

Worksession

MEMORANDUM

February 10, 2012

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:

Dieter Klinger, Acting Chief Information Officer, Department of Technology Services
John Castner, FiberNet Project Manager, DTS
Mitsuko R. Herrera, Cable and Communications Administrator, DTS
Gary Thomas, ITPCC staff
Representatives from Office of Management and Budget (OMB)

Summary of Staff Recommendations

1. **Accept** the Executive's recommendation of **\$1,831,000** on a preliminary basis for the FiberNet program in FY2013, and ensure that the Operating Budget that is submitted on March 15, 2012 is adequate for the overall support needed for the program.
2. **Request** that the **total FiberNet costs** (CIP and Operating budget, as well as the investments from ARRA) **be provided with the March 15, 2012 proposed Operating Budget** submission so that the Committee can make a proper project assessment and accept or modify the Executive's recommendation for the total FiberNet project.
3. **Encourage discussions between DTS and DED** in order to ensure that the broadband capabilities of FiberNet for government and supporting connectivity needs are properly reflected as an economic development advantage for the County.
4. **Encourage the Executive to offer public space WiFi** for residents and visitors using FiberNet carrying capacity and through possible public/private partnerships. Costs associated with this implementation can be absorbed in the CIP or Operating Budget portion of the FiberNet budget; staff suggests the latter.

Background

FiberNet provides broadband connectivity amongst 316 user sites in 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. This compares with 289 sites supported in 2010, an impressive accomplishment given the fact that the Executive reduced the FiberNet budget in FY2011 by \$1.5m. FiberNet has the capacity to support voice, data, and video transmissions, and the current cost model is supported through a single MCG allocation which covers all agency users (i.e., no chargeback mechanism is in place). Beyond voice, data and video transmission between civilian agencies, FiberNet is also the communication backbone for the Public Safety Radio and Mobile Data Systems, thus being an important link in the County's emergency communications system.

The current geographic deployment of FiberNet throughout the County is shown on the map on © 1. The map shows the locations of facilities that currently enjoy connectivity through FiberNet, and those that are scheduled to be connected under the FiberNet Deployment plan.

CIP submission

The Executive is recommending funding for FiberNet in the amount of \$1,831,000 (see © 2-3 for FiberNet PDF No 509651). However, there are two other major funding streams that support FiberNet operations: the Operating Budget; and a special multi-year ARRA grant administered by Howard County that provides construction and other services (primarily to complete the build-out of FiberNet to all MCPS elementary schools), which are valued at \$17m and another \$2.6m from the Montgomery County CIP, which goes for consultants and other cash expenditures. The following table summarizes the FiberNet revenue streams in FY13 (although some of the ARRA grant moneys and cash matches may extend beyond FY13):

Source of funding in FY13	Expenditures in FY13
CIP	1,831,000
ARRA	17,000,000*
ARRA cash match	2,600,000
Operating Budget	Not Available until 3/15

*Approximation- \$17m is the entire grant amount; the implementation period is Y2012-2014, with the majority of construction occurring in FY2013.

Table 1. Approximate FY2013 expenditures on FiberNet

The activities under the broad title of "FiberNet" include support of connectivity in 6 agencies, a strong role in the Public Safety Communications Systems, a current emphasis on building out the final 100+ elementary schools currently without FiberNet service, and supporting the Advanced Traffic (Transportation) Management System. Circle 4 provides some detail for these activities

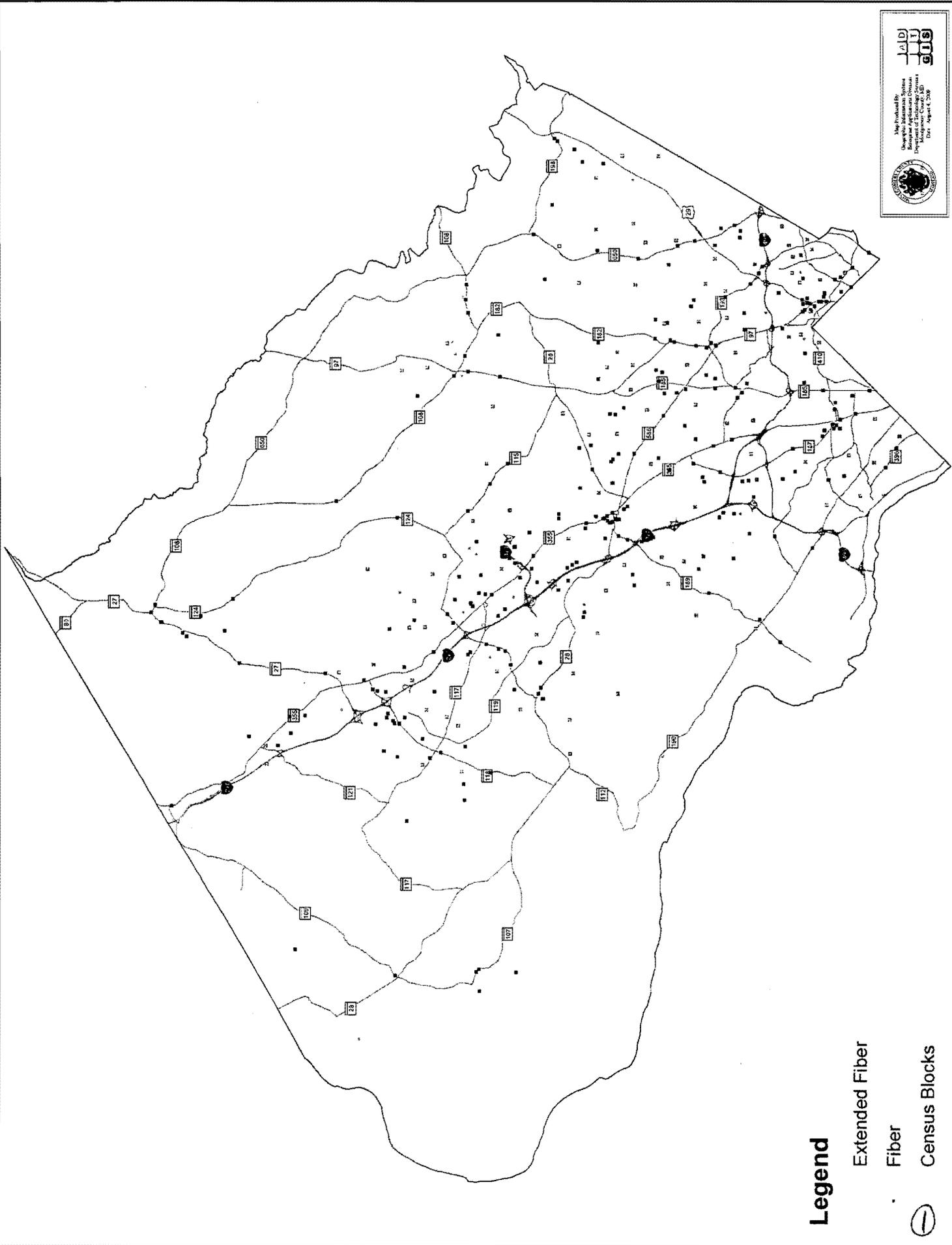
over the six years of the current CIP plan horizon. There is no information in the Executive's FiberNet submission that details the cost of the activities indicated on © 4. The CIP plan contains a total figure of \$1,831,000 as a recommended CIP funding level. The Executive branch provided detail on this number in tabular form on © 5; this table shows CIP-only expenditures estimated over the 6 years of the CIP, but it is almost impossible to make use of these figures in any management assessment manner, since the complementary Operating Budget expenditures are not yet provided to the Committee.

In order to make a proper assessment of the effectiveness of the project and provide a recommendation that would support or modify the Executive's recommended levels, it is vital to understand the total costs of the project. As the Operating Budget will not be released until March 15, 2012, it is not possible to provide a full recommendation during the CIP cycle. Therefore, Council staff suggests preliminary approval of the Executive's recommendation, with the final total FiberNet project approval becoming operative when both CIP and Operating Budget costs are known.

Council staff suggestions for expanded FiberNet use

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 WiFi 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 WiFi 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).



Legend

- Extended Fiber
 - Fiber
 - Census Blocks
- 

Fibernet -- No. 509651

Category
Subcategory
Administering Agency
Planning Area

General Government
Technology Services
Technology Services
Countywide

Date Last Modified
Required Adequate Public Facility
Relocation Impact
Status

January 09, 2012
No
None.
On-going

EXPENDITURE SCHEDULE (\$000)

Cost Element	Total	Thru FY11	Est. FY12	Total 6 Years	FY13	FY14	FY15	FY16	FY17	FY18	Beyond 6 Years
Planning, Design, and Supervision	3,046	2,220	200	626	606	20	0	0	0	0	0
Land	4	4	0	0	0	0	0	0	0	0	0
Site Improvements and Utilities	13,106	12,441	65	600	250	175	175	0	0	0	0
Construction	14,544	1,169	1,875	11,500	875	2,175	2,175	2,175	2,175	1,925	0
Other	24,773	21,173	0	3,600	100	100	100	1,600	1,600	100	0
Total	55,473	37,007	2,140	16,326	1,831	2,470	2,450	3,775	3,775	2,025	0

FUNDING SCHEDULE (\$000)

	Total	FY11	FY12	Total 6 Years	FY13	FY14	FY15	FY16	FY17	FY18	Beyond 6 Years
Cable TV	44,387	25,921	2,140	16,326	1,831	2,470	2,450	3,775	3,775	2,025	0
Contributions	86	86	0	0	0	0	0	0	0	0	0
G.O. Bonds	8,900	8,900	0	0	0	0	0	0	0	0	0
PAYGO	2,100	2,100	0	0	0	0	0	0	0	0	0
Total	55,473	37,007	2,140	16,326	1,831	2,470	2,450	3,775	3,775	2,025	0

OPERATING BUDGET IMPACT (\$000)

	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	Beyond 6 Years
Maintenance			1,459	1,097	153	101	13	37	58
Net Impact			1,459	1,097	153	101	13	37	58

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, 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 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.

CAPACITY

As of September 1, 2011, there are 316 sites on FiberNet. The number of sites scheduled for completion by September 1, 2014 is 465. By September 1, 2017, that number is expected to be 510. The majority of these sites will be Montgomery Public Schools.

ESTIMATED SCHEDULE

FiberNet anticipates 134 sites will be brought on-net by 2014. In the prior FY11-16 CIP, the estimated time frame would have extended into 2017.

COST CHANGE

Cost increase is due to an increase in the project scope primarily related to the increasing Montgomery County Public Schools FiberNet sites, as well as, providing FiberNet support to the Advanced Traffic Management System.

JUSTIFICATION

FiberNet is a critical infrastructure asset serving every agency in Montgomery County. As of September 1, 2011, 316 user sites are on-net and receiving critical services from FiberNet. In FY07, the Department of Technology Services (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 to operate on a per-site basis.

The Interagency Technology Policy Coordination Committee (ITPCC) focus during the first two years of this CIP will be constructing the ARRA Grant funded sites. MCG, MCPS, MC, M-NCPPC, HOC and WSSC 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, June 2002; Fibernet Strategic Direction, Interagency Telecommunications Advisory Group (ITAG), Nov 2003; and the Fibernet service level agreement, Jan 2005.

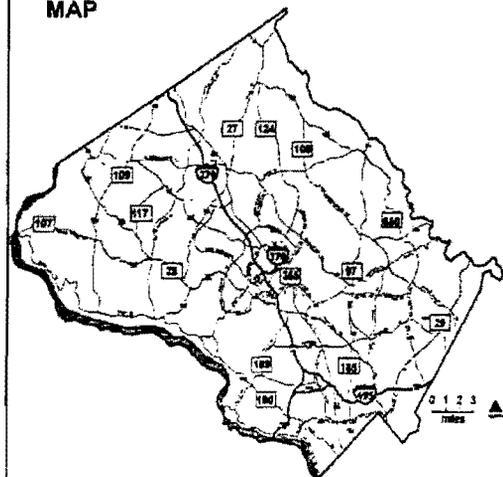
OTHER

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, also provides fiber used in Fibernet. Sites installed to date include MCG

APPROPRIATION AND EXPENDITURE DATA		
Date First Appropriation	FY96	(\$000)
First Cost Estimate	FY12	55,473
Current Scope		
Last FY's Cost Estimate		39,147
Appropriation Request	FY13	1,831
Appropriation Request Est.	FY14	2,470
Supplemental Appropriation Request		0
Transfer		0
Cumulative Appropriation		39,148
Expenditures / Encumbrances		37,045
Unencumbered Balance		2,103
Partial Closeout Thru	FY10	0
New Partial Closeout	FY11	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)
 CIO Howard County
 Inter-County Broadband Network Program
 Office

MAP



Fibernet -- No. 509651 (continued)

departments/offices, PSCS sites, MC campuses, MCPS high schools/middle schools/administrative facilities and several elementary schools, 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 American Film Institute (AFI), Strathmore, the Convention Center and Black Rock. Currently FiberNet is focused on building out the ARRA Grant sites which are elementary schools and HOC properties. Approximately \$3 million is necessary to build out the cable plant to support Advanced Traffic Management System field devices. Funding for this project is included in the FY13-FY18 CIP.

FISCAL NOTE

The ARRA Grant represents a tremendous cost savings to Montgomery County. The County will receive the benefit of over \$17 million dollars in construction for a matching contribution of \$2.6 million.
Fibernet maintenance is supported by a grant from the franchise agreement with the County's cable service provider, Comcast. The original grant amount of \$1.2 million/yr is increased by the CPI each year.
The Comcast franchise agreement is currently in renegotiation.

FiberNet CIP FY13-FY18

FiberNet Optical Network Expenses	FY13	FY14	FY15	FY16	FY17	FY18
Fiber - ATMS	500,000	500,000	500,000	500,000	500,000	250,000
Fiber - Backbone Capacity Increases	0	0	0	0	0	0
Fiber - DoT Construction Supervision	50,000	50,000	50,000	50,000	50,000	50,000
Fiber - Non-ARRA Construction Cost Estimation	25,000	25,000	25,000	25,000	25,000	25,000
Fiber - Relocation	300,000	100,000	100,000	100,000	100,000	100,000
New Site Construction	0	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
Subtotal	875,000	2,175,000	2,175,000	2,175,000	2,175,000	1,925,000
FiberNet Activities - Non Recurring	FY13	FY14	FY15	FY16	FY17	FY18
FiberNet II Transition	0	0	0	0	0	0
OSPInSight Project & Other Commissioned Activities	250,000	175,000	175,000	0	0	0
Subtotal	250,000	175,000	175,000	0	0	0
ARRA Cash-Match	FY13	FY14	FY15	FY16	FY17	FY18
Consultant - Design and Supervision	80,000	20,000				
Pole Application Fees (PEPCO)	0	0				
Other Cash Match Expenditures	526,000	0				
Utility Make Ready (40 sites)	0	0				
Subtotal	606,000	20,000				
FiberNet Infrastructure	FY13	FY14	FY15	FY16	FY17	FY18
Hub Improvements	0	0	0	0	0	0
Security Improvement	0	0	0	0	0	0
Contingency Fund	100,000	100,000	100,000	100,000	100,000	100,000
FiberNet III (100 Gig Backbone, terrabit backplanes)	0	0	0	1,500,000	1,500,000	0
Subtotal	100,000	100,000	100,000	1,600,000	1,600,000	100,000
CIP Totals	1,831,000	2,470,000	2,450,000	3,775,000	3,775,000	2,025,000
Number of Sites (BOY)	383	450	465	480	495	510
Added	67	15	15	15	15	0
Number of Sites (EOY)	450	465	480	495	510	510

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FiberNet CIP FY13-FY18

FiberNet Optical Network Expenses	FY13	FY14	FY15	FY16	FY17	FY18
Fiber - ATMS	500,000	500,000	500,000	500,000	500,000	250,000
Fiber - Backbone Capacity Increases	0	0	0	0	0	0
Fiber - DoT Construction Supervision	50,000	50,000	50,000	50,000	50,000	50,000
Fiber - Non-ARRA Construction Cost Estimation	25,000	25,000	25,000	25,000	25,000	25,000
Fiber - Relocation	300,000	100,000	100,000	100,000	100,000	100,000
New Site Construction	0	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
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Security Improvement	0	0	0	0	0	0
Contingency Fund	100,000	100,000	100,000	100,000	100,000	100,000
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