From: Frank Kartmann/MOAWC/AWWSC
To: steven.reed@psc.mo.gov
Date: 11/15/2012 06:09 AM
Subject: Materials from Missouri American Water Day for Commissioner Kenney

Mr. Reed:

These are materials intended to summarize for Commissioner Kenney the events, activities and discussions that occurred at our Missouri American Water Day that several members of the Commission staff, OPC and commissioners themselves attended. Unfortunately Commissioner Kenney had a schedule conflict and was unable to attend. I just wanted to afford him a view into the information presented that day. I would appreciate it if you would pass this information along to Commissioner Kenney. I will also be sending this information to Commissioner Kenney directly via U.S. mail.

Thank you,
Frank Kartmann

Kenney, Commissioner, Letter

Agenda, Missouri American Water Day.

2012MOAWC_Trends in Water Demand M

BT Presentation Summary, MAW Day

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November 7, 2012

Mr. Robert S. Kenney
Commissioner
Missouri Public Service Commission
Governor Office Bldg
200 Madison Street
PO Box 360
Jefferson City, MO 65102-0360

Re: Missouri American Water Day at the St. Louis County Operation

Dear Commissioner Kenney:

I am sorry you were not able to attend Missouri American Water Day. I believe all in attendance found the tours and presentations informative. It is too often the case that the view into the regulated utility by the commissioners, commission staff and Office of the Public Council is through its accounting records, rate case and other filings and associated testimony. The experience created by the Missouri American Water Day was an understanding and appreciation of our employees and what they do, our operations, and the 'bricks and mortar' behind the numbers.

During Missouri American Water Day we conducted tours of our Distribution Load Control Center, Service Center and Central County Treatment Plant and conducted a fire hydrant demonstration. In addition, interactive presentations on aging water main infrastructure, declining customer usage, the future of small water and wastewater systems and an overview of our Business Transformation project (installation of new business software) were conducted. These are some of the most pressing issues facing the water and wastewater industries and we were appreciative that so many could attend the event and for all of us to have the opportunity to discuss them.

I have enclosed a copy of the agenda for the day's activities and the documents used for the Business Transformation and declining customer usage presentations. If in your review of these documents you have any questions, please do not hesitate to give me a call to discuss them further.

Sincerely,

Frank Kartmann

Agenda: Missouri American Water Day

Group No.1		Group No.2	
Activity	**Time Period**	**Activity**	**Time Period**
Begin Meeting at Missouri American Water Craig Road Administrative Office	9:00 A.M.	Begin Meeting at Missouri American Water Craig Road Administrative Office	9:00 A.M.
Introduction	9:00 A.M. – 9:15 A.M.	Introduction	9:00 A.M. – 9:15 A.M.
Business Transformation Discussion	9:15 A.M. – 10:00 A.M.	Business Transformation Discussion	9:15 A.M. – 10:00 A.M.
Travel to Service Center/Main Replacement Discussion	10:00 A.M. – 10:30 A.M.	Travel to Service Center/Main Replacement Discussion	10:00 A.M. – 10:30 A.M.
Hydrant Inspection Demonstration/Observation of Failed Pipe Sections	10:30 A.M. – 11:15 A.M.	Tour of the Distribution Load Control Center (DLCC)	10:30 A.M. – 11:15 A.M.
Tour of the Distribution Load Control Center (DLCC)	11:15 A.M. – 12:00 P.M.	Hydrant Inspection Demonstration/Observation of Failed Pipe Sections	11:15 A.M. – 12:00 P.M.
Lunch*/Small System Issues Discussion	12:00 P.M. – 12:45 P.M.	Lunch*/Small System Issues Discussion	12:00 P.M. – 12:45 P.M.
Declining Usage Per Customer Discussion	12:45 P.M. – 1:30 P.M.	Declining Usage Per Customer Discussion	12:45 P.M. – 1:30 P.M.
Wrap up Lunch/Travel to the Central County Plant (CCP)/Discuss CCP Production Facts	1:30 P.M. – 2:00 P.M.	Wrap up Lunch/Travel to the Central County Plant (CCP)/Discuss CCP Production Facts	1:30 P.M. – 2:00 P.M.
CCP Tour	2:00 P.M. – 3:30 P.M.	CCP Tour	2:00 P.M. – 3:30 P.M.
Return to Missouri American Water Craig Road Administrative Office	3:30 P.M. – 4:00 P.M.	Return to Missouri American Water Craig Road Administrative Office	3:30 P.M. – 4:00 P.M.

* Complimentary lunches will be provided. Those who prefer paying for their lunch may do so at that time. The lunches have a value of $7.00 per person. A receipt will be provided.

Declining Residential Water Usage

Kevin Dunn
Director-Engineering
Missouri American Water

Topics to Be Covered

- Background
- Why Is this Happening?
- Will the Trend Continue?
- Residential Water Use Trends
- Impacts of Declining Usage
- Conclusions/Solutions

National Studies on Declining Use Trends

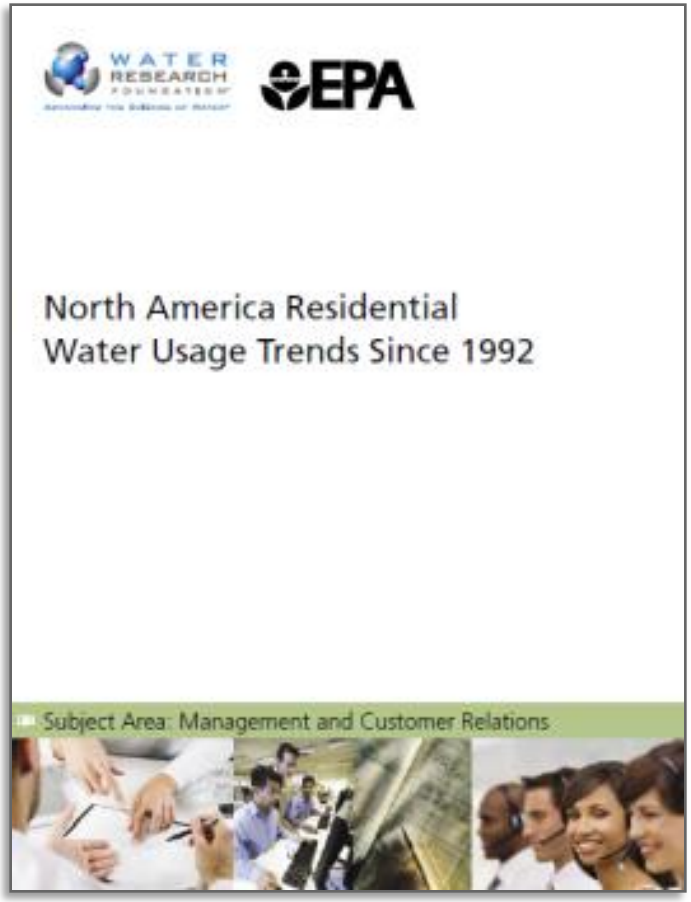
- **Residential Water Use is Changing throughout the U.S.**

- **Two Studies in Particular detail the trends of decline:**

  - Water Research Foundation –"North America Residential Water Usage Trends Since 1992" and

  - AWWA Journal Vol. 104, Issue 6, 2012 – "Insights into declining single-family residential water demands" William B. DeOreo and Peter W. Mayer

North America Residential Water Usage Trends Since 1992 – Water Research Foundation Report Project #4031 (2010)



- "A pervasive decline in household consumption has been determined at the national and regional levels." (p. xxviii)
- "Many water utilities across the United States and elsewhere are experiencing declining water sales among households." (p. 1)
- " To appropriately identify the source of declining water sales, it is necessary to assess overall water usage trends at the national, regional, and local levels." (p. 72)

North America Residential Water Usage Trends Since 1992 – Water Research Foundation Report Project #4031 (2010)

- "however, usage trends varied widely among the national and regional participants" (p.72)
- "Overall, when assessing the raw data for total water usage; there was no consistent average and maximum daily demand trend. The average and maximum daily demands were highly influenced by local fluctuations in demographics, weather, and drought conditions. (p. 72)
- "However, when the data are corrected for climate, drought index, and other key factors, the models showed that overall residential household use has declined … since 1978. (p. 73)
- "identified decreasing household size and penetration of water-conserving appliances as the primary causes of declining residential water usage." (p. 75)

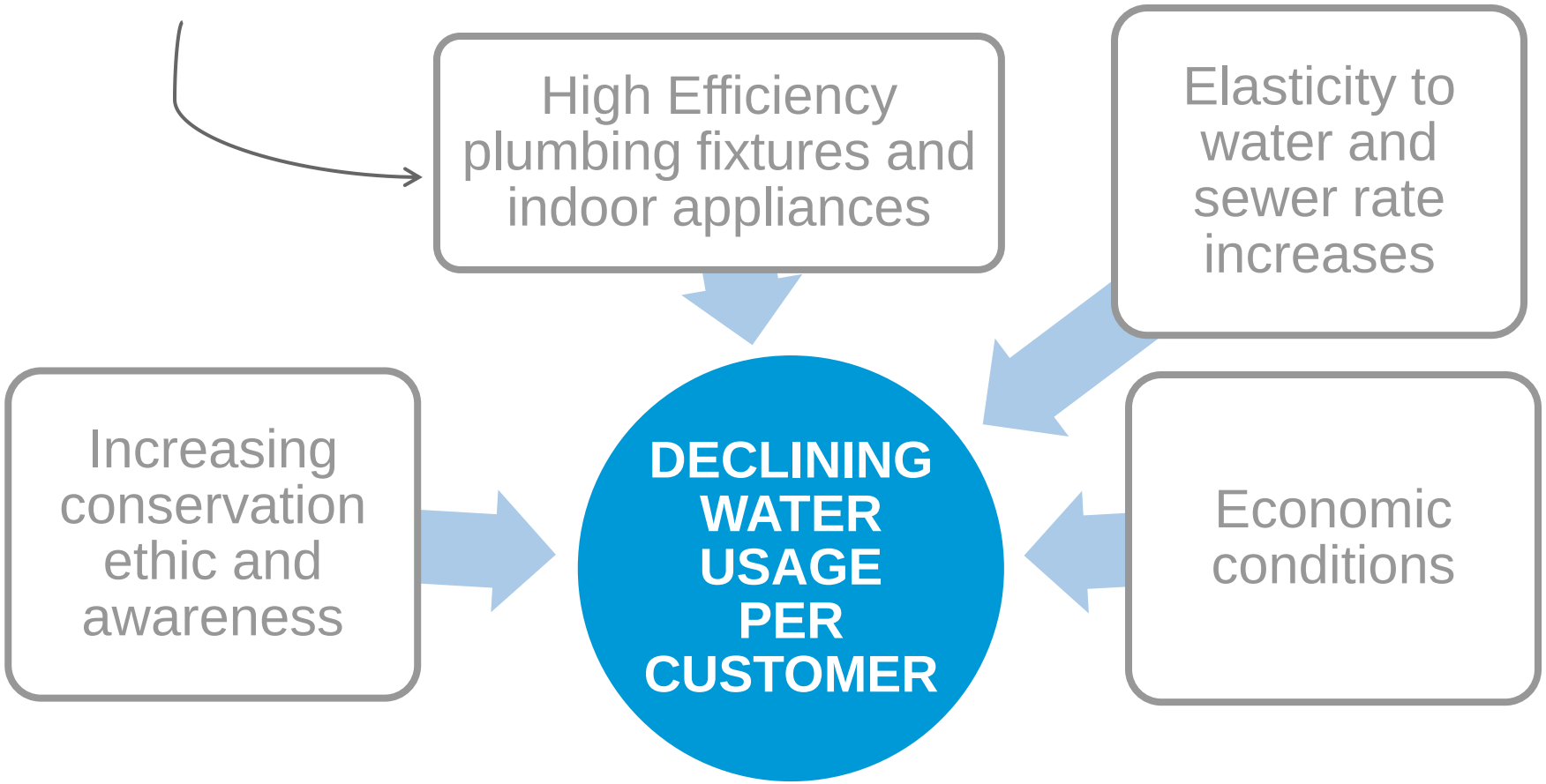
Insights into declining single-family residential water demands – Journal AWWA Vol.104, Issue 6, 2012

- "indoor use, in single-family residence has declined since 1995 and is expected to continue to do so as new technologies enter the market." (p. E383)
- "The data show clear decreases in household and per capita indoor water use over time" (p. E383)
- "In these studies, water use was disaggregated into the following end-use categories; toilets, clothes washers, dishwashers, showers, baths, misc. faucets, irrigation, leaks, and special use" (p. E384)
- "older homes can be brought to a similar high-efficiency level through basic fixture and appliance retrofits" (p. E385)
- "water conservation efforts are bearing fruit and demand reductions are occurring" (p. E392)

Why is this Happening?

Declining Trends in Water Usage

- Energy Policy Act of 1992 (effective in 1994);
- Energy Policy Act of 2005 (effective in 2006); and
- Energy Independence and Security Act of 2007 (effective in 2010)



Example: Impact of Demographics & Low Flow Devices on Indoor Residential Water Use

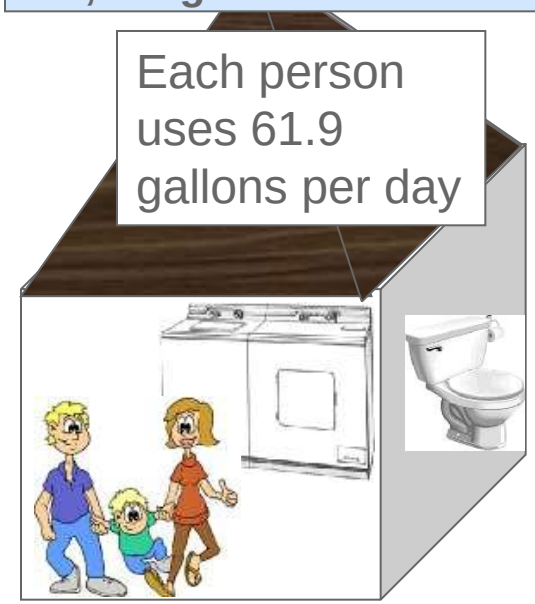
Non-conserving Household in 1990

61.9 gallons/person/day(gppd) and

2.63 person per household(pph)

=61.9 gppd*2.63pph*30days/month

= 4,884 gallons/customer/month



Average Household size is 2.63

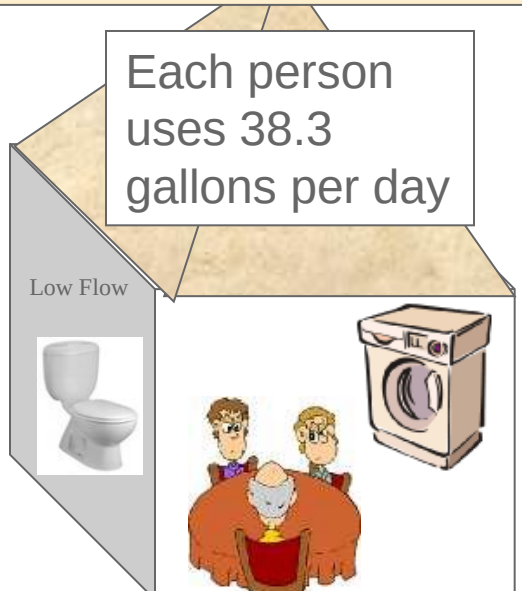
Decline in Indoor Usage = 39%

Conserving Household Today

38.3 gallons/person/day(gppd) and
2.61 person per household(pph)

=38.3 gppd*2.61pph*30days/month

= 2,999 gallons/customer/month



Average Household size is 2.61

Source: *Handbook of Water Use and Conservation*, Amy Vickers, May 2001 modified to include Regulatory Standards from the New Direction for Energy Independence, National Security, and Consumer Protection Act'' of 2007 (H.R. 3221) which became effective in 2010 and 2011 affecting the typical usage rates for dishwashers and clothes washers respectively.

Background – Flow rates from different appliances

Type of Use	Pre-Regulatory Flow*	New Regulatory Standards and Flows			WaterSense / ENERGY STAR Current Specification+
		New Standard (maximum)	Federal Standard	Year Effective	
Toilets	**3.5 gpf** 	**1.6 gpf** 	U.S. Energy Policy Act	1994	**1.28 gpf**
Clothes washers**	**41 gpl (14.6 WF)** 	**≈26.6 gpl (9.5 WF)** 	Energy Independence & Security Act of 2007	2011	**≈22.4 gpl (8.0 WF)**
Showers	**2.75 gpm** 	**2.5 gpm at 80 psi** 	U.S. Energy Policy Act	1994	**2.0 gpm at 20 psi**
Faucets***	**2.75 gpm** 	**2.5 gpm at 80 psi (1.5 gpm)** 	U.S. Energy Policy Act	1994	**1.5 gpm at 60 psi**
Dishwashers	**14.0 gpc** 	**6.5 gpc for standard; 4.5 gpc for compact** 	Energy Independence & Security Act of 2007	2010	**5.8 gpc for standard; 4.0 gpc for compact**

ABBREVIATIONS USED
gpf - gallons per flush
gpl - gallons per load
W.F - Water factor or gallons per cycle per cubic feet capacity of the washer
gpc - gallons per cycle

* Source: *Handbook of Water Use and Conservation*, Amy Vickers, May 2001

** Average estimated gallons per load and water factor (see calculations)

*** Regulation maximum of 2.5 gpm at 80 psi, but lavatory faucets available at 1.5 gpm maximum (see calculations)

\+ Source: http://www.epa.gov/watersense/ and http://www.energystar.gov websites

Will The Trend Continue?

American Decline in Average Household Size

- The decline in Average Household Size has slowed
- The decrease in household size may have reached equilibrium but does not show that a reverse in trend is occurring.

Census Year	1990	2000	2010
United States	2.63	2.59	2.58
Missouri	2.54	2.48	2.45
St. Louis Cnty	2.57	2.47	2.42
St. Joseph	2.48	2.42	2.45

Note: Numbers are Average Persons per Household

Reference: http://www.census.gov/prod/2011pubs

American Housing Survey Data

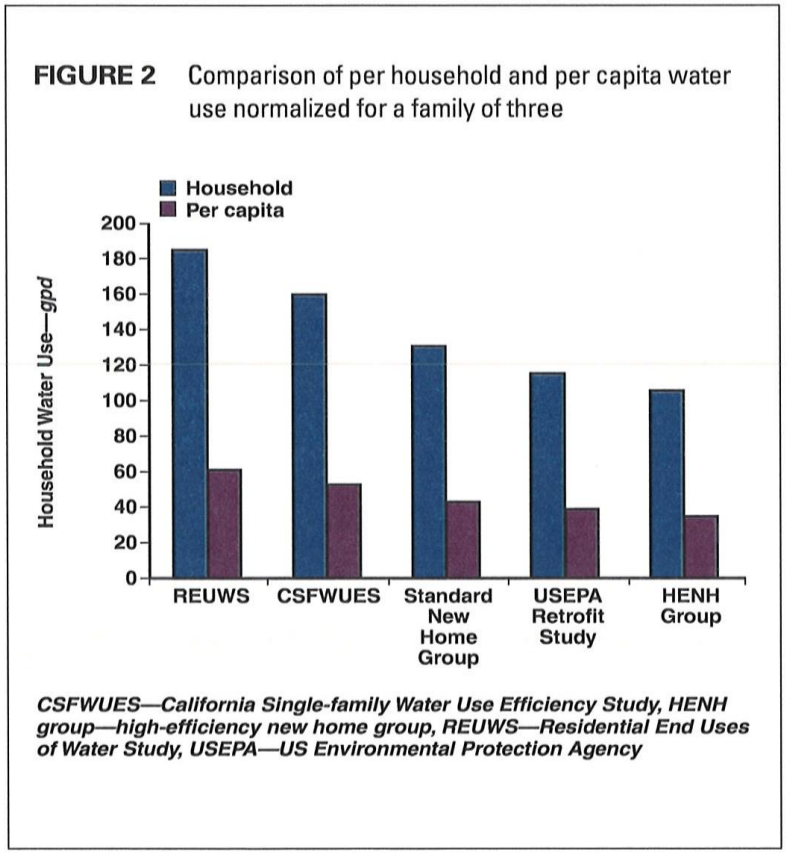
- Year Structure Built Statistics reported from the 2010 U.S. Census show that 71% of housing units were built before 1990
- Therefore a significant number of plumbing fixture and appliance replacements could be expected in these homes

Year Structure Built	Total Housing Units	Percent (%)
	131,791	100%
2005 or later	8,007	6.1%
2000 to 2004	11,549	8.8%
1990 to 1999	18,302	13.9%
1980 to 1989	18,408	14.0%
1970 to 1979	21,105	16.0%
1960 to 1969	14,692	11.1%
1950 to 1959	14,428	10.9%
1940 to 1949	7,304	5.5%
1939 or earlier	17,992	13.7%

Note: Numbers in thousands
Reference: http://www.census.gov/prod/2011pubs/h150-09.pdf

Are Appliance & Fixture Replacements Complete

- DeOreo & Mayer study notes that toilet & wash machines met the conservation criteria in 30% of homes in the CSFWUES as compared to 10 yrs earlier REUWS.
- However, the latest legislation on washing machines and dishwashers went into effect in 2010 & 2011.
- Owners wishing to meet the WaterSense standard with Energy Star rating will drive usage lower.
- Other drivers such as elasticity, conservation ethic, etc. are still showing impacts



Conservation –Consumer Choices –Home Depot circular Sunday Apr 18, 2010

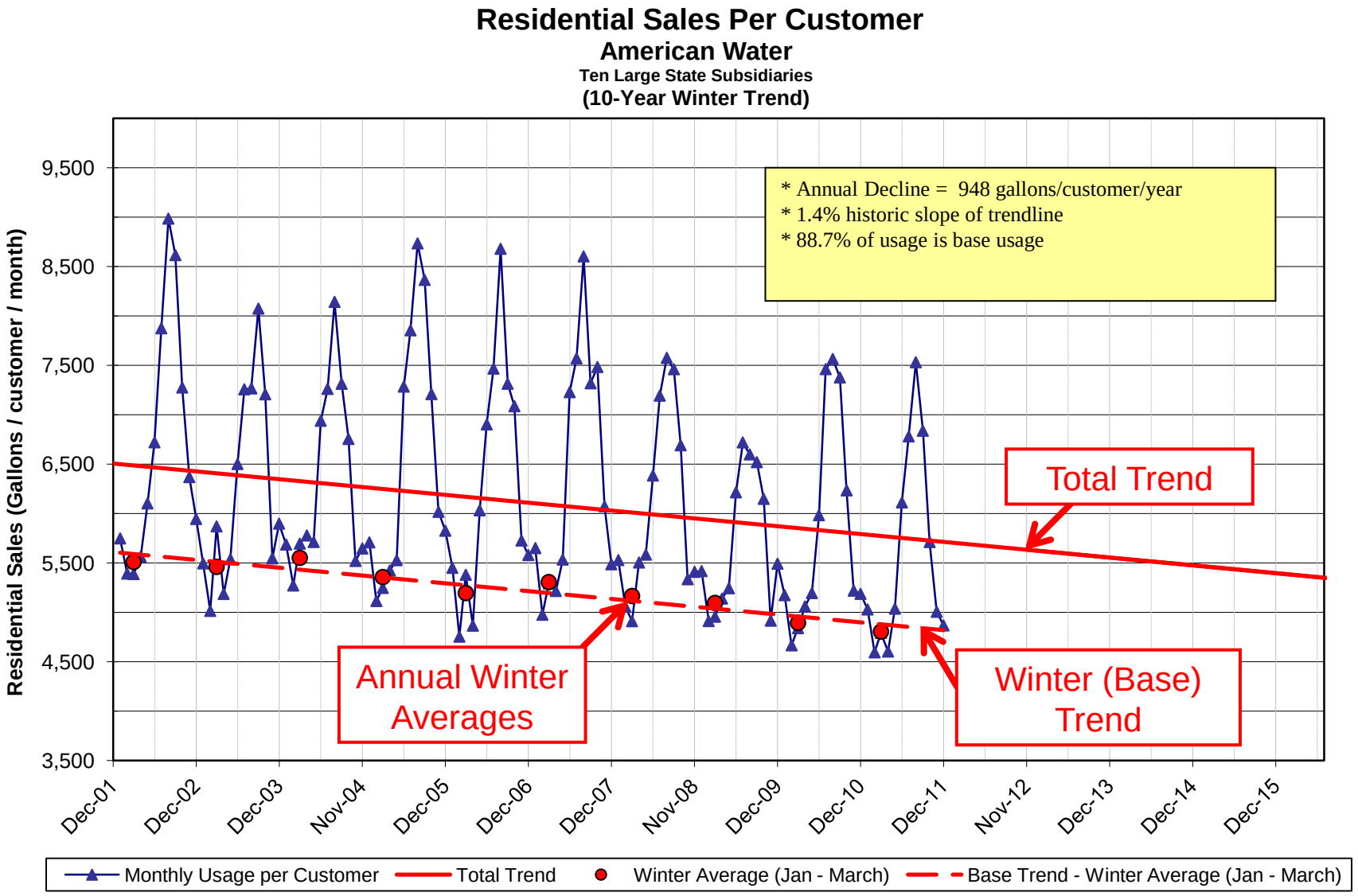
- Scotts Water Smart Turf Builder – “Helps lawns retain water to protect against heat and drought”
- Maytag 4.0 Cu.FT Washer – “Washer uses 49% less water and 65% less energy”
- LG 4.2 Cu. Ft Washer – “Reduce energy cost and save up to 7,000 gallons of water annually”
- Price Pfister Faucet – “Watersense certified to conserve water without sacrificing performance”
- Delta Water Amplifying Showerhead – “Uses 36% less water per minute compared to traditional models” Neoperl Water-Saving Faucet Aerator – “In store giveaway for first 200 customers”
- NEW! Tuscany Rainwater Barrel – “Easy way to collect, store and dispense rainwater from your roof
- Sterling Windham 1.28gpf Toilet – “save $90 annually in water bills when replacing your 3.5gpf toilet”

Slide Courtesy of Connecticut Water

Method of Analyzing Declining Usage

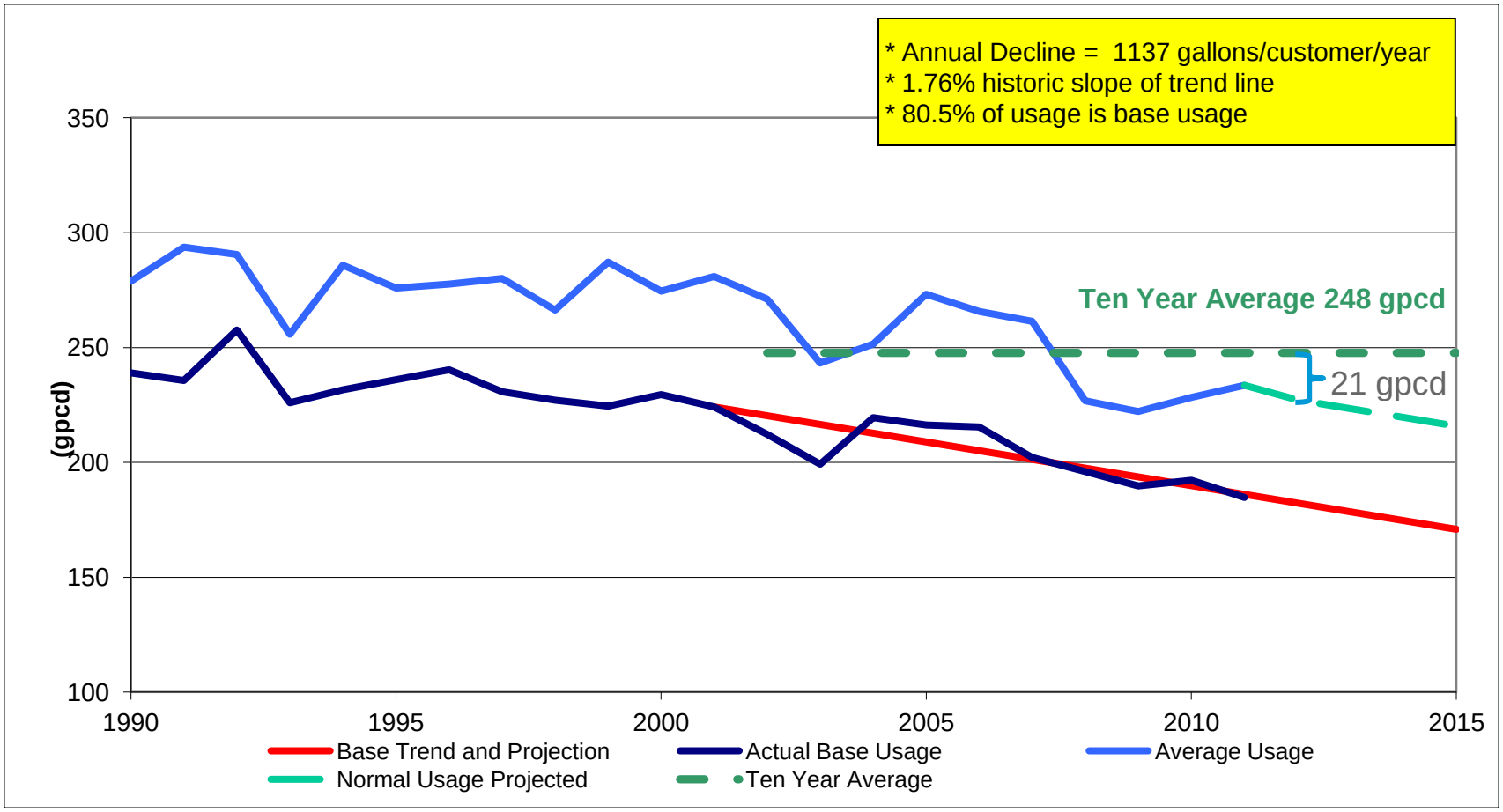
National Representative for Water Utilities

- **Issues facing American Water systems are representative of those impacting water industry as a whole**
- American Water provides service to approx. 15 million people in more than 1,600 communities in over 30 states and parts of Canada
- Comprised of approx. 375 individual water systems, ranging in size from 25 customers to over 350,000 customers


Residential Sales Per Customer
American Water
Ten Large State Subsidiaries
(10-Year Winter Trend)
Residential Sales (Gallons / customer / month)
9,500
8,500
7,500
6,500
5,500
4,500
3,500
* Annual Decline = 948 gallons/customer/year
* 1.4% historic slope of trendline
* 88.7% of usage is base usage
Total Trend
Annual Winter Averages
Winter (Base) Trend
Dec-01
Dec-02
Dec-03
Nov-04
Dec-05
Dec-06
Dec-07
Nov-08
Dec-09
Dec-10
Dec-11
Nov-12
Dec-13
Dec-14
Dec-15
Monthly Usage per Customer
Total Trend
Winter Average (Jan - March)
Base Trend - Winter Average (Jan - March)

Residential Sales Per Customer

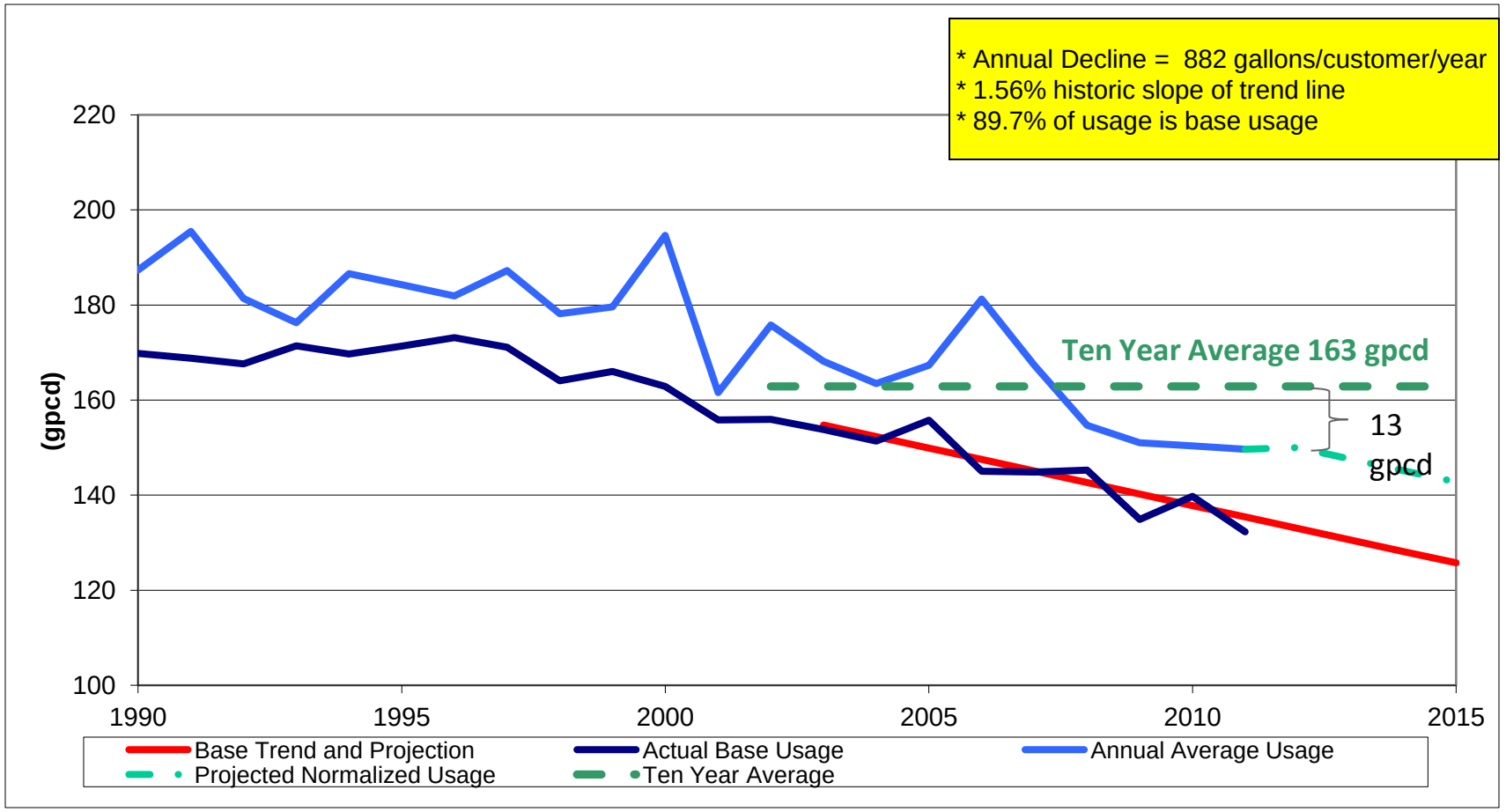
Missouri American – St. Louis County



gpcd – gallons per customer per day

Residential Sales Per Customer

Missouri American – St. Joseph



gpcd – gallons per customer per day

Missouri Decline in Base Usage

	Base Usage		2003-2012	
District	1991 Usage (gpcd)	2012 Usage (gpcd)	Slope of Trend (%)	Usage Decline (gpcd)
Brunswick	126	99	-2.43%	3.57
Mexico	171	112	-1.76%	2.53
Platte County	268	155	-3.45%	7.19
Warrensburg	165	130	-1.76%	2.68
Jeff City	144*	121	-1.43%	2.02
St. Charles	228	176	-1.77%	3.52
Warren County	160*	136	-2.04%	3.30
St. Joseph	169	137	-1.56%	2.42
Joplin	178	133	-2.06%	3.35
St. Louis County	236	179	-1.76%	3.80

* 2001 Jeff City 2006 Warren County

Impact to Revenue

District*	Water Customers at 6/30/12	Annual Gallon Loss in Thousands	Rate A per 1000 Gallons	Annual Dollar Loss	Annual Dollar Loss Loaded to the Projected Loss
St. Louis Metro	342,993	125,192,445	0.0034447	$431,250	1,638,752
St. Joseph	28,644	10,455,060	0.0049115	51,350	124,267
Platte County	5,163	1,884,495	0.0077731	14,648	105,322
Warrensburg	6,392	2,333,080	0.0035833	8,360	22,405
Brunswick	338	123,370	0.01085	1,339	4,779
Mexico	4,294	1,567,310	0.0068929	10,803	27,332
Joplin	19,594	7,151,810	0.0041838	29,922	100,238
Jefferson City	9,059	3,306,535	0.004274	14,132	28,547
Lake Carmel	54	19,710	0.00237	47	47
Riverside Estates	279	101,835	0.00237	241	241
Ozark Mountain/Lake Taneycomo	388	141,620	0.0085	1,204	1,204
Spring Valley	100	36,500	0.01085	396	396
Lakewood Manor	36	13,140	0.01085	143	143
Maplewood	521	190,165	0.00237	451	451
Stonebridge	692	252,580	0.00237	599	599
Total	418,547	152,769,655	0.0037	$564,884	$2,054,721

* Excludes flat rate customer districts

Impacts on Utility Financials

- Average usage decline impacts annual water utility revenues
- Offset in annual production costs
- Use is decreasing and the corresponding revenue decreases
  - Operating costs (personnel, compliance, IT, etc.)
    - Water utilities are growing increasingly concerned with the effects on operating revenues. Especially those that have tariff rates with high volume pricing.
    - Missouri American's variable O&M cost are approx. 13%
  - Appropriate tariff designs can mitigate the financial impact of declining usage

Conclusions/Solutions

- Acknowledge and understand the water usage per customer declining trend
- Water conservation efforts are successful
- Public Awareness (value of water)
- Commissions across various states have considered various rate solutions:
  - Revenue balancing account
  - Raise fixed allocation
  - Decoupling

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Questions?

Business Transformation

- *Program Overview*
- *ERP Deployment*
- *CIS and EAM*

Business Transformation Program Overview

1. Missouri American Water is undertaking a Business Transformation program to update and modernize its business processes and information technology systems.
2. Over the life of the Business Transformation program, there will be four primary areas of focus:
    - Replace legacy systems near the end of useful lives
    - Promote operating excellence, efficiency, and economies of scale
    - Enhance the customer experience
    - Increase employee effectiveness and satisfaction
3. American Water selected SAP as its new software platform. The SAP software solution is a fully integrated enterprise software[1] application that will enhance our ability to continue delivering high-quality water and wastewater services to our customers.
4. There are three projects that comprise the core of the Business Transformation program: Enterprise Resource Planning ("ERP"); Enterprise Asset Management ("EAM"), and Customer Information System ("CIS"):
    - ERP systems encompass applications that will support human resources, finance, and supply chain/procurement management.
    - EAM systems will support the management of asset lifecycles including the design, construction, commissioning, operations, maintenance and decommissioning/replacement of plant, equipment and facilities as well as work management for both short-term (service turn-ons, leak inspections, etc.) and long-term (main replacements, etc.) work.
    - CIS contains all billing and personal data pertaining to American Water's customers including billing rates, historical utility consumption, associated charges and meter information and the strategy for managing and nurturing American Water's interactions with its customers.
5. American Water selected Accenture to help implement its new software solutions. As the solutions implementer, Accenture is responsible for working closely with American Water to realize the full potential of its new technology implementation. They will help us to confirm that American Water's business processes are aligned with the new software technologies, allowing us to improve our ability to provide more effective and enhanced service to our customers.
6. The ERP system was deployed as planned in August 2012. CIS and EAM will be deployed in to waves - May 2013 and October 2013. CIS and EAM will be deployed for Missouri in May of 2013.

[1] "Enterprise" computing is best understood in contrast to our existing software systems, which are customized, stand-alone systems used by specific departments or functions within the company, resulting in information "silos" – or more isolated departments and functions. Enterprise computing breaks down information barriers while also giving each department or function within a company the enterprise-compatible module it needs to do its job. In this way, enterprise computing bridges information gaps, reduces redundancy and opportunities for error, and is a more powerful tool for effectively managing the business.

ERP Deployment

7. We had been advised by Accenture, other experienced consultants, and other Companies that have experience with similar system implementations that our productivity would dip as we approached “go-live” because resources are pulled into training and other priorities.
8. We also have been advised by Accenture and other experienced consultants that our productivity can be expected to drop 20-40% for a period of time after each “go live.” (For example, the first times major processes run would require additional work time and analysis).
9. In an effort to minimize this anticipated productivity dip, we implemented Change Management strategies and engaged employees at every level of the organization (e.g., conducted extensive employee communication and training; established the BT Network; identified and trained Super Users). ERP post ‘go live’ support has been provided, in part, by the establishment of a Hypercare War Room and IT Help Desk staffed to handle all incoming calls.
10. Based on Accenture’s experience with similar implementations and the results that American Water has achieved to date, one could reasonably conclude that, other than in the accounts payable area, the overall implementation can be classified as Good to Above Average.
11. Over time, the ERP system will enable us to automate processes, replace less efficient manual processes, improve workflow, and integrate the Company's data so it is more readily accessible.

CIS and EAM Deployment

12. EAM and CIS deployment will follow with two waves starting in May 2013 and October 2013. We anticipate that Missouri CIS and EAM will “go-live” in May 2013.
13. The EAM system will enable the Company to more effectively manage information about its physical assets. The EAM system 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, better enabling managers to control and optimize their operations for quality and efficiency. The following are some of the anticipated benefits for "Service Request to Completion” and "Plan to Build and Maintain” process areas:

    - 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.
    - More integrated systems (and fewer manual processes) leading to the timely closure of service orders and efficient handling of customer requests.
    - 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.
    - More efficiently dispatch service orders by bundling work and improving visibility of outstanding orders to enable the offloading of excess work to contractors.
    - Improved complaint resolution effectiveness by attaching a timer on escalated utility contacts.
    - Better asset reliability and fewer unexpected outages by improving American Water's reliability centered maintenance programs.
    - Improved customer solutions and response times through more visible data that will improve employee dispatch.

- Greater ability to “prioritize” capital projects, as well as operational and maintenance expenditures, through the use of more visible data.
- More consistent design and cost estimates for construction projects based on data being readily available for reference and analysis from prior projects.

14. CIS will provide a companywide software application that assists in the management of every aspect of the customer relationship – from customer inquiry to billing and collecting for services provided. The following are some of the anticipated benefits for the "Order to Cash" process area, which logs and handles customer requests for service, manages customer billing, and collects customer payments.
    - More system functionality, such as group billing and budget 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)
    - Greater first contact resolution because of greater automation in the billing process and redirected resources providing the opportunity to resolve customer requests in a timely manner