

OFFICE OF FINANCIAL & PROGRAM AUDIT



May 2013

Quarterly Report

FAIRFAX COUNTY BOARD OF SUPERVISORS
AUDITOR OF THE BOARD

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Office of Financial & Program Audit

QUARTERLY REPORT

EXECUTIVE SUMMARY

Dulles Metrorail Project

As of February 2013, MWAA reports that approximately \$2.5 billion of the total \$3.35 billion Phase I budget has been expended (the \$3.35 billion budget includes \$2.7 billion in construction costs and \$.5 billion in MWAA specific finance costs and \$150 million in cost increases). The MWAA Board approved \$150 million increase to the construction budget resulting in a \$2.9 billion construction budget. MWAA assessed the main construction component of the Project as 90% complete through March 2013.

The overall Project schedule, as estimated by DTP, has changed from a zero lapse in October to a 12 day lapse in February. DTP projects the Project Revenue Operations Date (Project ROD) as January 15, 2014. MWAA has not changed the official start of revenue service for Phase I from December 4, 2013. The West Falls Church Yard is not included in the main project schedule. The Yard's overall completion date is anticipated as December 2013 or January 2014, critical components possibly being ready earlier. The projected late completion date for the West Falls Church Yard and its impact on WMATA testing and operations have introduced risk into the overall Project schedule.

Rate of Return on County Investments

The County's return on cash investments (non-retirement funds) has been decreasing since 2007, influenced significantly by national economic conditions and federal monetary policy. The study shows a comparison of the investment policies and rates of return for other jurisdictions. Recommendations include reallocating a larger portion of the portfolio to longer maturity periods, increasing the maximum maturity period and review of investment instruments as permitted by the *Code of Virginia*.

Information Technology Disaster Recovery Plan

The Department of Information Technology (DIT) current disaster recovery plan document (dated April 22, 2013) contains many of the recommended elements of an information technology disaster recovery plan. However, much of the underlying infrastructure that will enable DIT to effectively recover the County's mission critical systems in the event of a disaster is currently under development. DIT should continue efforts to improve the County's disaster recovery infrastructure capabilities for its server-based systems. In addition, DIT should designate a single point of contact for the IT disaster recovery plan to help ensure that future testing of the disaster recovery plan includes a more comprehensive and coordinated approach and the results of those tests (particularly for the server-based systems) are documented in accordance with industry standards.

STUDY BRIEFINGS

DULLES METRORAIL PROJECT

The Audit Committee requested OFPA monitor Phase I of the Dulles Corridor Metrorail Project (Project) with a focus on the following areas: 1) Project Cost, 2) Start of Revenue Service and 3) Funding Obligations. Information used in this OFPA report is primarily based on the February 2013, MWAA Monthly Progress Report, dated March 28, 2013 and the Comprehensive Monthly Report for March 2013 issued by the Project Management Oversight Contractor (PMOC) for the FTA dated April 25, 2013.

PROJECT COST STRUCTURE

A. Phase I Budget

Phase I of the Project has a budget of approximately \$3.35 billion, comprised of \$2.7 billion for construction plus \$.5 billion in MWAA specific finance costs and a \$150 million budget increase. As of February 2013 approximately \$2.5 billion of Project funds have been expended.¹ The Project team assesses Phase I as 90% complete.² The overall budget utilization and construction completion rates are running in parallel.

Previous MWAA reports noted a \$71.8 million transfer (per direction from the FTA/PMOC)³ into the Contingency Budget. Additionally, their reports note a \$78.2 million increase in non-federal FFGA scope budget. Combined the transfer and increase equate to \$150 million, consistent with the MWAA Board action in June of 2012 to increase the Project budget. The transfers are reflected in the MWAA 2014 Budget.

B. Change Orders

MWAA reports change orders in two broad categories: (1) Amended and Restated Design Build and (2) Utility Relocation. Through February 2013, there were \$99.5 million in total changes to the Design Build category⁴ which represent approximately 5.8% of the original Design Build estimate. There have been \$19.1 million in total changes to the Utility Relocation category, which represent 15.6% of the total original budget amount.⁵ There is approximately \$26 million in additional Contract Change Orders currently under evaluation by MWAA.⁶ Depending on the outcome of these evaluations all or a portion of these change orders could be applied against the contingency budget.

C. Allowance Items

There is a \$486 million budget for allowance items. The total awarded/recommended allowance items through February 2013 is \$602 million. Allowance Items contain a budget overrun of \$160.6 million, with 91% of the base allowance item budget complete.⁷ Overruns are funded by contingency budget drawdowns.

¹ MWAA February 2013 - Monthly Progress Report: Table 8, Page 22

² PMOC Report for March 2013, Dated April 25, 2013, page 2

³ PMOC Report for July 2012, Dated August 31, 2012, page 6

⁴ MWAA February 2013 - Monthly Progress Report: Table 11, Page 30

⁵ MWAA February 2013 - Monthly Progress Report: Table 12, Page 31

⁶ MWAA February 2013 - Monthly Progress Report, Tables 13 & 14, Pages 32 & 33

⁷ MWAA February 2013 - Monthly Progress Report: Table 9, Page 26

D. Contingency Utilization

Contingency funds are classified as federal and non-federal. The federal contingency had a starting budget of \$297.7 million. This budget was supplemented with a \$71.8 million transfer from MWAA finance cost savings (part of the June 2012, \$150 million budget increase approved by the MWAA Board). An additional transfer of \$19 million came from savings in Indexed Commodity Costs.⁸ This brings the total additions to Federal Contingency to \$90.8 million. The adjusted federal contingency budget is now \$388.6 million.

Through February 2013 - Utilized and Obligated Federal Contingency totaled \$377.6 million as reflected in the following MWAA chart.

Federal Contingency Utilized and Obligated Summary, February 2013

CONTINGENCY PHASE	BUDGET	CONTINGENCY		
		CONTRIBUTION	TO-DATE	REMAINING
Phase 1 through 10	\$ 271,000,000	\$ 90,800,000	\$ 358,616,087 (Utilized)	\$ 3,183,913
Phase 11 through 12	\$ 26,762,579	\$ -	\$ 18,988,157 (Obligated)	\$ 7,774,424
TOTAL	\$ 297,762,579	\$ 90,800,000	\$ 377,604,244	\$ 10,958,337

Source: MWAA February 2013 – Monthly Progress Report, Table 20, Page 43

The original non-federal contingency budget had been \$14.5 million through September 2012. In February 2013 the estimated balance of this line was \$59.7 million.⁹ The non-federal balance was increased through a portion of the June 2012 budget increase of \$150 million approved by the MWAA Board.

Budget Summary

The additional budget authorization and reduced commodity escalations have provided \$169 million to address project cost overruns. Of this, \$10.9 million remains in Federal Contingency and \$59.7 million in non-federal contingency.¹⁰ There are approximately \$26 million in additional Contract Change Orders currently under evaluation by MWAA.¹¹ Additional contract change orders, allowance item, contingency or CNPA overruns will need to be continually managed. There are a large number of potential change orders (104) and utility relocation subcontractor changes (5) still under review.¹²

START OF REVENUE SERVICE FOR PHASE I**Overall Project Schedule**

The MWAA report for February 2013 reports a schedule lapse of 12 days. Making the DTP projection of the Project ROD January 15, 2014. The official MWAA projected Project ROD is December 4, 2013. The forecasted substantial completion date is projected between August 30 and September 11, 2013.¹³ These projections exclude the West Falls Church Yard.

⁸ MWAA October 2012 – Monthly Progress Report, Page 29

⁹ MWAA February 2013 – Monthly Progress Report: Table 8, Page 22

¹⁰ MWAA February 2013 – Monthly Progress Report: Table 8, Page 22

¹¹ MWAA February 2013 – Monthly Progress Report: Table 8, Pages 32 and 33

¹² PMOC Report for March 2013, Dated April 25, 2013, page 28

¹³ MWAA February 2013 – Monthly Progress Report: Table 23, Page 47

The Table below shows construction progress through September.

SILVER LINE CONSTRUCTION PROGRESS THROUGH MARCH 2013			
ELEMENTS	% COMPLETE	STATIONS/YARD	% COMPLETE
O-3 (DCR) Trackway	100%	Tysons East	75%
Tysons East Guideway	100%	Tysons Central 123	67%
Tysons West Guideway	100%	Tysons Central 7	56%
O-9 (DIAAH) Trackway	100%	Tysons West	55%
Systems	51%	Wiehle Avenue	84%
Trackwork	99%		

Source: PMOC Monthly Report for March 2013, dated April 25, 2013. page 2

MWAA reports that: "As of February 28, 2013 the overall Project Systems Testing program stood at about 45% complete, inclusive of both the K Line and the N Line. The breakdown by individual system elements is 44% for ATC, 38% for Communications and 54% for Traction Power, with no testing of the WFC Yard systems complete as of the end of February."¹⁴

The West Falls Church Yard is excluded from the above projections and has a tentative completion date of December 30, 2013¹⁵. MWAA noted it is working with WMATA on mitigation plans for the start of revenue service without the availability of the yard for rail car service or storage. MWAA also reported that it is working with WMATA to mitigate the impact of the WFC Yard availability, interoperability and systems tests. OFPA has requested a tour of the WFC Yard construction.

A breakdown of the West Falls Church Yard project phases and completion progress follows:

WEST FALLS CHURCH YARD PROGRESS THROUGH MARCH	
ELEMENTS	% COMPLETE
<i>Overall</i>	<i>40%</i>
<i>Sitework</i>	<i>95%</i>
<i>Sound Cover Box</i>	<i>30%</i>
<i>S&I Building</i>	<i>28%</i>
<i>Trackwork</i>	<i>63%</i>
<i>Systems</i>	<i>30%</i>
<i>Testing</i>	<i>5%</i>

Source: PMOC Monthly Report for March 2013, dated April 25, 2013. page 2

The reported schedules note that the WFCY will not be available until after the Project's Scheduled Substantial Completion Date (SSCD) which is forecasted for August/September 2013. The SSCD date is significant in that it marks the availability of the Project for full testing, training and integration. This testing, training and integration will lead to operational readiness for revenue service and the acceptance of Phase I of the Project by WMATA. The planned December 2013 WFCY completion date does not include systems integration into the mainline system.¹⁶ To mitigate the WFCY impact on the overall Project schedule WMATA has noted that the sound cover box and storage tracks are the most critical to their start up and operational needs. The Project Team anticipates completing those two components of the WFCY in November 2013.

¹⁴ MWAA February 2013 - Monthly Progress Report: Page 75

¹⁵ PMOC Report for March 2013, Dated April 25, 2013, Page 3

¹⁶ PMOC Report for March 2013, Dated April 25, 2013, Page 21

The overall system tests at 50% complete (excluding the WFCY) result in the need to continue aggressive completion of the construction and the overall testing schedule, while monitoring the WFCY implications. MWAA and WMATA are jointly undertaking preliminary tests as a strategy to ensure these requirements are accomplished within the existing schedule.

PHASE II Contract Procurement

The following table is the anticipated schedule for the Phase II procurement for the rail line, stations and systems portion of this Project phase (Packet A). All items have been completed on schedule up to the contract award recommendation, planned for May 2013. The notice to proceed is anticipated in June 2013. The actual construction schedule will be determined with the contract award. The targeted revenue operations start for Phase II is late 2018.

Packet A Activity	Date
Issue Final RFP	February 2013
RFP Technical Proposals Due	March 2013
Technical Proposal Evaluation (Pass/Fail)	April 2013
Price Proposals Due	April 2013
Contract Award Recommendation	May 2013

Phase II is planned to be procured through 5 bid packages. In addition to Packet A noted above, there are:

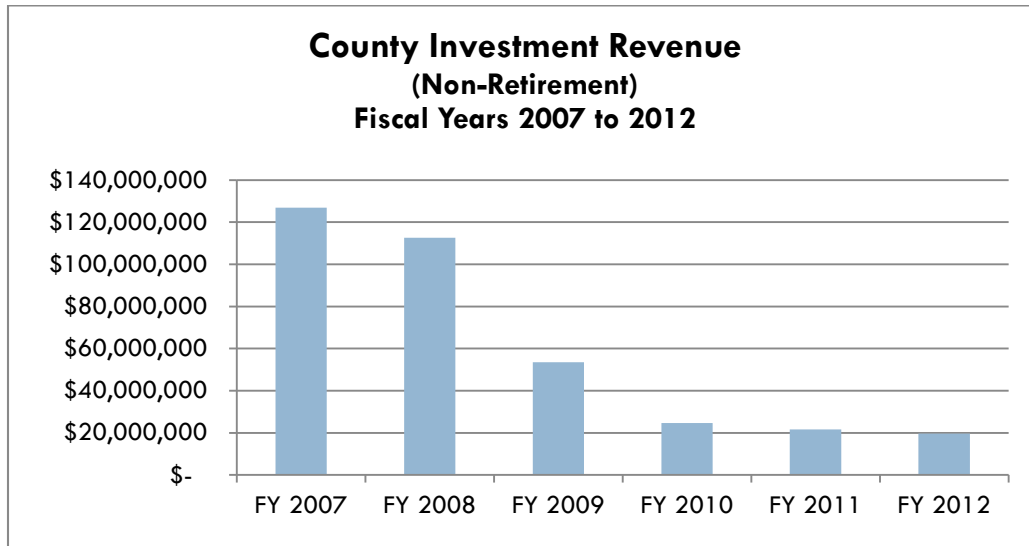
- Packet B – Yard and Shop
- Packet C – Parking Garages (may not be issued)
- Packet D – Right of Way (ROW)
- Packet E – Utilities

FUNDING OBLIGATIONS OF FAIRFAX COUNTY

Based on the current funding agreement, Fairfax County is obligated to pay 16.1% of the total project costs. This will include a proportionate share of the \$150 million budget increase approved by the MWAA Board in June 2012. OFPA will continue to monitor the Project construction costs. With Phase II receiving approval to move forward; any variation in the Phase I budget will be combined with the costs in Phase II to determine the final project cost.

RATE OF RETURN ON COUNTY INVESTMENTS¹⁷

On March 5, 2013, through a Joint Board Matter presented by Chairman Bulova and Supervisor Foust (Audit Committee Chairman) the Office of Financial and Program Audit was directed to examine the County's rate of return on cash investments. The County's return on cash investments has been decreasing, since fiscal year 2007, influenced significantly by national economic conditions and federal monetary policy. The chart below shows the decline in investment income between fiscal year 2007 and fiscal year 2012.



Source: Department of Finance - Investment Committee Reports FY 2007 to FY 2012

Background

The *Code of Virginia* (Code) sets the parameters for investments and cash management of public funds for local governments. Code Section §2.2-4514 describes the standard of care for investing public funds:

“Any investment of such funds pursuant to the provisions of this chapter shall be made solely in the interest of the citizens of the Commonwealth and with the care, skill, prudence, and diligence under the circumstances then prevailing that a prudent person acting in a like capacity and familiar with such matters would use in the conduct of a like character and with like aims.”

Cash and investments are managed by the Department of Finance, Investing and Cash Management Division. The cash and investments under management include County and School funds. Retirement funds, other than operational balances, are managed by the Retirement Administration Agency.

The Code also stipulates which investment instruments and depositories are permitted and further defines the required characteristics in terms of credit quality and other factors. The Code leaves to local authority important decisions which constitute an individual locality's investment policy. Three of these decisions are:

- Maturity periods of investments.
- Use of investment instruments and deposits products - of those permitted under state code.
- Maximum percent of each instrument relative to the total size of the portfolio.

¹⁷ Study excludes retirement funds, which are administered by the Retirement Administration Agency. This study was not an audit of controls over investment operations or allocations of investment earnings or fees. The County's Internal Audit Division recently reviewed investment operations as part of a larger review of controls related to the implementation of FOCUS, the County's new financial system.

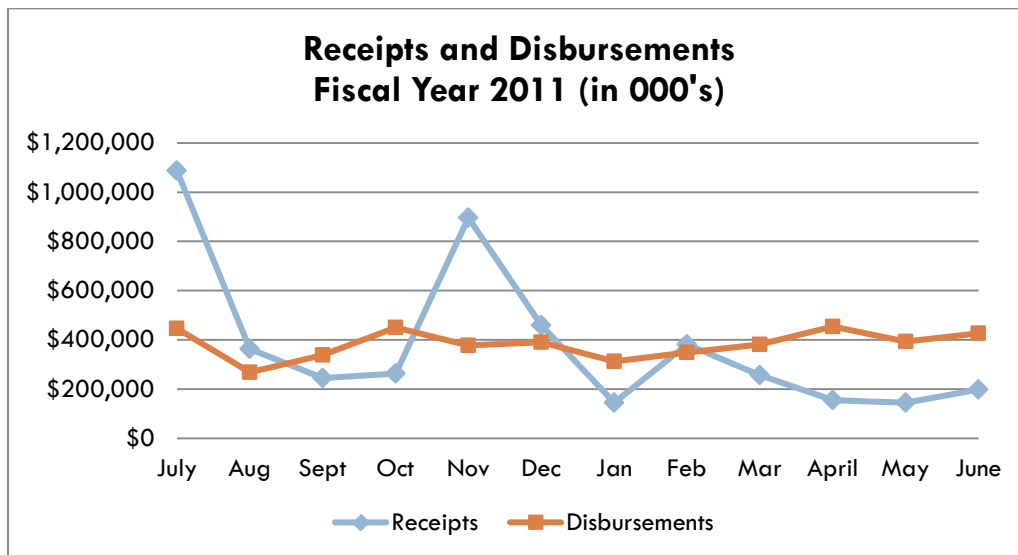
Policy and practice issues such as, transaction protocols, safekeeping, internal controls and reporting requirements, are contained in the County's Investment Policy. All aspects of an investment policy and related practices must be consistent with the *Code of Virginia*. Oversight and management of the County's investment portfolio is the responsibility of an Investment Committee. The Investment Committee structure is left to local authority. The County's committee consists of the following staff positions:

- Chief Financial Officer
- Director, Department of Finance
- Director, Department of Tax Administration
- Deputy Director, Department of Finance
- Investment Manager, Department of Finance
- Investment Analysts (3), Department of Finance

A voting hierarchy is set in the Investment Policy which requires any successful initiative to have the concurrence of at least one of the following; Chief Financial Officer, Director, Department of Finance, Director, Department of Tax Administration. The investment committee reviews investment activity, provides guidance and approves any changes to the Investment Policy. The committee typically meets on at least a monthly basis.

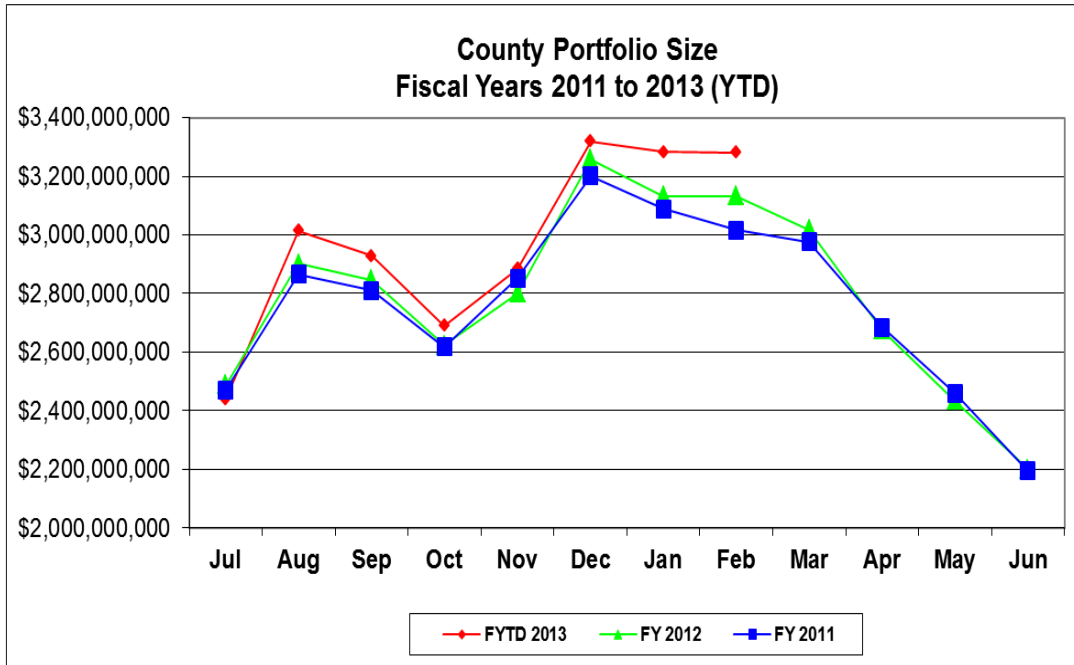
Investment Practices

Similar to other localities in Northern Virginia, Fairfax County's incoming cash flow (receipts) peak at two regular points on the calendar. Whereas cash outflows (disbursements) have a greater level of month to month consistency as shown on the chart below.



Source: Department of Finance. Due to the financial system transition, FY 2011 is the latest period this information is available.

The peak then valley aspect of the County's flow of incoming receipts results in cash being received but not immediately required for disbursements. This pattern results in a cash high point in December of over \$3.2 billion and a low point in June of approximately \$2.2 billion as shown on the next chart:



Source: Investment Committee Report for March 20, 2013, showing results for February 28, 2013

Localities use local authority to tailor their investment policies to take advantage of this predictable cash flow cycle in the selection of maturity horizons and investment instruments. Through their investment policies, jurisdictions place conditions on maturities as a way to balance liquidity and risk. A review of investment policies in other jurisdictions found that Fairfax has the shortest maturity period as shown below.

Maximum Maturities			
Jurisdiction	Maximum Maturity	Conditions	Credit Rating
Alexandria City	3 Year Max, 1 Year Portfolio WAM	Minimum of \$15 million to stay within 14 days.	AAA*
Arlington County	5 Years	Maximum maturity based on investment type	AAA
Henrico County	5 Years	Minimum \$10 million liquid, can exceed 5 years if matched to specific cash flow.	AAA
Loudoun County	5 Years	15% of Portfolio Less than 2 years. 10% of Portfolio, less than 5 years	AAA
Montgomery County, MD	1 Year	2 Years with Director of Finance approval and matched to cash flow (disbursements)	AAA
Prince William County	10 Years	No more than 50% of the Portfolio can go further than 3 years.	AAA
Fairfax County	1 Year	A significant portion of the portfolio has a maximum 90 day WAM**, unless approved by the Investment Committee	AAA

*As of August 2011, Alexandria City had not requested a third rating. All other jurisdictions have AAA from three rating agencies.

** WAM = Weighted Average Maturity

The Fairfax County Investment Policy divides cash into three investment portfolios. As of January 31, 2013, the overall days to maturity on \$3.3 billion in cash was 92 days, with the rate of return at .55%. The specific breakdown of the County's three portfolios was:

Fairfax County Portfolio Performance				
Portfolio Name	Rate	Value	Days to Maturity	% of total Portfolio
Revenue Stabilization	.90%	\$104,505,270	173 days	3%
Core	.93%	\$1,028,565,486	142 days	31%
Liquidity	.35%	\$2,202,619,772	65 days	66%
Total	.55%	\$3,335,690,528	92 days	

Source: Investment Committee Report for February 6, 2013, showing results for January 31, 2013.

Revenue Stabilization – Sized to match funds reserved by the Board of Supervisors for use under certain fiscal conditions.

Core – Funds not needed for short term liquidity. Currently sized to be 50% of all investment holdings, less revenue stabilization as of June 30 of the preceding fiscal year.

Liquidity – Funds used for daily and short term liquidity needs.

Investment Comparison

The following table was developed to provide a comparison of experience in other jurisdictions with investment instruments, yield, composition in the portfolio (as a percentage of the whole), and their maturity in days. The table reflects the various policies adopted by each jurisdiction and shows a variety of results. A common factor shown in the table is the relationship between yield and maturity as well as the ability of different jurisdictions to find a range of yields, over time, on the same instrument types.

COMPARISON TABLE									
	Fairfax			Prince William			Arlington		
Portfolio Size	\$3,335,690,528			\$1,017,296,435			\$367,304,777		
	Yield	% of Portfolio	Reported Maturity	Yield	% of Portfolio	Reported Maturity	Yield	% of Portfolio	Reported Maturity
US Agency	0.12%	16%	36 Days	1.59%	45%	2,505 Days	0.91%	11%	1,686 Days
CD*	-	-	-	0.41%	6%	183 Days	0.65%	7%	258 Days
CD-Negotiable	0.77%	38%	137 Days	-	-	-	-	-	-
CD-Insured	0.25%	4%	62 Days	-	-	-	-	-	-
Comm Paper	0.59%	35%	88 Days	0.42%	1%	93 Days	0.69%	29%	38 Days
Corp Notes	0.55%	2%	79 Days	1.43%	13%	1,177 Days	1.39%	32%	1,441 Days
MMF/DDA**	0.10%	5%	1 Day	0.25%	27%	1 Day	0.70%	9%	1 Day
Muni	-	-	-	1.93%	7%	2,100 Days	1.26%	12%	1,104 Days
Overall	0.55%		92 Days	1.13%		1,448 Days	1.01%		813 days

All figures reported by the referenced jurisdiction as of January 31, 2013

*Prince William and Arlington do not differentiate Negotiable and Insured CDs.

** MMF = Money Market Funds, DDA = Demand Deposit Accounts

The table uses Prince William and Arlington County for comparison. All three jurisdictions have different investment approaches. Prince William County uses an active management approach for its portfolio (actively buying and selling securities). Arlington County uses a laddered maturity approach (aligning maturities with large cash outflows such as payroll and bond payments) with some opportunistic sales. The City of Alexandria and Loudoun County were not included in the table based on unique factors that prevent a valid comparative analysis. Information was requested from Henrico County and Montgomery County, but not received in time for this report.

As reflected in the comparison table of other local jurisdictions, maturity periods have a significant impact on the yield earned on investments. The County's maximum maturity is currently one year. However, the one year time horizon is seldom approached in the portfolio. The County's Investment Policy calls for "structuring the investment portfolio so that securities mature to meet daily liquidity". An effective strategy to extend the maturity period would be to use a laddered approach by investing so that maturities match large predictable disbursements such as County/School payrolls and bond payments. Using such a methodology will allow the County to safely increase yield while maintaining liquidity.

Expanding the allowable maturity period to two years will permit the County to obtain additional yield. In looking at the comparison table, it is noted that the County is earning .12% on Treasuries and Agencies while earning .55% on corporate notes. At the same time corporate notes comprise less than 2% of the county's holdings, yet 13% to 32% of other jurisdictions holdings.

Current practice restricts Money Market Funds (MMFs) to those which invest in United States Treasury and Agency securities. Significant yield could be obtained by allowing the purchase of MMFs which invest in other instruments permitted by the Code. These types of funds are generally referred to as PRIME Funds. One example of such a MMF is the Virginia Local Government Investment Pool (LGIP) offered by the Commonwealth of Virginia. During FY 2012 the yield difference between the utilized MMFs and the LGIP was as high as .13% or more representing the potential for approximately \$250,000 in additional earnings. These funds typically offer 1 to 7 day maturities making them highly liquid.

Due to their one day maturity period Demand Deposit Accounts (DDAs) are included in the MMF instrument category in the Comparison Table. The one day maturity category reflects a difference of .15% and .60% between the three jurisdictions. Examining the detailed portfolio holdings for the three jurisdictions indicates a significant contributor to the greater yield experienced at the other jurisdictions is the use of community banks for CD and DDA placement of funds. All banks receiving public deposits in Virginia must be in compliance with the Virginia Security of Public Deposits Act and become a "Qualified Public Depository". The Act qualifies depositories and manages a collateralization process to reimburse public depositors in the event of a bank or savings and loan default. Increasing the pool of qualified local financial institutions will also support Fairfax County's strong local banking community.

Recommendations

The following recommendations have been reviewed with the Finance Department. The Investment Committee has agreed with Recommendation #1, and has agreed to research and consider the other recommendations. The Investment Committee noted that many of the recommendations had been studied in prior years. Placing a revenue value on the recommendations can be based on recent experience or based on forward projections. The Finance Department has decided upon a forward looking approach which anticipates that market rates will see further declines. If market rates decline the recommendations will slow the impact on the portfolio. If market rates increase, using a laddered approach to maturity periods (aligning maturities with major disbursements such as county/school payrolls and bond payments) will still produce positive revenue benefits. The Investment Committee should place revenue estimates on the recommendations as it studies them.

1. Realign Portfolio Target Balances - The Investment Committee should consider establishing the Liquidity Portfolio target balance at \$1 billion. This will have the effect of increasing the average balance of the Core Portfolio by \$750,000,000. The Department of Finance estimates that this will produce a General Fund revenue increase of \$1.2 million for FY 2014. (This recommendation has already been incorporated in the FY 2014 Budget.)
2. Maximum Maturity Period – It is recommended that the County move to a maximum maturity of two years as permitted in the *Code of Virginia* and allow an additional one year of maturity on a case by case basis approved in advance by the County’s Chief Financial Officer and Investment Committee. After an appropriate amount of time to adjust and develop experience with the recommended increase in maturity, the Investment Committee should examine further maturity increases to a maximum of five years.
3. Money Market Funds (MMF) – The current practice is to restrict MMFs to those which invest in United States Government and Agency securities. The Investment Committee should evaluate the use of PRIME type MMFs which make additional use of a broader array of investment instruments allowed by the *Code of Virginia*. Use of any PRIME type MMF must be determined to be in compliance with the *Code of Virginia*.
4. Demand Deposit Accounts (DDA) and Certificates of Deposit (CD) – Increasing the pool of banks for CDs and DDAs to include well qualified community banks will increase competition for County funds and provide access to higher yields.
5. US Treasury and Agency Instruments – It is recommended that greater efforts be made to utilize the maturity period expansion to obtain additional yield through Treasuries and Agency instruments or utilize other allowable instruments such as corporate notes, in compliance with the appropriate provisions of the *Code of Virginia*.

INFORMATION TECHNOLOGY DISASTER RECOVERY PLAN (MAIN DATA CENTER)

Overview

The recovery of critical Information Technology (IT) systems during a disaster is an essential component of business continuity planning. The objective of a disaster recovery plan is to ensure that essential IT systems are recoverable and available during disasters. Disasters can be caused by natural forces (such as severe thunderstorms, earthquakes, and floods), the unexpected disruption of critical services (such as electrical power and telecommunications), or human intervention (such as terrorist attacks, computer viruses, or human error). Key elements of a disaster recovery plan include identifying and classifying critical IT systems, developing recovery strategies for those systems, routinely testing the disaster recovery strategies, and documenting the disaster recovery strategies and testing procedures in a comprehensive and readily available plan.

The Department of Information Technology (DIT) has developed a document titled “COOP & DR Plan” (dated April 22, 2013) to cover systems and applications that are hosted in the County’s main data center. According to the DIT Director, this document constitutes the County’s current disaster recovery plan. Although the “COOP & DR Plan” document contains many of the recommended elements of an information technology disaster recovery plan, much of the underlying infrastructure that will enable DIT to effectively recover the County’s mission critical systems in the event of a disaster is currently under development.

IT System Backup Methods and Recovery Strategies

There are a variety of backup methods and recovery strategies that an organization can use to restore its IT systems in the event of a disaster or disruption. The importance (criticality) of the IT system usually determines the backup method and recovery strategy. For example, an IT system that processes and maintains financial data is more critical to an organization than a system that maintains a list of office supplies. As noted in the table below, IT systems and applications that are classified as critical or mission-critical for an organization typically require a higher degree of redundancy and recoverability.

Recommended Disaster Recovery Backup and Recovery Strategies National Institute of Standards and Technology*

System Classification	Impact Level	Recommended Disaster Recovery Backup Strategy
Mission-Critical	High Priority – any outage or unavailability of the system would cause the most impact on the organization, mission, and other networks.	Backup Method: Mirrored systems and disk replication. Recovery Strategy: Hot site.
Critical	Moderate priority – any outage or unavailability of the system would cause moderate problems for the organization and possibly impact other networks or systems.	Backup Method: Fixed Media Drives, Network Replication. Recovery Strategy: Cold or warm site.
Non-Critical	Low priority – any outage or unavailability of the system would not significantly impact the organization.	Backup Method: Tape Backup Recovery Strategy: Relocate or cold site.

*National Institute of Standards and Technology (NIST), Special Publication 800-34.

Backup tapes are currently the primary disaster recovery backup method for most of the County's systems and applications. The County's applications are maintained on three primary systems: (1) Mainframe-based systems, (2) Server-based systems, and (3) SAP. DIT contracts with a vendor to provide and maintain an available off-site facility for the mainframe-based systems and applications. For the County's server-based systems, DIT uses data center space in the Public Safety and Transportation Operations Center (PSTOC) to provide disaster recovery redundancy and failover capability for a limited number of systems and applications. It is important to note that PSTOC is located approximately 1 mile from the County's main data center, which is significantly closer than industry standards recommend. PSTOC also has limited data center space, and lacks the equipment and capacity necessary to provide full and effective recoverability for all of the County's server-based systems.

Fairfax County IT Systems Disaster Recovery Backup and Recovery Strategies

	Mainframe	Server-Based Systems	SAP
Systems/Applications	Personal and Property Tax System, Budget Preparation (BPREP).	Multiple systems and applications: LDSnet FIDO, PARKNet (ParkTakes Online), Yardi (Housing Outlook (email), etc.	FOCUS (financial system)
Backup Method and Recovery Strategy	Backup Tapes: Available off-site recovery facility provided by a vendor.	Backup Tapes: Redundancy available at PSTOC* for some systems and applications.	Backup Tapes: Implementation of full redundancy at an offsite facility in July/August 2013.

*Public Safety and Transportation Operations Center, located approximately 1 mile from the County's main data center.

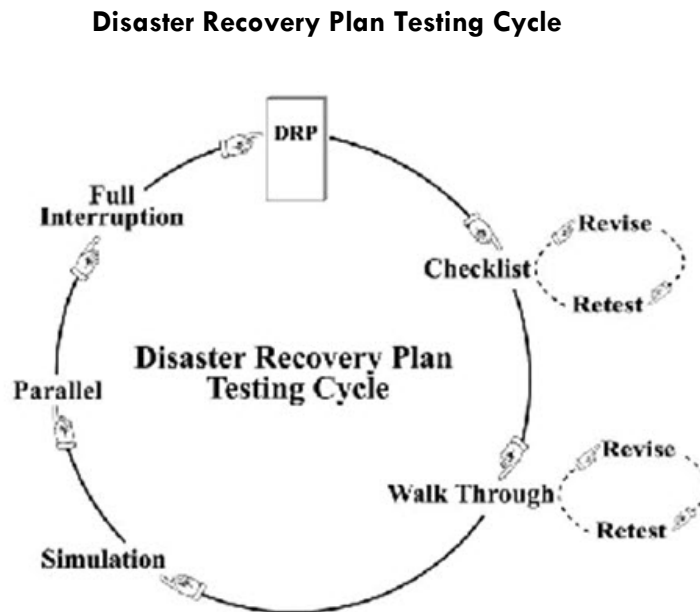
DIT is currently using backup tapes as the primary backup and recovery method for the County's financial system (FOCUS), a mission-critical system. DIT management and staff have indicated that plans are in place to implement full redundancy at an offsite facility located outside of the Northern Virginia region. It is anticipated that full redundancy capability for the County's financial system, as well as other server-based systems, will be operational in the late summer/early fall of 2013.

Disaster Recovery Plan Testing

Routine testing is an essential component of an effective information technology disaster recovery plan. The key objectives of disaster recovery testing are to familiarize staff with the disaster recovery process, verify the effectiveness of the plan, ensure that the recovery processes and procedures actually work and are achievable, and to identify gaps and needed improvements to the disaster recovery plan. The test plan should clearly delineate the scope of testing, the test scenarios, and logistics. The scenario chosen may be a worst-case incident or an incident most likely to occur. It should mimic reality as closely as possible. Disaster recovery testing should be conducted at least annually and the results should be evaluated and sufficiently documented.¹⁸

¹⁸ National Institute of Standards and Technology (NIST), Special Publication 800-34.

As shown in the figure below, there are five standard methods for testing disaster recovery plans: (1) Checklist, (2) Walk Through, (3) Simulation, (4) Parallel, and (5) Full Interruption.



Source: SANS Institute, "Disaster Recovery Plan Testing: Cycle the Plan, Plan the Cycle."

Checklist Test - A checklist test is an easy way to validate multiple components of the disaster recovery plan, including the emergency call tree, key procedures, hardware and software configuration, tape backup libraries, and operational manual.

Walk Through Test – During a walk through test, disaster recovery team members verbally "walk through" the specific steps as documented in the plan to confirm effectiveness, identify gaps, bottlenecks or other weaknesses in the plan.

Simulation Test – During a simulation test, a disaster is simulated – however, normal operations are not interrupted. Hardware, software, personnel, communications, procedures, documentation, transportation, utilities, and alternate site processing are thoroughly tested.

Parallel Test - Under this scenario, historical transactions such as the prior business day's transactions are processed against preceding day's backup files at the contingency processing site or hot site.

Full Interruption Test - A full-interruption test activates the total disaster recovery plan. This type of testing is costly and could disrupt normal operations; it should be approached with caution and an extensive amount of planning.

Currently, the County's disaster recovery testing documentation is dispersed between three different groups within DIT and the level of documentation varies from group to group. One group within DIT provided documentation showing the results of disaster recovery testing for the County's mainframe-based systems. Another group within DIT verbally indicated that disaster recovery testing is performed for the server-based (open) systems on a periodic, ad-hoc basis. A third group within DIT indicated that they recently performed a test demonstrating the recoverability of the FOCUS system from the backup tapes as part of the annual financial audit. Industry standard-setting organizations, such as the National Institute of Standards and Technology, recommend a single point of contact for coordinating and documenting the results of disaster recovery testing. This helps to ensure a more efficient and coordinated process of review and evaluation.

Recommendations

- DIT should continue efforts to improve the County's disaster recovery infrastructure capabilities for its server-based and SAP systems (planned for late summer/early fall 2013). Once the disaster recovery infrastructure is in place, DIT should ensure that the IT disaster recovery plan reflects the new backup methods and recovery strategies.
- DIT should designate a single point of contact for the IT disaster recovery plan. Once designated, the disaster recovery contact should ensure that future testing of the disaster recovery plan includes a more comprehensive and coordinated approach and the results of those tests (particularly for the server-based systems) are documented in accordance with industry standards and are maintained in a central location.

PRIOR STUDIES FOLLOW-UP

PARK AUTHORITY BUDGET REVIEW (November 2012)

In November 2012, OFPA issued a special report on strategies to reduce County General Fund support of the Park Authority. The report outlined three strategies for reducing General Fund support by approximately \$3.5 million for the fiscal year 2014 budget. The three strategies were: (1) Cost Recovery for Support Services, (2) Reductions to Underutilized Budget Line-Items, and (3) One-Time Transfers from reserves. The County implemented most of our recommended strategies, which resulted in a \$2.6 million benefit to the fiscal year 2014 budget.

INFANT TODDLER CONNECTION BILLING PRACTICES (January 2013)

In January 2013, we reported the results of our review of the Infant Toddler Connection (ITC) program billing practices. The review was conducted as part of the County Executive's Community Services Board (CSB) Work Plan. We recommended that the ITC implement three best practices to help ensure that the County's ITC collections revenues are effectively maximized and sufficiently safeguarded.

1. **Establish Performance Measures for Billing and Collections** – ITC has established baseline collection targets for the five largest insurers with whom ITC has in-network status. This encompasses over 90 percent of the ITC families who use insurance. ITC has also established with the billing contractor a monthly timeline for billing and sending out family fee invoices as well as submitting the required financial reports. These performance measures will be added to the contract at the next renewal.
2. **Ensure Financial Reports Provide a Reliable Basis for Monitoring and Oversight** – The Department of Administration for Human Services met with ITC staff and the billing contractor to recommend categories that are more closely aligned with the County's financial system and to improve the transparency of the billing contractor's reports.
3. **Conduct Audits of the Billing Contractor's Financial Records** – Audits are planned to take place after the above practices have been in place for several months.

CABLE REVENUE VERIFICATIONS (May 2012)

In May 2012, OFPA reported on the status of the County's cable revenue verifications. Although the communications sales tax replaced the franchise fee system in 2007, the County's franchise agreements with Verizon, Cox, and Comcast remain in effect until their expiration dates. Under the terms of the existing agreements, the County has the right to audit the cable provider payments.

We recommended that the Department of Cable and Consumer Services verify the cable provider payments and initiate periodic audits of the cable providers during fiscal year 2013. In January 2013, the Department of Cable and Consumer Services reported that it had reviewed the cable payments for Verizon and determined that the County had been underpaid by \$458,888. Verizon subsequently remitted that amount to the County.

LIST OF ACRONYMS

CD	Certificate of Deposit
CNPAs	Concurrent Non-Project Activities
COOP	Continuity of Operations Plan
CSB	Fairfax-Falls Church Community Services Board
DCMP	Dulles Corridor Metrorail Project
DDA	Demand Deposit Account
DIT	Department of Information Technology
DR	Disaster Recovery
DTP	Dulles Transit Partners
ETS	Emergency Trip Stations
FFGA	Full Funding Grant Agreement
FTA	U. S. Federal Transit Administration
IT	Information Technology
ITC	Infant Toddler Connection
LGIP	Local Government Investment Pool
MMF	Money Market Fund
MWAA	Metropolitan Washington Airports Authority
OFPA	Office of Financial and Program Audit
PMOC	Project Management Oversight Contractor
ROD	Revenue Operations Date
ROW	Right of Way
TPSS	Traction Power Substation
WAM	Weighted Average Maturity
WFCY	West Falls Church Yard
WMATA	Washington Metropolitan Area Transit Authority