

LOB #59:

## **UTILITIES DESIGN AND CONSTRUCTION**

### **Purpose**

Utilities Design and Construction Division (UDCD) manages the design and construction of a wide variety of wastewater, stormwater, and transportation infrastructure projects.

### **Description**

UDCD projects include: sanitary sewer upgrades, wastewater pump station rehabilitations, wastewater treatment plant expansions/upgrades, storm drainage improvements, transportation infrastructure projects; road improvements, trails, sidewalks, developer defaults, and bus shelters. UDCD provides professional project management, construction administration and quality control to ensure implementation of CIP projects in a timely, safe, cost-effective, high quality and environmentally sensitive manner.

#### **Wastewater Projects:**

UDCD manages all aspects of design and construction for wastewater collections system and treatment plant projects. In FY 2015, UDCD managed design and construction for wastewater projects totaling over \$43 million in expenditures. Wastewater projects typically include:

- Sanitary sewer replacement/upgrade;
- Pump station rehabilitations;
- Wastewater treatment plant expansions/upgrades; and
- Emergency repair projects.

These projects are part of a robust Capital Improvement Program for significant and long-term upgrades at the Noman M. Cole, Jr. Pollution Control Plant and a growing list of pump stations and sanitary sewer lines that form the wastewater collection system for Fairfax County. For the design phase of a project, UDCD manages the selection of engineering firms, oversees scope development, ensures designs are completed to meet the needs of our customers, identifies required land rights, and obtains all required permits for projects. For the construction phase of a project, UDCD manages the bid advertisement and contract award processes, oversees all aspects of construction contract management to include inspection, testing, code compliance, and project close-out.

#### **Transportation Projects:**

UDCD manages the construction for a variety of transportation improvement projects, and the design for these projects is administered by the FCDOT. UDCD works closely with FCDOT during the design phases to ensure the construction documents are bid-ready. In FY 2015, UDCD totaled over \$49 million for construction expenditures on Transportation projects. Transportation improvement projects typically include:

- Lane widening, turn lane and signalization improvements;
- Pedestrian improvements such as trails, sidewalks, and crossing;
- Commercial revitalization and streetscape improvements projects;
- Roadway re-alignment projects;
- Bicycle and multi-use trails; and,
- Traffic calming.

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During the construction phase of a project, UDCD manages the bid advertisement and contract award processes, oversees all aspects of construction contract management to include inspection, testing, code compliance, and project close-out.

## Stormwater Projects:

UDCD manages the construction for a variety of stormwater improvement projects. The design for these projects is administered by the Stormwater Planning Division of DPWES. UDCD works closely with Stormwater Planning Division during the design phase to ensure the construction documents are bid ready. In FY 2015, UDCD totaled over \$21 million for construction expenditures on Stormwater projects. Stormwater improvement projects typically include:

- Stream restoration pond retrofits and upgrades;
- Bio-retention ponds;
- Storm sewer pipe replacement and upgrades;
- Dam rehabilitation/upgrades; and,
- Lake dredging.

For the construction phase of a project, UDCD manages the bid advertisement and contract award processes, oversees all aspects of construction contract management to include inspection, testing, code compliance, and project close-out.

## Developer Default Projects:

UDCD manages the developer default program whereby a developer has been unable to complete a permitted project and the project is turned over to the County to complete. In these instances, Land Development Services, Department of Public Works and Environmental Services, coordinates with the County Attorney's office to declare a project in default and cash-in the developer's bond for the project. The bond money is transferred to UDCD and used to complete the project. UDCD determines the scope for the incomplete items, contracts with design firms as needed, obtains price quotes from vendors, awards contracts and oversees all aspects of construction to include inspection, testing, code compliance, and project close-out. Once all remaining work is complete, UDCD works to turn the completed project over to the Virginia Department of Transportation (VDOT) or other entities as needed for long-term maintenance and operation.

The overall UDCD LOB is performed with 67/67.0 FTEs and headed by a Division Director position.

## **Benefits**

Utility Design and Construction is key to fulfilling the mission of Capital Facilities to provide Fairfax County with quality, cost-effective buildings and infrastructure in a safe, timely and environmentally-sound manner. The design and construction managed by UDCD provides vital benefits to the citizens of Fairfax County that have a direct link to the County's Vision Elements. The UDCD LOB provides the following benefits:

- Implement CIP programs for wastewater, stormwater, transportation, and developer default projects in a timely, safe, cost-effective, high quality and environmentally sensitive manner.
- Provide assurance of quality and regulatory compliance for all projects.
- Provide a centralized area of professional expertise in managing the vast majority of the County's major horizontal infrastructure projects (Standard Operating Procedures (SOPs), lessons learned, design standards, quality assurance processes, procurement and accounting).
- Provide leadership in promoting the Board of Supervisor's Environmental Agenda and Sustainable Development Policy.
- Promote a culture of safety and promote safety awareness for staff and contractors.

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- Contribute to the Strategic Plan for Economic Success Goal 4 by investing in natural and physical infrastructure.
- Professional and proactive project budget and schedule management, and contract administration.
- Provide regular project reporting and coordination with wide array of stakeholders, including the community.
- Provide leadership role in preparation of annual CIP, Capital Budgets, project funding strategies, and cash flow projections.
- Collaborate with the community to assure awareness and support for County infrastructure projects.
- Support a wide array of County agencies by providing new and upgraded facilities necessary for the delivery of County services.

## **Primary Correlation to County Vision Elements**

**Maintaining Safe and Caring Communities:** The wastewater projects implemented by UDCD have a direct link to public health. Fairfax County has a vast wastewater collection system that is aging rapidly. The upgrades and emergency repairs on these aging sanitary sewer lines protect the public health and improve water quality for the residents. In addition, Transportation projects include improvements such as curb cut ramps, pedestrian crossings, and bus shelters to provide safe access to mass transit for all sectors of the County's population.

**Building Livable Spaces:** The infrastructure to collect and treat wastewater has a direct link residential and commercial development across the County. Additionally, the transportation improvements constructed by UDCD also play an important role in providing livable spaces for residents.

**Connecting People with Places:** The transportation improvements constructed by UDCD allow people to drive, walk, bicycle, and have safe access to public transportation to connect with places in the County and beyond. Many transportation projects (i.e. Lorton Road Realignment) provide trails and sidewalks, bicycle lanes, and bus stops in urbanized areas of the County.

**Maintaining Healthy Economies:** By connecting people and places UDCD projects have a direct link to vibrant economies as residents are able to travel to business destinations with more predictable travel times.

**Practicing Environmental Stewardship:** Stream restoration projects (i.e., Wakefield Park Stream Restoration and Huntsman Lake Dredging projects) and other stormwater projects provide critical water quality benefits to streams, rivers and the Chesapeake Bay. Similarly, sanitary sewer collection and treatment system projects provide additional water quality and environmental improvements for the County. Additionally, many roadway improvements are targeted at public mass transportation and increased pedestrian/bicycle traffic which all help reduce the carbon footprint for the County.

**Creating a Culture of Engagement:** Input from residents is an essential part of the capital projects program. Public meetings are routinely conducted through the District Supervisor's offices to explain all aspects of proposed projects and seek input from residents that may modify elements of a project. Additionally, information is provided to residents during the course of project implementation.

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## Mandates

The projects implemented by UDCD work to support compliance with:

- UDCD implements stormwater projects that are specifically designed to improve stormwater quality across the County per mandates under the MS4 permit.
- Air and water quality permits at the Noman M. Cole, Jr. Pollution Control Plant. UDCD manages the design and construction of projects that are specifically implemented to meet current and future air and plant effluent quality permit limits.
- Many UDCD projects involve the upgrade of sanitary sewer infrastructure that ultimately reduce sanitary sewer overflows (SSOs) across the County. SSOs are closely scrutinized and impact the County's MS4 permit requirements.
- Emergency sanitary sewer repairs are implemented to repair failed infrastructure and to remediate SSOs.
- Inspectors are charged with compliance on erosion and sediment controls on each of the projects implemented in Capital Facilities. UDCD has 10 full-time site inspectors that are trained to enforce state erosion and sediment control regulations. These inspectors visit hundreds of project sites each year to enforce these requirements.

## Trends and Challenges

- Aging County Infrastructure;
- Urbanization of the County;
- Increasing size and complexity of projects and limited staff and resources;
- Increase in number and size of projects;
- Complexity of design and construction processes and permits;
- Increasing and constantly changing environmental requirements for air and water quality;
- Transit Oriented Development and urbanized centers such as Tysons, Merrifield, Reston, Springfield and Bailey's/Seven Corners;
- Uncertainty of multi-year capital funding allocations and associated staff resource demands;
- Potential for significant swing in the regional construction industry that would lead to an increase in cost of future projects;
- Increasing use of Alternative Delivery Methods for project, design/build, construction management at risk, job order contracts; and,
- Increased emphasis on rehabilitation and upgrade of aging sanitary sewer system infrastructure.

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## Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
<b>LOB #59: Utilities Design and Construction</b>			
<b>FUNDING</b>			
<u>Expenditures:</u>			
Compensation	\$4,864,901	\$4,976,654	\$5,445,168
Operating Expenses	114,703	96,160	41,471
Work Performed for Others	(3,433,419)	(3,652,061)	(3,661,617)
<b>Total Expenditures</b>	<b>\$1,546,185</b>	<b>\$1,420,753</b>	<b>\$1,825,022</b>
General Fund Revenue	\$0	\$0	\$0
<b>Net Cost/(Savings) to General Fund</b>	<b>\$1,546,185</b>	<b>\$1,420,753</b>	<b>\$1,825,022</b>
<b>POSITIONS</b>			
Authorized Positions/Full-Time Equivalents (FTEs)			
<u>Positions:</u>			
Regular	67 / 67	67 / 67	67 / 67
<b>Total Positions</b>	<b>67 / 67</b>	<b>67 / 67</b>	<b>67 / 67</b>

## Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Total Construction Value of Completed Projects or Projects in Construction per Fiscal Year	NA	NA	\$154,270,000	\$190,430,888	\$202,009,086
Total expenditure for design and construction per fiscal year	\$93,288,739	\$106,500,984	\$111,376,480	\$139,484,991	\$147,979,241
Total expenditure for design and construction per staff person	\$1,392,369	\$1,589,567	\$1,662,336	\$2,081,886	\$2,208,645
Customer Service Survey	NA	85%	NA	90%	NA

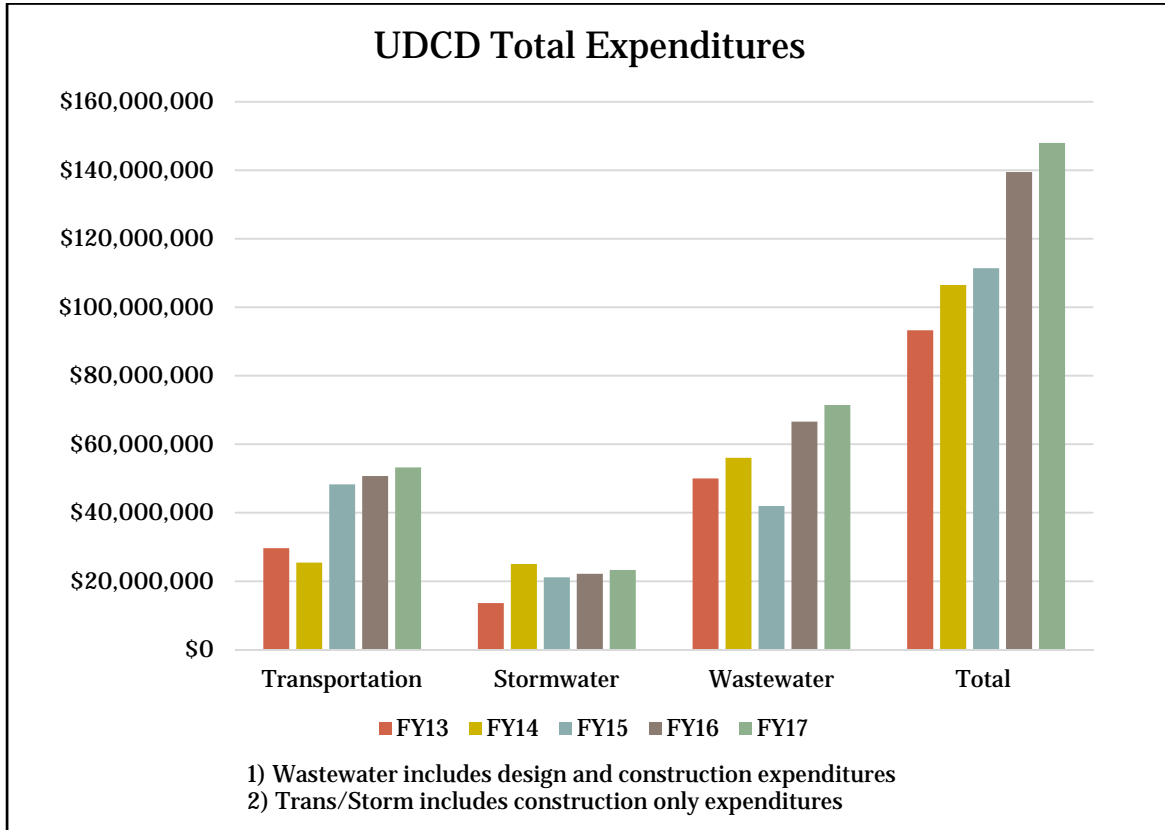
### **Total Construction Value of Projects per Fiscal Year**

This measure tracks the construction value of all active construction projects in a given fiscal year. The construction value is a reflection of the overall workload managed by this LOB. FY 2015 is the first year of tracking this number so historical data from previous years is not available. With project growth in all sectors of this LOB (wastewater, transportation, and stormwater), the workload and output by the UDCD LOB is anticipated to continue to increase. Construction value of projects has grown from \$93 million in FY 2013 to \$147.9 million estimated for FY 2017.

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### **Total Expenditure per fiscal year**

This output measure provides a comparison of total expenditures by UDC since FY 2013. The expenditures are a reflection of the overall workload managed by UDC. With project growth in all sectors of this LOB (wastewater, transportation, stormwater), the workload managed by the UDC is anticipated to continue to increase as project growth continues from all sectors.



### **Total Expenditure per FTE**

This efficiency measure provides a comparison of total expenditures per FTE by this LOB during a given fiscal year. Total expenditures are divided by the total number of full-time merit employees in UDCD. Project growth continues in all sectors of this LOB (wastewater, transportation, stormwater). Contract dollars managed are increasing with project growth, resulting in increases in the dollar level managed per FTE but also complexity of project type.

<b>UDCD Expenditures</b>					
	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Total Expenditures	\$93,288,739	\$106,500,984	\$111,376,480	\$139,484,991	\$147,979,241
Expenditure \$/ FTE	\$1,392,369	\$1,589,567	\$1,662,336	\$2,081,866	\$2,208,645
FTE's	67	67	67	67	67

### **Customer Service Survey**

UDCD conducts a customer service survey bi-annually to gauge the level of satisfaction for the services the agency provides. The target goal is 90 percent of responses of satisfactory or above. FY 2014 was the first year of this survey and results show an 85 percent customer service satisfaction. Efforts at all levels of the organization are ongoing to work toward achieving the 90 percent goal when the next survey is conducted in FY 2016.