriation	FY96
Cumulative Appropriation	72,019	Last FY's Cost Estimate	89,987
Expenditure / Encumbrances	67,816		
Unencumbered Balance	4,203		

## 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 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

## PROJECT JUSTIFICATION

FiberNet is a critical infrastructure asset providing communication services and applications to every agency in Montgomery County. As more services are offered

CE Recommended (FY21-26 Amended CIP)

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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.

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## **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.

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## **DISCLOSURES**

Expenditures will continue indefinitely.

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## **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.