

5-Year IT Strategic Plan





5-Year Information Technology Strategic Plan

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I. Foreword

DURING THE LAST SEVERAL YEARS, the Washington Suburban Sanitary Commission (WSSC) has begun implementing aggressive plans to improve our operations, contain costs, and vastly improve customer service. The fact, for example, that we are gradually replacing an aging infrastructure, which is both critically important and very costly, is well known. We are also embarking on bold strategies that will touch every aspect of our work and which we believe will help us continuously improve our operations and enhance our ability to deliver the highest quality services to our customers.

Information has always been vital, and access to information using technology is crucial to the success of the modern water and wastewater utility. Almost everything we do today at WSSC is facilitated by information technology, touching every aspect of utility operations as it has touched our everyday lives. Its pervasiveness allows us to take labor and time saving technologies for granted, but a great deal of effort must be invested in planning, designing, and implementing information technology systems that really improve business operations.

At WSSC, we consider our information technology assets, our “soft” infrastructure, as the foundation for future development for the utility. We need to treat information as a strategic asset, establishing a robust, reliable, modern, and interoperable technology infrastructure to support data collection, analysis, reporting, and even direct operations. To realize this vision, WSSC must optimize Information Technology (IT) investments and more rapidly deploy IT capabilities, drawing on our highly skilled and innovative workforce positioned to meet these emerging and expanding requirements.

This strategic plan outlines the information technology roadmap for WSSC. It is comprehensive and ambitious. It demonstrates the significant contribution of technology in the way we operate our business, service our customers, and manage our finances. It also affirms WSSC’s commitment to investing substantially in its IT infrastructure, as guided by this IT Strategic Plan. In this dynamic context, it is also important to note that this plan itself will need to adjust and respond to evolving customer needs and changing technological opportunities.

We want to thank the WSSC management and staff, and Mujib Lodhi, WSSC’s Chief Information Officer, for developing this comprehensive plan. Finally, we want to thank our Commissioners and our Chairman for their strategic guidance in this area and for their support.



Jerry N. Johnson
General Manager/CEO

II. Executive Summary

WSSC's core business is to provide safe and reliable water and wastewater services to its customers. Among the nation's largest water and wastewater utilities, WSSC serves more than 1.8 million residents over roughly 1,000 square miles.

WSSC's vision is to be among the top tier of the best-managed water and wastewater utilities in the world. It pursues this excellence in an environment of growing business complexity, advances in technology, changing stakeholder expectations, and tight economics (see inset on water utility trends for context). As the nation and this region gradually recover from the severe economic downturn, WSSC is determined to nimbly respond to the myriad of challenges and opportunities that lie ahead. Several overarching factors make this an opportune moment to take a fresh look at WSSC's overall Information Technology (IT) strategy. First, WSSC must efficiently replace its aging infrastructure, which is a costly, complex and information-intensive management process. Second, the release of pent-up demand accumulated during the recent economic slow-down is likely to strain WSSC's capacity to support new growth and economic activity. Third, given increased financial pressures on its customers, WSSC must deliver strong value to its ratepayers and earn the public's confidence by better communicating and engaging with the stakeholders.

Delivering high-quality services requires more than pipes and pumps. In addition to physical infrastructure, WSSC's future performance will also depend on its ability to provide first-rate customer service; operate a modern, efficient service delivery organization; secure and optimize financial resources; employ a skilled workforce capable of delivering on future needs; and serve and protect the region's water resources.

The 21st century IT function is increasingly recognized as a strategic as well as a service and support function. This requires strategic forethought, ongoing investment, quality assurance, and periodic renewal. Intelligently deployed IT-based systems,

Top 10 Water Utility Trends

A 2011 inquiry commissioned by the Water Research Foundation on the future of the industry produced a list of trends to watch over the next 10-20 years. While these selected trends are qualitative and not comprehensive, they nonetheless portray a future that is significantly more complex, more dynamic, and more technologically and conservationally driven than today.

1. Uncertain Economy, Financial Instability
2. Decreased Availability/Adequacy of Water Resources
3. Aging Water Infrastructure/Capital Needs
4. Shifting Water Demands (Per Capita Reduction)
5. Changing Workforce, Dynamic Talent Life-Cycle
6. Expanding Technology Application
7. Mass/Social Media Explosion
8. Increasing/Expanding Regulations
9. Efficiency Drivers, Resource Optimization
10. Climate Uncertainty

WSSC's IT strategy offers a robust IT response to these trends. Interspersed in this document are Stories of the Near Future, a series of short vignettes illustrating how a successful implementation of this strategy could be experienced by our customers, our employees and our other stakeholders.

Source: Water Research Foundation, 2012.

business processes and real-time data offer WSSC unprecedented opportunities to improve and even innovate the way business is managed and customers are served. Congruent with this vision, WSSC will exploit opportunities where information technology can significantly contribute to the enterprise's business effectiveness and efficiency.

BUSINESS NEEDS MAPPED TO POTENTIAL IT SOLUTIONS

PILLAR	KEY BUSINESS OPPORTUNITIES	IT SOLUTION OPPORTUNITIES
BUILD & RENEW PHYSICAL INFRASTRUCTURE	Make optimal replacement decisions	Decision Support & Budget Management
	Attract quality, price-competitive vendors	Procurement & Contracts Management
	Ensure timely execution to standards	Construction Management
WATER FILTRATION & WASTEWATER TREATMENT	Adequate and cost-effective inputs	Supply Chain Management
	Optimize asset availability & work management	Asset Management: Production
	Track & monitor quality and compliance	Water Quality Analytics*
DISTRIBUTION, COLLECTION & CUSTOMER SERVICE	Optimize preventive & corrective maintenance	Asset Management: Infrastructure Geographical Information Systems (GIS) Mobile Workforce
	Minimize leakage loss	Leak Detection
	Customer responsiveness	Customer Systems
	Accurate, fair billing and collections	Advanced Metering Infrastructure (AMI)
	Efficient licensing and permitting	Permitting
	Activation and terminations	Customer Systems
	Revenue enhancement	Advanced Metering Infrastructure (AMI) Customer Systems
CROSS-CUTTING BUSINESS SUPPORT FUNCTIONS	Financial compliance, cost management, reporting and efficient procurement	Procurement & Contracts Management Financial Reporting Stakeholder Management
	Attract, develop & retain right skills mix	Human Resources Information System (HRIS)
	Maintain accurate records of plants, pipes, people	Documents/Records/Knowledge Management (KM)
	Set performance targets & monitor results	Dashboard Mobile Workforce
	Safety & environmental stewardship	Safety Management Leak Detection Asset Management Stakeholder Management

With inputs from individual and group consultations with WSSC staff at different levels from across the enterprise, the IT strategic planning team analyzed WSSC's business needs and identified and prioritized opportunities where IT solutions could help address those needs, as illustrated in the table above. The prioritized IT solution opportunities span the Commission's eight enterprise-wide strategic priorities articulated in the 2010 Strategic Plan, with some solution approaches serving and reinforcing across multiple priorities. The planned IT initiatives are being phased in over the 5-year planning horizon taking into account multiple considerations, including: implementation intensity (and concomitant demands on management attention); expected benefits; and some additional portfolio and system-specific considerations.

Our 5-Year IT Strategic Plan pinpoints opportunities to improve WSSC's technical and IT service functions. Highlights include:

- ◆ Continue transitioning to modern, distributed architectures
- ◆ Leverage cloud infrastructure where it is secure and cost-effective
- ◆ Invest in IT security
- ◆ Invest in mobile infrastructure and equip staff with real-time information and guidance
- ◆ Develop analytical capabilities to integrate and harness large-scale data

Delivering on this plan will also require a streamlined, user-oriented and performance-driven project

implementation approach; successful leveraging of county-level synergies; clear IT governance processes to guide priorities and project implementation; an IT team organized and equipped to support business needs; mitigation of key risks; and sufficient financial resources.

This 5-Year IT Strategic Plan embodies a shift in the way the Commission views its IT function and evaluates and plans its IT investments over the medium term. As a **living strategy**, this plan must be periodically revisited and recalibrated to ensure responsiveness to technological advancements and WSSC's changing business needs. Successful delivery of this plan will solidify IT's role as a valuable strategic partner, as well as a reliable service provider.



Vision for Leveraging Information Technology to Improve Service Visits for Customers

After putting her kids to bed one night, Mrs. Jones makes a service activation appointment using WSSC's service app on her mobile phone. WSSC commits to a 4-hour window for the service visit, allowing her to schedule the appointment for the morning with minimal disruption to her day. The evening before, Mrs. Jones receives an automated call reminding her of her appointment, with the option to reschedule.

The next morning, Mrs. Jones drops off her kids and comes home in time for her service window. Meanwhile, Bob, the WSSC service technician, is finishing up another job. Thirty minutes before leaving, Bob uses his hand-held device to send an automatic text message to Mrs. Jones with his anticipated arrival time. When Bob arrives, he presents his WSSC badge. Home alone, Mrs. Jones is very security conscious and enters his badge number into her WSSC service app. The WSSC service instantly confirms Bob's identity by sending Bob's picture through the app and links him with the appointment. Reassured, she invites him to begin his work. As he switches on the meter, Bob notices the pressure is low. Using his hand-held device, Bob initiates a follow-up service ticket to check the pressure issue. Mrs. Jones then receives an email confirmation of the service initiation, which she can also access on her MyWSSC portal. She is particularly pleased that Bob arrived early in his appointment window and this busy working mom can now go about her daily tasks.

III. Background and Context

A. WSSC Context

WSSC's core business is to provide safe and reliable water and wastewater services to its customers. Among the nation's largest water and wastewater utilities, WSSC serves more than 1.8 million residents over roughly 1,000 square miles.

WSSC's vision is to be among the top tier of the best-managed water and wastewater utilities in the world. As WSSC's business environment continues to evolve, so too must WSSC to remain poised to respond to key strategic challenges. Water remains a precious, scarce resource—and WSSC plays an important role in protecting our watershed and waterways. At the same time, WSSC must continue to comply with changing regulatory requirements. Moreover, as the conduit between customers and their water supply, WSSC can also play a role in promoting water conservation throughout its service area.

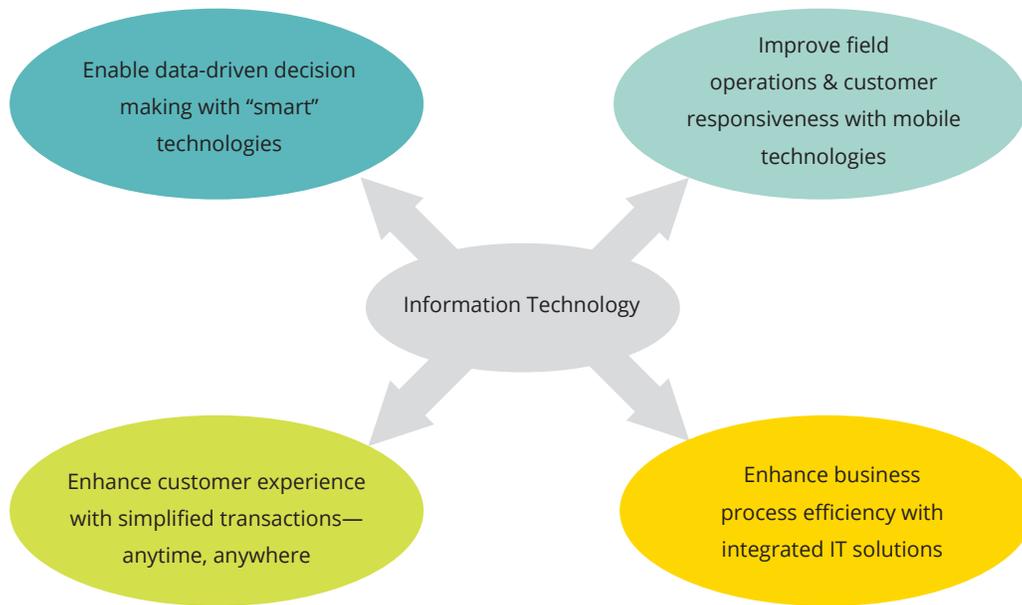
WSSC relies on its vast infrastructure network to deliver safe and reliable water and wastewater services. However, like many utilities, WSSC's aging infrastructure remains a persistent challenge.¹ WSSC maintains a network of roughly 11,000 miles of water and sewer pipelines as well as 7 wastewater treatment plants and 2 water filtration plants. Upgrading its aging infrastructure will require large-scale investments in repairs and replacement, bringing related challenges of controlling costs and maintaining long-term financial viability for WSSC to the forefront. In addition to improving infrastructure management practices, the planned infrastructure investments also offer the opportunity to deploy a new generation of utility infrastructure and application technologies that are smart, information-rich, context- and customer-responsive, and environmentally responsible.

WSSC continues to be committed to delivering high-quality water and wastewater services to its customers.

WSSC as an enterprise largely remains “out of sight, out of mind” for many customers. But this passive interaction with consumers is gradually changing, and WSSC will likely face greater attention and scrutiny from customers and other stakeholders with expected rate increases and environmental consciousness. In addition to safe and reliable water and wastewater services, customers are increasingly seeking the kind of control, flexibility, transparency, and self-service options they have become accustomed to receiving from other services providers. They demand first-rate customer service, with up-to-the-minute information, when and how they want it, and turn to online and mobile channels to access information, access support, provide feedback, and carry out transactions.

Delivering high-quality services in the modern era requires more than pipes and pumps. Operating and maintaining this sophisticated enterprise requires knowledgeable and service-oriented staff; effective and efficient business systems and processes; sufficient and reliable financial resources; and more. WSSC's workforce continues to change as baby boomers retire. While these trends have implications for organizational bench strength and knowledge transfer, they also offer an opportunity to build new skills and competencies for the WSSC of the future. WSSC must also strive for greater business efficiency as it plans for large-scale infrastructure investments and makes its case to stakeholders for continued rate increases. At the same time, the release of pent-up demand accumulated during the recent period of economic slowdown is likely to strain WSSC's capacity to support new growth and economic activity.

1. On a national scale, the Government Accountability Office (GAO) and the Environmental Protection Agency (EPA) have estimated a \$300–\$500 billion gap in what is currently being spent on water infrastructure and what needs to be invested over the next 20 years. Source: *Water Sector Interdependencies: Summary Report 2011* (Water Environment Federation, 2011).



Illustrative Examples of Information Technology Driving Business Value

B. The Catalytic Role of Information Technology

Modernizing business processes and improving infrastructure management practices are at the heart of how a 21st century water and wastewater utility must respond to the above-mentioned challenges. Intelligent deployment of technologies will play an important role in making our industry more efficient, and even change the way we do business in order to better serve their customers. Remedy and innovation are both components of this transformation. The figure above illustrates just some of the ways technology can enhance performance in water and wastewater utilities.

A strategic IT function can support a utility's mission by:

- ◆ Nimble taking advantage of strategic opportunities when they arise
- ◆ Developing strategies to effectively leverage technology
- ◆ Creating and leading initiatives to and bring about IT-enabled change
- ◆ Developing new, IT-enabled products and services
- ◆ Improving the efficiency of business practices

Leading utilities are increasingly realizing that IT is integral to every aspect of operations and that an organization's ability to take advantage of new solutions to enhance performance will depend on the

strength of their IT investments. In WSSC, the IT Team must play a strategic and catalytic role by proactively partnering with its functional counterparts to identify new opportunities where technology can drive greater business effectiveness and efficiency. In turn, the broader enterprise will benefit from embracing IT as a strategic resource and a mission-critical investment.

C. Need for an IT Strategy Refresh

In 2007, an Enterprise Resource Planning (ERP) systems replacement project was initiated by WSSC under the leadership of the Corporate Asset Management Office (CAMO). The plan focused on upgrades to Enterprise Resource Planning (ERP), Enterprise Asset Management (EAM) and Customer Relationships Management (CRM) systems which would retire legacy systems such as COMPASS, MMIS, TAMSO, MAPS, and CSIS. Implementation was scheduled through 2013.

Since the ERP planning effort, WSSC's IT Team has pressed ahead with the ERP agenda and beyond as well as delivered important business solutions to the utility and its customers. As a result of strong partnerships with their line-of-business counterparts, the IT Team delivered over 20 new system solutions in the last two years. The following table contains a sampling of solutions delivered during 2011 and 2012.

Examples of System Solutions Delivered—2011-2012

SYSTEM	GO-LIVE DATE
Oracle® Time & Labor	March 2011
Customer Contact Center	June 2011
Fleet Management	October 2011
Oracle® HR/Payroll Self-Service	March 2012
Watershed Permits	July 2012
SLMBE Compliance Tracking	July 2012

Now several years out from the most recent major IT planning efforts, WSSC's new IT strategic plan is designed to respond to changing business needs, new technology opportunities, and the Commission's new strategic plan. With dedicated and empowered leadership, increasing receptivity from business units, and some early successes, the IT Team is well positioned to help transform IT into a high-performing, strategic function. The challenge going forward will be in sustaining this momentum and balancing the demands of business units, while growing the IT Team's own capacity and discipline to deliver responsive and timely systems.

Vision for Leveraging IT for More Effective & Efficient Capital Investment Planning

In June 2015, WSSC received approval to rehabilitate a large portion of the Patuxent plant and 12 miles of water mains. Using WSSC's plant asset management system, engineering consultants review asset maintenance histories of the big pumps. They discover that 30 HP pumps are responsible for the major maintenance workloads and adjust the design specifications accordingly. Engineers load the preliminary project implementation work-plan into WSSC's Primavera Engineering Project Management (PEPM) system, which generates an engineering cost estimate for the project. Engineers then enter design parameters into WSSC's Contracts Management (CM) System and assemble bid specifications and ancillary documents using contract wizards and pre-approved templates. The various documents are then routed to the appropriate approval channels using the built-in workflow. Using CM, the Project Manager regularly tracks the progress of the contracts, ensuring steady movement through the approval cycle. The procurement approval cycle was reduced from 4 months to 1 month.

With the work now underway, Contracts Administration personnel track work performance in real time using the PEPM system. Earned-value reports from the PEPM give the Engineering Team Chief assurance that the project is running within schedule and under budget.

IV. IT Strategic Planning Objectives and Methodology

Envisioning a more strategic role of IT that is in lock-step with the Commission's business needs, the General Manager and Chief Information Officer led the development of a 5-year IT Strategic Plan during 2012. A small team of technology and business strategy consultants from tieBridge Inc. and GivingWorks Inc. advised and supported this effort.

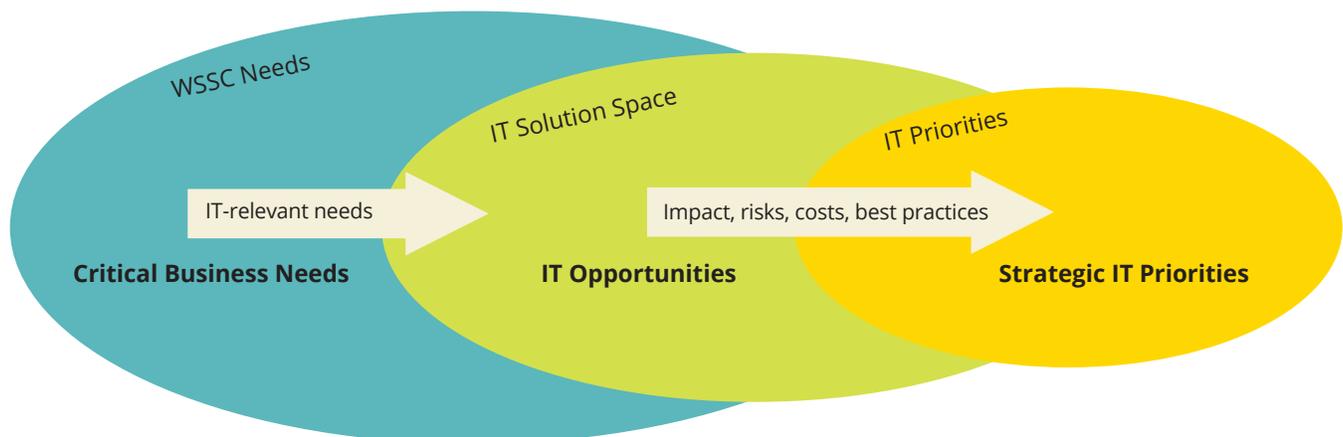
While legacy systems replacement remains a priority for the enterprise, this plan employs a broader frame, identifying opportunities to drive business value through new systems and technologies as well as modernizing current systems while examining areas of greatest business risk. Rather than an inward-looking vision developed by and for the IT Department, this plan is rooted in—and guided by—the Commission's critical business needs, with IT as the tool and not the objective. As a business-driven plan, this 5-Year IT Strategic Plan hones in on specific opportunities over the next five years where IT-based solutions can unlock the greatest business value for WSSC. This approach not only ensures alignment with WSSC's own strategic priorities and core values such as operational efficiency and customer service, but also leverages IT's critical enabling and strategic roles in supporting the mission of WSSC.

The planning approach can be summarized and illustrated as follows:

- ◆ **Business Needs Analysis:** identifying the critical business needs to drive success, drawn primarily from consultations with business units and WSSC's Strategic Plan;
- ◆ **IT Solutions Overlay:** identifying the subset of business needs with corresponding IT solutions, and specific opportunities where IT-based solutions can address those needs; and
- ◆ **Prioritization & Sequencing:** prioritizing among the potential IT opportunities to derive a set of IT project priorities, and sequencing those opportunities appropriately.

Guided by the enterprise-wide strategic priorities identified in the 2010 WSSC Strategic Plan, the IT planning team consulted extensively with WSSC staff and user community from across the enterprise to identify key business and IT challenges and potential IT solutions. Individual consultations were held with all Team Chiefs and Directors. Focus groups primarily targeting Group Leaders were also held for key functional departments, as well as with Unit Coordinators at the four field-service depots. More than 200 WSSC team members

STRATEGIC PLANNING APPROACH



participated in this conversation. Core elements of the proposed strategic plan were also vetted with members of the Change Leadership Team (CLT) and WSSC's Commissioners. Analysis of industry trends and IT's current portfolio, as well as targeted consultations with external experts on select topics further stimulated and validated the team's strategic perspective.

The plan presented here offers a strategic framework to guide WSSC's IT priorities over the next five years. The plan's ultimate value, however, depends not on its articulation per se, but on its successful implementation. As such, this plan also includes an overview of implementation sequencing and timeframes for key initiatives; technical and customer service recommendations; and delivery requirements, including project implementation approach, external partnerships, IT governance and organization recommendations, and risk mitigation strategies. This overall strategy will be further supplemented by short-term, tactical implementation sub-plans that further detail system gaps, requirements, accountabilities, and implementation schedules.

It is critical to note that this plan is intended as a living strategy. Five years can be an "eternity" in IT, and this plan must be periodically recalibrated to respond to technological advancements as well as WSSC's evolving landscape and changing business needs. The process for recalibration is also outlined in this document.

Vision for Leveraging IT to Facilitate Our Local Development

Turney and Reynolds PC (T&R), a Laurel-based developer, is finalizing plans to build a new subdivision in Olney. In need of a Water and Sewer permit, a T&R employee logs into WSSC's permits portal to initiate the permitting process. Within the portal, he validates his registration, submits his permit application using the online form, uploads his AutoCAD® drawings, and pays the permit fees by credit card. The permitting system does a preliminary check of the information submitted and notifies T&R that an inspection report will be required. Fortunately, T&R has the inspection report handy and uploads a scanned copy. Now complete, the permit application is immediately registered and T&R receives a tracking number to track his application's progress in the portal.

A week later, T&R receives an email from the WSSC automated permitting system requesting an inspection appointment date. T&R calls the automatic appointment scheduling Interactive Voice Response (IVR) system and schedules the inspection appointment. Three weeks later, T&R receives his permit by email as a PDF. The permit is also available in T&R's MyWSSC portal.

V. Strategic IT System Priorities

A. Mapping Business Needs to Potential IT Solutions

In assessing WSSC’s IT-responsive business needs and opportunities, we considered both core operations and the business support functions of the enterprise. Infrastructure, filtration and treatment, distribution, collection, and customer service represent WSSC’s core product and customer-service pillars. But delivering on high-quality and cost-effective water and wastewater services also relies on crucial enterprise business support and management functions, including finance, workforce, knowledge management, performance, and safety and environment. In addition to supporting operations, these cross-cutting functions also enable greater coherence and optimization across the enterprise. Consultations with WSSC leadership and staff as well as the planning team’s independent insights surfaced a range of needs and opportunities to enhance WSSC’s performance. The following table maps each need and opportunity with its potential IT solution areas.

BUSINESS NEEDS MAPPED TO POTENTIAL IT SOLUTIONS

PILLAR	KEY BUSINESS OPPORTUNITIES	KEY BUSINESS OPPORTUNITIES	IT SOLUTION OPPORTUNITIES
BUILD & RENEW PHYSICAL INFRASTRUCTURE	Plan	Make optimal replacement decisions	Decision Support & Budget Management
	Acquire	Attract quality, price-competitive vendors	Procurement & Contracts Management
	Build	Ensure timely execution to standards	Construction Management
WATER FILTRATION & WASTEWATER TREATMENT	Inbound logistics	Adequate and cost-effective inputs	Supply Chain Management
	Plant maintenance	Optimize asset availability & work management	Asset Management: Production
	Product quality	Track & monitor quality and compliance	Water Quality Analytics
DISTRIBUTION, COLLECTION & CUSTOMER SERVICE	Water delivery & wastewater collection	Optimize preventive & corrective maintenance	Asset Management: Infrastructure Geographical Information System (GIS) Mobile Workforce
		Minimize leakage loss	Leak Detection
	Customer service	Customer responsiveness	Customer Systems
		Accurate, fair billing and collections	Advanced Metering Infrastructure (AMI)
		Efficient licensing and permitting	Permitting
		Activation and terminations	Customer Systems
		Revenue enhancement	Advanced Metering Infrastructure (AMI) Customer Systems
CROSS-CUTTING BUSINESS SUPPORT FUNCTIONS	Finance	Financial compliance, cost management, reporting and efficient procurement	Procurement & Contracts Management Financial Reporting Stakeholder Management
	Workforce	Attract, develop & retain right skills mix	Human Resources Inform System (HRIS)
	Knowledge Management	Maintain accurate records of plants, pipes, people	Documents/Records/Knowledge Management
	Performance	Set performance targets & monitor results	Dashboard Mobile Workforce
	Safety & environment	Safety & environmental stewardship	Safety Management Leak Detection Asset Management Stakeholder Management

B. Guiding Principles

IT is increasingly becoming the soft infrastructure in modern enterprises, providing the connectivity and harnessing the data-derived intelligence from and for increasingly networked organizations. In thinking through WSSC's business needs and opportunities identified in the preceding section, it became evident that it would be unwise to simply "solve" each need and opportunity in a piecemeal or siloed manner, and WSSC needed to formulate its IT strategy from a holistic perspective. Drawing on internal consultations, industry trends and optimal IT practices, the following guiding principles were developed to inform our project portfolio and implementation choices.²

Invest in IT as Part of Mission-Critical Infrastructure

- ◆ **Upgrade "orphaned" and "legacy" systems:** With best-in-class solutions, WSSC can take advantage of the latest developments in the field and ensure sufficient qualified support personnel. Modernizing the underlying system architecture will also lay the foundation for greater integration across the enterprise systems.
- ◆ **Streamline, then automate business processes:** WSSC's legacy systems have also locked the organization into outdated and inefficient business processes. The proposed modernization effort will allow WSSC to take a fresh look at its business processes and redesign them to streamline the workflow and also make them more resilient. Thoughtful automation will increase business efficiency and reduce human error.
- ◆ **Leverage mobile technologies to increase efficiency and connectivity of the dispersed workforce:** WSSC is entering an era of greater reliance on enterprise mobile solutions to transparently integrate the office and field. Mobile technologies at WSSC will have to be architected from the ground up to support business and operational functions across the enterprise. Mobile technologies will play a dominant role in delivering the vision of a real-

time WSSC where operational activities are visible and managed in real-time, delivering very significant benefits in terms of improved customer service and process efficiencies.

- ◆ **Expand use of online technologies to better serve and engage various stakeholders (customers, staff, vendors, community, etc.):** Online technologies are critical to deploying self-service transactions by customers. These services will not only have to be easy-to-use but cannot needlessly penalize the customers for the convenience. Online technologies will have to be carefully designed to ensure that the customer experience is smooth, consistent, convenient, and secure. In addition, online technologies must be leveraged to deploy remote learning, live communications, and transparency to WSSC operations. Social technologies offer unprecedented opportunity to leverage a real-time media for customer messaging as well as responding to customer concerns.
- ◆ **Improve information transparency and accuracy for customers:** An enhanced customer service experience gives customers real-time access to information they care about, such as usage data and service issues. Fortunately, smart data technologies are mature enough to respond to these needs.
- ◆ **Mitigate system performance risks:** Given its aging infrastructure, the essential nature of WSSC's services, and its strategic location near Washington, DC, anticipating and addressing performance degradation helps maintain operations continuity and protect WSSC's assets and reputation.

Work Smarter

- ◆ **Develop integrated technology solutions that cut across functional units:** With systems that "talk to" one another, WSSC can streamline and enhance the flow of information across functional silos and even combine and analyze information in new ways.

2. These guiding principles were further vetted through benchmarking discussions with other leading utilities and industry best practices.

- ◆ **Enhance two-way information flows by expanding the use of real-time technologies:** This will enable information to pass instantly to and from the field, the operations centers, and, ultimately, the customer. Accurate and timely information will allow a greater degree of fine-grained control of utility operations and allow greater flexibility to deploy consumption-based revenue models.
- ◆ **Harness the power of information with business intelligence and predictive analytics:** Advanced analytics can help forecast the Commission's needs (e.g. inventory), identify opportunities for cost savings, enhance preventive maintenance, identify patterns of risks and performance, and proactively flag issues for further attention.
- ◆ **Leverage IT for better tracking of business performance:** A good monitoring function tracks decision-relevant information, presents critical information in digestible formats, and enables users to drill down as required.

Effectively Steward IT Resources

- ◆ **Leverage "off-the-shelf" technologies where appropriate:** While "made in WSSC" is a well-deserved source of institutional pride, best-in-class off-the-shelf solutions (where appropriate) will allow WSSC to stay at the technological forefront while achieving high cost-efficiencies.
- ◆ **Optimize existing systems, end-to-end:** IT needs to work closely with users to specify requirements upfront, maximize system functionality, ensure systems are fully "owned" by the business unit, and ensure users have regular opportunities for needed training (in-house or through vendors).
- ◆ **Employ bridge solutions, where appropriate, to alleviate user "pain points" while waiting for system replacement:** By addressing some pressing user needs, bridge solutions can help buy time in a resource-constrained environment.

C. Priority IT Systems

Drawing upon the consultations, analysis of business needs and opportunities and the guiding principles, the planning team identified the set of proposed IT applications that, if implemented, could drive the greatest business value for WSSC. This included core systems impacting critical business functions and/or large numbers of staff as well as secondary systems where relatively modest investment would produce tangible and substantive gains for WSSC.

The table on the following page briefly describes the portfolio of enterprise-level technology initiatives that are expected to produce the greatest overall business benefit for WSSC. The selected IT project portfolio responds to the eight strategic priorities identified in the Commission's adopted enterprise-wide Strategic Plan. While a number of initiatives will create spill-over impact across multiple priorities (e.g., leak detection carries significant benefits for customers as well as the environment), the table maps the principal alignment between the proposed IT initiatives and the Commission's priorities.

IT INITIATIVES MAPPED TO STRATEGIC PRIORITIES

WSSC PRIORITY	KEY IT INITIATIVE(S)	INITIATIVE DESCRIPTION
INFRASTRUCTURE	Asset Management: Production	Supports production (plant) assets (e.g. filtration wastewater treatment plants). Includes plant assets, MRO inventory, and work management tools.
	Asset Management: Infrastructure (Linear)	Supports management of WSSC's field infrastructure assets (e.g. pipes, pumps, valves, connections, etc.). Includes field work-orders, asset costs and utilization.
	Construction Operations Management	Delivers cradle-to-grave management of capital improvement projects.
	CIP Budget Management	Provides planning and budgeting tools for long-term capital investments.
	CIP Decision Support	Manages engineering data to support long-term capital investment decisions.
	Documents/Record/Knowledge Management	Delivers solution base for document-based business process improvement projects across WSSC.
	Master Data Management	Develops processes, governance, policies, standards and tools that consistently define and manage WSSC's master data (non-transactional reference data) to help WSSC perform better by creating a single authoritative version of customers, vendors, assets, inventory parts, etc.
CUSTOMER SERVICE	Customer Service Information System	Supports customer relations, customer billing, and revenue management.
	Contact Center BPR-Enhancements	Redesigns customer services contact center business processes and technology to significantly improve contact center responsiveness.
	Advanced Metering Infrastructure	Delivers automated meter reading resulting in more efficient consumption management and enhanced customer service.
	Permitting	Supports WSSC's entire scope of permitting responsibilities, including permit issuances, plan reviews, inspections, and licensing.
	Mobile Workforce	Integrates different technologies to deliver the platform, tools, and solutions needed for a connected and more effective mobile workforce. Foundation to "real-time" utility.
	Geographical Information Systems	Provides the platform, analysis tools, and solutions to incorporate spatial information in managing WSSC's customers and infrastructure.
PROCUREMENT	AP/PO/Inventory/CM	Supports WSSC's "procure-to-pay" processes. Includes contracts management, purchasing, inventory, and payables.
SECURITY & SAFETY	Safety Management	Provides a comprehensive business management system designed to manage safety elements in the workplace.
WORKFORCE MANAGEMENT	HRIS/Payroll Enhancements	Upgrades and enhances functionality of the HRIS system through improved business processes, better data management, and stronger integration between HR and Payroll.
	Retiree Payments Management	Manages accounting, taxing, and disbursements of retiree payments.
FINANCIAL STABILITY	Financial Reporting	Provides reporting tools to support the ERP system.
	Fixed Assets	Delivers an integrated enterprise fixed assets accounting solution including planning, tracking, and compliance reporting.
	Dashboard	Provides unified performance and management information dashboard across WSSC business units.
COMMUNICATIONS & STAKEHOLDER RELATIONS	Stakeholder Management	Facilitates WSSC's communications, messaging, and overall engagement with WSSC's key stakeholders.
ENVIRONMENTAL STEWARDSHIP	Leak Detection	Uses advanced sensors and analytics for proactive leak detection ultimately driving up the sold-to-pumped ratio.

VI. Sequencing of Strategic IT Systems

A. Sequencing Methodology

While each project listed in the previous section addresses an important business need, implementation must be carried out in the context of finite human and financial resources. A phased approach is required that balances the implementation demands—and risks—of individual projects within the broader portfolio, while ensuring full continuity of our essential products and services. The planning team employed a heuristic process to sequence the implementation of the priority IT systems, taking various system-specific and portfolio considerations into account. While most of these assessments are qualitative by nature, they provide a pragmatic framework for thinking through tradeoffs and balancing the project portfolio.

Projects were clustered according to their **expected implementation intensity**, including project duration and complexity, yielding three broad categories:

- ◆ **Multi-Year projects** are complex and intensive, with expected implementation of two years or more. These carry greater risks, and require greater stakeholder engagement.
- ◆ **Short-term projects** are less complex and narrower in scope, with expected implementation of less than two years.
- ◆ **Platform projects** provide for the development and maintenance of technology platforms upon which vertical solutions are constructed. These are low intensity, multi-year projects, often implemented in modules. They are dynamic and open-ended by nature.

To ensure preferential ranking based on IT-derived business benefit, projects were also assessed on their **expected business value**. In addition to considering overall impact, particular attention was given to projects that served the three enterprise priorities (customer service, operations and infrastructure, and financial stability) considered most actionable from

an IT perspective. These assessments are included in Appendix B.

Multi-year projects took additional considerations into account given the high cost, complexity and risk associated with implementing these systems. **System vulnerability**, including age and availability of system support, was a particularly important consideration, as some of these critical systems were legacy systems or homegrown solutions with dwindling trained support personnel. Additional portfolio and system-specific implementation considerations included:

- ◆ **Systems dependencies:** any natural projects linkages (e.g., when one system is a prerequisite for or can harness positive spillover effects from another).
- ◆ **Staff bandwidth:** implementation bandwidth of IT and the respective functional units.³
- ◆ **Organizational readiness:** capacity of IT and the respective functional units to support implementation.
- ◆ **Technical constraints:** technical considerations, such as level of project complexity and maturity of technology.
- ◆ **Reputational constraints:** risk of breeding negative perceptions of WSSC by external stakeholders, primarily an issue for externally-facing technologies.
- ◆ **Bridge solutions:** any short-term solutions that can address users' urgent needs while waiting for system replacement.

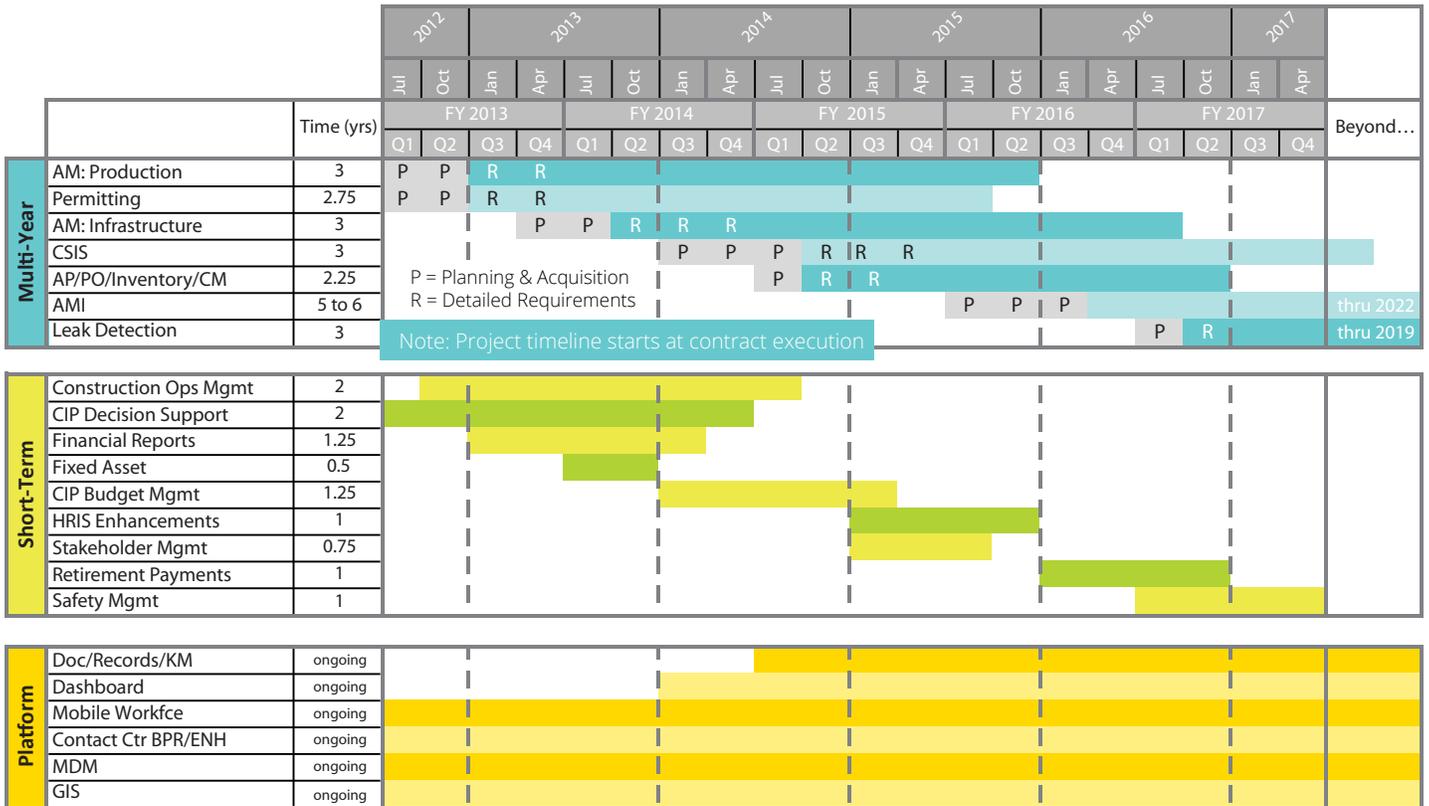
A decision tree helped logically organize the various decision drivers for the multi-year projects, as illustrated in Appendix C. Determining the sequencing of AMI vis-à-vis CSIS involved deeper analysis of specific technical concerns and expert consultations, and are detailed in Appendix D.

3. Ideally, IT should ramp up no more than two multi-year projects at once, while business units should ramp up one multi-year project at a time.

B. Project Implementation Schedule (indicative)

The figure below illustrates the proposed implementation sequence of the project portfolio developed from the various sequencing considerations (described earlier) and in consultations with subject matter experts.

PROJECT IMPLEMENTATION SCHEDULE



VII IT Technical and Service Functions

WSSC's IT Team is both a strategic and a service function. As such, IT also plays a critical role in maintaining WSSC's technical infrastructure and supporting the broad range of WSSC staff to troubleshoot technology and system-related issues as they arise. Proposals for enhancing these important complementary IT functions are outlined below.

A. Technical Infrastructure

A robust technical infrastructure is the foundation upon which WSSC's IT investments are built, and requires sufficient attention to ensure that the benefits of these planned IT investments are properly realized. Going forward, WSSC's technical infrastructure must offer the architectural flexibility that makes implementation of new technologies and business applications both fast and easy. The vision for upgrading the various components of WSSC's technical infrastructure is listed below.

Continue to transition from a legacy environment to modern, distributed architectures: Moving away from a legacy big-iron environment to a more distributed, net-centric technology infrastructure can have many benefits to the WSSC enterprise. This will produce greater peer-to-peer real time connectivity among users within WSSC and also shift more control and responsibility on the usage of the functionalities to the end-user. Moving to a robust distributed infrastructure will also allow WSSC to take advantage of many available off-the-shelf business applications at significantly lower cost and risk.

Leverage cloud infrastructure where it is secure and cost-effective: IT organizations are increasingly becoming "cloud first." Whether they are software, platform or infrastructure as a service, cloud deployments are becoming more complex, and the importance of a broader cloud data management strategy is now recognized as the critical enabler of success. To avoid the perils of data and system fragmentation, IT and the business units will need to align around the need for secure and trusted data. Before extensive cloud

adoption becomes a reality at WSSC, there needs to be a sufficient convergence of cost structures, service levels and responsiveness to evolving business needs. As WSSC weighs transitioning towards the cloud, some key focus areas will include:

- ◆ Clear articulation of WSSC's cloud strategy
- ◆ Identification of the right set of workloads to be migrated on to cloud
- ◆ Cloud architecture design and build (for private clouds)
- ◆ Cloud security
- ◆ Regulatory requirements
- ◆ Cloud governance and sustenance

If utilizing a public cloud model, another key challenge will be to identify the right cloud service provider. Several options exist in the cloud market, and some factors to be considered in choosing among cloud service providers will include the following:

- ◆ Selection of the right provider for a given application, workload or infrastructure configuration
- ◆ Service Level Agreements (SLA) offered by the provider
- ◆ Approach for sharing performance risk between WSSC and the cloud provider
- ◆ Standards/compliance requirements adhered to by the service provider
- ◆ Cloud security mechanisms
- ◆ Pricing models
- ◆ Transparency in metering & billing

Invest in IT security to protect our infrastructure, effectively respond to breaches, and earn the confidence of our customers and other stakeholders:

Our nation's critical infrastructure is a potential terrorist or state-sponsored cyberwar target, and WSSC's proximity to Washington, DC, likely renders us more vulnerable because of the area's attractiveness to terrorists. The disruption of drinking water and wastewater services, irrespective of whether it results

from physical or cyber attack, would have cascading impact not only on homes, but also on hospitals, schools, and commercial enterprises. WSSC's risk environment remains dynamic and there is a critical, continuing need for developing and maintaining adequate safeguards. Security threats may arise from within or outside our borders, and those who may wish to compromise our infrastructure are increasingly sophisticated in their knowledge of technology and willingness to use it to disrupt our services. Furthermore, the overall strategy of improving the quality of customer service and improving business efficiency critically depends on the confidence our customers have on protecting the privacy of their personal and business information. Even small breaches can greatly damage this trust. WSSC must invest carefully and adequately protect this trust. Recognizing the need to focus attention on the most valuable data assets, our IT security efforts will place particular emphasis on protecting:

- ◆ Customer information
- ◆ Payment information
- ◆ Infrastructure data and plans
- ◆ Cyber security protection regimens
- ◆ SCADA data—managing flow, pressure, etc.

To enhance IT security, the strategy envisions the following actions:

- ◆ Establish and enforce monitoring standards and system health metrics
- ◆ Develop and refine disaster recovery plans and capabilities
- ◆ Ensure resilient systems (e.g. redundancy and back-up regimens)
- ◆ Improve disaster preparedness so WSSC's critical functions can continue uninterrupted
- ◆ Test plans on a regular and rigorous basis against pre-defined success measures
- ◆ Conduct regular vulnerability testing of key systems
- ◆ Follow industry-standard recommendations and guidelines for cyber security protection

Invest in mobile infrastructure and equip management and frontline workers with real-time information and guidance: While mobile networking provides exceptional opportunity to stitch together the field workforce and the operations centers, the robustness and reliability of the network infrastructure must be ensured. Given WSSC's large geography, utilizing

multiple telecom network providers will be essential to ensure optimal coverage and mitigate outage risks. The county telecom infrastructure should also be leveraged. For areas with no mobile coverage, clear back-up protocols must be in place to manage these gaps, including a process of reconciling and uploading data into the system in frequent intervals to allow access to updated information. Several other key enablers to optimize mobile workforce are also planned, including:

- ◆ Provide user-friendly tools for work-planning, compliance, and dynamic task-scheduling based on real time information
- ◆ Promote situational awareness and use field staff as surveillance sentinels to detect and record early warning signs, e.g. infrastructure monitoring
- ◆ Provide work-planning and logistics/scheduling management with real-time tracking of people and mobile equipment

Develop capabilities to harness and integrate large-scale data to support business analytics: A potentially highly significant consequence of this systems modernization plan will be the organized collection of a large quantity of accurate and service-relevant data regarding our infrastructure, product, customers, vendors, staff, and external stakeholders. Over the next five years, WSSC will systematically develop the capacity to integrate, analyze, and derive patterns and insights from this large-scale data to support business decision-making—and distinguish itself as a truly smart utility of the future.

Vision for Leveraging IT to Empower Our Customers as Environmental Stewards

While paying his water and sewer bill online, Mr. Richards noticed WSSC was offering customers the option of enrolling in its leak notification system for AMR-enabled households. He registered his email address and cell phone number without much thought.

Six months later, Mr. Richards received an email and text message notifying him of unusually high water usage at his residence. The email also provided a direct link to view his usage history on his MyWSSC portal. Since Mr. Richards had followed his normal routine that morning and the days prior, he checked his home for obvious leaks, including the toilets, faucets, under-sink plumbing, and so on. He then checked his garden hose, which he forgot to shut off for the winter and had begun leaking. As this leak was unknown to Mr. Richards, it might have gone unnoticed for weeks or even months, wasting water resources and driving up his water bill.

That evening, Mr. Richards was curious and went online to view his water usage history. He scrolled through easy-to-read graphs with his monthly and daily usage over the last year. The portal provided him interactive tools to understand his usage, including monthly comparisons, year-over-year comparisons, and comparisons with averages for similarly-sized households in WSSC's region. The portal also featured a calculator that estimated the impact of usage reductions on his monthly bill and a catalogue of water conservation tips, which Mr. Richards read with new interest. Now with a heightened awareness of his consumption, he began implementing a few of the tips. Mr. Richards began checking his usage data every time he paid his bill online, comparing it to the prior month and year, where available. When the summer months came around, he was particularly pleased to see how his efforts to water his garden only when needed and during cooler temperatures helped lower his usage—and bills—from the previous summer.

B. IT Customer Service

Providing competent and timely support to staff across the enterprise is an important IT function. During our consultation process, business units were asked for candid feedback on their IT service experience during the consultations in early and mid-2012. In general, business units viewed the IT Team as a significantly more responsive partner, and many reported improved customer orientation in the department.⁴ Some clients also noted the need for:

- ◆ Stronger user orientation and coordination with business units during planning (e.g. taking business cycles into account, and clarifying expectations of business units);
- ◆ Improved preventative maintenance; and
- ◆ More systematic long-term planning and spend data.

The integration of IT personnel into a single cohesive team was generally welcomed by key client units—with an important caveat that they wanted competent technical support and relationship management to efficiently address their specific IT challenges. There is also a need to ensure that the staff is well equipped to provide technical support for specialized databases (e.g., AIS, cashier and key support areas like the Call Center). The streamlining and longer service hours of the IT Help Desk were welcomed, but a number of clients noted that the IT Team needed to more effectively communicate its improved offerings.

To improve the IT service experience, the IT Team will:

- ◆ Create Service Level Agreements and performance metrics for each function and transaction type
- ◆ Monitor and communicate performance results and improvements
- ◆ Seek structured and ongoing user (internal and external) feedback and analyze results to improve performance
- ◆ Designate a primary support resource for each key enterprise system, supported by a designated back-up team to ensure quick problem resolution and timely escalation, if needed
- ◆ Designate internal IT personnel to serve as account management liaisons to line-of-business groups

4. For example, there was broad appreciation for advanced warnings of system downtime and efforts to time downtime during off hours.

VIII. Delivering on the Vision

For the IT Team to effectively serve as a strategic partner and deliver on the vision, several enabling conditions, processes, structures, and norms must be in place, as described below.

A. Project Delivery Approach

The ambitious nature of this plan will require WSSC to optimally mobilize staff and external consultants and vendors. The accountability and oversight responsibility for project success will squarely rest on the WSSC team. Realizing this vision will require close cooperation and sustained commitment from IT and business units, a streamlined delivery process, and an uncompromising focus on performance.

Realistic and credible commitments: To meet, and hopefully exceed, expectations, IT and the user community need to develop and align around realistic commitments. At the project outset, IT and business units must continue to work together to hone in on the expected value of the project (recognizing that in most cases, IT systems are only part of the solution and also require new skills and behaviors), and develop realistic implementation timelines that take into account competing demands on implementation partners.

Clear mutual expectations and advanced planning: To ensure new systems are responsive to users' needs, users must work closely with IT to specify requirements, test, launch, and ultimately maintain new systems. This process necessarily adds considerable demands on users, who must balance the IT project with their regular job functions. To build and sustain commitment to implementation, users need to understand upfront what will be expected of them vis-à-vis IT to design and implement new systems. In turn, IT needs to plan sufficiently in advance to allow users to prepare for the added demands—and wherever possible, time the most intensive contributions around the users' business cycle.

Sustained management commitment from IT and business units: While the plan is intended as a living

document that can be adapted to changing contexts, it is important to avoid false starts to projects based on changing management priorities, which ultimately diminishes IT's credibility and frustrates users. In fact, the IT strategic planning process was designed to build commitment to a shared long-term vision around IT priorities. By taking an enterprise approach to system modernization, IT seeks to break through the departmental silos and build commitment to enterprise objectives. Unlike previous efforts, this plan was developed based on extensive consultations with the business units across the enterprise, and key components have been endorsed by the Commission's senior leadership team and the Commissioners. Moreover, the implementation of this plan will be overseen by the IT Governance Group.

Streamlined project delivery processes: In executing this ambitious transformation plan, the rubber meets the road in the project delivery processes adopted for each initiative. For each implementation scenario, WSSC has to make smart choices regarding (a) how much of the system is bought off-the-shelf and how much is built in-house, (b) how requirements are developed and scoping is phased, (c) how the system is procured, (d) what governance and project management resources are mobilized for the initiative, and (e) and how project ownership is exercised. As WSSC moves from a predominance of home-grown systems to industry-standard solutions, staff will manage these changes systematically and deploy external expertise in a timely and cost-efficient manner.

Given the intensity of project implementation activities, it will be critical for WSSC internal staff to have ownership and control over the exercise of the project delivery process. WSSC must be opportunistic in choosing between turnkey implementation by an integrator or utilizing an internal integration team but leveraging external resources for key components. The latter alternative will also allow WSSC to unbundle large initiatives into smaller subprojects for closer oversight. Unbundling large projects into smaller contracts will also enable hiring of the most qualified consulting support for

each project phase and greater Small, Local, and Minority Business Enterprise (SLMBE) participation in the projects.

Phased approach to system implementation: To ensure timely and effective implementation, large system implementation projects will be separated into smaller, more manageable phases. Each phase will be run as a stand-alone project where deliverables and benefits are clearly identified and project implementation risk is closely monitored and mitigated. This approach better enables: (a) delivering key business benefits earlier during the life-cycle of the project; (b) keeping the project team focused on goals and success measures that are “within grasp”; and (c) incorporating “lessons learned” from one phase of the project to the next reducing overall project risk.

Focus on end-to-end performance: Each project presents an opportunity to significantly improve the performance of the business activity. IT and the business units will redesign relevant business processes to rationalize process steps, establish accountability through process metrics, and eliminate unnecessary complexity.

Getting the most out of systems also requires well-trained users, ongoing commitment to system maintenance, and periodic adjustments or enhancements to optimize performance. While users have primary responsibility for system maintenance, IT plays an important supporting role. Each major system should have at least one designated support contact within IT who can troubleshoot issues as they arise, and track help desk inquiries to identify patterns of issues. Finally, periodic refresher trainings for new and existing users organized by IT can help keep knowledge levels current.

A more rigorous approach to performance management that goes beyond timely delivery of systems should be developed to complement informal user feedback. At the project outset, IT and the business unit should agree on a few simple performance metrics that can signal whether the system is enhancing users’ effectiveness and/or efficiency. Some metrics might be straightforward to measure, such as call time or records digitized. For metrics that measure changes in the way users do business, IT will consider periodic brief user surveys using simple e-survey tools.

Periodic reassessment: This plan will not be implemented in a vacuum. While the strategic planning process has endeavored to capture the most critical IT-relevant needs across the enterprise, these needs will

evolve and new needs are likely to emerge. Furthermore, IT itself is a dynamic field, with evolving best practices, and new and improved technology solutions entering the market. Every two years, the IT Governance Group (see IT Governance section) charged with overseeing the overall progress of the plan will review the proposed projects and sequencing and make necessary adjustments. Decisions taken by the IT Governance Group, along with their underlying rationale, will be communicated to the senior management team to ensure that all principals understand and share the commitment to implement.

B. County Partnerships

WSSC receives the support, cooperation, and pride-of-ownership from two of Maryland’s best-in-class county governments. This offers unique strategic opportunities to leverage the leadership, resources, and expertise that reside in Prince George’s and Montgomery counties.

Continue to work with the Montgomery County Interagency Technology Policy and Coordination Committee (ITPCC) and Prince George’s County Interagency Technology Committee (ITC): WSSC has been active in the Montgomery County ITPCC both at the principals and CIO subcommittee level and Prince George’s County ITC at the CIO level. The ITPCC and ITC have proven to be a productive platform to coordinate planning, cooperation, and leveraging of mutual resources. WSSC must continue these efforts and further explore areas of mutual cooperation.

Explore developing an Inter-county Technology Panel consisting of government technology leaders of both counties: WSSC plans to leverage the expertise and resources of both counties to promote stronger collaboration and potential integration of systems. The following areas are particularly promising and will be pursued:

- ◆ Integration of mutual permitting and licensing systems to provide one-stop shopping experience to bi-county customers
- ◆ Broader leveraging of county-owned FiberNet infrastructure and WSSC-operated microwave telecommunications system
- ◆ Expand existing cooperative arrangements on GIS projects to include access to live data, shared on-site training, and joint application development activities.
- ◆ Mutual support arrangements under disaster recovery and continuity of operations scenarios

- ◆ Cooperative purchasing and mutual leveraging of contract vehicles
- ◆ Open data initiatives, data visualization, web, and mobile
- ◆ Development of internship opportunities for students in universities and community colleges in the counties
- ◆ Greater strategic partnering with external technology vendors and consultants to ensure access and utilization of best-in-class solutions and expertise

Develop and implement plans to co-locate WSSC customer kiosks in County facilities: There are great opportunities to better serve WSSC’s retail customers by strategically deploying service kiosks closer to our customers. These kiosks will be able to process customer transactions and service inquiries as well as serve as dynamic public messaging stations. Co-locating these kiosks in County facilities will allow WSSC to leverage the joint infrastructure facilities and also expand WSSC’s brand footprint.

C. IT Organization and Staffing

WSSC’s IT department is fortunate to have a strong technical team. The team is technically competent, motivated problem-solvers, intellectually curious, and eager to play a key role in making WSSC an industry leader in the smart choice and deployment of information technology solutions. To help deliver on this plan, WSSC IT has developed a new “One-IT” organizational architecture (enterprise-wide, integrated IT team) and is creating a business culture that is focused on delivering sustainable business solution on time and within budget. Groups within the IT Team have been designated to manage the system acquisition and implementation life-cycle respectively with very specific accountabilities along those lines.

To further elevate the IT Team’s performance trajectory, a number of staffing, business process, and cultural shifts are being introduced within the IT Team. These include:

- ◆ Modernizing the skills mix to fit the evolving enterprise architecture
- ◆ Upfront needs prioritization and disciplined project management
- ◆ Greater collaboration with and feedback from internal clients
- ◆ Evidence-based performance management (e.g. tracking performance against service standards)
- ◆ Linking individual performance plans to project success

Implementing the technology modernization strategy will require a changing mix of technical skills. The demographic shifts in our workforce discussed earlier also make it necessary—and feasible – for the IT Team to reconfigure its competencies to deliver value in a more agile technological environment. Shortages are occurring or expected in several job categories including technical and line-of-business specific skillset, and these shortages could worsen as the aging workforce retires (50 percent are eligible to retire within five years). Moreover, WSSC IT has to compete with other utilities as well as federal government agencies and contractors for skilled staff. Recruiting the best IT talent in a competitive yet dynamic marketplace will require WSSC to proactively attract, develop, and retain new talent. To meet the need for staffing flexibility as well attracting top-quality staff with the appropriate skillsets, IT has to address competitive compensation and maintain the ability to tailor compensation and terms of employment to optimize capabilities. To ensure workforce continuity as staff retire, WSSC must adequately document and transfer knowledge. Moreover, WSSC must allocate funds for skills training as it transitions to new systems.

Under these highly competitive circumstances, the WSSC IT Team has to adopt a highly proactive, nimble, and results-oriented recruitment process. With the support of the HR Team, IT will develop a “continuous recruitment” strategy which focuses on opportunistic, quick-response hiring of key talent as they become available in the market rather than relying on the traditional method of posting positions and waiting for applications. Participation in technology career fairs, engagement of recruiting teams, promotion of WSSC’s attractiveness as a conducive workplace will all become elements of the IT Team’s new recruitment posture.

D. IT Governance

IT governance refers to the decision, rights, and responsibilities surrounding IT initiatives. WSSC has no formalized IT governance process. As outlined below, IT governance structures seek to guide IT delivery across multiple enterprise goals, including strategic alignment, enterprise value, resource allocation and efficiency, risk mitigation, and project performance.

IT Governance Objectives

Strategic alignment:

- ◆ Ensuring IT's alignment with core strategic and business objectives
- ◆ Exploiting IT capabilities to refine business objectives and capabilities

Protecting and growing enterprise value:

- ◆ Protecting existing enterprise value and consumer brand equity
- ◆ Extending value of existing assets, relationships and infrastructure
- ◆ Eliminating value-depleting technologies and inefficient processes

Deploying resources:

- ◆ Taking an enterprise perspective on human, financial, reputational resources
- ◆ Optimizing sequence and resource allocations

Mitigating risks:

- ◆ Mitigating technology risks
- ◆ Using IT to manage business risks

Ensuring IT project portfolio performance:

- ◆ Tracking implementation milestones
- ◆ Meeting compliance requirements
- ◆ Tracking service delivery performance
- ◆ Tracking savings

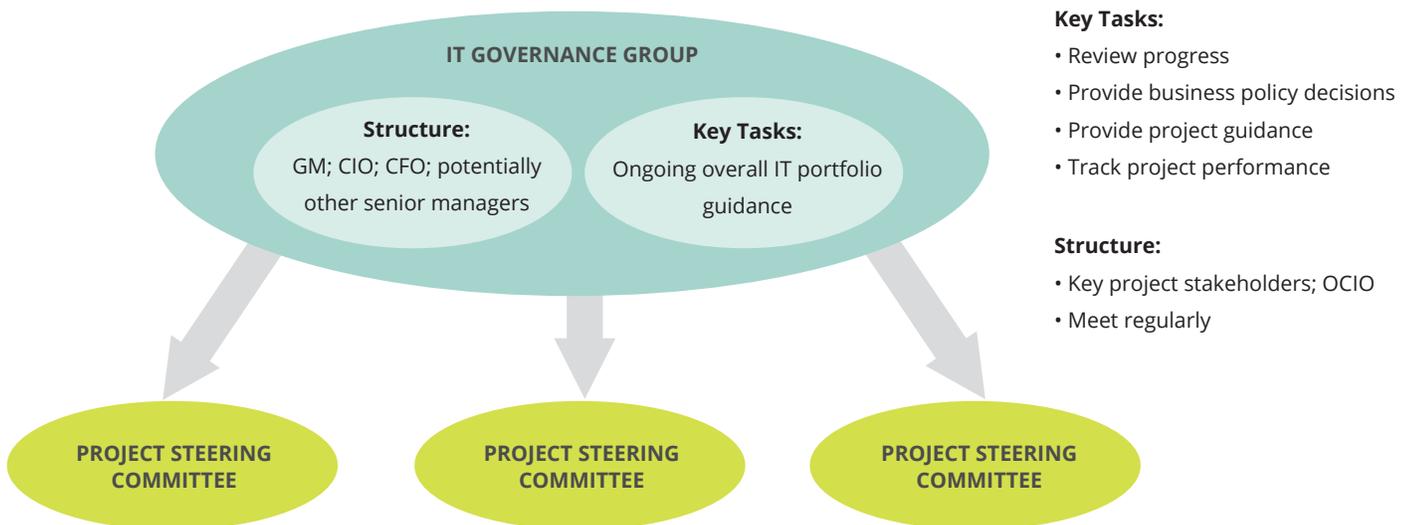
While implementation responsibility primarily rests with the CIO, the IT governance process involves multiple internal stakeholders impacted by these changes. An **IT Governance Group** comprised of the GM, CIO, CFO, and potentially other senior managers will meet quarterly and will be charged with providing overall IT portfolio guidance from an enterprise perspective. While not a project implementation oversight role, this group plays an important strategic role in taking stock of and identifying enterprise-wide IT priorities; reviewing progress and budgets at the portfolio level; and building support for successful project implementation for major initiatives.

As a portfolio-level review body, the IT Governance Group is charged with overseeing the overall progress of this strategic plan, including reviewing implementation progress and making any readjustments. Going forward, the IT Governance Group working closely with the CIO will prioritize new major initiatives as they arise.

Governance of individual projects will rest with **Project Steering Committees**, comprised of the key project stakeholders representing the community of users (project principals), and the CIO. These committees will meet regularly to review progress, guide process, ensure alignment between users and the IT staff, and track project performance.

This arrangement is depicted graphically below.

IT PORTFOLIO GOVERNANCE MODEL



IX. Conclusion

Designed to be responsive to WSSC's critical business, this 5-year IT Strategic Plan leverages IT-enabled solutions to advance the Commission's pressing business challenges. This plan is intended to support the Commission's transformation into a high-performing, customer-responsive, cost-effective and environmentally-responsible industry leader.

This 5-year IT Strategic Plan represents a shift in the way the Commission views its IT function and evaluates and plans its IT investments over the medium term. Successful delivery of this plan will solidify IT's role as a valuable strategic partner, as well as a reliable service provider. Its implementation, however, depends on the ongoing commitment of and close cooperation between the IT Team and their functional counterparts and WSSC's ability to mobilize the best-available internal and external expertise.

It is important to reiterate that this plan is intended as a **living strategy**. While the Commission's leadership is confident in the strategic direction proposed in this plan, it also recognizes that this plan is not being implemented in a vacuum. As WSSC's business needs change and new and better IT solutions come to market, so too must this plan be revisited at least once every two years and recalibrated to optimize performance.

Appendix A: WSSC Strategic Priorities

ORGANIZATION STRATEGIC PRIORITIES

INFRASTRUCTURE	Plan, renew, and sustain our infrastructure to meet customer expectations through innovative, cost-effective technology and world class asset management practices.
FINANCIAL STABILITY	Practice sound financial stewardship that ensures delivery of the best quality water and wastewater treatment services to our customers at a reasonable cost with affordable rates.
WORKFORCE MANAGEMENT	Sustain a high-performing workplace that attracts and retains diverse, flexible, and knowledgeable employees focused on service excellence.
PROCUREMENT	Ensure operational efficiency and reliable service to customers and all stakeholders through transparent, equitable, and responsible procurement practices which enhance the community we serve.
CUSTOMER SERVICE	Ensure customer confidence through the delivery of timely, high-quality products and services to internal and external customers.
SECURITY & SAFETY	Protect our people, our business, and our community through proactive planning, emergency preparedness, and utilization of effective risk management.
COMMUNICATIONS & STAKEHOLDER RELATIONSHIPS	Proactively communicate and maintain strategic partnerships and community relationships with key stakeholders and jurisdictions in support of our mission.
ENVIRONMENTAL STEWARDSHIP	Promote safe and responsible stewardship of our water, air, and land using efficient and effective business practices and technology.

Appendix B: Impact Assessments for Priority IT Projects

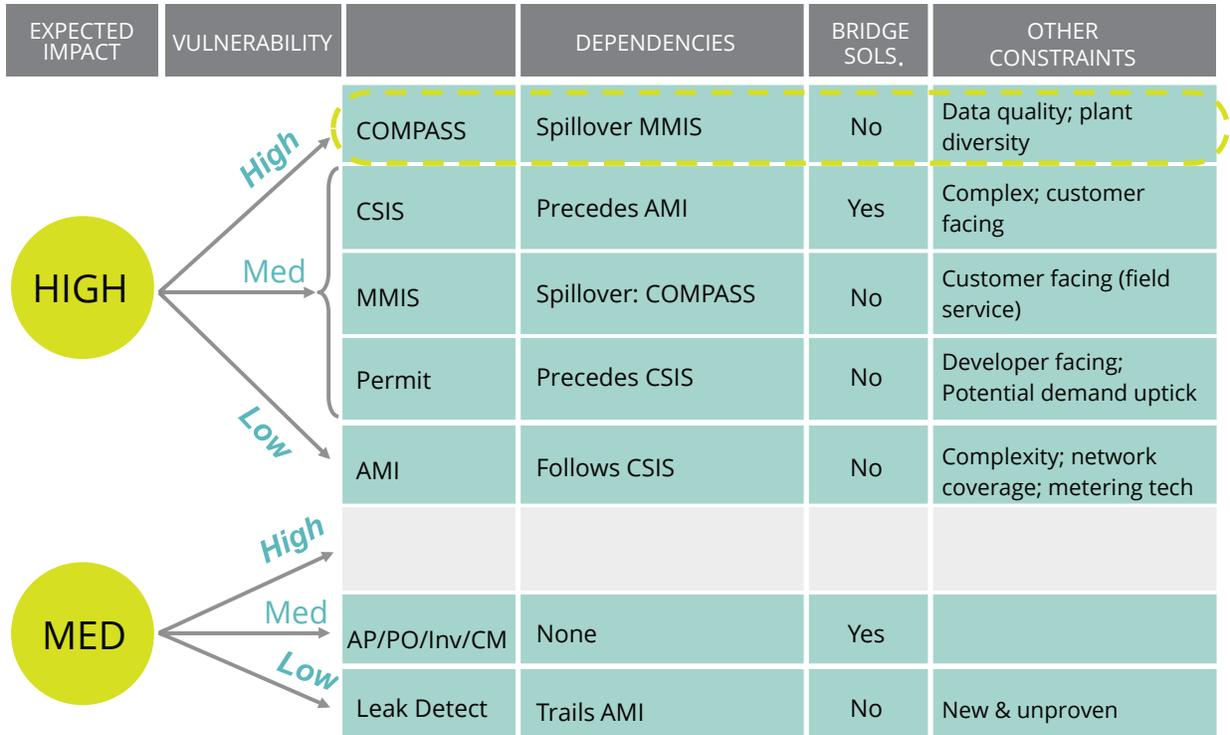
ASSESSMENT OF EXPECTED IMPACT FOR PRIORITY IT PROJECTS

SYSTEMS (NEW/REPLACED)	Customer		Operations & Infrastructure				Financial Stability				Likely Impact	
	Cost Fairness	Service Quality	Asset Performance	Asset Efficiency	Workforce Performance	Compliance	Cost of Capital	Efficient Treasury	Incr. Revenues	Reduced Costs		
Multi-year	CSIS	Major			Major	Major			Supporting		High	
	AMI	Major		Supporting	Major	Supporting			Major		High	
	ASSET MGMT - PRODUC			Major	Major	Major		Supporting		Major	High	
	ASSET MGMT - INFRAST			Major	Major	Major				Major	High	
	AP/PO/INVENTORY/CM				Supporting		Major				Supporting	Med
	LEAK DETECTION	Major				Supporting					Major	Med
	PERMITTING (PPIS,AIS)		Major	Major		Supporting	Major			Supporting		High
Short-term	FINANCIAL REPORTING			Major			Major	Supporting	Major	Major	High	
	FIXED ASSETS			Major			Major	Major	Major	Major	High	
	CONSTRUCTION MGMT			Major		Major	Major			Major	High	
	CIP DECISION SUPPORT				Major		Major			Major	High	
	CIP BUDGET PLANNING				Major		Major	Major	Major	Major	High	
	HRIS ENHANCEMENTS					Major	Major			Major	Med	
	SAFETY MGMT					Major	Major			Major	Med	
	RETIREE SYSTEM									Major	Med	
	STAKEHOLDER MGMT		Major				Major			Major	Med	
	Platform	DOC/RECORDS/KM			Major	Major	Major	Major				High
DASHBOARD							Major				High	
MOBILE WORKFORCE					Major	Major	Major			Major	High	
CONTACT CTR BPR/ENH		Major				Major	Major				Med	
MDM		Major				Major	Major				Med	
GIS			Major				Major				Med	

■ ■ ■ = Major Role
 ■ ■ ■ = Supporting Role

Appendix C: Summary Sequencing Considerations for Multi-Year Systems

DECISION TREE - SEQUENCING CONSIDERATIONS FOR MULTI-YEAR SYSTEMS



Appendix D: AMI and CIS – The Sequencing Dilemma

Advanced metering and improved customer information systems are both essential for water utilities to be successful in the modern era, but the transition is fraught with challenges and risks. Advanced Metering Infrastructure (AMI) and Customer Information Systems (CIS) both tend to be large, complex projects. As such, it is generally unwise to launch both simultaneously because of the high demands they place on management focus. Within the industry, there are divergent opinions on what sequence to follow.

When is it wise to implement Advanced Metering first?

The most persuasive reason for doing AMI first is that it takes a long time to fully implement. Utilities that do not make the commitment risk unnecessarily delaying implementation. Furthermore, if field data is messy, then AMI preceding CIS allows cleaning of the data and preempts feeding erroneous information into the CIS.

There are also some reasons to delay implementation. AMI implementation is expensive. Solid state metering is at the cusp of significant technological improvements, so a slight delay may mean cheaper and better proven solutions.

When is it wiser to begin with CIS first?

Implementing a new CIS system makes the most sense when the existing customer data is largely reliable and does not require significant corrections before migration. Although CIS is conceptually more complex than AMI, its software-only solutions are based on proven technologies and can be completed in a much shorter duration than the time required to build out AMI's physical infrastructure. Once implemented, CIS can deliver immediate and significant improvements of all customers' experiences and also enhance WSSC's ability to gather and analyze customer feedback in an unprecedented manner. This, in turn, creates the opportunity to develop customer segmentation, offer monthly billings, and integrate with permitting and payment systems. The ability to systematically segment customers based on their usage and preferences also provides the analytical basis for tailoring rate structures in the future.

Which sequence is recommended for WSSC?

After weighing the above factors, the strategy team has concluded that WSSC would be best served by first launching the CIS implementation closely followed by the launch of the AMI project. In making this determination, the planning team took into account the relatively clean quality of our existing customer data which bodes well for a smooth implementation of CIS and thus a relatively early realization of customer experience benefits. Furthermore, this will allow the IT Team to evaluate and resolve the uncertainties around competing metering offerings and avoid getting locked into an inferior architecture. In addition, the current CIS system is inflexible and difficult to adapt to WSSC's changing regulatory and business environment, creating additional urgency for replacing the CIS. Once the AMI technology selection is finalized, WSSC will aggressively pursue opportunities to accelerate AMI deployment in a cost-effective manner.

