Exhibit No.: 133 NP
Issues: Comprehensive Planning Study
Witness: John S. Young
Exhibit Type: Rebuttal NON PROPRIETARY
Sponsoring Party: Missouri-American Water Company
Case No.: WR-2010-0131
SR-2010-0135
Date: April 15, 2010

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. WR-2010-0131
CASE NO. SR-2010-0135

REBUTTAL TESTIMONY

OF

JOHN S. YOUNG

ON BEHALF OF

MISSOURI-AMERICAN WATER COMPANY

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

IN THE MATTER OF MISSOURI-AMERICAN WATER COMPANY FOR AUTHORITY TO FILE TARIFFS REFLECTING INCREASED RATES FOR WATER AND SEWER SERVICE	)))))	**CASE NO. WR-2010-0131** **CASE NO. SR-2010-0135**

AFFIDAVIT OF JOHN S. YOUNG

John S. Young, being first duly sworn, deposes and says that he is the witness who sponsors the accompanying testimony entitled "Rebuttal Testimony of John S. Young"; that said testimony was prepared by him and/or under his direction and supervision; that if inquires were made as to the facts in said testimony, he would respond as therein set forth; and that the aforesaid testimony is true and correct to the best of his knowledge.

John S. Young

State of New Jersey
County of Camden
SUBSCRIBED and sworn to
Before me this 12th **day of** April **2010.**

Annette Ocasio
Notary Public

My commission expires:

ANNETTE OCASIO
Notary Public of New Jersey
My Commission Expires 12/20/2011

Exhibit No. 73
Date ____ Reporter ____
File No. ____

REBUTTAL TESTIMONY

John S Young

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is John S. Young. My business address is 1025 Laurel Oak Road, Voorhees, NJ 08043.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am President and Chief Water Technology Officer of American Water Works Service Company, Inc.

Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE.

A. My education, qualifications and job history are attached (**Schedule JSY-1**).

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. The purpose of my rebuttal testimony is to respond to a portion of the direct testimony from the Office of the Public Counsel witness Mr. Ted Robertson.

Q. HAVE YOU REVIEWED MR. ROBERTSON'S DIRECT TESTIMONY?

A. Yes, with a particular focus on his discussion of cost recovery associated with the Comprehensive Planning Study.

Q. TO WHAT ASPECT OF MR. ROBERTSON'S COMPREHENSIVE PLANNING TESTIMONY WILL YOU RESPOND?

A. Mr. Robertson recommends disallowance of cost recovery associated with the Comprehensive Planning Study "until such time as the OPC and MPSC Staff are provided with the information and support that would allow them to complete a thorough review and audit of the project's purpose, processes, implementation and actual costs." (Robertson, Dir., p. 37.) My testimony will provide the background concerning several of these issues.

Q. WHAT IS THE COMPREHENSIVE PLANNING STUDY?

A. This Comprehensive Planning Study (CPS) is a detailed and systematic process used to identify the information technology-based needs of American Water (AW), which will enable the company's public utility subsidiaries to continue delivering high-quality service to customers. The results of this broad based analysis are documented in the Comprehensive Planning Study report (**Schedule JSY-2**). The report identifies the enhancements needed to maintain high quality, reliable service in the future, and to improve customer value by enhancing core business processes and systems to be more accurate, timely, and effective.

The Study provides a detailed review and analysis of AW's current business systems, processes, hardware, and software. Furthermore, it recommends a company-wide program that will improve AW's key business processes and

information, and update the systems that support them so Missouri American and AW can continue to deliver high-quality water and wastewater services.

Q. WHAT IS THE COST OF THE COMPREHENSIVE PLANNING STUDY AND HOW WERE THESE COSTS ALLOCATED TO MISSOURI AMERICAN?

A. The total cost for completing the CPS and its associated process and system evaluation is $6.7 million. Missouri-American's allocation of these costs is $938,062 based on a customer count allocation.

Q. WHY IS IT APPROPRIATE THAT THE CUSTOMERS OF MISSOURI AMERICAN WATER COMPANY PAY A PORTION OF THE COST FOR THE CPS AND FOR THE IMPROVEMENTS TO AMERICAN WATER'S INFORMATION TECHNOLOGY SYSTEMS?

A. As I will discuss in greater detail herein, the information technology systems (ITS) upon which Missouri American depends to provide service to its customers are at the end of their useful lives. It is essential that these systems be replaced if Missouri American is to continue providing high quality service to its customers in the future. Customers will directly benefit from the implementation of improvements to the ITS throughout American Water. Employees will be able to utilize modern, highly effective software programs as they conduct their job tasks, thus enhancing the quality and efficiency of the services they provide to customers. In addition, customers will have expanded web self-service capabilities to meet their service needs and compliance with regulatory reporting requirements will be more efficient.

The CPS is a prudent step with the overall program for improving AW's Information Technology Systems. It provides the detailed planning analysis that is appropriate for a project of this size and complexity.

Q. WHAT IS THE BACKGROUND OF AMERICAN WATER'S INFORMATION TECHNOLOGY SYSTEMS?

A. The company's first computer applications were developed in-house on early mainframe technology in the mid-1970s. In the mid-1980s, a customer billing system (EDIS) was added. Subsequently, computing technology was upgraded in the late 1980s and early 1990s from mainframe and System 36 computers to AS400 computers in response to changing business needs.

AW owns and operates regulated water and wastewater systems in many states. During the 1970s and early 1980s, AW's regulated utility systems operated as stand-alone business utilities. In some instances there were multiple utility businesses in a single state. Over time, utilities within each state were consolidated into a single state corporation. The legacy computer software became inadequate to meet the needs of the consolidated utility businesses. Therefore, in the mid-1990s, software was introduced to support the consolidated companies' back office (e.g. functions include accounting, procurement, and human resources) needs (JDEdwards) and customer service needs (Orcom). This software was implemented at each data center,

serving one or more state utilities, and was configured to suit the processes and needs of each.

In the early 2000s, AW recognized that benefits could be achieved through consolidation of common business activities and formed a consolidated shared services center and customer service center. While common work was consolidated, the project did not attempt to change business processes or practices. Even today, the company continues to run on the software and hardware solutions that were implemented more than a decade ago including the AS400 computing systems, which were designed to support small to medium sized businesses. AW's business and the complexity of today's business and customer needs have grown beyond what the existing systems were designed to accommodate. This is also true for Missouri American. For example, in 1993, Missouri American consisted of two service areas, Joplin and St. Joseph, and provided water service to approximately 51,000 customers. At present, Missouri American Water is comprised of 10 water service areas (including Brunswick, Jefferson City, Joplin, Mexico, Platte County, St. Joseph, St. Louis Metro, Warren County, and Warrensburg) serving approximately 446,000 customers. In addition to these water systems, there are three wastewater systems including Cedar Hill, Platte County and Warren County which serve almost 1,100 customers.

Q. DO THE CURRENT SYSTEMS ADEQUATELY SUPPORT THE EXISTING BUSINESS?

A. No. The Information Technology systems of AW, which support many AW processes, are at the end of their useful life cycles. The technology now being used is outdated, was designed to accommodate a much smaller customer base, and lacks the functionality needed to meet today's customer expectations. As a result, it is difficult to maintain and support the existing systems. Furthermore, the professionals who support many of the AW ITS applications are reaching retirement age, and it will become increasingly difficult to locate professionals who can support the existing systems, which have been customized to meet the needs of individual utilities or groups of utilities.

Q. ARE THERE ALSO CHALLENGES WITH MANAGING DATA WITHIN AMERICAN WATER'S CURRENT SYSTEMS AND DATABASES?

A. Yes. AW's lack of ability to access data across multiple, non-integrated systems presents considerable challenges. Our current systems have the same information contained in multiple databases, which are independently configured with no consideration for integration needs. It is estimated that approximately 10 percent of AW data is integrated across multiple IT systems, which means that 90 percent of the company's information is maintained using non-integrated systems across functions and locations. These non-integrated systems require a significant amount of human interaction.

In addition, since AW captures information in non-integrated databases, more manual work is necessary to confirm data and manage data issues. Also, the same data may reside in multiple applications rather than in one place. That data often differs from application to application due to the data entry requirements of each system, and therefore, can require time consuming reconciliation. To support the CPS effort, a data assessment project is underway that will define, quantify, and assess all data and applications as they relate to the development and implementation of a data management program.

Q. DO THE CURRENT SYSTEMS PROVIDE ADEQUATE SUPPORT TO CUSTOMER SERVICE?

A. Over the last 10 to 15 years, more has changed than just technology. Customer needs and expectations have also shifted. As always, AW customers expect to receive high-quality, reliable supplies of water and wastewater service. However, today's customers expect more: internet billing, appointments for repair calls, self-service inquiry and ordering capabilities, secure transfer of personal information, and high-level customer service online and by phone through voice and text. When AW's IT systems were acquired in the mid-1990s, they met the customer expectations of the time. However, today AW's non-integrated systems have insufficient automation, which limits the capabilities available in providing service to its customers.

The customer experience includes three major areas: delivery of high-quality, reliable, water and wastewater service; effective resolution of customer needs and problems; and accurate billing. To adequately meet these three high-level expectations of the customer, AW employees must complete hundreds of tasks every day. AW's existing technology systems do not effectively support the performance of the majority of these tasks on an automated basis. Thus, there is an opportunity to obtain greater automation and integration across the company. Improved technology systems would allow AW employees to more efficiently and effectively meet customer needs and expectations.

Q. WHAT APPROACH WAS USED TO IDENTIFY THE PROCESS AND SYSTEM ENHANCEMENT REQUIRED BY AMERICAN WATER?

A. In order to improve AW's core business process areas and the corresponding technology, it is critical to have a solid understanding of what works well and what needs to be improved. To determine this, AW conducted an analysis of each core process area to examine its needs and study its current ("as-is") state of operation. As-is process maps were developed for each core business process to document how activities are performed (end to end) across AW's regulated businesses. The as-is process maps:

- Depict the steps within each process
- Identify less efficient areas that have resulted in workarounds and introduce operational barriers
- Highlight opportunities for process optimization and improvement

To ensure the as-is process maps capture the processes accurately, process leads and over 1,000 employees representing different levels across the organization thoroughly reviewed each map. Once validated, AW mapped redundancies and manual handoffs, and identified opportunities for improvement.

Q. DID MISSOURI AMERICAN PARTICIPATE IN THE COMPREHENSIVE PLANNING STUDY ANALYSIS AND DECISION MAKING REGARDING THE RECOMMENDED PROJECT?

A. Yes. Employees of Missouri American had extensive involvement in the process through which the recommended improvements to American Water's information technology systems came about. Sixty-six employees of Missouri American have actively participated in the process, in various roles, including workshop participants, subject matter experts and advisory council members.

Q. WHICH BUSINESS PROCESSES WERE EVALUATED?

A. Business processes involve all functions including operations, accounting, human resources, and purchasing. For the purpose of this CPS, AW segmented its business based on how AW currently operates and provides customer service into six core business process areas:

1. "Procure to Pay" (supply chain and inventory management) is the work stream and process that ensures employees have the goods and services they need to serve our customers and that those goods and services are requisitioned or obtained at competitive prices.

2. "Recruit to Retire" (human resources) is the work stream and process to manage human resource activities including recruiting, hiring, payroll, performance and development, learning and knowledge management, benefits administration, training and development, and retirement.
3. "Record to Report" (finance) is the work stream and process to capture, record, and report all financial transactions and information uniformly and consistently across the Missouri American and all of AW.
4. "Plan to Build and Maintain" (operations) is the work stream and process used to plan, budget, design, build, operate, maintain, and manage the physical assets which comprise a major investment for Missouri American and for all of AW.
5. "Order to Cash" (billing) is the work stream and process to manage customer billing, collect customer payments, and handle customer billing inquiries.
6. "Service Request to Completion" (customer service) is the work stream and process to manage activities required to address inquiries from customers for issues related to their service experience such as leaks, payment problems, service interruptions, and water quality.

These core business process areas are constantly evolving to meet changing business and customer needs, but they are constrained in how much they can evolve due to the company's outdated technology systems. As a result, AW uses manual solutions to improve processes. These manual solutions are not optimal because they introduce unnecessary redundancy and

inconsistency of data, require additional manual steps, and limit information availability. New information technology systems would create a single repository for data, decrease the amount of necessary manual handoffs, and introduce integrated systems that all process areas can access. These improvements will enhance the capabilities of each core process area, so the processes are better organized to work together in delivering high-quality water and wastewater services to AW customers.

Q. HOW WERE FUTURE BUSINESS PROCESSES DEVELOPED?

A. Once the as-is process maps were complete, "to-be" (future) process maps were developed to illustrate the proposed design of how AW core business process areas could be organized in the future. To facilitate the creation of the to-be process maps, AW used the data collected from the as-is validation process and again met with employees across the country from all levels. To get an enhanced perspective on business outside AW, the company also analyzed technology and processes in use across utility and other industries.

Q. PROVIDE SOME EXAMPLES OF THE POTENTIAL BENEFITS OF IMPROVEMENT TO PROCESSES AND TECHNOLOGY?

A. As previously discussed, the primary benefit of the Project is to allow continued provision of high quality service to customers in the future because the IT systems that support that service are at the end of their useful lives. During the analysis, AW also compared its current capabilities, technology, and processes to those of other companies to assess potential benefits

associated with changing processes and systems. Some of the observations from this analysis include:

- There is potential to complete up to 95 percent of material orders through purchase orders; AW's level is substantially less.
- There is potential to use electronic catalogs and robust item masters to automate repeat purchase of goods and services; AW's purchase orders are manually completed.
- There is potential to integrate work orders with inventory/purchasing system; these systems are not fully integrated at AW.
- There is potential to automate the general ledger account reconciliation process; AW's reconciliations are time-consuming with minimal automation.
- There is potential to automatically dispatch normal services orders; very few of AW's normal service orders are automatically dispatched.
- There is potential to offer automated monthly budget billing to those St. Louis County district customers that would prefer a monthly bill over a quarterly bill while still allowing for the lower expense of quarterly meter reading over monthly meter reading.
- There is potential to use employee self-service systems to provide employees access to their personal records and payroll details; these processes at AW are manual and paper-based.
- There is potential to use a computerized maintenance management system to standardize and optimize the preventative maintenance that is

performed on assets; AW's preventative maintenance management is currently a manual process that differs across operating units.

Q. WHAT PROJECTS DID THE CPS RECOMMEND TO SUPPORT THE AMERICAN WATER BUSINESS REQUIREMENTS AND MEET OUR CUSTOMER EXPECTATIONS?

A. There are three recommended capital improvement projects to improve the performance of AW's data management capabilities, ITS infrastructure, and customer service levels: Enterprise Resource Planning (ERP), Enterprise Asset Management (EAM), and the Customer Information System (CIS). AW plans to implement these projects in two phases after a six-month design phase that includes all three projects. Phase 1 is the ERP, which will act as the foundation for the EAM and the CIS. The ERP primarily impacts three core business process areas: Procure to Pay, Record to Report, and Recruit to Retire. The total current estimated cost for the ERP is $94 million, and AW estimates that implementation and stabilization will be completed in 24 months commencing in approximately September 2010. Phase 2 includes the EAM and CIS projects. The EAM project primarily impacts the Plan to Build and Maintain core process area while the CIS project primarily impacts the Order to Cash and Service Request to Completion process areas. The EAM project's current estimated cost is $77 million, and AW believes that implementation and stabilization will be completed in about 38 months commencing in approximately September 2011. The CIS project's current estimated cost is $102 million, and AW expects that implementation and

stabilization will be completed in about 38 months commencing in approximately September 2011. The investment for these three projects totals approximately $273 million over a time span of approximately five years (2010-2014). At this time, these cost estimates are at the concept-level and do not have the benefit of detailed design. The projected costs are mid-range estimates based on input from outside experts and could vary based on final design considerations and implementation timeframes.

Q. WHAT WORK PRODUCTS RESULT FROM THE COMPLETION OF THE CPS?

A. The work products (**Schedule JSY-3**) that resulted from the completion of the CPS include the following:

- As-Is Study, which is current-state mapping and data collection. This analysis provides an understanding of how things are currently being done. It enables the identification of areas where processes are cumbersome and can be improved, provides understanding of how our systems interact with our current processes, and establishes a baseline for evaluating benefits of proposed solutions.
- Capability Assessment, the purpose of which is to understand what the possibilities are related to systems and processes. This assessment enables determination on a process by process basis of how advanced we can/should be, provides an understanding of the size of the gap that we were striving to close, and allows us to apply knowledge

learned by visiting other companies to supplement guidelines of high performance models.

- To-Be study, which provides business requirements and a set of process diagrams which enables us to analyze existing gaps. Essentially, this product provided information as to what our processes need to be to achieve the desired level of capability and what business requirements must be met through processes and systems.
- Gap Analysis/Benefits, which high-lights differences between the current state and future state. This analysis documents the benefits of the Business Transformation.
- Impact Analysis documents, which identifies how the To-Be processes will affect the organization. Four key considerations in this analysis are: organization alignment – how our current roles align to the proposed processes; organizational capability – what adjustments will be needed to ensure employees are ready for new processes and systems; policy, culture & governance – how aspects of policies, culture and governance will be updated to reflect new capabilities; and third party impact – how the process and system upgrades will change the way we interact with our third parties, such as our suppliers.
- Software Point of View, which documents the applications that best meet the organization's needs as provided in the To-Be business requirements.

Q. WAS THE ANALYSIS COMPLETED DURING THE CPS A NECESSARY AND PRUDENT PRECURSOR TO THE ENHANCEMENT OF IT SYSTEMS AND BUSINESS PROCESSES?

A. Yes. Given the size and complexity of this transformational program, it is essential that proper planning and analysis be performed to assure efficient, cost-effective delivery of the program. Prior to implementing significant enhancements to IT systems and/or data management, it is important that business processes and requirements be accurately defined. This effort provides proper scope definition, engages the business in the planning process and avoids significant, costly customization of software in the future. The process analysis, capability assessment, gap analysis and business impact analysis performed during the CPS will establish the proper foundation for the program. The planning effort associated with the CPS represents only 2 to 3 percent of the total project costs. Therefore, these expenditures are prudent and necessary to ensure the most cost-effective solution for Missouri-American business and customer needs.

Q. WHAT ARE THE NEXT STEPS IN THE PROGRAM?

A. The Business Transformation – System Build Lifecycle (**Schedule JSY-4**) includes the following phases: design, build, test and deploy. This lifecycle applies to each of the projects implemented (ERP, EAM, and CIS). The design phase is expected to cover a six month timeframe during which the following will be accomplished: rationalization/finalizing of business requirements/rules, configuration and development of RICEF (reports,

interfaces, conversions, enhancements, and forms), validation of process models, and development of user scripts which describe how all the process variants will be handled. The build phase includes finalization of RICEF, configuration/coding, unit testing, and then finalization of configuration. The test phase includes integration testing, stress testing, user testing, and user acceptance testing. The last phase, deploy, rolls out the new systems across the enterprise.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes

JOHN S. YOUNG, JR, P.E.

Home: 109 Kingsdale Avenue
Cherry Hill, New Jersey 08003
856-424-0718

Business: American Water
1025 Laurel Oak Road
Voorhees, New Jersey 08043
856-346-8250

Education: B. S. Civil Engineering, Duke University, 1975;
M.S. Environmental Engineering, University of North Carolina at Chapel Hill, August 1977 (two year program)

Employment Record:

President
Chief Water Technology Officer
3/10 - Present

American Water Works Service Company
American Water

Responsible for the management/governance of American Water Works Service Company which provides functional support services to the business and operation of American Water utility subsidiaries. Responsible for developing innovative and technological solutions to support American Water's customer service and efficiencies. Additionally, responsible for facilitating and managing growth opportunities within American Water.

President
7/08 – 3/10

American Water Works Service Company
American Water Services

Responsible for the management of American Water Works Service Company which provides functional support services to the business and operation of American Water utility subsidiaries. Responsible for a business transformation program to improve process and efficiency, enhance customer service and replace antiquated IT systems across the business. Additionally responsible for facilitating and managing growth opportunities within American Water.

Chief Operating Officer

American Water

10/05 – 7/08

Responsible for developing and integrating the Company's strategic plan including establishing balance between the company's immediate business goals and long-term vision, developing and implementing policies, procedures and standards, as well as maintaining and enhancing the company's image and quality service.

Vice President – Operations and Investment Performance
11/03 – 10/05

American Water
Responsible for the following functions/activities:

1) Identifying and implementing operational improvements, and efficiencies and best practices across the business;
2) Managing the Americas Region $600M capital program;
3) Risk Management – Health & Safety, Security and Event Management;
4) Environmental compliance, management and stewardship;
5) Engineering;
6) Research & Technology.
7) Assessment of commercial and growth initiatives.

Vice President – Technical Services
1/03 – 11/03

American Water
Responsible for managing the American Water technical services including the engineering, environmental management and research functions. Additionally, responsible for improving business performance through identifying and implementing operational efficiencies, material procurement and energy management initiatives. Provide technical leadership for commercial opportunities to maximize value and performance.

Vice President – Engineering
4/91 – 1/03

American Water Works Service Co., Inc.
Responsible for managing the engineering function of the American Water System. This includes the preparation of comprehensive planning studies for system operations in twenty-two (22) states and the design, design overview and construction management or projects involving water supply, treatment, pumping, distribution and transmission facilities. Responsibilities also include development of engineering standards, project management procedures, employee development and business development.

Director – Engineering Design
1/86 – 4/91

American Water Works Service Co., Inc.
Responsible for managing engineering design for American System Engineering Office. Responsibilities include:

1) Review and approval of in-house design of water treatment, pumping and storage facilities.
2) Development of detailed design concepts and coordination of water works design and construction.
3) Pilot plant testing and start-up of new or expanded

facilities.
4) Instruction at training seminars.
5) Technical presentations.
6) Expert testimony.

Director – Engineering Planning
9/84 – 12/85

American Water Works Service Co., Inc.
Responsible for managing engineering planning for American System Engineering Office. This group developed Comprehensive Planning Studies for water systems which included water demand projections and regional water supply plans, analysis of sources of supply and produetion facilities and modeling of distribution systems.

Supervising Engineer
10/82 – 9/84

American Water Works Service Co., Inc.
Served as project engineer for the major design projects within System Engineering Offiee and supervised personnel on other design and planning projeets.

System Environmental Engineer
12/79 – 10/82

American Water Works Scrvice Co., Inc.
Project engineer with primary responsibility for process, hydraulic, chemical feed and instrumentation and control design and eoordination of structural, electrical and HVAC for new and renovated water works facilities. These facilities included turbidity removal, greensand filtration, lime softening, GAC adsorption, air stripping and residual solids proeessing.

System Water Quality Engineer
10/78 – 12/79

American Water Works Service Co., Inc.
Evaluated the performance and efficiency of treatment facilities for American System Water Quality Office.

Director of Water Quality – Eastern Division
9/77 – 10/78

American Water Works Service Co., Inc.
Responsible for the review and implementation of recommendations to improve finished and raw water quality, treatment effieiency and laboratory.

Teaching Assistant
9/76 – 6/77

University of North Carolina
Involved the preparation and instruction of laboratory exercises for three graduate level eourses in water and wastewater unit processes.

Student Research Assistant
9/75 – 9/76

Bogue Sound Water Quality Study
University of North Carolina
Duties included field sampling and collection of background data to develop recommendations for pollution abatement.

Assistant Engineer
1975, 1976 (part-time)

Wiggins-Rimer & Associates
Colleetion and analysis of watershed and stream flow data for 208 regional water quality/quantity planning studies.

Professional Certifications

Registered Professional Engineer in multiple states.

Professional Organizations:

National Drinking Water Advisory Council (2001- 2007)
NDWAC Affordability Workgroup
NDWAC Water Security Workgroup

American Water Works Association
Standards Council Member
Chair – AWWA/ASDWA Additives Committee
1992-1994 New Jersey Section Program Committee Chair
1994-1999 New Jersey Section Board of Trustees
1997 New Jersey Section Chair
1994 Fuller Award Recipient
2007 – 2010 AWWA Board of Directors

American Society of Civil Engineers

Design/Build Institute of America
Board Member 2004-2010
Treasurer 2009
Board Chair 2010

USEPA Effective Utility Management Workgroup

Court Appointed Special Master, Jefferson County Alabama – Sewer System. November 2008

WateReuse Foundation
Director 2010

Civic:

Trinity Presbyterian Church
Board of Deacons
Moderator – Board of Deacons
Elder – Session
President – Board of Trustees
Chair - $1.5 Million Capital Campaign

Awards:

Betty Anne Simon Dollar Energy Low Income Community Award, 2007.

Distinguished Alumnus Award: University of North Carolina – Chapel Hill, School of Public Health, 2008.

Presentations and Publications:

- "Perspectives on Desal" presented at the National Association of Water Company Conference, in Orlando, FL, October 2009.
- "Effective Utility Management Application of the EUM Primer", presented at the 2009 AWWA/WEF Utility Management Conference, in New Orleans, LA, February 2009.

- "Energy Management & Alternative Energy Use in the Water Sector", presented at the Mayors Water Council Summit, in Palm Beach, FL, November 2008.
- "Privatization/Regionalization in Water Resource Management", presented at a memorial symposium for Dr. Daniel A. Okun, in Chapel Hill, NC, November 2008.
- Key Note Speaker, NJAWWA Annual Conference, Atlantic City, NJ, March 2008.
- "State of the Sector – Water Emerging Trend" presented at the Center for Public Utilities Current Issues Conference, in Santa Fe, NM, March 2008.
- "Water Resource Technologies" presented at the National Drinking Water Symposium, in La Jolla, CA, October 2007.
- Key Note Speaker – "U.S. Water System Needs and Affordability" presented at the National Low Income Energy Consortium Conference (NLIEC), in Nashville, TN, June 2007.
- "Emerging Water Utility Trends" presented at the New Jersey Section – American Water Works Association, March 2007.
- "Effective Water Utility Management – Goals, Performance, Planning & Leadership" presented at the New Jersey American Water Works Association Seminar, February 2007.
- "Challenges and Benefits of Total Water Management" Published in *Underground Infrastructure Management*; November/December 2006.
- "Challenges and Benefits of Total Water Management", Published in *Journal* of the American Water Works Association; June 2006.
- "A Paradigm Shift for Owners", Design-Build and the Water/Wastewater Sector: Risks and Opportunities, Published in *Design-Build DATELINE*; January 2006.
- "Emerging Water Utility Trends" presented at the Association of Metropolitan Water Agencies, 2005 Annual Meeting; October 2005.
- "American Waters Business Process Transformation: Enhancing Asset Management" presented at the American Water Works Association, National Convention; June 2005.
- "High Performance Supply Chain" presented at the International Utilities and Energy Conference – Barcelona, Spain; April 2005.
- "Affordability: An Industry Perspective" presented at the National Association of Water Company Conference; October 2004.
- "Small Systems Affordability" presented at the National Association of Regulatory Utility Commissioners (NARUC) Conference; February 2003.

- "Automation and Instrumentation, Making the Most of Technology in Our Operations" presented for American Water Works Association teleconference; November 2000.
- "The Future of Drinking Water Treatment" presented to the American Water Works Association – Water Quality Technology Conference; November 1999.
- "Waste Stream Recycle" presented to U.S. EPA Stakeholders Meeting for Filter Backwash Recycle Rule; July 1998.
- "Innovative Project Delivery Techniques" presented to the American Water System – Annual Business Forum; April 1997.
- "Facility Reliability and Reserve Capacity" presented to the American Water System – Annual Business Forum; May 1996.
- "Facility Automation" presented to the American Water System – Annual Business Forum"; May 1995.
- "Source Remediation" presented to the American Water System – Annual Business Forum"; May 1995.
- "Industry Leadership through Participation in Water Industry Activities" presented to the American Water System – Annual Business Forum; May 1994.
- "Preparing a Request for Proposal" presented to the American Commonwealth Management Service meeting; March 1990.
- "Using Technology as a Management Tool – Management through Facility Design" presented at American Water System Management Seminar; May 1988.
- "Process Selection for Arsenic Removal" presented to the Indiana Section – American Water Works Association; November 1987.
- "Pilot Treatment Studies for the Kentucky River" presented to the Kentucky-Tennessee Section – American Water Works Association; September 1987.
- "On-Line Instrumentation – Practical Consideration" presented to the New Jersey Section – American Water Works Association; March 1986.
- "Pilot-Scale Investigation of Air Stripping for Removal of Volatile Organics" presented to New Jersey Section – American Water Works Association; September 1981.
- "Utilization of Belt Filter Press for Dewatering Water Treatment Plant Sludge" presented to the New Jersey Section – American Water Works Association; September 1981.
- "Operating Experience with Granular Activated Carbon" presented to the New Jersey Section – American Water Works Association; September 1979.

- "Chloroform Formation in Public Water Supplies: A Case Study" presented to the 97th Annual Convention of the American Water Works Association; May 1977. Published in *Journal* of the American Water Works Association; February 1979.

- "Adsorption of Alkyl Phenols by Activated Carbon"; Singer, Yen, Young; presented at American Chemical Society – Division of Environmental Chemistry; September 1978.

- "Adsorption of Phenolic Constituents of Coal Conversion Wastewaters"; Singer, Yen, Young; presented at the Purdue Industrial Waste Conference; 1977.

Guest Lecturer: Johns Hopkins University: "Pilot Studies for Process Selection".
Rowan University: "Challenges in the Water Industry".
Lehigh University: "Water Treatment Process Selection Criteria"

Instructor: American Water System – Water Treatment Plant Design Course.

American Water
Information Technology Infrastructure
Comprehensive Planning Study Report

American Water
Information Technology Infrastructure
Comprehensive Planning Study Report

Prepared by: American Water
1000 Voorhees Drive
Voorhees, NJ 08043

April 13, 2010

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Executive Summary

Overview

This Comprehensive Planning Study (CPS) report examines the detailed and systematic processes used to identify the information technology-based needs of American Water (AW) that enable the company's public utility subsidiaries to deliver high-quality service to over three million utility customers across the country. The recommendations identified in this CPS report are intended to allow maintenance of high-quality, reliable service in the future and to improve customer value by enhancing core business processes and systems to be more accurate, timely, and effective. For purposes of this document, American Water is defined as American Water Works Company and each of its regulated operating subsidiaries together with American Water Works Service Company and American Water Capital Corporation (collectively, AW). The project scope does not include the technology or process needs of AW's non-regulated business conducted through American Water Enterprises.

This document offers a detailed review and analysis of AW's current business systems, processes, hardware, and software. Furthermore, this document identifies the critical areas of focus and provides recommendations for a company-wide program that will improve AW's key business processes and information and update the systems that support them so AW can continue to deliver high-quality water and wastewater services.

The term 'Business Transformation' was developed by AW to frame this effort for internal audiences who will need to understand and support the effort since it will change the tools they use and the way they perform their jobs. It also serves as an internal nomenclature for the initiative that allows the company to conveniently refer to the initiative and report within the organization. Overall, the program will address AW's needs to improve processes, assess and rationalize data, and upgrade information technology (IT) systems.

This report provides a basis for the proposed tool, process changes, and a forecast for the timing and estimated cost of the recommended capital improvement projects. This Executive Summary is an overview of the Comprehensive Planning Study (CPS) that outlines AW's IT background, analysis, and recommendations. This document is comprised of six sections. Sections one through four focus on an analysis of the current state of AW's data/technology systems, customer expectations, and core business process areas. Section five offers project recommendations for the Business Transformation, and section six outlines alternative solutions that were considered for the program.

Situational Background

IT Systems Background

The company's first computer applications were developed in-house on early mainframe technology in the mid-1970s. In the mid-1980s, a customer billing system (EDIS) was added. Discussed in more detail below, this computing technology was upgraded in the late 1980s and early 1990s from mainframe and System 36 computers to AS400 computers in response to changing business needs.

AW owns and operates regulated water and wastewater systems in many states. During the 1970s and early 1980s, AW's regulated utility systems operated as stand-alone business utilities. In some instances, there were multiple utility businesses in a single state. Over time, utilities within each state were consolidated into a single-state corporation. The legacy computer software became inadequate in meeting the needs of the consolidated utility businesses. Therefore, in the mid-1990s, software was introduced to support the consolidated companies' back-office functions including accounting, procurement, and human resources needs using JD Edwards and customer service needs using Orcom. This software was implemented at each data center, serving one or more state utilities, and was configured to suit the processes and needs of each.

In early 2000s, AW recognized that it could achieve benefits through the consolidation of common business activities and formed a consolidated shared services center and customer service center. While common work was consolidated, the project did not

attempt to change business processes or practices. Even today, the company continues to run on the software and hardware solutions implemented more than a decade ago including the AS400 computing systems, which were designed to support small- to medium-sized businesses. The size and scope of AW's business and the complexity of today's business and customer needs have grown beyond what the existing systems were designed to accommodate.

Realizing that the current technology platform has reached the end of its useful life cycle, AW began a review of its business systems and processes. The review demonstrated that AW's IT systems, which support many AW processes, are at the end of their useful life cycles. The technology now in use is outdated, was designed to accommodate a much smaller customer base, and lacks the functionality needed to meet today's customer expectations. As a result, it is difficult to maintain and support the existing systems. Furthermore, the professionals who support many of the AW IT system applications are reaching retirement age, and it will become increasingly difficult to locate professionals who can support the existing systems that are customized to meet the needs of individual utilities or groups of utilities.

Customer Expectations

Over the last ten to 15 years, more has changed than just technology; customer needs and expectations have also shifted. As always, AW customers expect to receive high-quality, reliable supplies of water and wastewater service. However, today's customers expect more: Internet billing, appointments for repair calls, self-service inquiry and ordering capabilities, secure transfer of personal information, and high-level customer service online and by phone through voice and text. When AW's IT systems were acquired in the mid-1990s, they met the customer expectations of the time, but today AW's non-integrated systems have insufficient automation that limits the capabilities available in providing service to its customers.

The customer experience includes three major areas: delivery of high-quality, reliable water and wastewater service; effective resolution of customer needs and problems; and

accurate billing (Exhibit, Customer Experience Life Cycle). To adequately meet these three high-level expectations, AW employees must complete hundreds of tasks every day. AW's existing technology systems are not automated to effectively support the performance of the majority of these tasks. There is an opportunity to obtain greater automation and integration across the company, and improved technology systems would allow AW employees to more efficiently and effectively meet customer needs and expectations.

Core Business Process Areas

Effective, efficient business processes rely heavily on business systems—they are the foundation on which businesses operate and are essential to the success of any organization. Business processes involve all functions including operations, accounting, human resources, and purchasing. For the purpose of this CPS, AW segmented its business, based on how it currently operates and provides customer service, into six core business process areas.

1. "Procure to Pay" (supply chain and inventory management) is the work stream and process AW uses to ensure that employees have the goods and services they need to serve its customers and that those goods and services are requisitioned or obtained at the lowest possible cost.
2. "Recruit to Retire" (human resources) is the work stream and process AW uses to manage human resource activities including recruiting, hiring, payroll, performance and development, learning and knowledge management, benefits administration, training and development, and retirement.
3. "Record to Report" (finance) is the work stream and process AW uses to capture, record, and report all financial transactions and information uniformly and consistently across the AW organization.
4. "Plan to Build and Maintain" (operations) is the work stream and process AW uses to plan, budget, design, build, operate, maintain, and manage the physical assets which comprise a major investment for AW.

5. "Order to Cash" (billing) is the work stream and process AW uses to manage customer billing, collect customer payments, and handle customer billing inquiries.
6. "Service Request to Completion" (customer service) is the work stream and process AW uses to manage activities required to address inquiries from customers for issues related to their service experience such as leaks, payment problems, service interruptions, and water quality.

These core business process areas are constantly evolving to meet changing business and customer needs. However, due to the company's outdated technology systems, they are constrained as to how much they can evolve. As a result, AW now uses manual solutions to improve processes. These manual solutions are not optimal because they introduce redundancy and inconsistency of data, require additional manual steps, and limit information availability. New IT systems would create a single repository for data, decrease the amount of necessary manual handoffs, and introduce integrated systems that all process areas can access. These improvements will enhance the capabilities of each core process area, so the processes are better organized to work together in delivering high-quality water and wastewater services to AW customers.

Analysis of Core Process Areas

In order to improve AW's core business process areas and the corresponding technology, it is critical to have a solid understanding of what works well and what needs to be improved. To determine this, AW conducted an analysis of each core process area (outlined above) to examine its needs and study its current ("as-is") state of operation. As-is process maps (Appendix) were developed for each core business process to document how activities are performed end to end across AW's regulated businesses. The as-is process maps:

- Depict the steps within each process
- Identify less efficient areas that have resulted in workarounds and introduce operational barriers
- Highlight opportunities for process optimization and improvement

To ensure the as-is process maps captured the processes accurately, process leads and over 1,000 employees representing different levels across the organization thoroughly reviewed each map. Once validated, AW mapped redundancies and manual handoffs, and identified opportunities for improvement.

Once the as-is process maps were complete, "to-be" (future) process maps were developed to illustrate the proposed design of how AW core business process areas could be organized in the future. To facilitate the creation of the to-be process maps (Appendix), AW used the data collected from the as-is validation process and again met with employees across the country from all levels. To get a fuller perspective on business outside AW, the company also analyzed technology and processes in use by others.

During the analysis, AW compared its current capabilities, technology, and processes to those of other companies to assess potential benefits associated with changing processes and systems. The observations from this analysis include the following:

- There is potential to complete up to 95 percent of material orders through purchase orders; AW's level is substantially less.
- There is potential to use electronic catalogs to automate repeat purchase of goods and services; AW's purchase orders are manually completed.
- There is potential to integrate work orders with an inventory/purchasing system; these systems are not fully integrated at AW.
- There is potential to further automate the general ledger account reconciliation process; AW's reconciliations are time consuming with minimal automation.
- There is potential to automatically dispatch normal service orders; very few of AW's normal service orders are automatically dispatched.
- There is potential to use electronic work queues for routing and tracking service orders between the call center and field; AW uses email and phone calls to track the status of service order work and lacks an automated tracking system.

- There is potential to use employee self-service systems to provide employees access to their personal records and payroll details; these processes at AW are manual and paper-based.
- There is potential to use a computerized maintenance management system to standardize and optimize the preventative maintenance that is performed on assets; AW's preventative maintenance management is a manual process that differs across operating units.

Summary

In summary, over time AW's technology has reached the end of its useful life and requires multiple manual processes to support basic information requests. The IT systems at AW are not designed for or capable of fully or efficiently supporting the company's size, geographic, or regulatory requirements. Additionally, customer expectations have grown, and the current IT systems do not support customers' increasing needs. Introducing new technology solutions will provide customer and employee self-service capability and more convenient, efficient service to customers, employees, and vendors.

AW's lack of ability to access data across multiple, non-integrated systems presents considerable challenges. AW's current state is that the same information is contained in multiple packages, but independently configured with no consideration for integration needs. It is estimated that approximately 10 percent of AW data is integrated across multiple IT systems, which means that 90 percent of the company's information is maintained using non-integrated systems across functions and locations. These non-integrated systems require a significant amount of human interaction.

In addition, since AW captures information in non-integrated databases, more manual work is necessary to confirm data and manage data issues. In some instances, the same data may reside in multiple applications rather than in one place. That data often differs from application to application and, therefore, can be the source of inconsistent information and reporting. To support the Business Transformation effort, a data

assessment project is underway that will define, quantify, and assess all data and applications as they relate to the development and implementation of a data management program.

As a result of AW's existing IT systems, the company's processes have become outdated and time consuming. AW's core business process areas are overwhelmingly manual rather than optimal integrated solutions that incorporate processes, people, and technology. However, opportunities exist today to improve them and to benefit customer service levels as well. The recommendations identified in this CPS report are intended to improve customer value by improving core business process execution in a more accurate, timely, and effective manner. Technological and process improvements will shift AW's focus from highly manual solutions to technology solutions that provide more automation and analysis, improved and timely decision support, and better integration.

Recommended Capital Projects

There are three recommended capital improvement projects to improve the performance of AW's data management capabilities, IT systems infrastructure, and customer service levels: Enterprise Resource Planning (ERP); Enterprise Asset Management (EAM); and the Customer Information System (CIS). AW plans to implement these projects in two phases after a six-month design phase for all three projects.

Phase one is the ERP, which will act as the foundation for the EAM and the CIS. The ERP primarily impacts three core business process areas: Procure to Pay; Record to Report; and Recruit to Retire. The total estimated cost for the ERP is $94 million, and AW forecasts that implementation and stabilization will be completed in 24 months commencing in approximately September 2010. Phase two includes the EAM and CIS projects. The EAM project primarily impacts the "Plan to Build and Maintain" core business process area while the CIS project primarily impacts the "Order to Cash" and "Service Request to Completion" core business process areas. The EAM project's estimated cost is $77 million, and AW forecasts that implementation and stabilization will be completed in 38 months commencing in approximately September 2011. The CIS

project's estimated cost is $102 million, and AW forecasts that implementation and stabilization will be completed in 38 months commencing in approximately September 2011.

The investment for these three projects totals approximately $273 million over a time span of approximately five years (2010-2014). At this time, these cost estimates are at the concept level and do not have the benefit of detailed design. The projected costs are mid-range estimates based on input from outside experts and could vary based on final design considerations and implementation timeframes.

Section 1—Comprehensive Planning Process Overview

The goal of American Water[1] (AW) is to provide high-quality water and wastewater services to its customers. To achieve that goal, AW needs to have the right systems and processes to support its business. Through analysis, AW has learned that its existing systems and technology are outdated and no longer effectively and efficiently serve its business.

The company uses the same systems and processes today that it introduced 12 to 15 years ago. In fact, based on the 2009 performance metrics from a global strategic advisory firm, AW spent $20.1 million less per year on IT systems than the peer group[2], overall.

AW's last significant information technology (IT) financial system upgrade occurred in 1995, and the upgrade provided AW with the then-current IT necessary to meet its business needs at the time. Since then, AW's IT has remained viable through the addition of numerous customizations and manual processes that allow AW to keep up with growing and evolving business, regulatory, and customer needs. Continuing with this approach is less efficient as existing systems are at the end of their useful life, which leads to additional manual procedures and paperwork, and less time to focus on customer needs.

In addition to many customizations, AW's systems do not effectively support customer and regulatory needs. For instance, AW's systems do not support an emerging regulatory requirement, geographical information systems (GIS) formatting, which is the ability to electronically map the locations and attributes of all AW's sites, pipes, water mains, etc. In general, AW currently tracks this geographic information's on paper maps created from CADD maps, so it can provide information as required. This manual process is not adequate for the future.

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[1] For purposes of this document, American Water is defined as American Water Works Company and each of its regulated operating subsidiaries together with American Water Works Company and American Water Capital Corporation.

[2] For purposes of this document, peer group is defined as the median performance of all the Companies in their IT database)

from CADD maps, so it can provide information as required. This manual process is not adequate for the future.

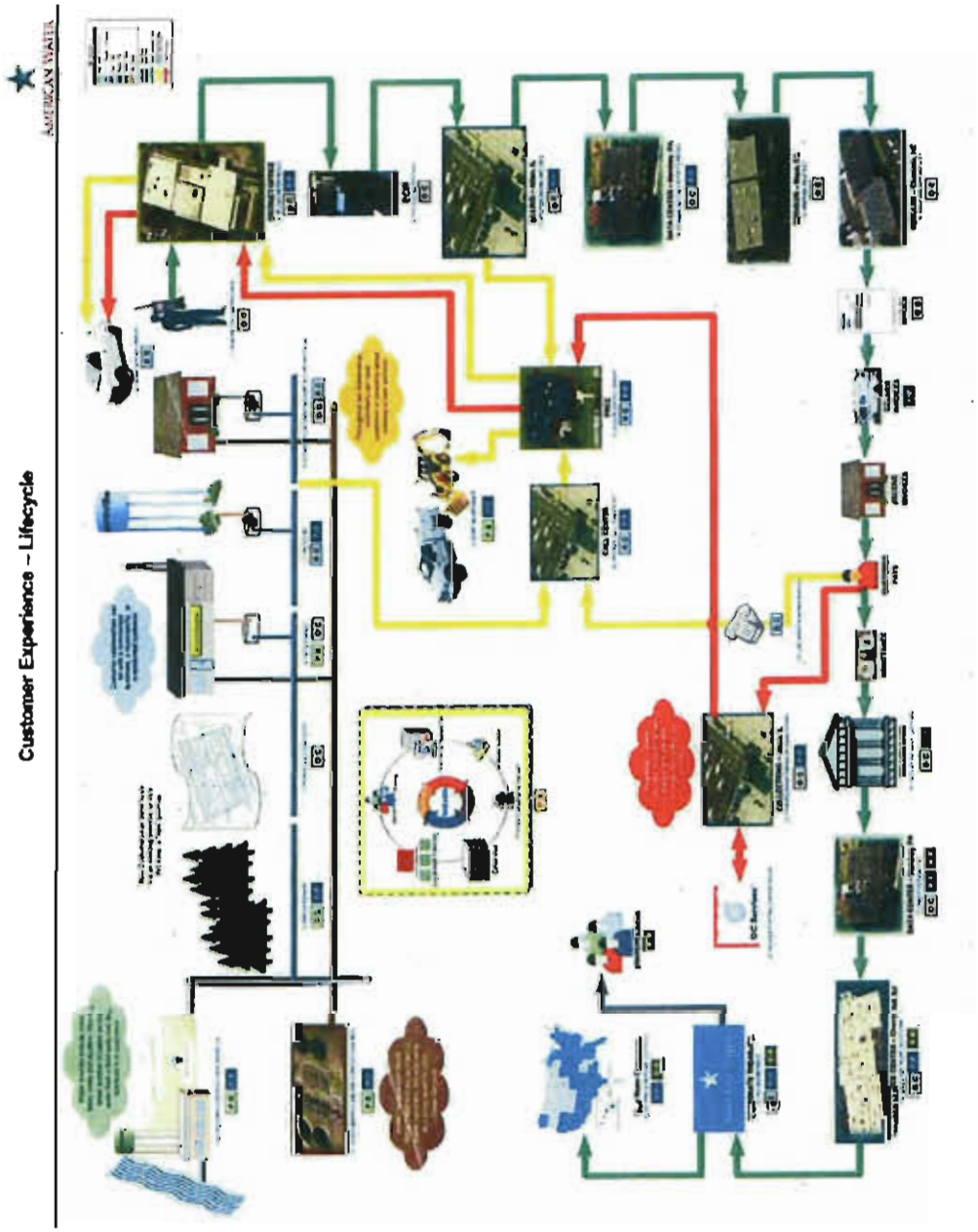
Additionally, customer expectations continue to grow. As always, AW customers depend on and trust that they will receive high-quality, reliable water and wastewater service. However, customers now expect more from their water service experience, such as Internet billing, quicker responses to repair calls, self-service ordering and inquiry capabilities, secure transfer of personal information, and superior customer service experience online and by phone.

The customer experience includes three major areas: delivery of high-quality, reliable water and wastewater service; effective resolution of customer needs and issues; and accurate billing (Exhibit, Customer Experience Life Cycle). Within each of these areas, AW employees must complete hundreds of tasks every day. A majority of these tasks would be completed more efficiently and effectively if improved systems were in place.

AW is proud of the service it delivers to its customers and has determines that change is necessary to replace obsolete technology. The Comprehensive Planning Study (CPS) report examines and further explains the current state of AW's IT systems and processes and details recommendations for improvement. The recommendations center around three projects: Enterprise Resource Planning (ERP); Enterprise Asset Management (EAM); Customer Information System (CIS). Through these projects, AW will improve its processes, clean up its data, and upgrade its technology so it is able to continue to deliver high-quality water and wastewater services to its customers.

The term 'Business Transformation' was developed by AW to frame this effort for internal audiences who are going to need to understand and support the effort since it will change the tools they use and the way they perform their jobs. It also serves as an internal nomenclature for the initiative that will allow the company to conveniently refer to the initiative and report progress within the organization. The program will assess data and replace systems at the end of their useful life to allow AW to continue to service

customers. Additionally, the resultant increase in integration will enable improved processes.


AMERICAN WATER
Customer Experience – Lifecycle

Section 2—Current State of American Water's IT Systems

2.1—IT Structure

AW's first computer applications were developed in-house as custom solutions in the mid-1970s. Following that, a customer billing system (EDIS) was added in the mid-1980s. Computing technology at AW progressed from mainframe to System 36 technology in the 1970s, and then to AS400 computers in the 1990s.

During the 1970s and early 1980s, AW's regulated utilities operated primarily as stand-alone business utilities, and in some cases multiple stand-alone utility companies existed within a single state (e.g. New Jersey and Pennsylvania). Over time, utilities within each state were consolidated into a single corporate entity. Then, within each state utility AW found opportunities to consolidate some of its services to attain improved efficiency and quality of service. Through these changes, the legacy IT system software remained and AW had an increasingly difficult time meeting the changing practices and processes of the business using its existing technology.

To support AW's needs in the mid-1990s, new software, JD Edwards (JDE) and Orcom (ECIS), was introduced to operate on the AS400 computers. JDE supported back-office functions, which include accounting, procurement, and human resources. The introduction of ECIS improved customer service with better generation and resolution of customer requests, billing management, payment collection, and information management.

In the early 2000s the company recognized the benefits that could be achieved through consolidation of many common work activities such as processing financial transactions and responding to customer inquiries. Consequently, AW created a consolidated shared services center, customer service center, and data center. While common work was consolidated, the project did not attempt to change business processes or practices. Even today, the company continues to run on the software and hardware solutions that were implemented more than a decade ago including the AS400 computing systems, which

were designed to support small- to medium-sized businesses. For example, the current customer service system, ECIS, is configured in 20 different instances across AW and is utilized by a consolidated customer service center. This presents maintenance support issues, training complexity, and a necessity for a call handler to toggle between instances on his or her computer screen. These issues ultimately add time to resolving customers' questions and issues.

Additionally, many factors affecting how business must be conducted have changed since AW's IT applications and systems were implemented in the mid-1990s. For instance, Sarbanes Oxley requirements have imposed a wide range of new control, security, and reporting requirements on the company.

AW understands that the software solutions implemented more than a decade ago are no longer useful. The company is challenged by the current technology platform, the AS400 computing system, since it is not designed to support the size and scope of AW's business today. Without a major system upgrade, AW will be challenged to effectively meet customer needs.

Realizing the shortcomings in the current technology platform, AW began a comprehensive review of its business systems and processes. This review illustrated that AW's IT system applications have reached the end of their useful life cycles and no longer provide the capabilities necessary for AW to function at its fullest capacity. The current technology is increasingly costly and difficult to maintain and support. Furthermore, many of AW's IT system applications are unable to be simply upgraded because new software versions are not compatible with AW's outdated systems.

2.2—Current Technology Platform

The following outlines AW's current major technology systems:

AS400 - American Water Operating/Application System

AS400 computers were implemented at AW in the 1990s. When implemented, these mid-range computers were appropriate technology for the time, but now they are over 14

years old and do not compare to modern technology in terms of speed, flexibility, security, and support. In an industry study, only six percent of utility and energy companies use AS400 today.

Compared to currently available technology, the AS400's response time is slow (newer technology performs at least twice as fast). In terms of security, it is increasingly difficult to install state-of-the-art security software and other modern business software on the AS400 machines because of their age and dated design. Additionally, AS400 computer experts are limited, since support personnel are typically found in older generations, many of whom will retire from the workforce by 2015.

While the AS400 is a stable product, the industry direction is moving away from single-vendor proprietary solutions like the AS400. Software vendors are slowly discontinuing product support for the platform and rapidly migrating to "open" platforms such as Linux/AIX. With this industry migration taking place, the ability to find applications for mid-size and large organizations and quality AS400 administrators is diminishing and will further degrade over time.

JD Edwards (JDE) – Financial Reporting Software

JDE supports financial transactions—paying a vendor invoice, processing and sending payroll, receiving customer payments—that occur on a daily basis. It was purchased for AS400 computers in the 1990s and was implemented in various versions to suit specific business utilities. In the early 2000s, AW consolidated back-office functions (e.g. accounting, human resources, finance) into a shared service center. During this time, in an effort to control costs, AW did not replace the AS400 computers.

Financial reporting, which is completed using JDE, is an essential area of the business. For example, daily financial transactions are recorded and entered into the general ledger at the individual state level. At the end of the month, financial transactions are gathered, reviewed, and balanced at the state level and then combined at a national level. This process is known as "closing the books" and "consolidation of results." Utility managers

use this information to review key operational and financial results to gain an understanding of the state of the business so they can effectively manage it and make the appropriate decisions. On a quarterly and annual basis, reports of financial results are filed with the Securities and Exchange Commission and communicated to large audiences such as State Public Utility Commissions.

Financial reporting is an important responsibility at AW, but the supporting software creates multiple challenges. One major challenge is obtaining technical support. The seven-year-old version of JDE now in use is costly to maintain due to its age and the fact that its programming language (RPG) is now obsolete. The RPG skill set required to support the JDE software is outdated; most people who began their career with this skill have moved on to attain more marketable programming capabilities. Consequently, the pool of skilled resources with this knowledge is shrinking and will continue to do so, making support for this software expensive and more difficult to acquire. Additionally, since its implementation AW introduced numerous customizations and workarounds to accommodate and meet changing business practices and processes. As a result of the customizations, finding ongoing technical support for this software is difficult.

Overall, the JDE design is dated, and it lacks adequate web enablement capability and security management features. Its inadequate functionality places limitations on process capabilities, including employee self service and vendor self service.

JDE supports human resources responsibilities; however, the current configuration does not integrate time and attendance or self-service features for employee benefits management. This creates extensive manual work, and limits tracking capability. JDE also supports supply chain and inventory management responsibilities. Regarding this area, there is limited transparency into the services that a vendor provides compared to the dollars that are spent on a vendor's services; presently the oversight of goods and services monitoring is a manual effort, performed and confirmed by multiple parties.

Enterprise Customer Information System – Orcom (ECIS) - Billing System

ECIS, the billing system, supports the processes for AW to start water service, ensure customers are billed correctly, and collect payments. The steps in this process include: creating new premises; activating customer accounts; reading meters; billing customers; and collecting and processing payments. The system also covers activities required to resolve customer issues such as leaks, payment problems, billing issues, service interruptions, water quality issues, and emergencies. Resolution of these issues generally include the following steps: 1) receive a customer call; 2) create a service order request; 3) route the request; 4) dispatch the correct resources to respond to the issue; 5) resolve the issue; and 6) communicate the resolution to the customer.

ECIS was introduced for AS400 computers in the 1990s and was implemented in various versions to suit specific businesses. In the early 2000s, AW consolidated the customer service center. As previously indicated, AW did not replace the AS400s or attempt to merge the various customer service software versions that were in use.

The current ECIS database design is outdated and less capable than modern technology. A modern system would provide improvement to overcome the current limitations, which include:

- Lack of front-end, built-in validation that prevents incorrect premise information from being entered into the system (e.g. location components or tax locale information). Currently, AW is required to run extensive reports and to engage a team to identify and correct errors.
- Essential dates and times are entered in general numeric fields, increasing the potential for errors. These potential errors can occur because the system can only validate whether a number has been entered into the numeric field, not whether the input is a valid date or time.
- Many service and Commission requests are completed manually because much of the data is listed in free-form fields requiring manual tabulations to respond to even simple queries.
- Limitations on bill details.

- An inability to house all AW regulated companies in one instance of the application due to limitations in database capacity and financial hierarchical configuration; currently there are 20 instances of ECIS, that must be maintained.
- The software is not easily configurable to meet new or changing business processes and practices.

2.3 Software Customizations

AW has fully maximized its software and systems since the mid-1990s by implementing significant customizations or workarounds, in part, to meet regulatory requirements and customer expectations that the original software was not equipped to support. Some examples of the numerous customizations that have been applied to the existing AW software include:

- Applying automatic adjustment to over-estimated bills
- Completing complex billing rates (e.g. conservation-based rates)
- Creating email fields and cell phone fields, as they've become a preferred means of customer contact
- Adding customer accounts to a system that was originally designed to accommodate a set number
- Adjusting revised daylight savings time dates
- Meeting new regulatory requirements [e.g. the state-mandated tariff structure based on customer usage (conservation pricing)]
- Implementing an entire service company time sheet and billing process

These customizations have addressed the needs of the business, but the company has reached a point where additional customizations are inefficient and costly or impossible. In addition, when customizations were too costly or impractical, manual processes were put in place. This manual intervention, however, adds steps and time to each process and increases the potential for human error.

While in the past, customization allowed AW to work around problems while minimizing capital investment requirements, it now creates a new problem: the inability to easily update software. There are 65 JDE and over 300 ECIS customizations. Since AW's software has such a large number of customizations, a system upgrade is not a viable option. As a result, new software versions cannot be implemented on AW's systems. Overall, the software and systems have done the job they were acquired to do, and AW has updated and expanded as much as prudently feasible. The time to replace them has arrived.

2.4—Data Assessment

Data is a vital asset. AW manages nearly three million fields of information and over 18 billion individual database records across multiple systems company wide including customer bills, service orders, customer profiles, asset information, and employee information. In order to continue to operate more efficiently and effectively, AW needs to manage data effectively. To do that, AW needs the right systems to house and maintain this vast amount of information.

Most of the systems that support AW's data were acquired over ten years ago. While these systems reflected the current technology, they have since reached the end of their useful lifespan and do not adequately support the amount and complexity of AW's data today. The outdated systems are not capable of being integrated with or connected to AW's other systems. This causes data that is manually entered into one system to be manually entered again in another system. Only 10 percent of AW data integrates across all systems today. Data entered may be correct in an independent system, but subsequent changes become difficult to maintain when data resides in multiple locations.

As a result of the numerous systems and vast amount of information, AW has begun a data assessment. This will help AW define, locate, evaluate, and assess all data and applications that relate to data management. The data assessment will establish the roadmap to ensure accurate and consistent data and establish a stronger, more mature data management capability across the enterprise. Data management is critically important in

order to effectively improve the management of information across integrated systems. It is important for AW to understand the detailed state of its data, in order to determine how to improve and understand what systems can best address the current issues.

The data assessment includes an analysis of all existing systems/applications and data used by AW and its subsidiaries. This effort will permit AW to create a comprehensive inventory of all databases and data sets and their related applications and systems. Also, data in the existing databases will be analyzed in order to better understand and map relationships with the various business processes, identify master data/reference data, highlight data issues across the processes, and uncover obsolete data sources. There will also be identification and documentation of existing governance and stewardship processes.

The goals for data governance are to ensure data is accurate, accessible, consistent, and able to:

- Support effective processes and decisions
- Prevent inappropriate use of data
- Promote consistent understanding of the meaning of data
- Leverage use of information assets to their full value while controlling costs
- Promote a wider and deeper understanding of the value of information assets
- Manage data assets across the enterprise based on policies and standards

Lastly, recommendations and a high-level action plan will be developed for the management of master data, data quality, data governance/stewardship, metadata, and data retention/archiving.

Section 3—Capabilities to Meet Expectations

When they were implemented, AW's IT applications and systems were aligned with customer, vendor, regulator, and employee expectations of the day. However, similar to many businesses, AW customers' and other stakeholders' needs and expectations have increased. Expectations have grown, but the capabilities of AW's IT systems have not. Modern systems would allow AW to make a number of improvements to continue to effectively conduct its business and will benefit customers, vendors, regulators, and employees.

For instance, in the mid-1990s when AS400 computers were in use and JDE and ECIS were implemented, customers' expectations did not include the ability to receive a bill online (e-billing). Most customers at that time did not even have a personal computer. Now, almost every industry (e.g. credit card companies, banks, cable companies, gas companies) offers customers the option of receiving their bills online because it provides timely, convenient, and environmentally-friendly service. Customers are affected in the same way when it comes to online services that ensure security of customer information and online transactions, track service requests, offer flexible service scheduling, and provide a single bill for multiple accounts. Years ago these offerings weren't even a possibility. Today they are business norms and AW must acquire the right capabilities in order to meet the needs and expectations of its stakeholders.

Similarly, there are technological offerings that vendors expect, such as the availability of electronic catalogs, electronic invoicing, and the ability to share current inventory levels. Offering these capabilities can reduce the costs of goods and services.

AW's limited capabilities also affect how the company responds to regulatory requirements. For instance, AW has many financial controls based on manual processes. Responding to a request with these additional manual steps has an impact on the amount of time it takes to complete these requests. AW's systems also limit the flexibility the company has in bill printing. For example, if AW is required to add additional

information to a current bill, an application customization must be made to meet the new requirement.

The IT systems also limit employees' abilities to complete normal tasks that many other companies have automated through employee self-service. AW has no online self-service options for employee benefits because the existing systems do not support the option. Any change to an employee's personal information (e.g. a change in address, phone number, name, etc.) must go through a manual paper-based process in human resources. These manual processes slow down the updating of information and increase the risk of human error.

Section 4—Core Business Process Areas

Effective, efficient business systems rely heavily on smart business process design—it is the foundation for how businesses operate and essential to the success of any organization. Business processes involve all functions including operations, accounting, human resources, procurement, maintenance, and customer service. In many cases, these business processes are interdependent and integrated through enabling IT systems. AW's existing IT systems lack the necessary integration and functionality, therefore limiting AW's processes. Listed below are AW's core business process areas:

1. "Procure to Pay" (supply chain and inventory management) is the work stream and process AW uses to ensure employees have the goods and services they need to serve customers and that those goods and services are requisitioned or obtained in the most effective manner. Under the existing AW systems, employees manually:
   - Process most invoices with minimal use of electronic purchase orders
   - Manage contractor service level agreements
   - Oversee most of AW's inventory process

   An example of the systems' impact: AW does not process any invoices electronically, while insight provided by Accenture[3] suggests that most companies process 25 to 76 percent of their invoices electronically. Use of electronic invoices minimizes the risk of input errors, reduces the amount of manual processing, and allows for negotiation of better payment terms with third-party vendors.

2. "Recruit to Retire" (human resources) is the work stream and process AW uses to manage human resource activities including recruiting, hiring, payroll, benefits administration, training and development, and retirement. There are no components of AW's existing systems that provide comprehensive management

[3] Accenture was contracted by AW to provide expertise and perspective in four areas: leading practices within the utility sector as well as other industries; generation of to-be processes; development of business requirements; and a software point of view.

of human resources activities and utilize independent programs (e.g. excel spreadsheets) to support the recruiting process. Even simple tasks such as producing a headcount tracking report are performed manually. Under the existing AW systems, employees manually:

- Change employee benefit information and other employee record updates
- Administer performance management and incentive compensation
- Track licensing and certifications against training requirements

3. "Record to Report" (finance and accounting) is the work stream and process AW uses to capture, record, and report all financial transactions and information uniformly and consistently across the company. Under the existing AW systems, employees manually:
   - Prepare and review the majority of monthly accruals, due to lack of sub-system integration
   - Implement numerous detective controls to maintain an effective control environment
   - Complete various external reports
   - Organize data extracts/reporting for rate case filing and data request completion
   - Process invoice approvals

   An example of the systems' impact: Month-end close takes eight to nine days each month; public companies typically take two to four days less than AW.

4. "Plan to Build and Maintain" (operations) is the work stream and process AW uses to plan, budget, design, build, operate, maintain, and manage the physical assets of its utility systems. With AW's existing systems, there are no integrated capabilities to electronically manage utility assets across an entire state utility. Under the existing AW systems:
   - All capital and maintenance project work orders must be created individually with no automated templates
   - Limited resource planning and scheduling automation exists

- Project planning, budgeting, and job cost accounting are manually performed and entered into AW's data systems for individual projects
- No comprehensive, automated project planning and analytical capability exists
- The absence of a comprehensive, integrated asset and maintenance database requires significant manual involvement
- No work management capability exists, making it difficult to efficiently schedule maintenance and operations work

An example of the systems' impact: Presently through the AW systems, a maintenance crew might only be assigned to one job if that assignment is estimated to take six hours. However, in reality, that crew could also perform a second, smaller job in the same area that day. The current manual system makes these pairings difficult, if not impossible to identify and schedule.

5. "Order to Cash" (billing) is the work stream and process AW uses to create and handle customer requests, manage customer billing, and collect customer payments. Under the existing AW systems, employees manually:
   - Calculate billing adjustments
   - Validate premise and customer record accuracy
   - Create work orders for new service installations with no capability for electronic work order issuance and integration into the system
   - Review thousands of transactions daily to ensure accurate meter reading, billing and collections processes

   An example of the systems' impact: The lack of integrated databases to support the customer information system requires a high level of manual effort to achieve needed results. While the results are being calculated, additional time is necessary to respond to a customer's inquiry or other stakeholder request.

6. "Service Request to Completion" (customer service) is the work stream and process AW uses to manage activities required to address inquiries from customers for issues related to their service experience including leaks, bill

inquiries, service interruptions, and water quality. Under the existing AW systems, employees manually:

- Assign 70 percent of all service orders
- Experience difficulty in meeting service level targets during periods of high call volume due to system limitations in identifying, scheduling, bundling, and routing work
- Access multiple systems to resolve billing questions
- Enter redundant data since the system does not prevent duplicate requests

An example of the systems' impact: If multiple customers call to report the same water main break to different customer service representatives, each representative could issue a different service order for attention to the main break.

The examples listed above represent only a brief summary of the state of the core business process areas, their tasks, and their system limitations. After determining the core business process areas, each was assessed to determine its strengths and weaknesses. As part of this assessment, "as-is" process maps (Appendix) were developed to illustrate how tasks are completed today within that functional area. The as-is process maps:

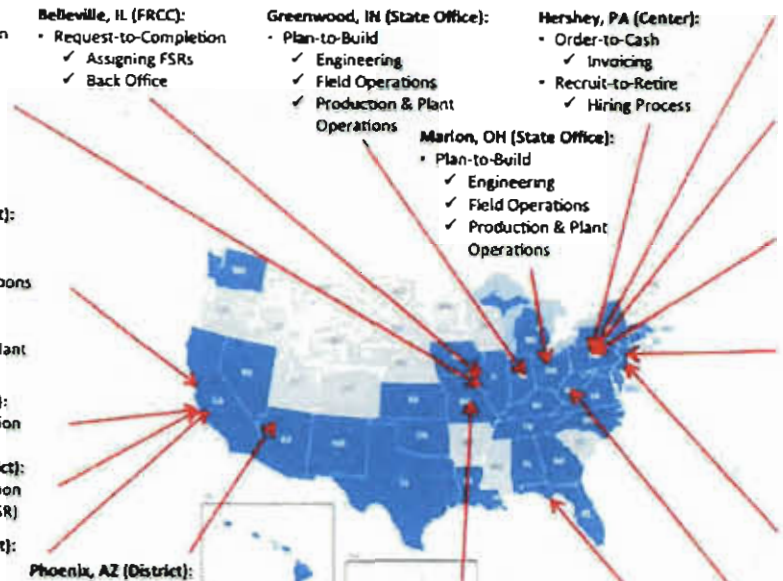
- Depict the steps within each process
- Identify areas that use workarounds and introduce operational barriers
- Highlight opportunities for process optimization and improvement

To ensure the as-is process maps captured the processes accurately, process leads and over 1,000 employees (representing different levels across the organization, from large and small service areas) thoroughly reviewed each map to validate its accuracy. Once validated, AW mapped redundancies, manual handoffs, etc., and identified opportunities for improvement (Exhibit, Breadth of Input Map).

With this evaluation, it became clear that AW as-is systems do not adequately support the business today. As a result, AW created an outline of the desired state of each core business process area. These outlines, referred to as the "to-be" process maps (Appendix), were created to illustrate how the as-is processes will be improved.

To ensure the to-be state represented feasible and effective process flows, employees from numerous levels across the organization reviewed and validated each process map. In addition to the technology assessment, the as-is process maps and to-be state were used to determine the recommended Business Transformation projects that will simplify AW's core business process areas and improve the systems that support them, so AW can continue to deliver high-quality water and wastewater service to its customers.

Breadth of Input



Alton, IL (Call Center):
- Request-to-Completion
  - ✓ Call Handling
  - ✓ Time Critical
- Order-to-Cash
  - ✓ Billing
  - ✓ Collections
- Recruit-to-Retire
  - ✓ Hiring Process

Sacramento, CA (District):
- Recruit-to-Retire
  - ✓ Hiring Process
  - ✓ Employee Relations
- Plan-to-Build
  - ✓ Engineering
  - ✓ Production & Plant Operations

Los Angeles, CA (FRCC):
- Request-to-Completion
  - ✓ Assigning FSRs

Los Angeles, CA (District):
- Request-to-Completion
  - ✓ Work Orders (FSR)

Rosemead, CA (District):
- Plan-to-Build
  - ✓ Field Operations

Belleville, IL (FRCC):
- Request-to-Completion
  - ✓ Assigning FSRs
  - ✓ Back Office

Greenwood, IN (State Office):
- Plan-to-Build
  - ✓ Engineering
  - ✓ Field Operations
  - ✓ Production & Plant Operations

Hershey, PA (Center):
- Order-to-Cash
  - ✓ Invoicing
- Recruit-to-Retire
  - ✓ Hiring Process

Marion, OH (State Office):
- Plan-to-Build
  - ✓ Engineering
  - ✓ Field Operations
  - ✓ Production & Plant Operations

Phoenix, AZ (District):
- Request-to-Completion
  - ✓ Work Orders (FSR)
- Order-to-Cash
  - ✓ Meter Reads
- Recruit-to-Retire
  - ✓ Hiring Process
- Plan-to-Build
  - ✓ Engineering
  - ✓ Field Operations
  - ✓ Production & Plant Operations

Saint Louis, MO (State Office):
- Plan-to-Build
  - ✓ Engineering
- Recruit-to-Retire
  - ✓ Hiring practices
  - ✓ Employee Relations

(Central Plant & Service Center):
- Plan-to-Build
  - ✓ Production & Plant Operations
  - ✓ Field Operations

Pensacola, FL (Call Center):
- Request-to-Completion
  - ✓ Call Handling

Wilkes-Barre, PA (FRCC):
- Request-to-Completion
  - ✓ Assigning FSRs
  - ✓ Back Office

McMurray, PA (District):
- Recruit-To-Retire
  - ✓ Hiring Practices
  - ✓ Employee Relations

Mechanicsburg, PA (District Office):
- Plan-to-Build
  - ✓ Engineering
  - ✓ Field Operations
  - ✓ Production & Plant Operations

Lakewood, NJ (FRCC):
- Request-to-Completion
  - ✓ Assigning FSRs
  - ✓ Back Office

Voorhees, NJ (Shared Services):
- Order-to-Cash
  - ✓ Posting
- Record-to-Report
- Recruit-to-Retire
  - ✓ Employee Status Changes
  - ✓ Payroll Process
  - ✓ Benefits Service Center

Delran, NJ (Delran Plant):
- Plan-To-Build
  - ✓ Engineering

West Virginia (State Office):
- Recruit-to-Retire
  - ✓ Hiring practices

Section 5—Project Recommendations

Section 5.1—Recommendations Overview

This section provides a description of each of AW's recommended projects. It includes a detailed explanation of the project's scope, duration, purpose, benefits, and costs. These recommendations address improvements to all of AW's core business process areas (previously identified in this CPS). These recommendations were reached after analyzing and evaluating the company's data, IT systems, and core business process areas.

Following these evaluations, it was evident that the necessary improvements for AW's systems and processes align with three major projects: Enterprise Resource Planning (ERP); Enterprise Asset Management (EAM); and Customer Information System (CIS). These projects will happen in two phases over a five-year period. Although the projects will have a total duration of five years, the implementation will allow customers to begin to experience benefits upon the completion of phase one.

The company is committed to investing in its core business processes and the IT systems that support them, so AW can continue to deliver high-quality water and wastewater service to its customers. The recommended projects will improve efficiency and effectiveness at AW by updating technology, adding capabilities, and improving processes. The ERP, EAM, and CIS projects will prepare AW to do that by automating processes and replacing inefficient manual processes. They will also optimize workflow and enhance back-office operations (e.g. accounting, procurement, and human resources) by automating and integrating the company's data so it is readily accessible to multiple functions and sites at once, reducing the manual re-keying and validation processes that exist today.

The Business Transformation program is aimed at improving outdated processes and systems, not reducing AW's workforce. If solutions implemented through the Business Transformation produce workforce efficiencies, AW will take every step possible to

address these efficiencies through natural attrition. To the extent that any savings are realized, they will be included in revenue requirements in future rate cases.

Section 5.2—Enterprise Resource Planning

Implementing Enterprise Resource Planning (ERP) System	
Duration:	
	Anticipated Design, 6 months Implementation and Stabilization, 24 months
Timeline:	
	Projected Design, April 2010-September 2010 Implementation and Stabilization, September 2010-October 2012
Project Cost:	
	Preliminary Estimate, $94 Million* *Project Cost does not include AFUDC

Project Description and Scope:

The ERP will integrate all of AW's regulated utility business data and processes into a unified system. More specifically, it will improve the way AW performs business in three core business process areas: 1) finance, by the ability to capture, record, and report all financial transactions and information across the organization ("Record to Report"); 2) purchasing, by ensuring that employees have the goods and services they need to serve customers, and that those goods and services are requisitioned or obtained at the lowest possible cost ("Procure to Pay"); and 3) human resources, by managing human resource activities including recruitment, hiring, payroll, performance and development, learning and knowledge management, benefits administration, training and development, and retirement ("Recruit to Retire"). The ERP will improve the systems and processes for AW's inventory management, goods and services management, general ledger, chart of accounts, financial transactions/reporting, time sheet submission, talent management, human resource services and administration, and human resources operations and support.

Early in the ERP project, software (ERP software and possibly additional supporting software for specific human resource processes) will be purchased along with associated supportive hardware (servers, storage, backup systems, etc.). The project will begin with a six-month design phase followed by a 24-month implementation/stabilization effort.

AW anticipates that the implementation effort will be staffed with 50/50 (internal/external) support. AW subject matter experts will provide internal support while a system integrator will provide external support. The project will also address data assessment, analysis, rationalization–the level of effort in this area is still to be determined. Data assessment, analysis, and rationalization will require support from both internal and external sources.

As with any large initiative, there will be a major learning curve for AW employees, which will require quality training and time. Nearing the end of the implementation, AW will put forth a sizable effort into training employees on the new systems. The training and development effort will be very large due to the scope of systems affected and the number of employees that will be impacted by the process improvements. AW will be replacing back-office applications as well as customer-facing and field-service applications. The projects will impact all active system users from the standpoint of user interface, business processes, and transition processing. Training will be delivered to associates via various methods (classroom, web cast, and e-Learning) using the "Train the Training" methodology to ensure the highest level of knowledge transfer. There will also be a significant effort in the development of physical and virtual training materials to support associates in obtaining the needed competencies in operating and understanding the downstream effect of the applications they utilize.

Throughout the project duration, the project management office (PMO) will provide oversight across the span of the project. The PMO costs will include labor, labor-related, and employee-related expenses for administration, communications support, financial support, training manager, trainers, process integration lead, and IT Systems technical lead, along with non-labor expenses including rent, depreciation, utilities, telecom, office supplies, copier expenses, and postage. Each core business process area will have a process lead and a project manager, and there will be one project manager who will act as oversight across all core business process areas for the entire project.

The ERP project, along with the other projects in the Business Transformation, is not scoped to address AW's non-regulated companies. The ERP scope also does not replace the current Utility Plant Asset Accounting system (Power Plant/Power Tax), current planning tool (Hyperion), and current tax system (Sabrix).

Output and Anticipated Benefits:

The ERP is expected to improve customer value by integrating AW's systems, thereby increasing the company's ability to accurately and timely execute core business processes in an effective manner. The ERP will benefit AW and utility customers in numerous ways by introducing benefits that primarily affect three core business process areas: "Record to Report," "Procure to Pay," and "Recruit to Retire."

Anticipated Benefits for "Record to Report:"

- Greater ability to execute core business processes in a more efficient fashion (e.g. more integration/automation of data that will support preparation of SEC-required filings and financial statements).
- Improved ability for reporting and communications (more efficient analysis and reporting) that are largely driven by the quality of the information used to manage and report the performance of AW's businesses.
- Improved data integration for sub systems that will be linked and flow seamlessly to the main system, improving data sharing (e.g. sending data between customer information system sub-ledgers and the general ledger).
- Sustainable and flexible IT systems that are able to meet AW's current requirements such as the ability to efficiently manage rate structures by state.
- Enable employees to focus on strategic analysis of data by reducing time spent on tactical tasks such as manual data entry, maintenance, and review/validation.
- Substantially enhanced and automated internal controls environment that is preventative in nature not manual like the existing detective processes.

Anticipated Benefits for "Procure to Pay:"

- Optimized material availability to field personnel, so they are prepared with the right tools and equipment when they arrive at a job site. This will enhance the quality and timeliness of field service.
- Improved purchase order processing that systematically manages purchase orders and automates former manual activities. The automated systems will allow more time for employees (such as Field Service Representatives) to be in the field working with customers instead of addressing invoice and purchase order matching issues.
- Enhanced inventory management that will alert those who oversee inventory to order more stock, when appropriate, compared to the current configuration, which has no alert in place. For example, ordering chemicals necessary to treat water supplies could be done through enhanced and automated logic, rather than an operator manually tracking chemical quantity status.
- Improved tracking of vendor contracts. The ERP will provide automated systems to track purchase of a good or service to its appropriate contact. The system will also be able to monitor repeat purchases from vendors for various trend analysis related to product, quantity, delivery time, price, etc.
- Better electronic records to measure and monitor vendor performance across the company, so there is a clearly determined list of vendors that provide the best work at the best price.

Anticipated Benefits for "Recruit to Retire:"

- Enable human resources staff to increase focus on value-added activities such as training and ensure compliance to human resources policies and practices versus providing manual transactional activity support.
- Improvement in the integration of the effective date system (i.e. the date of each change is kept in the system's history for future reference) that houses all employee information allowing human resources to efficiently aggregate employee data.

- Deployment of electronic employee self-service applications such as performance appraisal and time reporting.
- Electronic employee open benefits enrollment, which is currently a manual process.
- Central repository with employee job requirements, licensing, certifications, completed training, and continuing education programs.
- Reduced reliance on offline and manual processes to support pay and job bidding requirements per the Collective Bargaining Agreements.
- Ability to track and enforce leave entitlements.
- Increased efficiency in recruiting processes to minimize work gaps and ensure continuity of service for customers.

Estimated ERP Financial Summary*:

Project Area	2010	2011	2012	Total Area Cost
Software				
Hardware				
Implementation				
– Internal				
– External				
– Training				
– Data assessment, analysis, and rationalization				
Other Project Costs				
Contingency				
Total Annual ERP Cost				94.2

*Project Cost does not include AFUDC

Business Transformation Program's Estimated Cost and Time Line Assumptions:

The Estimated Financial Summary assumes that AW will begin phase one of the Business Transformation with the ERP project followed concurrently by the EAM and CIS projects.

At this time, the project cost estimates are based on a conceptual plan, without the benefit of detailed design. At this conceptual level, the costs projected are considered mid-range estimates based on input from a number of resources and could vary based on final design. The assembly of cost projections began with internal discussions with AW's IT Systems CIO and Director of Architecture. Their estimates were gathered from a number of perspectives including previous work experience with similar projects at companies of comparable size to AW, along with networking discussions with companies that have undergone similar efforts.

Next, an external consulting group, Accenture, provided a software point of view. The software point of view provides dollar ranges for major project costs, including software and hardware. The software and hardware cost projections were adjusted for expected vendor negotiation discounts. Additionally, a detailed implementation staffing plan for all three projects (ERP, EAM, and CIS) was developed, which included estimated internal/external pricing. Project costs were then reviewed for reasonableness with an external contractor, Five Point Partners, hired to assist with software and system integrator Request for Proposals.

In arriving at the above costs, the following assumptions were used:

- Assumed discount percentage for software and hardware.
- Implementation costs based on a detailed staffing plan. (External implementation costs also include associated travel costs.)
- Training costs are assumed to be 10 percent of the Business Transformation budget split among the ERP, EAM, and CIS projects. Ten percent was reasonable for a training effort of this size based on information provided by IT Systems employees with previous work experience on similar projects. Also, Five Point Partners considered 10 percent a reasonable estimate for a project of this size.
- Data assessment, analysis, and rationalization will be completed primarily by external support. The projected cost was supplied by AW's IT Systems

Architect Group based on previous experience, and it has a notable range of uncertainty until the data assessment is completed.

- Other major cost items include: core project team, IT Systems technical lead, project process integration management, training support, administrative (e.g. building lease/utilities), data assessment, travel, and other employee expenses.
- Contingency represents 20 percent of internal/external implementation costs, in recognition of the level of uncertainty inherent in the concept-level cost estimates.

Section 5.3—Enterprise Asset Management

Implementing Enterprise Asset Management (EAM) System	
Duration:	
	Anticipated Design, 6 months Implementation and Stabilization, 38 months
Timeline:	
	Projected Design, April 2010-September 2010 Implementation and Stabilization, September 2011-October 2014
Project Cost:	
	Preliminary Estimate, $77 Million* *Project Cost does not include AFUDC

Project Description and Scope:

The EAM will implement an Enterprise Asset Management System that will enable the company to more effectively manage information about its physical assets. The EAM will provide a platform for connecting people, processes, assets, industry-based knowledge, and decision support capabilities based on quality information. It allows for a holistic view of an organization's asset base, enabling managers to control and optimize their operations for quality and efficiency. A core activity is to plan, design, build, maintain, and manage AW's physical assets.

AW assets include pipes, services, meters, hydrants, valves, pumps, and treatment process equipment. Many of AW's assets are located underground, which makes the effective management of information even more challenging. AW assets number well over one million separate units and represent a rate base investment of over $10 billion. The effective performance of these assets is a crucial element in providing effective service to AW customers.

Early in the EAM project, software will be purchased along with associated supportive hardware (servers, storage, backup systems, etc.). The EAM project is part of phase two; the phase one is the ERP project. To ensure proper integration among all projects, the EAM team will be part of the initial six-month design phase, as will the ERP and CIS

project teams. While the ERP project is being implemented, the EAM team will focus on the GIS portion of the EAM project scope. The enterprise GIS effort will require the identification of AW assets so that the future EAM application can identify and track these assets to ensure proper and effective maintenance or replacement. The implementation of the software will begin with a six-month design phase, then after the GIS asset identification has been completed (estimated by September 2011), the EAM application implementation will begin and last approximately 38 months.

AW anticipates that the implementation effort will be staffed with 50/50 (internal/external) support. AW subject matter experts will provide internal support while a system integrator will provide external support. The project will also address data assessment, analysis, rationalization—the level of effort in this area is still to be determined. Data assessment, analysis, and rationalization will require support from both internal an external sources.

As with any large initiative, there will be a major learning curve for AW employees, which will require quality training and time. Nearing the end of the implementation, AW will put forth a sizable effort into training employees on the new systems. The training and development effort will be very large due to the scope of systems affected and the number of employees that will be impacted by the process improvements. AW will be replacing back-office applications as well as customer-facing and field-service applications. The projects will impact all active system users from the standpoint of user interface, business processes, and transition processing. Training will be delivered to associates via various methods (classroom, web cast, and e-Learning) using the "Train the Training" methodology to ensure the highest level of knowledge transfer. There will also be a significant effort in the development of physical and virtual training materials to support associates in obtaining the needed competencies in operating and understanding the downstream effect of the applications they utilize.

Throughout the project duration, the project management office (PMO) will provide oversight across the span of the project. The PMO costs will include labor, labor-related,

and employee-related expenses for administration, communications support, financial support, training manager, trainers, process integration lead, and IT Systems technical lead, along with non-labor expenses including rent, depreciation, utilities, telecom, office supplies, copier expenses, and postage. Each core business process area will have a process lead and a project manager, and there will be one project manager who will act as oversight across all core business process areas for the entire project.

The scope of the EAM includes the integration of GIS within the EAM systems. GIS stores, manipulates, and graphically displays geographical data in map form. GIS capabilities unlock a wide rand of benefits, through the combination of asset attributes and geographic data. EAM will provide important fixed attributes and ongoing maintenance and operations data associated with distribution network assets captured and stored within the EAM's computerized maintenance management module. Through integration with GIS, the information can by analyzed spatially, thus providing a more effective means for identifying problem areas and deploying capital investment for improvements. For instance, using GIS to overlay (1) pipe material, (2) main break data, and (3) map of corrosive soils can highlight the cause-and-effect relationship between these three parameters. This will be an important tool in prioritizing projects in AW's main replacement program. Using GIS within the EAM system, problem mains can be identified and prioritized more effectively for replacement, coordinated with road paving schedules, and bundled for more efficient project delivery.

Output and Anticipated Benefits:

The EAM will benefit AW in numerous ways. Overall, it will allow the company to enhance its planning and management of physical asset needs from purchasing to building to maintaining. Benefits from this effort will be realized by customers, engineering, field operations, production, back office, and AW management. Newly integrated technology acquired in this effort will include GIS. The EAM will introduce benefits in the "Plan to Build and Maintain" core business process area.

Anticipated Benefits for "Plan to Build and Maintain:"

- Better asset reliability and fewer unexpected outages by optimizing AW's reliability centered maintenance programs.
- Reduced number of calls to the customer service center as a result of proactive communication through automated phone messages that alert all affected customers of an incident in their area (like a water main break) allowing Customer Service Representatives to focus on other incoming calls.
- Improved customer solutions and response times through more visible data that will provide the optimum locations to dispatch employees. For instance, instead of sending employees to two repairs on opposite ends of town, the new system will highlight repairs that are needed in same area.
- Greater ability to prioritize capital projects, as well as operational and maintenance expenditures, through the use of more visible data.
- Improved developer service relations by shortening the time that's required to process projects paid for by developers.
- More consistent design and cost estimates for construction projects based on data being readily available for reference and analysis from prior projects.

Estimated EAM Financial Summary*:

Project Area	2010	2011	2012	2013	2014	Total Area Cost
Software						
Hardware						
Implementation						
- Internal						
- External						
- Training						
- GIS/Other - Data assessment, analysis, and rationalization						
Other Project Costs						
Contingency						
Total Annual EAM Cost						76.6

*Project Cost does not include AFUDC

Business Transformation Program's Estimated Cost and Time Line Assumptions:

The Estimated Financial Summary assumes that AW will begin phase one of the Business Transformation with the ERP project followed concurrently by the EAM and CIS projects.

At this time, the project cost estimates are based on a conceptual plan, without the benefit of detailed design. At this conceptual level, the costs projected are considered mid-range estimates based on input from a number of resources and could vary based on final design. The assembly of cost projections began with internal discussions with AW's IT Systems CIO and Director of Architecture. Their estimates were gathered from a number of perspectives including previous work experience with similar projects at companies of comparable size to AW, along with networking discussions with companies that have gone through similar efforts.

Next, an external consulting group, Accenture, provided a software point of view. The software point of view provides dollar ranges for major project costs, including software and hardware. The software and hardware cost projections were adjusted for expected vendor negotiation discounts. Additionally, a detailed implementation staffing plan for all three projects (ERP, EAM, and CIS) was developed, which included estimated internal/external pricing. Project costs were then reviewed for reasonableness with an external contractor, Five Point Partners, hired to assist with software and system integrator Request for Proposals.

In arriving at the above costs, the following assumptions were used:

- Assumed discount percentage for software and hardware.
- Implementation costs based on a detailed staffing plan. (External implementation costs also include associated travel costs.)
- Training costs are assumed to be 10 percent of the Business Transformation budget split among the ERP, EAM, and CIS projects. Ten percent was reasonable for a training effort of this size based on information provided by

IT Systems employees with previous work experience on similar projects Also, Five Point Partners considered 10 percent a reasonable estimate for a project with this scope.

- Data assessment, analysis, and rationalization will be completed primarily by external support. The projected cost was supplied by AW's IT Systems Architect Group based on previous experience, and it has a notable range of uncertainty until the data assessment is completed.
- Other major cost items include: core project team, IT Systems technical lead, project process integration management, training support, administrative (e.g. building lease/utilities), data assessment, travel, and other employee expenses.
- Contingency represents 20 percent of internal/external implementation costs, in recognition of the level of uncertainty inherent in the concept-level cost estimates.

Section 5.4—Customer Information System

Implementing Customer Information System (CIS)	
Duration:	
	Anticipated Design, 6 months
	Implementation and Stabilization, 38 months
Timeline:	
	Projected Design, April 2010-September 2010
	Implementation and Stabilization, September 2011-October 2014
Project Cost:	
	Preliminary Estimate, $102 Million*
	*Project Cost does not include AFUDC

Project Description and Scope:

The CIS will provide a company-wide software application that assists in the management of every aspect of customer relationship—from customer inquiry to billing and collecting for services provided. Customer information will be captured and stored in a centralized database that is integrated with other systems throughout the company such as accounting. Currently these systems are not integrated; multiple systems and processes must be utilized in order to receive required information and data.

More specifically, the CIS will focus on improving the core business processes: "Order to Cash," by creating and handling customer requests for service, managing customer billing, and collecting customer payments; and "Service Request to Completion," by managing the activities that are required to address customer inquiries related to their service (e.g. leaks, payment problems, billing issues, service interruptions, water quality, etc.). The CIS will improve and support the following areas: new customer establishment, meter reading, billing, payments, collections, e-services, mobile dispatch, scheduling, planning, and work management.

Early in the CIS project, customer information system software will be purchased along with associated supportive hardware (servers, storage, backup systems, etc.). The CIS project is part of phase two of the program with the EAM; phase one is the ERP project.

To ensure proper integration with all projects, the CIS team will be part of the initial six-month design phase, as will the ERP and EAM project teams. While the ERP project is being implemented, the CIS team will focus on data assessment, analysis, and rationalization and the identification/validation of regulatory requirements impacting CIS business processes. The implementation of the CIS software will begin thereafter, lasting approximately 38 months. AW anticipates the implementations effort to be staffed with 50/50 (internal vs. external) support. AW subject matter experts will provide internal support while the selected system integrator will provide the external support.

As with any large initiative, there will be a major learning curve for AW employees, which will require quality training and time. Nearing the end of the implementation, AW will put forth a sizable effort into training employees on the new systems. The training and development effort will be very large due to the scope of systems affected and the number of employees that will be impacted by the process improvements. AW will be replacing back-office applications as well as customer-facing and field-service applications. The projects will impact all active system users from the standpoint of user interface, business processes, and transition processing. Training will be delivered to associates via various methods (classroom, web cast, and e-Learning) using the "Train the Training" methodology to ensure the highest level of knowledge transfer. There will also be a significant effort in the development of physical and virtual training materials to support associates in obtaining the needed competencies in operating and understanding the downstream effect of the applications they utilize.

The go-live rollout may occur with large service areas or groups of smaller service areas; however, this will not be determined until later in the project timeline. The project management office (PMO) will provide oversight across the span of the project. The PMO costs will include labor, labor-related, and employee-related expenses for administration, communications support, financial support, training manager, trainers, process integration lead, and IT Systems technical lead, along with non-labor expenses including rent, depreciation, utilities, telecom, office supplies, copier expenses, and

postage. Also, there will be a process lead and a project manager for each of the core processes along with one project manager with oversight across all process areas.
The scope and cost of the CIS includes all data assessment, analysis, and rationalization, training, and change management tasks completed in conjunction with the project. The scope does not include Interactive Voice Response (IVR), which is the automated telephone system used by customers to address simpler tasks/requests/questions or advanced metering infrastructure which is the network of antennas that allow for the ability to read meters throughout the billing cycle and is outside of AW's billing system.

Output and Anticipated Benefits:

The CIS will allow the company to deliver the right information at the right time to the right people (Customer Service Representatives, field service people, and customers) to enhance AW's customers' experience and employees' productivity.

More specifically, the CIS will introduce benefits in the "Order to Cash" and "Request to Completion" core business process areas.

Anticipated Benefits for "Order to Cash:"

- Greater first contact resolution rate as a result of automation in the bill correction process and redirected resources providing the opportunity to resolve customer requests in a timely manner.
- More system functionality, such as group billing, which will better meet customer needs.
- Opportunities for enhanced bill presentment options including additional detail of billed charges and transactional account activity (e.g. charges, payments, transfers, and adjustments).
- Ability to introduce tools that would assist customers in resolving debt issues and eliminate manually intensive collection processes.
- Integrated systems and automated processes that would eliminate numerous manual financial controls and allow employees to work more efficiently.

- Additional bill presentment options that will strengthen AW's 'green' commitment to be environmentally conscious.

Anticipated Benefits for "Service Request to Completion:"

- Improved scheduling between field service representatives and customers that will increase customer convenience and service that could lead to offering a smaller window of time for service call appointments. Currently, all appointments are offered in three-hour blocks.
- Ability to track service orders (similar to tracking a shipped package) that will allow customers to view their service order progress online. Currently, field short-cycle (e.g. bad meter dial) work is manually tracked by the Field Resource Coordination Center. Long-cycle work, such as replacing valves and installing services, has limited tracking.
- Integrated systems will minimize the number of required manual processes that often add time to a customer's issue resolution.
- Reduced manual input for tasks such as meter change-outs, shut-offs, and bad dials on meters. This will result in a greater volume of work completed and requests having improved completion times.
- More integrated systems (and fewer manual processes) leading to the timely closure of service orders and efficient handling of customer requests. Some examples of the manual processes that will be improved include the creation, dispatching, and execution of service orders as well as researching various items such as water quality information and business rules.
- Prevention of duplicate service order request generation by utilizing system validation checks to determine whether or not a service order already exists for the account.
- Fewer repeat calls into the call center since the new system will better equip Customer Service Representatives with the information they need to resolve customer inquiries. Currently, business rules and state-specific data reside in multiple databases that are needed to support customer inquiries. These

databases are difficult to navigate and can limit Customer Service Representatives' timely resolution of customer issues.

- More efficiently dispatch service orders by bundling work and improving visibility of outstanding orders to enable the offloading of excess work to contractors (better way to manage peaks and valleys).
- Improved complaint resolution effectiveness by attaching a timer on escalated utility contacts. For example, if a customer has a billing inquiry and the Call Service Representative cannot resolve it, the Customer Service Representative would set up a utility contact and route the question to the billing department. Currently, there is no timer on the utility contact, thus no aging report that highlights how long an escalated customer inquiry has gone unresolved.
- Auto-assignment of service orders based on service order priority and business rules. Currently, only thirty percent of service orders are auto-assigned. The remaining service orders are assigned manually by the Field Resource Coordination Center. Ideally the oldest shut-off service orders with the 'highest dollar amount outstanding' or those 'about to expire' would become top priority, but manual assignment makes this task difficult.

Estimated CIS Financial Summary*:

Project Area (Figures in Million Dollars)	2010	2011	2012	2013	2014	Total Area Cost
Software	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Hardware	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Implementation						
- Internal	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
- External	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
- Training	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
- Data assessment, analysis, and rationalization	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Other Project Costs	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Contingency	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Total Annual CIS Cost	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	102.2

*Project Cost does not include AFUDC

Business Transformation Program's Estimated Cost and Time Line Assumptions:

The Estimated Financial Summary assumes that AW will begin phase one of the Business Transformation with the ERP project followed concurrently by the EAM and CIS projects.

At this time, the project cost estimates are based on a conceptual plan, without the benefit of detailed design. At this conceptual level, the costs projected are considered mid-range estimates based on input from a number of resources and could vary based on final design. The assembly of cost projections began with internal discussions with AW's IT Systems CIO and Director of Architecture. Their estimates were gathered from a number of perspectives including previous work experience with similar projects at companies of comparable size to AW, along with networking discussions with companies that have gone through similar efforts.

Next, an external consulting group, Accenture, provided a software point of view. The software point of view provides dollar ranges for major project costs, including software and hardware. The software and hardware cost projections were adjusted for expected vendor negotiation discounts. Additionally, a detailed implementation staffing plan for all three projects (ERP, EAM, and CIS) was developed, which included estimated internal/external pricing. Project costs were then reviewed for reasonableness with an external contractor, Five Point Partners, hired to assist with software and system integrator Request for Proposals.

In arriving at the above costs, the following assumptions were used:

- Assumed discount percentage for software and hardware.
- Implementation costs based on a detailed staffing plan. (External implementation costs also include associated travel costs.)
- Training costs are assumed to be 10 percent of the Business Transformation budget split among the ERP, EAM, and CIS projects. Ten percent was reasonable for a training effort of this size based on information provided by

IT Systems employees with previous work experience on similar projects. Also, Five Point Partners considered 10 percent a reasonable estimate for a project with this scope.

- Data assessment, analysis, and rationalization will be completed primarily by external support. The projected cost was supplied by AW's IT Systems Architect Group based on previous experience, and it has a notable range of uncertainty until the data assessment is completed.
- Other major cost items include: core project team, IT Systems technical lead, project process integration management, training support, administrative (e.g. building lease/utilities), data assessment, travel, and other employee expenses.
- Contingency represents 20 percent of internal/external implementation costs, in recognition of the level of uncertainty inherent in the concept-level cost estimates.

Section 5.5—Potential Applications for Business Transformation Projects

In order to determine what software to use for each project, AW has developed business requirements based on "to be" processes, comparison with other companies, and Accenture's point of view on existing software in the market. Leading software vendors were identified and requests for proposals were issued based on AW's business requirements. After evaluating vendor proposals, selected vendors were invited to perform software demonstrations based on provided AW business scripts. Three primary vendor demonstrations and one set of vendor technical discussions were held over a six-week period. Attendees from throughout the Business, IT Systems representatives and the Business Transformation Team were in attendance. The total number of AW attendees combined was over 330. The total number of vendor attendees was in excess of 100. In addition, a series of follow-up demonstrations was held to get a more detailed look at specific functionality. Demonstrations were then evaluated based on the software's functionality to perform AW's business scripts.

Based on the above process, the following are potential application options under consideration:

	ERP	EAM	CIS
Oracle	X	X	X
SAP	X	X	X
Possible Point Solutions	X	X	
Maximo		X	

Section 6—Alternative Solutions

Alternative options were evaluated throughout this process including the following solutions:

- **Do nothing:** This is not a viable option because the existing systems are at the end of their useful lives and in order to ensure a strong foundational infrastructure for AW, replacement of the IT systems is needed. Not completing the ERP, EAM, and CIS projects introduces new risks to AW. As customer expectations for service expand, AW's ability to respond to customer needs will become increasingly limited. Additionally, if AW continues to spend money on support of software customizations without addressing the core issues surrounding the antiquated and inadequately integrated systems and processes, the support costs associated with customizations will continue and the number of "workarounds" will accelerate. In addition, the professionals who support many of the AW IT System applications are reaching retirement age, and it will become increasingly difficult to locate professionals who can support the current hardware and systems.
- **Upgrade legacy systems:** This is not a viable option. Even though AW could upgrade JDE, it would involve a complete implementation in addition to an upgrade to a new version. After doing all of that work, AW still would not have the most current technology or platform. Regarding ECIS, AW could upgrade, along with taking all the customizations through the upgrade, but it would be a tremendous effort of time and a significant investment and still would not integrate AW's systems.
- **Use a smaller solution, such as only proceeding with an ERP, EAM, or CIS:** This is not a viable option. Since only ten percent of the company's data is integrated, a smaller solution would not address the high level of manual intervention that is required to overcome the lack of system and data integration, and would leave AW with the same issues that have been identified throughout this planning study.

In addition to other courses of action, the recommended projects were looked at with various timeline approaches:

- **72-month project timeline:** A major risk to this plan is the potential for technology to change over such a long time frame. The technology could even be obsolete or require significant upgrades before being implemented. Likewise, the approach had the potential to be at a higher cost over an extended period of time as the development and implementation process stretched out.
- **44-month project timeline:** This approach would have a high impact on resources and capital investment in early years. This timeline would introduce significant risk in managing multiple system implementations, integrations, data assessment and conversions, and training/change management that would be necessary. Together these two risks could potentially strain the organization and endanger the project's successful implementation, as well as the level of customer service during the implementation period.

APPENDIX

Appendix A
Sources of Input

Site Visits	Phone Discussions
Ameren	Allegheny Energy
Aquarion (CT)	Baxter International
Atlanta Gas Light Company	CBS Corporation
Baltimore Gas & Electric (MD)	Consumers Energy
Comcast	County of Santa Clara
Constellation Energy	Dresser-Rand
Duke Energy	DRS Technologies
E.On (KY)	Eli Lilly
Fairfax County Water Authority	Energy East
Greater Cincinnati Water Works	Exelon
Las Vegas Valley Water (NV)	First Energy
National Grid	Jacksonville Electric Authority
NiSource	Memphis Light Gas & Water
Pennsylvania Power & Light	PPG
Pepco	PSEG Services Group
San Jose Water	St Louis Metropolitan Sewer District
Southern Utilities	St. Petersburg Water
The Hershey Company	University of Virginia
UGI	Utilities Inc
United States Postal Service	Veolia Water
	Washington DC Water and Sewer Authority

Appendix B
As-is Process Maps

Procure to Pay:

G:\BT_CPS\Cross Ref Documents\AS_I

Recruit to Retire:

G:\BT_CPS\Cross Ref Documents\AS_I

Record to Report:

G:\BT_CPS\Cross Ref Documents\AS_I

Plan to Build and Maintain:

G:\BT_CPS\Cross Ref Documents\AS_I

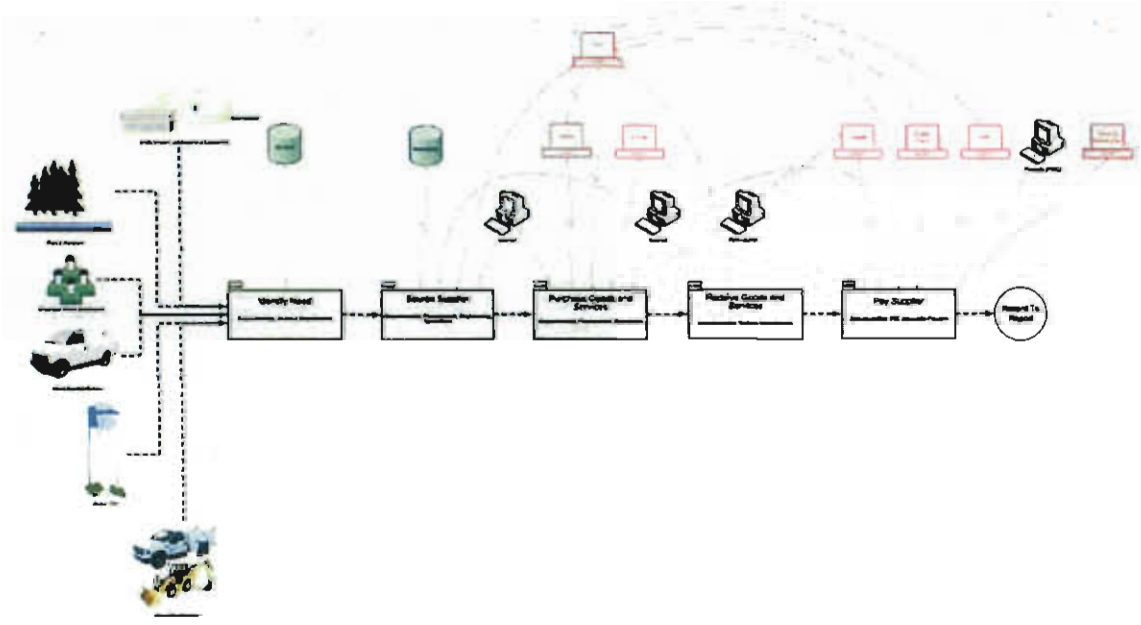
Order to Cash:

G:\BT_CPS\Cross Ref Documents\AS_I

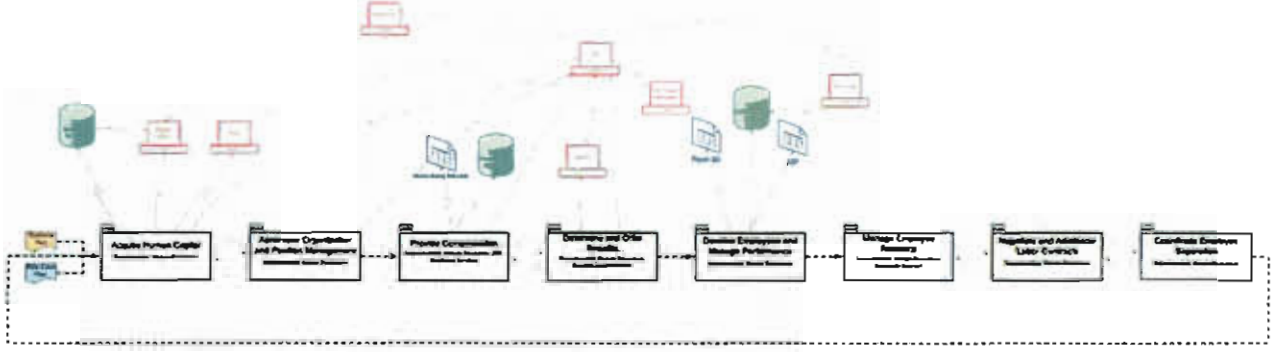
Service Request to Completion:

G:\BT_CPS\Cross Ref Documents\AS_I

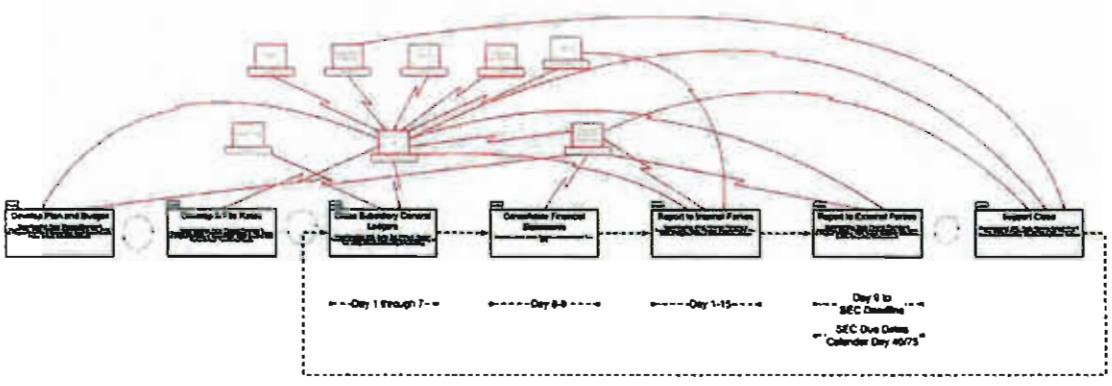
Level 1 – Procure To Pay



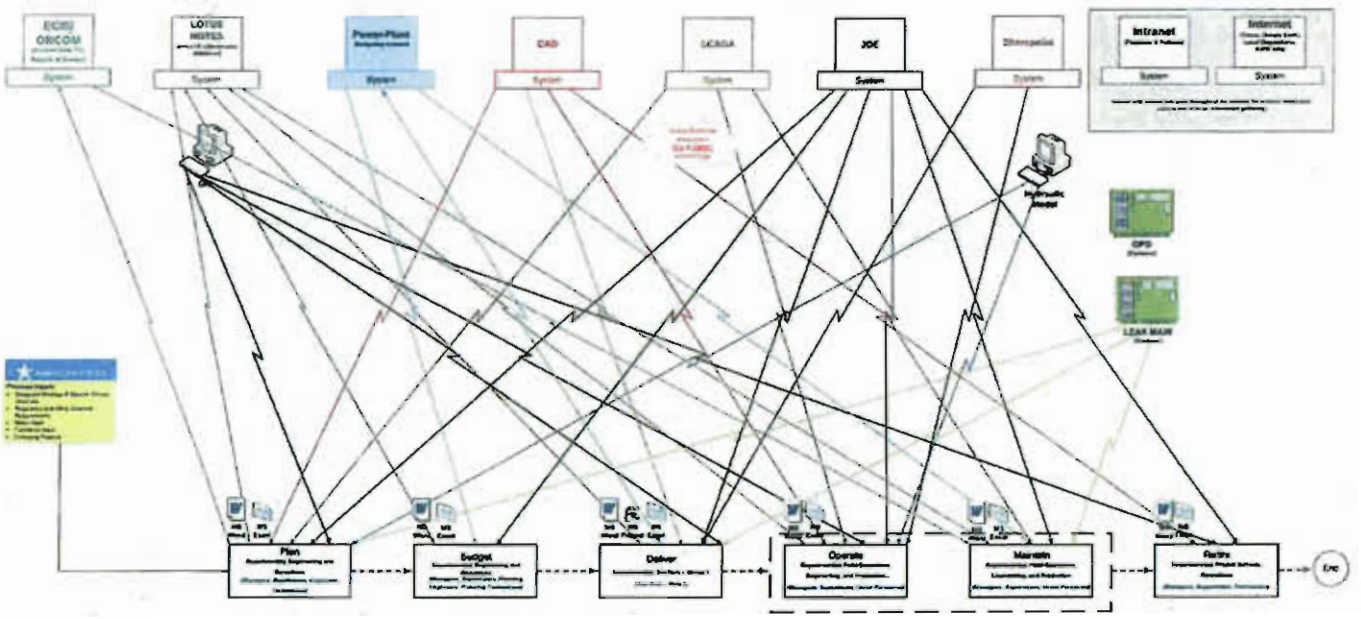
Level 1 – Recruit To Retire



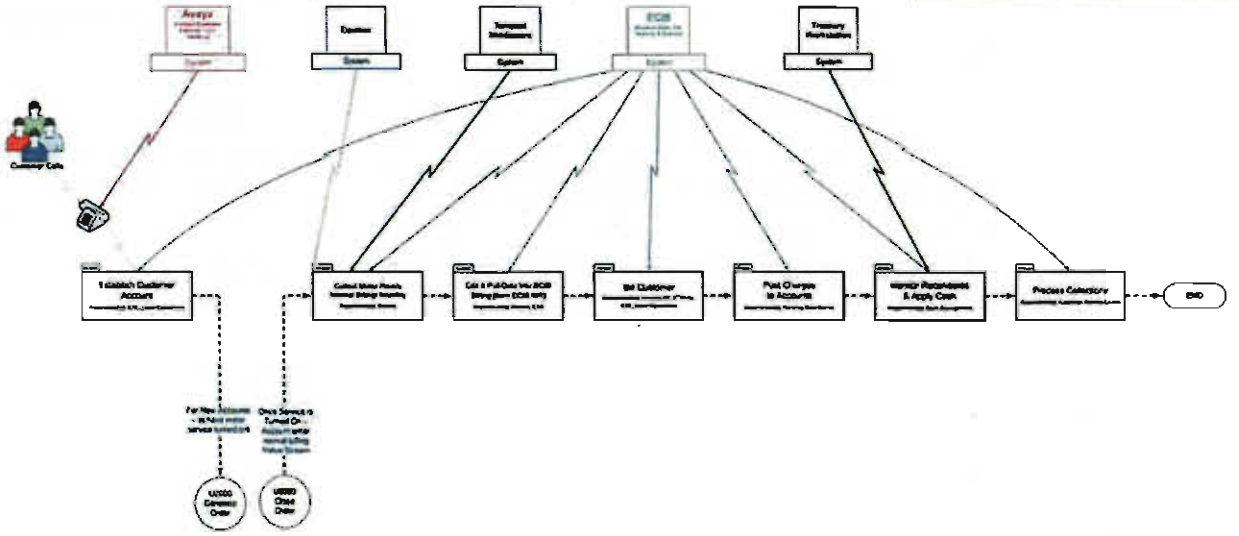
Level 1 – Record To Report



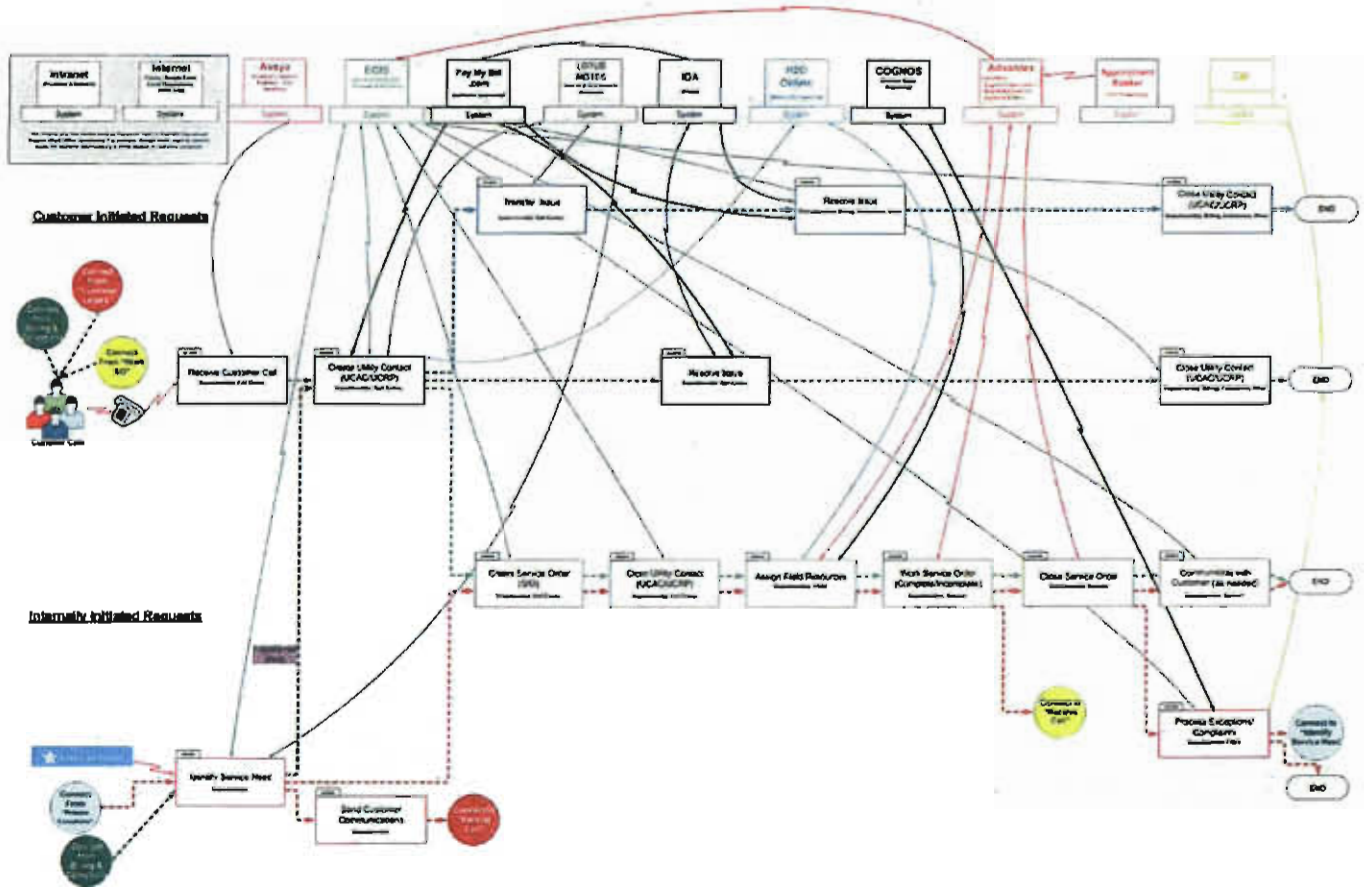
Level 1 – Plan to Build and Maintain



Level 1 – Order To Cash



Level 1 – Request To Completion



Appendix C

To-be Process Maps

Procure to Pay:

G:\BT_CPS\Cross Ref Documents\TO Bl

Recruit to Retire:

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Record to Report:

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Plan to Build and Maintain:

G:\BT_CPS\Cross Ref Documents\TO Bl

Order to Cash:

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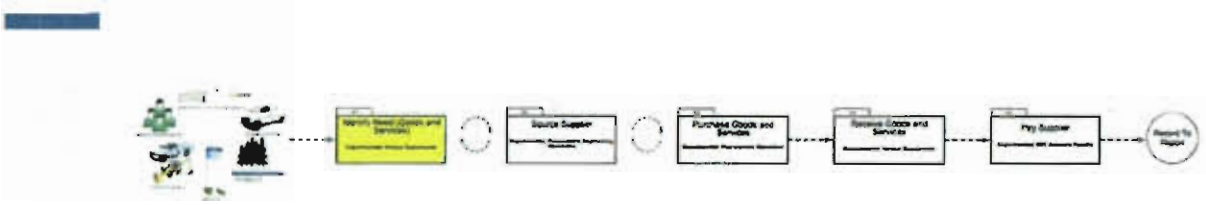
Service Request to Completion:

G:\BT_CPS\Cross Ref Documents\TO Bl

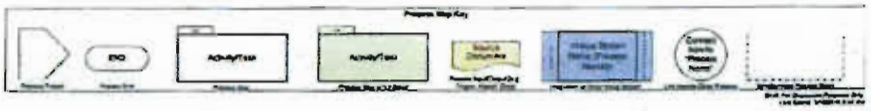
Procure To Pay



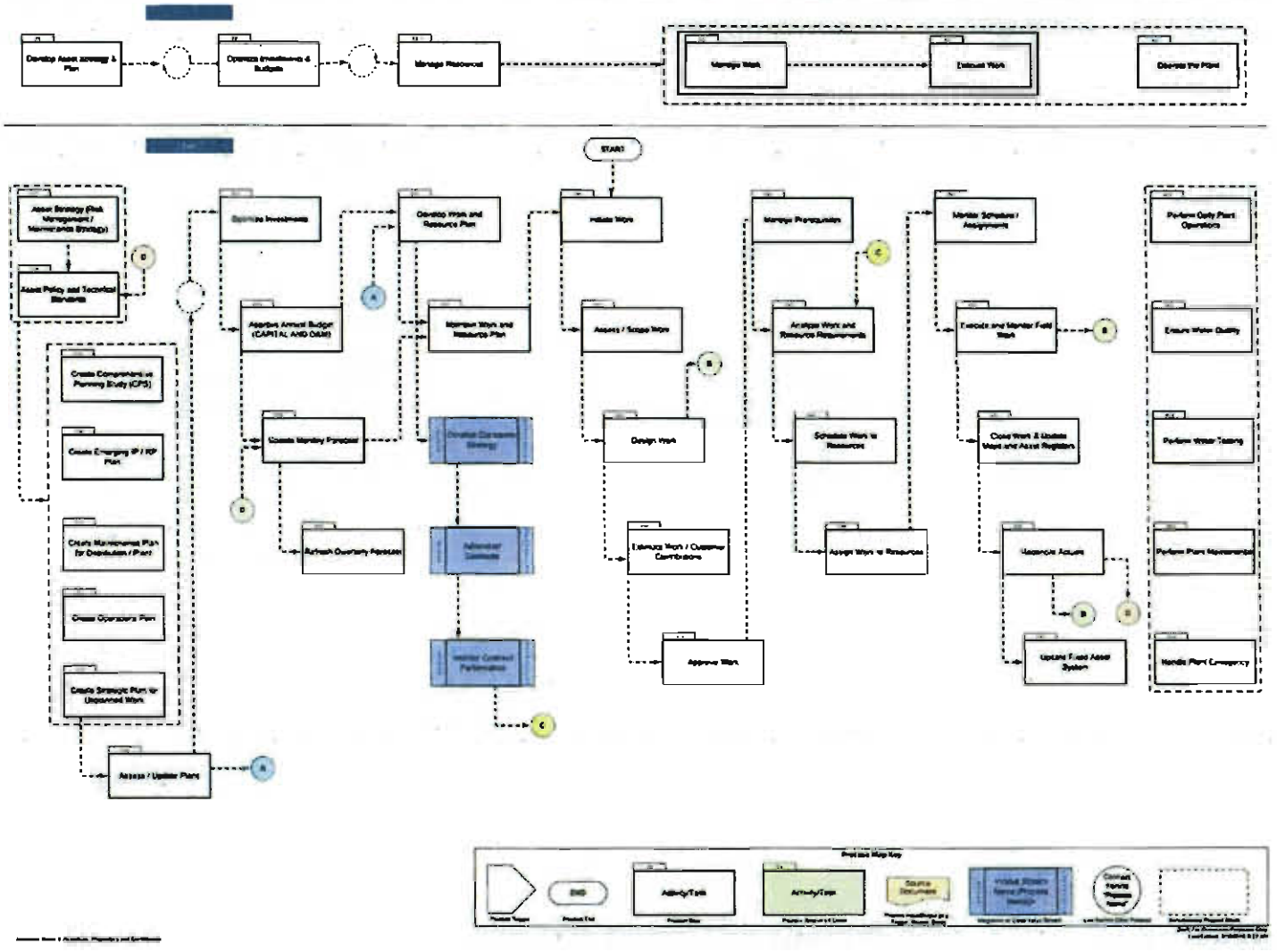
Inventory Management

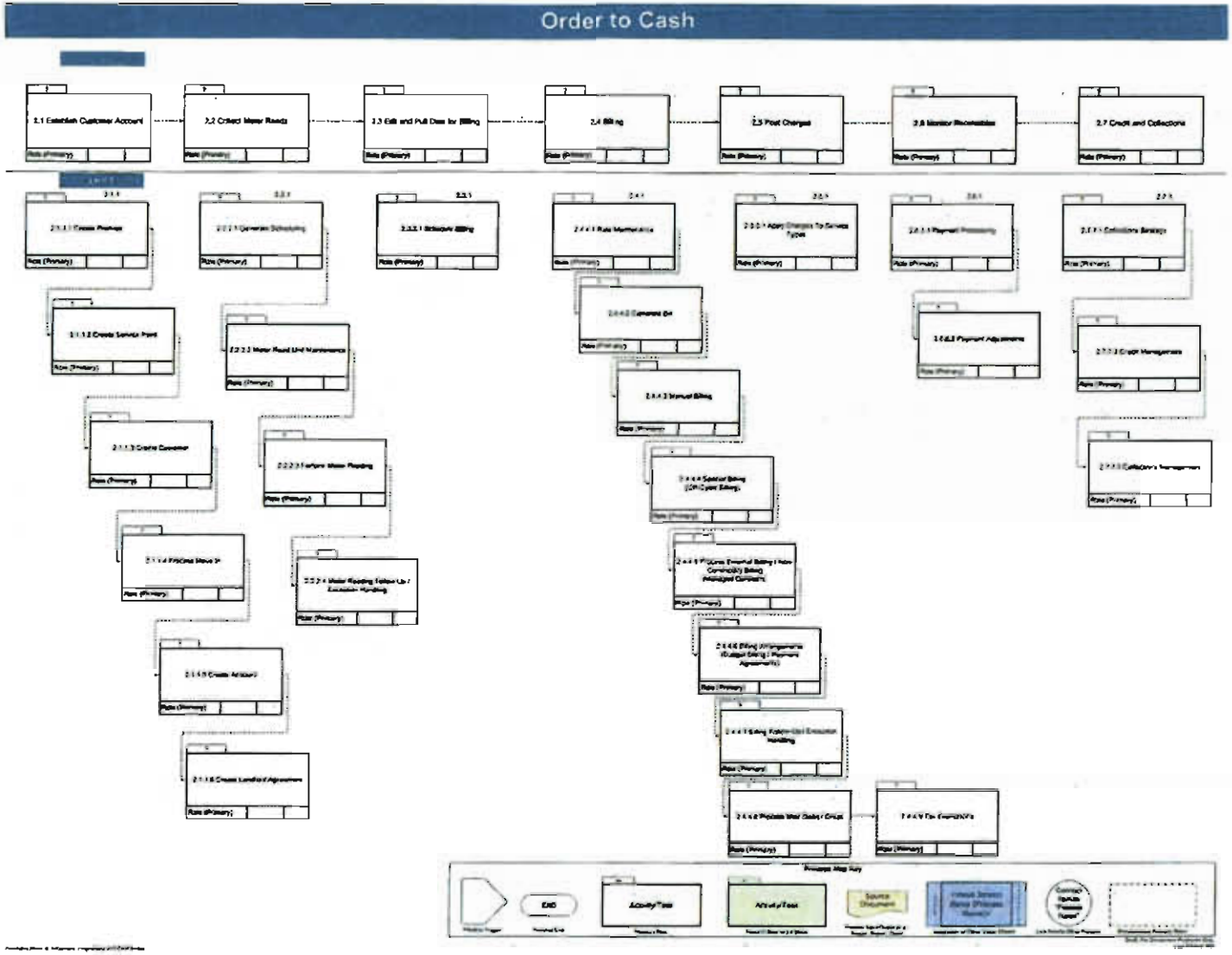
Recruit To Retire

Record To Report

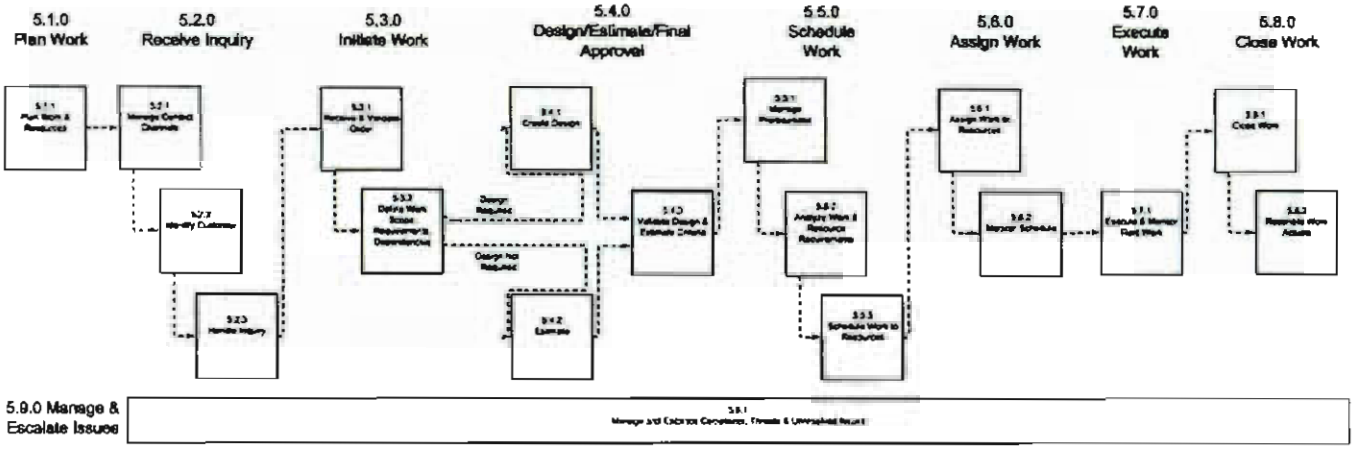


Plan to Build




Order to Cash

Request to Completion



2009 Business Transformation Deliverables

1. **AS-IS Study –** Current State Mapping & Data Collection

2. **Capability Assessment –** Deciding Where We Want To Be

3. **TO-BE Study –** Business Requirements & Process Development

4. **Gap Analysis / Benefits –** Difference Between Where We Are and Where We Want To Be

5. **Impact Analysis –** How To-Be processes will affect the organization

6. **Software Point-of-View –** What Applications Best Meet Our Needs

AS-IS – Current State Mapping & Data Collection:

The goal of this phase was to understand how things are currently being done within American Water. We visited as many States as possible and heard about work processes in both small and large operations.

We also collected data/doc information about the processes including:

- ✓ How many items went through the process during 2008
- ✓ How much time was spent working on each item
- ✓ And, for comparative purposes we converted that information into a normalized annual processing load

This work should help us do three things as we move forward:

1. Identify areas where processes are cumbersome and can be improved
2. Understand how our systems interact with our current processes
3. Offer a baseline for evaluating the benefits of proposed solutions

Capability Assessment – Deciding Where We Want To Be:

The purpose of this assessment is to understand what the possibilities are for American Water. We spent time looking outside American Water and compared how we do our work to how other companies get things done.

We assessed our capabilities against a multi-level scale (similar to):

- ✓ Basic – high level & unclear processes
- ✓ Threshold – processes are defined but lack discipline
- ✓ Above Average – processes are predictable and controllable
- ✓ Leading – processes create a competitive advantage

Assessing capability in this way allows us to:

1. Define where our processes rank relative to the other companies in the marketplace
2. Determine on a process by process basis, how advanced we want to be
3. Understand the size of the gap we were striving to close
4. Apply knowledge learned by visiting other companies to supplement guidelines offered by Accenture's High Performance Models

TO-BE – Process Development & Business Requirements:

Once we understood our current capability and the level of capability we want to achieve, we asked the question: "What is we need to do to get there?"

Working with groups across the American Water system, we found answers to the following questions:

- ✓ What do our processes need to look like to achieve the desired level of capability
- ✓ What are the business requirements that must be fulfilled by our processes and systems

With a list of requirements and a set of process diagrams we could move forward and conduct an analysis of the gaps that exist.

Gap Analysis / Benefits – Difference Between Where We Are and Where We Want To Be:

Based on what we have learned through As-Is Mapping, Capability Assessment, To-Be Process Development, and the collection of Business Requirements, a Gap Analysis is conducted to quantify the expected benefits of our Business Transformation.

Impact Analysis – How To-Be Processes Will Affect the Organization:

Understanding where we want to be in the future allows us to conduct an Impact Analysis that addresses four key considerations:

1. Organization Alignment – how our current roles align to the proposed To-Be processes
2. Organizational Capability – what adjustments will be needed to ensure employees are ready for new processes and systems
3. Policy, Culture & Governance – how aspects of policies, culture and governance will be updated to reflect new capabilities
4. 3rd Party Impact – how will process and system upgrades change the way we will interact with 3rd parties, such as our suppliers

Software Point-of-View – What Application Best Meets Our Needs:

Results of the Gap Analysis combined with a complete set of Business Requirements will allow for a thorough evaluation of available software applications.

The goal is to ensure that we select those applications that best fit the needs of our To-Be Business Requirements while giving us flexibility for the future.

1/1/2009 9/1/2009

Business Transformation – System Build Lifecycle

1. 2. 3. 4. 5. 6. 7.

DESIGN | BUILD | TEST | DEPLOY

1. Rationalize Requirements/Rules

Compare documented **Business Requirement** and **Business Rules** against the native functionality of the selected system to optimize out-of-the-box capabilities.

2. Finalized Requirements w/ RICEF

Compile a final set of requirements which along with To-Be Maps (often referred to as Process Models) will drive the configuration and development. Develop a list of the Reports, Interfaces, Conversions, Enhancements, Forms (RICEF) needed to run the business.

3. Scenario (L4-Model) Validation

To-Be Process Maps (Process Models) must be validated based on any trade-offs made between business requirements and native functionality – this will be the final opportunity to ensure that processes are efficiently designed, scalable, and meet the needs of the business.

4. User Script Development

Using the scenarios (process models) as guides, SME teams will develop scripts that describe how all of the process variants will be handled. Therefore, it is imperative that scripts:

- Reflect all possible situational variants
- Align to the To-Be process (as opposed to today's world)
- Are detailed enough to ensure proper configuration

5. Build

The Build Phase of the process may involve multiple iterations of the following steps:

- Finalize RICEF (Build RICEF)
- Configuration (sometimes referred to as coding)
- Unit Testing
- Revise/Finalize configuration

6. Test

Testing to confirm that configurations properly account for required integrations, typical volumes and usability. Testing also provides an opportunity to validate training materials.

7. Deploy

Roll out of the new systems across the enterprise. Depending on the scope of the system and location of the user base, deployment will be conducted via a series of stages (either by process, geography or work volume)

IMPORTANT!

Throughout the development and implementation process, all parties must be vigilant in identifying and addressing impacts to:

- ✓ Upstream & Downstream processes
- ✓ SOX Controls
- ✓ American Water Policies (Business Rules & Regulatory Requirements)
- ✓ Training & Change Management

Upstream & Downstream Interfaces / Integrations

American Water Business Rules (Policies & Regulatory Requirements)

SOX Controls (Updates / Changes)

Training & Change Management Impacts