Kentucky Rural Water Association
Helping water and wastewater utilities help themselves

January 14, 2020

Ms. Gwen R. Pinson, Executive Director
Public Service Commission
P. O. Box 615
Frankfort, KY 40602-0615

Dear Ms. Pinson:

Kentucky Rural Water Association (KRWA) is applying for approval of a proposed water district management training program pursuant to KRS 74.020 and 807 KAR 5:070. The proposed session, entitled "2020 Management Conference," will be conducted February 19-20, at the Sloan Convention Center in Bowling Green, Kentucky. A copy of the proposed agenda is attached as **Exhibit 1**.

As reflected in Exhibit 1, the proposed training program for the Management Conference is directed toward decision-makers of water and wastewater utilities. This year's conference will offer discussions on trends and ideas affecting our industry and will present ideas for planning and preparing for the future of drinking water and wastewater services in the Commonwealth. These presentations will enhance the attendees' understanding of relevant issues involved in the management, operation, and maintenance of utilities.

The proposed training offers six hours of instruction each day and should be accredited and approved as water management training satisfying the requirements set forth in KRS 74.020(7) to establish a water district commissioner's eligibility for a maximum annual salary of $6,000. **KRWA is not requesting that the proposed training program be accredited as a program of instruction for newly appointed commissioners.**

A biographical statement containing the name and relevant qualifications and credentials for the presenters is attached as **Exhibit 2.**

The PowerPoint presentations, included as **Exhibit 3**, will be copied to a flash drive and provided to commissioners. Should the presenters revise or amend their presentations prior to the proposed session (or provide additional written materials to the attendees), KRWA will include a copy of the revised presentation with their sworn statement and report regarding the instruction.

1151 Old Porter Pike · Bowling Green, KY 42103 · Phone 270.843.2291 · Fax 270.796.8623
www.krwa.org

KRWA has submitted this proposed training to the Kentucky Board of Certification of Drinking Water Treatment and Distribution System Operators and the Kentucky Board of Certification of Wastewater System Operators. A copy of our Application for Approval of Courses for Continuing Education Credit is enclosed as **Exhibit 4**. KRWA will also submit a training approval request to Department for Local Government for Elected County Officials Training Incentive Program. A copy of the Training Approval Request Form is included as **Exhibit 4A**.

Along with a list of the commissioners, their water district, and the number of hours they attend the session, KRWA will provide a sworn statement attesting the accredited instruction was performed, noting any changings in the presenters or proposed program curriculum which may occur after certification.

With this letter and enclosed exhibits, the Kentucky Rural Water Association requests that the Commission approve and accredit the proposed training program entitled "2020 Management Conference" for annual water district management continuing education credit.

Respectfully submitted,

Janet Cole

Janet Cole
Education Coordinator
j.cole@krwa.org

Enclosures
(Original and 10 packets)

EXHIBIT 1

EXHIBIT 1

PROPOSED AGENDA

Kentucky Rural Water Association
2020 Management Conference
February 19-20, 2020
Sloan Convention Center
Bowling Green, Kentucky

Wednesday, February 19, 2020

8:00 a.m. – 9:00 a.m.
Session 1: Apprenticeships and Workforce Development
Presenter: Mary Taylor, Kentucky Department of Education
Heather Stevenson, Kentucky Rural Water Association
Apprenticeships are a great way to train for a career. They are supported by state regulation as well as by schools and industry. This session will cover what apprenticeships are, how apprenticeships work in Kentucky, and what benefits are available to apprentices and their employers. Also included will be specifics on the KRWA Water and Wastewater Apprenticeship Program.

9:15 a.m. – 10:15 a.m.
Session 2: Your Tariff as Sword and Shield
Presenter: Gerald Wuetcher, Stoll Keenon Ogden, PLLC
Tariffs are often misunderstood and neglected by water and sanitation districts. Tariffs are filed with the Public Service Commission and are the rules a district plays by. As such, tariffs are the means by which a district enforces the rules with customers and can also protect a utility form a customer's complaints. This session will cover many of the important factors regarding tariffs and PSC regulations along with the importance of keeping up to date on the specifics of your utility's tariffs.

10:30 a.m. – 11:30 a.m.
Session 3: Challenges and Changes for Kentucky Utilities
Presenters: Damon Talley, Stoll Keenon Ogden, PLLC
Gary Larimore, Kentucky Rural Water Association
2020 brings about a number of challenges and changes for Kentucky utilities. The Public Service Commission has released an investigative report critical of a number of utilities facing financial, operational and compliance hurdles. The results of this investigation have the potential to affect many Kentucky utilities. Also adding to the change is a new governor and a new administration which means there will be new leadership appointed to Kentucky Cabinets. This session will address these challenges and changes and will highlight relevant news coming from the 2020 Legislative Session.

11:30 a.m. – 1:00 p.m. Lunch

1:00 p.m. – 2:00 p.m.
Session 4: Mayfield and Graves County Water District - Water Loss Recovery Plan
Presenters: Marty Ivy, Mayfield Electric / Water System
The City of Mayfield has faced significant challenges regarding water loss. Mayfield took over the management of several small rural water districts surrounding the city and his discovered that reducing loss in the city takes different techniques and strategies than reducing water loss in the rural areas. This session will review what Mayfield has been doing to reduce their water loss, how their methods vary depending on location, and the success they have experienced. As part of the ongoing process, the future plans for water loss recovery will be outlined.

2:20 p.m. – 3:20 p.m.
Session 5: All You Ever Wanted to Know About Depreciation...And Then Some
Presenter: Katelyn Brown, Stoll Keenon Ogden, PLLC
This presentation explains the importance of "fully funding depreciation" and examines the levels at which utilities are currently funding depreciation. The consequences of not funding depreciation and what utilities can do to increase their depreciation funding will also be discussed.

3:30 p.m. – 4:30 p.m.
Session 6: A Practical Approach to Cyber Security
Presenter: David Carter, CDP Engineers
The America's Water Infrastructure Act (AWIA) requires each community water system to conduct and certify a risk and resilience assessment. This includes an assessment of the security of any electronic and computer systems utilized by the community water system. Many rural communities across the Commonwealth face a shortage of cybersecurity experts required to conduct effective assessments of these computer systems. This presentation presents an affordable approach to remotely conduct security assessments using a combination of low-cost network sensors, open-source software agents and cloud-based big data analytics.

Thursday, February 20, 2020

8:00 a.m. – 9:00 a.m.
Session 7: Identity Theft Epidemic
Presenter: Robert Mohon, The Neil Group
Identity theft is the deliberate use of someone else's identity, usually as a method to gain a financial advantage or obtain credit and other benefits in the other person's name. The person whose identity has been assumed may suffer adverse consequences. Identity theft can occur many ways, including to businesses, and utilities are at risk as well. This session will discuss topics related to identity theft such as new ways criminals are stealing identities, how you can guard your personal credit, and ways utilities can protect themselves and their customers.

9:15 a.m. – 10:15 a.m.
Session 8: Improving Communication via a Notification App
Presenter: Lewis Dixon, CDP Engineers
This presentation will examine a means to more effectively communicate with utility customers. Historically, communication methods have included local television, local radio, newspapers, phone call systems, websites, Facebook, etc. None of these methods reach the majority of intended recipients causing frustration for the customers. This session will discuss a way to quickly and easily send messages to customers on their smartphones (text, image and map).

10:30 a.m. – 11:30 a.m.
Session 9: Hiring Contractors and the Financial Risks at Stake
Presenter: Chip Wilkins, Lawton Insurance
Christopher "Kick" Barber, Cincinnati Insurance
The day-to-day operations of a utility involves many risks. Should utilities carry an additional burden when hiring outside contractors? This presentation will discuss the insurance implications when hiring subcontractors in the utility industry and will offer details on how to use their insurance company to secure needed information to transfer the risk from the utility to the other parties involved.

11:30 a.m. – 1:00 p.m. Lunch

1:00 p.m. – 2:00 p.m. (DW / WW)
Session 10: Instrumentation, Controls and Energy Management 101
Presenter: Jake Hildebrant, Chastain & Associates
This presentation will provide attendees with a better understanding of the concepts associated with instrumentation and controls related to water and wastewater treatment and will explain the importance of properly designed and maintained instrumentation. Energy Management ideas and easy methods to save energy with process controls will be addressed.

2:15 p.m. – 3:15 p.m. (DW / WW)
Session 11: Preserving Utility Assets and Improving Manpower Productivity Through the Use of Technology
Presenter: Richard Sanders, Zenner USA
The session will provide an overview of technologies that are available to better manage utility assets and manpower. Management of key assets and resources is a critical topic among utility administrators. Utilities are actively seeking a smarter approach to managing water supplies, minimizing labor costs and maximizing ROI on infrastructure investments.

2:15 p.m. – 3:15 p.m. (DW / WW)
Session 12: Evaluating Energy Saving Proposals
Presenter: Toby Church, Commonwealth Engineers
Energy savings proposals can come in many forms and offer savings via various methods. This presentation will focus on the benefits of energy savings and will provide an overview of improvements that can be made. Discussion will include renewable energy (where this industry is going) and will also offer advice for evaluating what energy savings proposal would work best for your utility.

EXHIBIT 2

EXHIBIT 2

SPEAKER BIOS

Mary Taylor is a Training and Development Specialist for the Kentucky Department of Education's Office of Career and Technical Education. One of Mary's primary responsibilities is to manage the Tech Ready Apprentices for Careers in Kentucky (TRACK) Youth Apprenticeship program. Mary has over twenty years of experience in the field of education. Prior to her current position, she was a Technology Center Career Advisor for high school students and an Adult Education Director.

Heather Stevenson joined the Kentucky Rural Water Association staff in November, 2019 as the Workforce Development Coordinator. Heather has been involved in local and regional workforce development programs since 2010. Prior to working for KRWA, Heather worked at Lake Cumberland Area Development District—first as a career manager for the Workforce Development program, then as the Water and Wastewater Coordinator for the LCADD Water Management Planning Council. Heather earned a B.A. in Corporate and Organizational Communication from Western Kentucky University. As the Workforce Development Coordinator, Heather focuses on providing utilities with more resources to meet the ever-growing demand of skilled operators in this industry.

Gerald Wuetcher is a member of Stoll Keenon Ogden's Utility & Energy practice. He spent more than 26 years at the Kentucky Public Service Commission, serving as a staff attorney, deputy general counsel and executive advisor. Although he worked on matters involving electric, natural gas, water and sewer utility issues, he is known for his experience in water and wastewater issues. Jerry developed the PSC's training program for water utility officials in 1998 and served as one of its principal instructors during his tenure at the PSC. After 27 years of service as a judge advocate in the U.S. Army, Jerry retired with the rank of Colonel. He is a regular presenter at seminars on utility law and regulation.

Damon Talley joined Stoll Keenon Ogden PLLC (SKO) on May 1, 2015. He is a member of the Utility & Energy practice. He practices out of the Hodgenville, Louisville, and Lexington, Kentucky offices. Damon brings to SKO more than 35 years of experience working in private practice focusing on public utility work. He serves as General Counsel of the Kentucky Rural Water Association and has served in this capacity since 1979. Damon received his J.D. from the University of Kentucky College of Law in 1975, and earned his B.S.M.E. in 1972 from the University of Kentucky College of Engineering.

Gary Larimore has been Executive Director of the Kentucky Rural Water Association since its formation in March, 1979. He received both Bachelor of Science and Master of Public Service Degrees from Western Kentucky University in Bowling Green, Kentucky. Mr. Larimore is responsible for the administration and day-to-day operation of the association's office. His duties include budgeting and financial management, personnel management, and acting as the primary representative with the membership, the board of directors, and other outside organizations. Other primary duties include representing the Association's legislative and regulatory interests as a full-time lobbyist and working with water-related groups and organizations.

Marty Ivy became General Superintendent of Mayfield Electric / Water System in 2001. Prior experience includes Electrical Operations Manager from 1998 to 2001 and Industrial electrician/Electrical Inspector from 1990 29 2991, Mr. Ivy holds an undergraduate degree from Murray State University. He is recognized as a State of Kentucky Master Electrician and a State of Kentucky Certified Electrical Inspector General. He currently serves on boards, including CSA Technology, KY League of Cities, KY Municipal Utilities Association and the KY Public Power Association.
29 Years in the Industry

Katelyn L. Brown joined Stoll Keenon Ogden (SKO) in 2018 as an Associate in the Louisville office. She is part of the Utility & Energy and Public Finance practice groups at SKO. Katelyn graduated from the University of Kentucky, where she went on to earn her J.D. with a cum laude distinction. She is also a Certified Public Accountant. As part of her work with the Utility & Energy group, she drafts pleadings for the largest electric utilities in Kentucky and researches regulations and drafts agreements between local water districts and cities. As part of the Public Finance group, Katelyn provides financial assistance to clients.

David Carter, President of CDP Engineers, is a 1982 graduate of the University of Kentucky with a BSCE in Civil Engineering with high distinction. David is a licensed civil engineer and professional land surveyor. His engineering experience has focused on storm water management and modeling, water distribution systems, wastewater collection systems and site development. Since 1994, David has integrated engineering and GIS into sustainable workflow products for communities, institutions and utilities. As principle software architect of GeoSync software (GeoSync, GeoSync XG, GeoSync Go), David has an intimate knowledge and understanding of new technologies and how they can be integrated with design services to provide sustainable solutions.

Robert Mohon of The Nell Group is a veteran of the credit card, debit card and check processing industry. In 1995, Robert began his career in the credit card processing industry and set up one of the very first websites to accept online credit card payments. With a degree in Marketing from Auburn University, Robert has helped grow the client base of the company through sales process development, CRM, and client support improvements. Robert is an Ambassador of the Brentwood Chamber of Commerce (TN), a Board Member of the Nashville Investors Group, and past member of the Minds in Motion Advisory Board and Nashville Business Breakfast Club. His expertise includes advising clients on security (customer, employee, office), technology, internal controls, interpersonal skills, leadership, and social media/public relations.

Lewis Dixon is the Executive Vice President of CP Engineers. After graduating from the University of Kentucky in 1984, Mr. Dixon went to work for Commonwealth Technology in Lexington, Kentucky. He worked there for 5-1/2 years and obtained his Professional Engineer's (PE) registration and Professional Land Surveyor's (PLS) registration. In 1989, David Carter and Lewis Dixon co-founded CDP Engineers. CDP Engineers is an award-winning design firm that provides a wide selection of services to governmental agencies, public institutions, municipalities, private developers, commercial establishments and industrial companies:

Chip Wilkins is a Senior Account Executive at Lawton Insurance with a CLCS designation. Lawton currently insures 36 Municipalities and Water Districts across Kentucky. For the last 8 years he has been working directly with the utilities and their respective boards to transfer risk and ultimately lower the overall costs of insurance.

Christopher "Kick" Barger has been with Cincinnati Insurance for 25 years. Over the last 10 years, he has created and managed a program designed to insure water and sewer utilities. He has several professional insurance designations, and is a member of the National Rural Water Association and the American Water Works Association. He is currently responsible for insuring nearly 600 water and sewer utilities across the country.

Jake Hildebrant is an Assistant Professor of Electromechanical Engineering Technology at Murray State University where he as the Program Coordinator and the Manufacturing Engineering Technology Program Coordinator. He teaches classes on Fluid Power, Electrical Distribution, Programmable Logic Controllers and Electrical Systems. Jake is also a Controls Systems Specialist for Chastain and Associates, LLC.

Richard Sanders joined Zenner in October of 2012 and is President of Zenner USA. He is responsible for all Zenner operations in North and Central America, including Manufacturing, R&D, sales and service. Prior to joining Zenner he held senior management positions with Amerada Hess, Elliott Turbo Machinery Co., AEG and GE. Rich has a bachelor's Degree in Marketing Management from Siena College.

Toby Church, Vice-President, Project Engineer for Commonwealth Engineers has been involved in the design and implementation of electrical and control systems for over 25 years. With his education and work experience, he possesses expertise in the electrical and control field and is able to evaluate and design cost-effective electrical and control systems. Toby is a professional licensed electrical engineer, AEE certified energy auditor, and licensed master electrician. Toby's key skills include: controls system design, electrical system design, blueprints & schematics, generators & transformers, switches & circuit breakers, electrical code, trouble shooting, testing instruments, and motors & conduit.

EXHIBIT 3

EXHIBIT 3

List of PowerPoint Presentations

Session 1: Apprenticeships and Workforce Development

Session 2: Your Tariff as Sword and Shield

Session 3: Challenges and Changes for Kentucky Utilities

Session 4: Mayfield and Graves County Water District – Water Loss Recovery Plan

Session 5 All You ever Wanted to Know About Depreciation...And Then Some

Session 6: A Practical Approach to Cyber Security

Session 7: Identify Theft Epidemic

Session 8: Improving Communication via a Notification App

Session 9: Hiring Contractors and the Financial Risks at Stake

Session 10: Instrumentation, Controls and Energy Management 101

Session 11: Preserving Utility Assets and Improving Manpower Productivity Through the Use of Technology

Session 12: Evaluating Energy Saving Proposals

1

What is Registered Apprenticeship?

- Employer customized training program regulated by the United States Department of Labor
- Combines on-the job learning with classroom instruction
- Leads to a nationally recognized portable credential called a Journeyperson certificate

2

What is Registered Apprenticeship?

- Earn as you learn
- Grow your own
- The 'other' degree

3

Why Registered Apprenticeship?

- Valid Career Pathway
- Regulation
- Oversight
- Nationally recognized portable credential

4

4

TRACK Conditions for Youth Apprenticeship

- Statewide Youth Apprenticeship program in partnership with the KY Division of Apprenticeship.
- Utilizes the current high school Career and Technical Education (CTE) infrastructure at no cost.
- Creates a seamless career pathway for students into post-secondary Registered Apprenticeship opportunities.
- Ready-made and sustainable pipeline of students with a good foundation and an interest in the occupation.

5

5

TRACK Practice

- The model is a minimum of 3 CTE courses related to the apprenticeship and a paid work experience (co-op) for course credit.
- The employer works with the school(s) to identify students and selection process.
- The employer determines if a student successfully completes and transitions as a full-time apprentice after graduation.
- Credit for prior learning through CTE courses can count towards the Related Technical Instruction component of the apprenticeship.

6

6

TRACK Stats

- Apprenticeship is being recognized as a valuable post-secondary option for students.
- Career pathway leads to gainful employment.
- Reinforces employability skills.
- Creates a competitive recruiting environment.
- Significant number of on-the-job hours are being credited towards the apprenticeship requirement.
- Employers are registering apprenticeship programs just to programs just to participate in TRACK.

7

7

TRACKing the Return on Investment

- Credit for prior learning for CTE courses
- High retention rates
- Minimal recruitment costs
- No relocation costs
- Don't have to 'unlearn' bad habits
- Students receive sector specific safety training

8

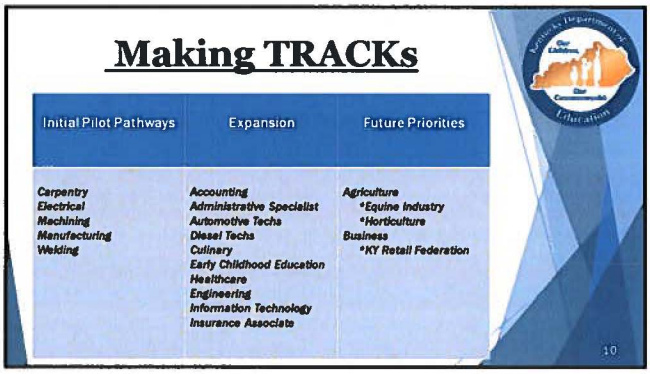
8

TRACKing the Broader Impact

- Method to combat drug and attendance problems.
- Method to combat the skilled labor gap.
- Method to combat $1.5 trillion dollars in student loan debt.

9

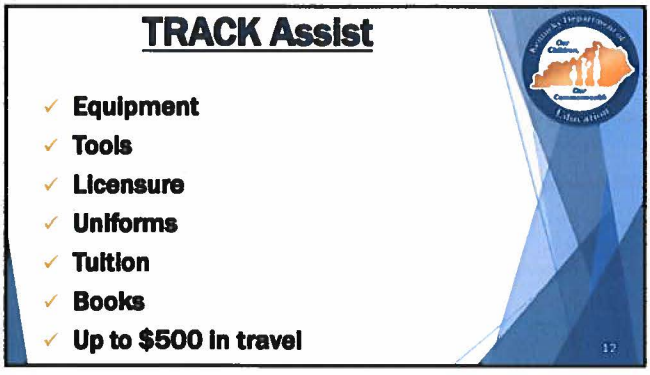
9


Making TRACKs
Initial Pilot Pathways
Expansion
Future Priorities
Carpentry
Electrical
Machining
Manufacturing
Welding
Accounting
Administrative Specialist
Automotive Techs
Diesel Techs
Culinary
Early Childhood Education
Healthcare
Engineering
Information Technology
Insurance Associate
Agriculture
*Equine Industry
*Horticulture
Business
*KY Retail Federation
10

10


Right TRACK
Kentucky Educational Excellence Scholarship (KEES)
Beginning this year, KEES can now be used for Registered Apprenticeship in addition to 2 and 4 year institutions!
11

11


TRACK Assist
Equipment
Tools
Licensure
Uniforms
Tuition
Books
Up to $500 in travel
12

12

Right TRACK

- Encourage students that normally may not have cared about KEES money to do better in school.
- More high-performing students will look at apprenticeship as a post-secondary option.
- Create an awareness of the benefits of apprenticeship for parents and educators.
- Demonstrate to employers that education is serious about apprenticeship.

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13

TRACK Assist

Number of students in career pathways across Kentucky eligible to co-op in the 18-19 school year...

69,921

14

14

TRACK Assist

Number of students in career pathways co-oping in the 18-19 school year...

4,575

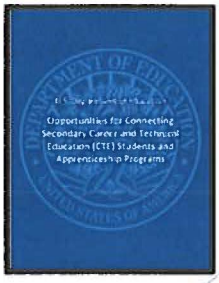
15

15

TRACK SPOTLIGHT:

JUNE 2017 REPORT

UNITED STATES DEPARTMENT OF EDUCATION (USED)



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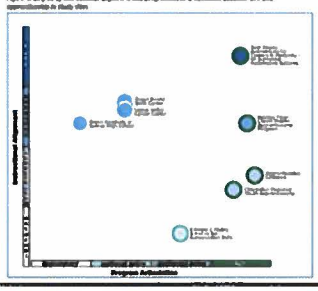
16

TRACK Wins!



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TRACK COACH

Mary Taylor, Business & Industry Specialist
Office of Career and Technical Education
Kentucky Department of Education
Mary.Taylor@education.ky.gov
502-564-4286

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Utility Tariffs: Sword and Shield

Gerald Wuetcher
Stoll Keenon Ogden PLLC
gerald.wuetcher@skofirm.com

1

Order of Presentation

- Basic Rules
- Common Problems
- Required Tariff Provisions
- Procedure to Revise Tariff
- Provisions to Consider

2

FILED RATE DOCTRINE

KRS 278.160: (1)

Under rules prescribed by the commission, **each utility shall file with the commission,** within such time and in such form as the commission designates, schedules showing **all rates and conditions for service established by it and collected or enforced.** The utility shall keep copies of its schedules open to public inspection under such rules as the commission prescribes.

3

FILED RATE DOCTRINE

KRS 278.160: (2)

No utility shall charge, demand, collect or receive from any person a greater or less compensation for any service rendered or to be rendered than that prescribed in its filed schedules, and no person shall receive any service from any utility for a compensation greater or less than that prescribed in such schedules.

4

Utility

What is a rate?

5

Utility Tariffs: Sword and Shield

[A]ny individual or joint fare, toll, charge, rental, or other compensation for service rendered or to be rendered by any utility, and any rule, regulation, practice, act, requirement, or privilege in any way relating to such fare, toll, charge, rental, or other compensation, and any schedule or tariff or part of a schedule or tariff thereof.

6

Utility Tariffs: Sword and Shield

Examples:

- Charge for commodity
- Water meter installation charge
- Billing recalculation policy
- Length of time to pay bill
- Length of minimum contract period

7

Tariff Filings: A Lawyer's Perspective

What is a "condition of service"?

Requirement, action or task that must be met or taken by applicant for service as a prerequisite for receiving service.

8

Utility Tariffs: Sword and Shield

Examples:

- Water Main Extension Policies
- Executing Application Form
- Technical Specifications for donated facilities
- Requirement of evidence of inspections/performance of tests
- Deposit Requirements
- Requiring Applicant to obtain Easement

9

Utility Tariffs: Sword and Shield

Effect of the Filed Rate Doctrine

- Tariff has status of law
- New tariff may be filed to change rates, but utility lacks authority to deviate from existing tariff.

10

Utility Tariffs: Sword and Shield

Purpose Behind the Rule

*Ensures PSC review of rates/rules.

*Prevent Discrimination.

11

Tariff Filings: A Lawyer's Perspective

Applying the Filed Rate Doctrine: The Rules

*If a fee is not in your tariff, you cannot charge it.

*If a rule is not in your tariff, you cannot enforce it.

*If a requirement is not in your tariff, you cannot impose it.

*If a service is not in your tariff, you cannot be required to provide it.

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Utility Tariffs: Sword and Shield

Applying the Filed Rate Doctrine: The Rules

*If a requirement is in your tariff, you must enforce it.

*If a charge or fee is in your tariff, you must charge it.

13

Tariff Filings: A Lawyer's Perspective

Billing Errors/Leak Adjustments:

Common Problems

14

Utility Tariffs: Sword and Shield

Defenses/Exceptions

to the

Filed Rate Doctrine

15

Utility Tariffs: Sword and Shield

- Equitable Estoppel
- Unclean Hands/Misconduct
- Adverse Impact on Finances of Utility
- Utility Negligence

NOT DEFENSES

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Utility Tariffs: Sword and Shield

Statute of Limitations

- Recognized as Defense
- KRS 278.225 - Backbilling Limited to Two years for Unbilled Service
- KCC: Four Years

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Utility Tariffs: Sword and Shield

Sanctions for Violating the Filed Rate Doctrine

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Utility Tariffs: Sword and Shield

Required Tariff Provisions

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Utility Tariffs: Sword and Shield

- Deposit Requirements
- Special Charges
- Procedures for Monitoring Customer Usage
- Reconnection Charge
- Charge for Requested Meter Tests
- All Rules and Administrative Regulations
- Requirements for Size, Design, Material and Installation of Service Lines
- Requirements for Service Line Installation & Maintenance

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Utility Tariffs: Sword and Shield

Deposits

- Method of Deposit (Flat or Calculated)
- Criteria for Requiring/Waiving Deposit
- Amount of Flat Deposit
- Policy/Rules on Refunding
- Policy on Interest

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Utility Tariffs: Sword and Shield

Special Charges

- Intended to recover customer-specific costs incurred which would otherwise result in monetary loss to the utility or increase rates to customers who receive no benefits from the service
- Must be uniformly applied

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Utility Tariffs: Sword and Shield

Special Charges: Examples

- Turn-on Charge
- Reconnect Charge
- Termination or field collection charge
- Special Meter Reading Charge
- Meter Resetting Charge
- Meter Test Charge
- Returned Check Charge
- Late Payment Penalty

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Utility Tariffs: Sword and Shield

Turn-On Charge

- Fee Assessed for:
  - New Service Turn-on
  - Seasonal Turn-on
  - Temporary Service

- Cannot Assess Turn-on Fee Where Tap Fee Assessed

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Tariff Filings: A Lawyer's Perspective

Termination-Field Collection Charge

- Fee Assessed When Utility Representative makes trip to customer premises to terminate service
- Can be assessed if service terminated, bill collected, or if customer agreement reached
- May be assessed only once per month

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Utility Tariffs: Sword and Shield

Special Meter Reading Charge

- Customer requests meter re-read
- If original reading correct, fee may be assessed a fee for cost of perform re-read
- No charge may be assessed if original reading is incorrect

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Utility Tariffs: Sword and Shield

Meter Testing Charge

-Utility must test meter upon written customer, provided request is not made more than once in a 12-month period
- If meter reading more than 2% fast, no charge for test
- If meter reading less than 2% fast, fee may be charged

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Tariff Filings: A Lawyer's Perspective

Returned Check Charge

- Fee may be assessed if not honored by customer's financial institution
- KRS 514.040 limits the amount of fee ($50)

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Utility Tariffs: Sword and Shield

Late Payment Fee

- Fee may be assessed if bill not paid by date shown on bill
-Fee may only be assessed once on any bill for rendered services
-Any payment applied 1st for service rendered
-May not assess penalty on unpaid penalty charges

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Utility Tariffs: Sword and Shield

Late Payment Fee (cont'd)

- How is the level of fee determined?
- Assessing the fee to state/federal agencies
- Late Posting/Delays in Transit

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Utility Tariffs: Sword and Shield

Monitoring Usage

- 807 KAR 5:006, Section 10(3)
- Monitoring Procedure in Tariff
- Must draw utility's attention to unusual deviations in customer usage
- Must provide means for determining reasons for unusual deviations
- Meters must be tested for unduly high and unexplainable usage

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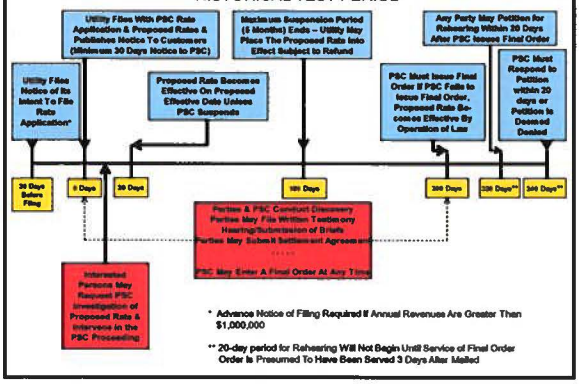
Utility Tariffs: Sword and Shield

Tariff Filings Procedure

32

TIMELINE FOR A RATE ADJUSTMENT PROCEEDING
HISTORICAL TEST PERIOD



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Utility Tariffs: Sword and Shield

KRS 278.180:
- 30 days notice to PSC
- May be reduced to 20 with PSC approval
- Less Notice if rate reduction

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Utility Tariffs: Sword and Shield

What is Notice?
- Filing of Tariff Sheet
- Proper Effective Date
- Sheet Complies with 807 KAR 5:011
- Notice to Public

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Utility Tariffs: Sword and Shield

<u>Notice to Public</u>
- Billing Insert
- In Trade Pub Going to All Customers
- Newspaper of General Circulation (3x - Once Weekly)
- Special Rules for Sewer

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Utility Tariffs: Sword and Shield

- Action Required by PSC - Suspension
- Timing Considerations - "Starting the Clock"
- Significance of PSC Failure to Act

37

Utility Tariffs: Sword and Shield

Suggestions for Expediting Review Process

- Explain in Detail Purpose/Reasons for filing in Cover Letter
- Provide Supporting Evidence
- Research/Anticipate Expected Questions/Issues
- Address Those Issues In Advance

38

Utility Tariffs: Sword and Shield

Non-Recurring Charges

39

Utility Tariffs: Sword and Shield

What is A Non-Recurring Charge?

Charges that are designed "to recover customer-specific costs incurred which would otherwise result in monetary loss to the utility or increased rates to other customers to whom no benefits accrue from the service provided or action taken."

807 KAR 5:006, Section 8

40

Utility Tariffs: Sword and Shield

Non-Recurring Charge Issues

- Proof of Costs
- Detailed Cost Info
- Failure to fully document utility costs (Utility cheats itself)
- Example: Case No. 2009-00540 (Tap-On Fee)

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Utility Tariffs: Sword and Shield

Tap-On Fees

- Special Incentives to Connect
- RD/ARC/HUD/AML Coverage of Tap-On Fees

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Utility Tariffs: Sword and Shield

LEAK ADJUSTMENTS

43

Utility Tariffs: Sword and Shield

LEAK ADJUSTMENTS

- Not Required
- Policy Must Be Set Forth in Tariff
- Uniform Treatment

44

Utility Tariffs: Sword and Shield

Commponents of Successful Leak Adjustment Policy

- Written Request from Customer
- Evidence of Leak/Repair
- Time Limits
- Adjust rate/not usage
- Recover cost of Water

45

Utility Tariffs: Sword and Shield

Free Service
to
Fire Departments

46

Utility Tariffs: Sword and Shield

Free Service:

- Water District Officials
- Employees
- Churches/Non-profit groups

47

Utility Tariffs: Sword and Shield

- Emergency Service: Utility may grant free or reduced rate service for the purpose of providing relief in case of flood, epidemic, pestilence, or other calamity
- Notice & Approval of PSC Required
- Emergency Exception – Must notify PSC w/i 5 days of providing the service

48

Utility Tariffs: Sword and Shield

Special Contracts

49

Utility Tariffs: Sword and Shield

Landlord/Tenant/Renter Issues

- Required Landlord Guarantee of Payment
- Increased Deposit Requirement for Renters
- Imputation of Debts to Co-Renters

50

Utility Tariffs: Sword and Shield

DISCONTINUING WATER SERVICE FOR FAILURE TO PAY SEWER SERVICE BILLS

51

Utility Tariffs: Sword and Shield

DISCONTINUING WATER SERVICE - OTHER GROUNDS

52

Utility Tariffs: Sword and Shield

- Failure to Pay Bill for Water Service
  - -Old Bills?
  - -Other Locations?
  - -Garbage Bills?
  - -Insurance?

53

Utility Tariffs: Sword and Shield

UTILITY'S OBLIGATION TO CUSTOMER RE: RATES

54

Utility Tariffs: Sword and Shield

Credit Cards

55

Utility Tariffs: Sword and Shield

Fire Protection Issues

- Disclaimer - Ability to Provide Fire Protection Service
- Fire Sprinkler Service (Rules)
- Limits on Free Water

56

Utility Tariffs: Sword and Shield

Water Shortage Response Plans

57

Utility Tariffs:
Sword and Shield

Water Distribution Main Extension Practices

58

Utility Tariffs:
Sword and Shield

Purchase Water Adjustments

59

Utility Tariffs:
Sword and Shield

Municipal Wholesale Contracts

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Utility Tariffs:
Sword and Shield

CONCLUSION

61

Utility Tariffs:
Sword and Shield

Gerald Wuetcher
Stoll Keenon Ogden PLLC
gerald.wuetcher@skofirm.com
(859) 231-3017

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CONFRONTING THE PROBLEMS PLAGUING KENTUCKY'S WATER UTILITIES

An Investigative Report by the

Kentucky Public Service Commission

November 2019

MESSAGE FROM THE CHAIRMAN

In this report, we share the results of several Commission-initiated investigations into what has become a recurring trend among rural water utilities across the Commonwealth. Reported water loss that exceeds generally accepted industry and regulatory best practices or standards is indicative of much more serious problems at these utilities—problems that pose a threat to the health and economic wellbeing of our citizens.

Per 807 KAR 5:066, Section 6(3) defining water supply measurement for ratemaking purposes, utilities cannot adjust rates for unaccounted-for water loss that exceeds 15 percent of the total water produced and purchased. Therefore, unaccounted-for water loss over 15 percent on an ongoing basis is cause for concern.[1] The Commission's recent investigations focused on water utilities that have the highest percentage of water loss among all the utilities under the Commission's jurisdiction, some in excess of 45 percent while two reported water loss approaching 70 percent. These shocking figures reveal that customers of the water utilities we investigated are paying for large amounts of treated water that never reaches their homes or businesses.

The Commission has repeatedly found that the utilities with chronic excessive water loss consistently struggle over time because their managers and board members lack the experience and training needed to maintain the operational viability of the water systems. Moreover, while Kentucky is a nationally recognized leader with regard to encouraging and promoting regionalization and consolidation of small water utilities, there is a great deal more to be done. Many small water systems lack a sufficient customer base to support their continued operations. Finally, board members and managers find themselves constrained by political and societal pressure when it comes to raising rates or exploring merger, consolidation or sale, even though taking such actions might be the best long-term solution for the water utility and its customers.

The Public Service Commission strives to foster the provision of safe and reliable service at a reasonable price to the customers of the utilities we regulate. The regulation of rates and service go hand in hand. The Commission must safeguard the financial stability of jurisdictional utilities (through the establishment of fair and just rates) in order to ensure utilities' operational competence to provide safe and reliable service to their customers. If a utility is not operating effectively because it is unwilling to set rates at a level sufficient to support daily operations and replace infrastructure as needed, then the utility cannot provide adequate and safe water service to its customers.

We recognize and appreciate the attention the Kentucky General Assembly has given to issues plaguing troubled water systems, most recently through the formation of the Public Water and Wastewater System Infrastructure Task Force. We hope sharing the results of our investigations can serve to further those efforts. Not only are we working to help right the course, but we also seek to bring attention to problems that may ultimately require action beyond the Commission's authority.

If not addressed now, the problems discussed herein will continue to mount along with the costs of remediation – costs that are already well beyond what the customer bases of these rural water utilities can bear. We must work together to find solutions for the challenges these water utilities face. And the time to act is now.

---

[1] *See* 807 KAR 5:066 Section 6(3) at https://apps.legislature.ky.gov/law/kar/807/005/066.pdf.

Acknowledgements

Chairman Michael J. Schmitt, Vice Chairman Robert J. Cicero and Commissioner Talina R. Mathews want to acknowledge all those without whose hard work and dedication this investigation and report would not have been possible. First, the Commissioners would like to thank the water loss investigation team members:

Brittany H. Koenig, Staff Attorney III
W. Andrew Bowker, Staff Attorney III
John B. Park, Staff Attorney III
Nancy Vinsel, Assistant General Counsel
Ariel Miller, Public Utilities Financial Analyst III
John Rogness, Public Utilities Rate Analyst III
Sam H. Reid, Public Utilities Rate Analyst V
Eddie Beavers, Public Utilities Rate Analyst V
David Foster, Public Utilities Financial Analyst III
Erin Donges, Utility Inspector III
Roy Gray, Utility Inspector II
Ruth Rowles, GIS Contractor
Kabrenda L. Warfield, Special Assistant/Paralegal Consultant

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Gwen R. Pinson, Executive Director
Karen L. Wilson, Executive Advisor
John S. Lyons, Deputy Executive Director
John E. Pinney, Acting General Counsel
Mary Beth Purvis, Division Director, Division of Financial Analysis

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The Library Editors, Editors and Filings staff who processed, edited and posted data requests, orders and all other relevant documents, despite the high volume and quick turnaround time required in many instances;
The IT specialists who managed the recording/broadcasting of concurrent hearings and helped the Commission share the report on its website;
The Administrative Staff who set up the hearing rooms and ensured that the needs of the Commissioners, staff and hearing participants were met along with providing assistance throughout the completion of the report;
The Consumer Complaint Investigators who took the calls before, during and after the hearings from customers of the struggling water districts, providing vital information about the ongoing proceedings; and
The Front Desk Staff who greeted visitors and assisted with directing all hearing participants to the correct locations as needed.

Executive Summary

A water utility's inability to reduce excessive water loss over time is a symptom of other significant problems plaguing the utility, such as poor financial management and operational practices. In March of 2019, the Public Service Commission launched an investigation (Case No. 2019-00041) of jurisdictional water utilities that recorded water loss of more than 35 percent in their most recent annual reports.[1] This report provides an overview of characteristics common among water utilities facing these challenges along with recommended solutions.

In addition to the 11 utilities named as parties in Case No. 2019-00041[2], the report also discusses two other water utilities, Martin County Water District and Cannonsburg Water District, which are subjects of ongoing investigations by the Commission.

During the course of its investigations, the Commission identified the following common characteristics among struggling water utilities.

Inadequate Oversight and Management

This overarching problem affects every aspect of water utility management. Untrained board members often miss the signs of financial distress that would prompt a rate adjustment to fund necessary capital investments and conduct daily operations and maintenance. The same is true if the general manager lacks training or experience. Common trends include failure to establish metrics to gauge performance, failure to adopt policies and internal controls to ensure business best practices are followed, and failure to maintain complete and accurate records relating to utility operations.

Poor Financial and Accounting Practices

A troubling practice is when water utilities file for rate increases as part of a loan process to fund capital projects and use those rate increases obtained to avoid filing a comprehensive rate adjustment with the Commission. Often, these capital projects are prepared by consulting engineering firms for approval by the water utility boards. The utilities are vulnerable when an engineering firm completes the technical project specifications along with the financial documentation supporting the loan application and then works with the funding agencies to help secure financing. This process lacks the oversight necessary to ensure project proposals address priority needs at reasonable costs.

Detrimental Extraneous Influences

Finally, board members and managers are misguided by local political and community pressure. They are pressured to keep rates at levels that are unsustainable over time. They refuse to even consider merger, consolidation or sale, and often make decisions that ultimately are counter to their duty to preserve the long-term viability of the utilities for their customers.

Recommendations

New or Enhanced Statutory or Regulatory Requirements

---

[1] *Electronic Investigation into Excessive Water Loss by Kentucky's Jurisdictional Water Utilities*, Case No. 2019-00041.

[2] Big Sandy, Cawood, Estill County, Farmdale, Hyden-Leslie, Milburn, Morgan County, Rattlesnake Ridge, Southern Water & Sewer, and West Carroll Water Districts along with North Manchester Water Association.

- **Establish Minimum Qualifications for Water Utility General Managers.** Given that ineffective managerial oversight leads to a host of financial and operational problems, the Commission recommends the establishment of formal, professional requirements for the position of water district/association general manager. Water utility general managers should possess the technical knowledge needed to ensure compliance with federal and state water quality standards, as well as knowledge of business and financial processes and internal controls needed to run the day-to-day operations.
- **Employment of a Staff Engineer.** Each water district or association, individually or jointly in cooperation with other similarly situated districts or associations, should employ a qualified engineer on staff. This requirement could be met if the utility's general manager holds a degree in engineering. A resident engineer could oversee infrastructure maintenance and replacement of the system as a whole while also identifying capital projects (and associated funding sources) and overseeing construction. A resident engineer could be held accountable for ensuring the true needs of the water utility are addressed.
- **Development of a Qualified Infrastructure Improvement Plan.** Each water district and association should be required to develop a comprehensive Qualified Infrastructure Improvement Plan to be filed with and approved by the Commission. Any changes to the Plan also must be filed with and approved by the Commission
- **Qualified Infrastructure Improvement Surcharge or Rider.** The Commission recommends formal codification of its authority to establish a Qualified Infrastructure Improvement Surcharge or Rider, the proceeds of which would be devoted exclusively to infrastructure improvement and replacement.
- **Authority to Effect a Merger or Consolidation.** While Kentucky is ahead of the curve when it comes to regionalization on a national level, there is more work to be done. Barriers to merger or consolidation must be addressed as consolidation among smaller utilities can be an effective tool. Ultimately, authority may be needed to effect a merger, consolidation or other combination of utilities located in the same geographic area.

Augmented Regulatory Oversight

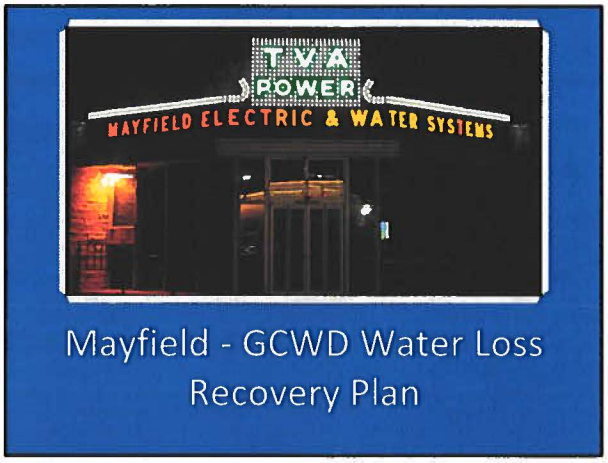
- **Establish Position of Infrastructure Engineer.** The Commission should establish the staff position of Infrastructure Engineer to review, approve and oversee implementation of the Qualified Infrastructure Improvement Plans filed by water districts and associations.
- **Create an Infrastructure Planning Committee.** The Commission, together with the Division of Water and the Kentucky Infrastructure Authority, should establish a joint committee to promote, design and develop infrastructure planning by water districts and associations as well as to review and enforce compliance with their respective Qualified Infrastructure Improvement Plans.
- **Consider Creation of Regional Water Boards.** Regional water boards could oversee the management of regional and local water supply, infrastructure and resources. Such a management structure could reduce duplication of services, achieve economies of scale in purchasing, and permit the employment of a professionally qualified general manager at a salary commensurate with the responsibilities of the office

Improved Oversight and Management of Water Utilities

- **Eliminate Partisan Political Pressure.** Water district oversight and management should be separated from the authority of the county judge executive and fiscal court to reduce partisan political influence.

- **Modify Annual Audit Requirements.** All annual audits of water utilities should include a discussion and critical analysis of internal controls, operating procedures and perceived or potential deficiencies in management practices. Water associations also should be required to undergo annual audits.
- **Require Periodic Rate and Operations Review.** Every water district and association should be subjected to a rate and operations review every three (3) years to ensure that revenue is adequate to properly operate the system over the long term. Rate increases recommended by Commission staff should be required to be implemented in full by the utility.

The Commission welcomes discussion on the issues and recommendations set forth in this report. The Commission is committed to working with all relevant stakeholders to improve water quality and service for all Kentuckians.



Mayfield - GCWD Water Loss Recovery Plan

1

MARTY IVY C.P.E.

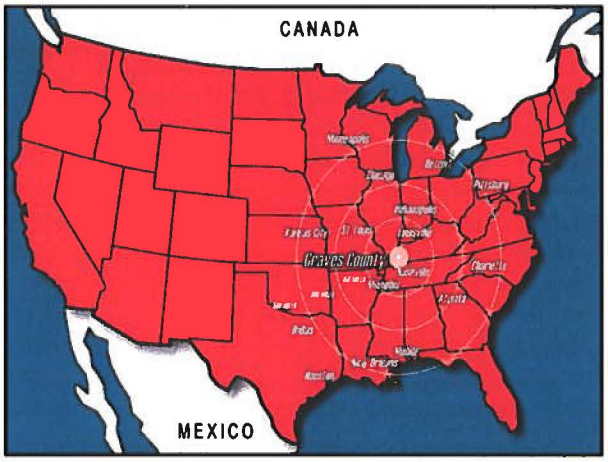
29 Years in Industry

2001 – Current General Superintendent

1998-2001 – Electrical Operation Manager

1990 -1998 – Industrial Electrician / Electrical Inspector

2



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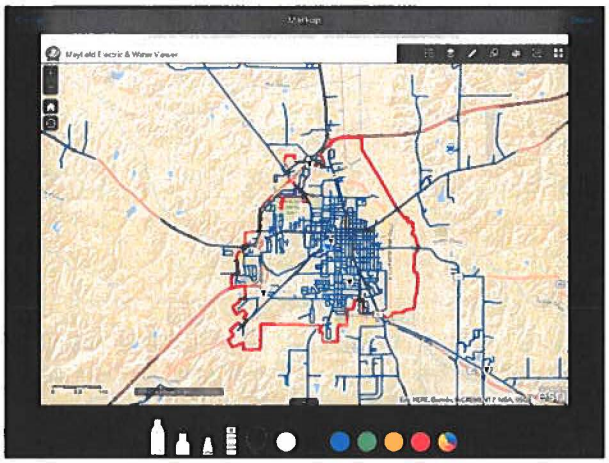

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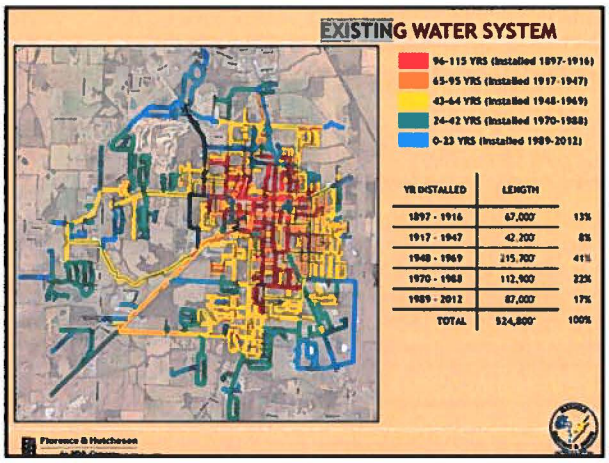
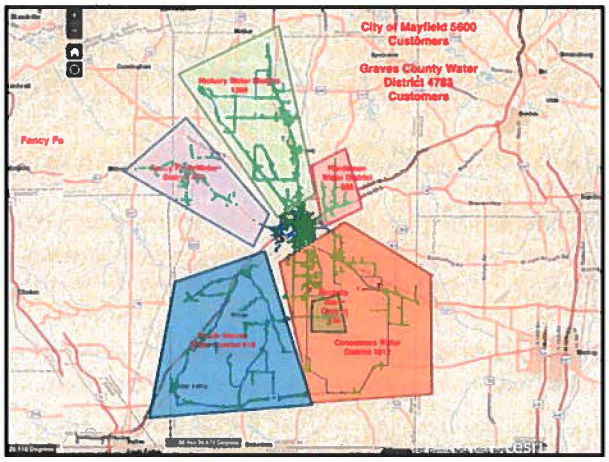

EXISTING WATER SYSTEM
96-115 YRS (Installed 1897-1916)
65-95 YRS (Installed 1917-1947)
43-64 YRS (Installed 1948-1969)
24-42 YRS (Installed 1970-1988)
0-23 YRS (Installed 1989-2012)
YR INSTALLED
LENGTH
1897 - 1916 67,000' 13%
1917 - 1947 42,200' 8%
1948 - 1969 215,700' 41%
1970 - 1988 112,900' 22%
1989 - 2012 87,000' 17%
TOTAL 524,800' 100%
Florence & Hutcheson

5


City of Mayfield 5600 Customers
Graves County Water District 4783 Customers
Fancy Fa

6

Things that we will be discussing in this presentation

- What is water loss?
- How do we find it?
- How much will it potentially save Mayfield Electric & Water?
- How much will it potentially save Graves County Water District?

7

What is water loss?

8

Water Loss Facts

- We have always had high water loss.
- The range is 25-30% of total water produced.
- We never ignore a leak.
- We have just never actively searched for leaks.

9

After Months of Discussions, This is our plan:

- 1. Figure out locations to install DMA Sites to help identify troubled areas utilizing our Meter Data Management System.
- 2. Once trouble areas are identified, use Acoustic Leak Noise Loggers to identify smaller areas.
- 3. Deploy Hand-held listening Device to pinpoint the leak location.

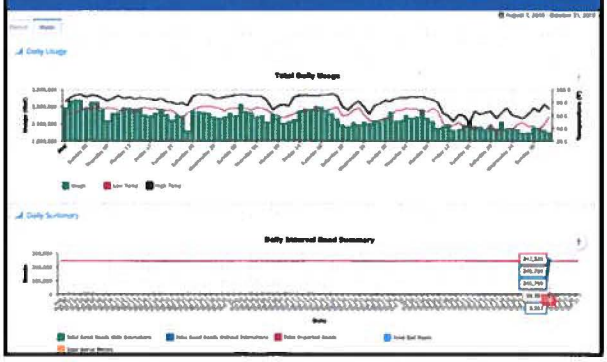
10

Meter Data Management

- The power of Virtual Meters/Locations
- You can create a virtual meter/location with as many meters of your choice.
- You can select them by billing cycle or read route.

11

Water Dashboard



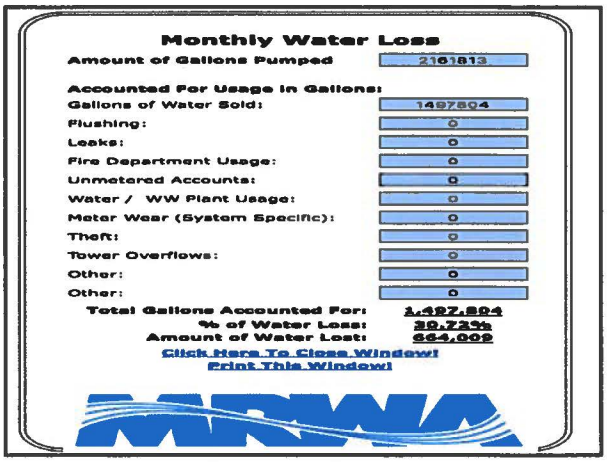
12


View Virtual Locations - Water

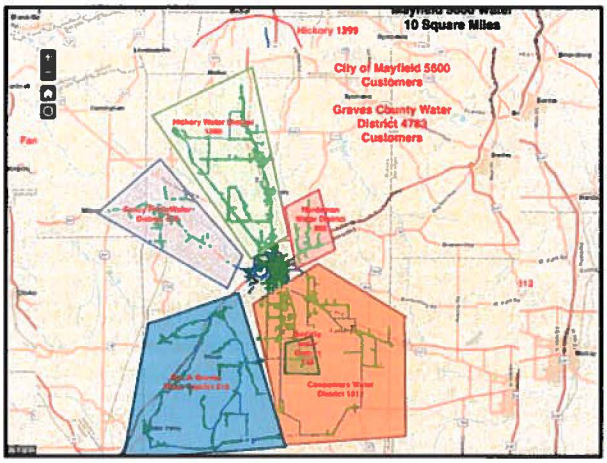
13


Location Hardeman - Water

14

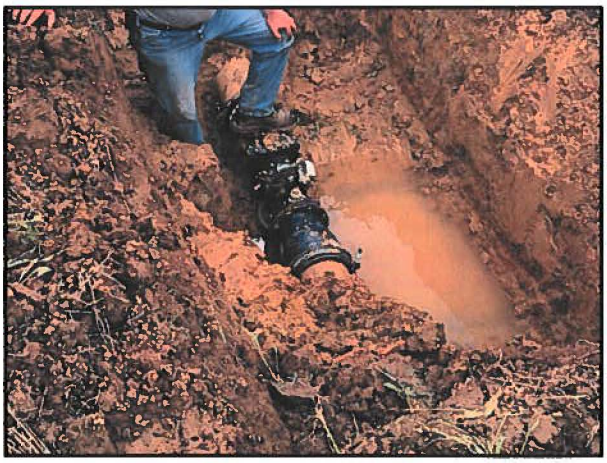

Monthly Water Loss
Amount of Gallons Pumped 2161813
Accounted For Usage in Gallons:
Gallons of Water Sold: 1497804
Flushing: 0
Leaks: 0
Fire Department Usage: 0
Unmetered Accounts: 0
Water / WW Plant Usage: 0
Meter Wear (System Specific): 0
Theft: 0
Tower Overflows: 0
Other: 0
Other: 0
Total Gallons Accounted For: 1,497,804
% of Water Loss: 30.73%
Amount of Water Lost: 664,009
Click Here To Close Window!
Print This Window!
NRWA

15


10 Square Miles
Hickory 1399
City of Mayfield 5600 Customers
Graves County Water District 4783 Customers

16

17



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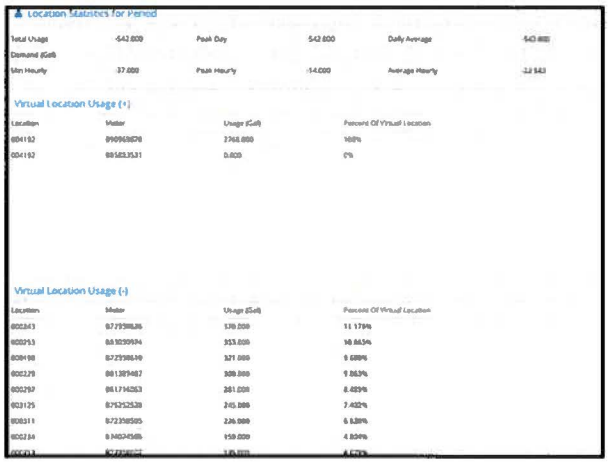
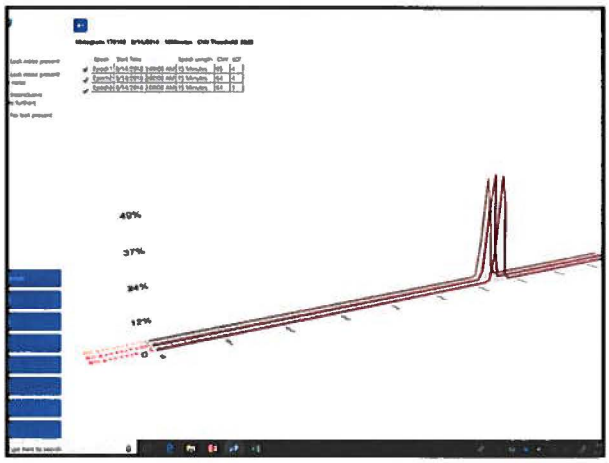

Location Statistics for Period
Total Usage
542.000
Peak Day
542.000
Daily Average
Demand (GAL)
Min Hourly
37.000
Peak Hourly
54.000
Average Hourly
Virtual Location Usage (+)
Location
Meter
Usage (Gal)
Percent Of Virtual Location
004192
004192
Virtual Location Usage (-)
Location
Meter
Usage (Gal)
Percent Of Virtual Location

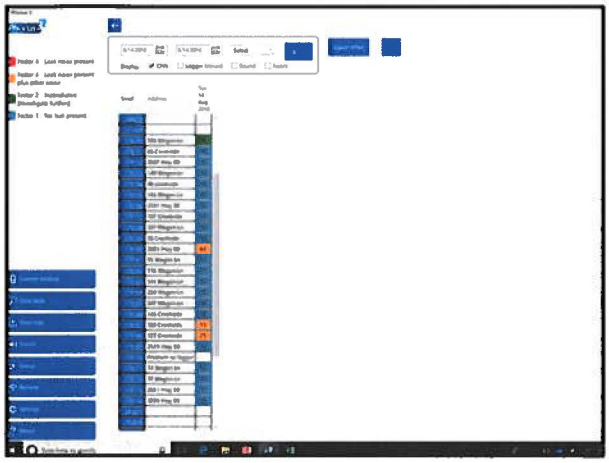
19


Wireless noise logger for leak detection
Phocus3 is an advanced leak noise logger designed for detecting and localising water leakage. Wireless communications allows both 'lift and shift' or permanent distribution network operation. On site leakage results may be obtained via the Communications Module with detailed analysis carried out on the host software.
Features
One, two, three and nine channel models
Rapid overnight identification of leaks
Two models available:
- local lift contact (lift + shift operation)
- radio contact (greater range for permanent installation)
Small size
Histogram display of noise data
Phocus noise algorithm to reduce incidence of undetected leaks
GPS coordinates stored in logger

20


49%
37%
24%
12%

21



22


Flexible technology for acoustic leak location
Dynamic Listen Control
System components

23

24

- While this is happening on the rural Systems
- We are also moving Acoustic Loggers within the City Limits
- Creating a massive log of information to be handled and sorted.

25

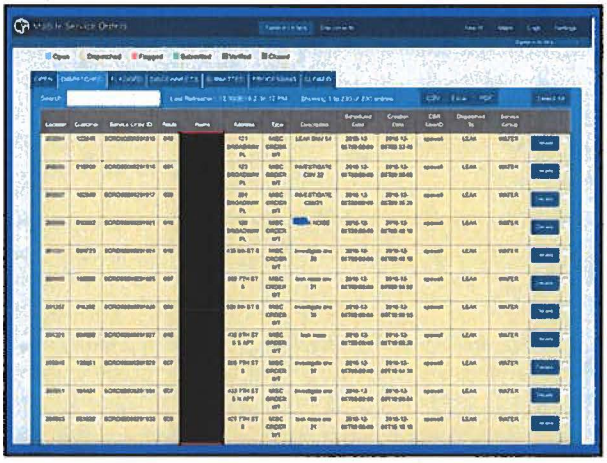
First Week's Findings

- We had more investigations than we ever imagined
- We had extreme success at pin pointing leaks
- With data flowing in - we had no way to manage and preserve it for comparing against future investigations.
- Water foreman and crew was getting behind

26

We also found that we needed a way to handle the massive amount of tickets which was being generated – So we ask CSA to incorporate maps within our Mobile Service Order System

27



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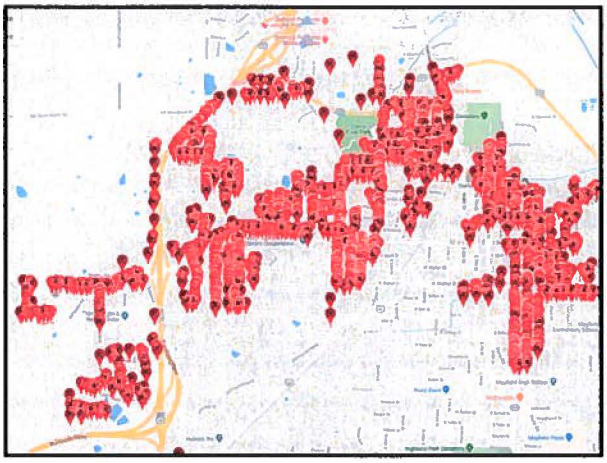

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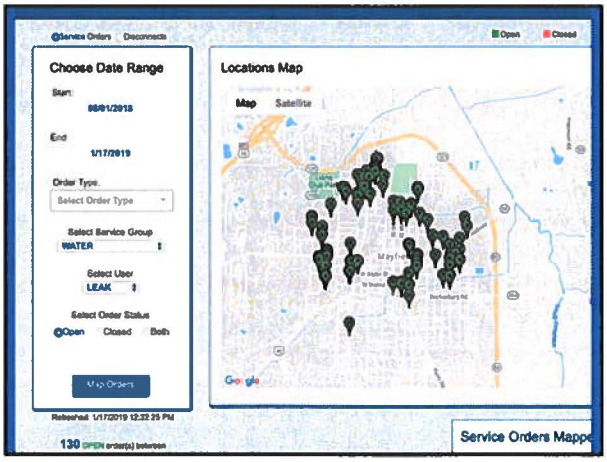
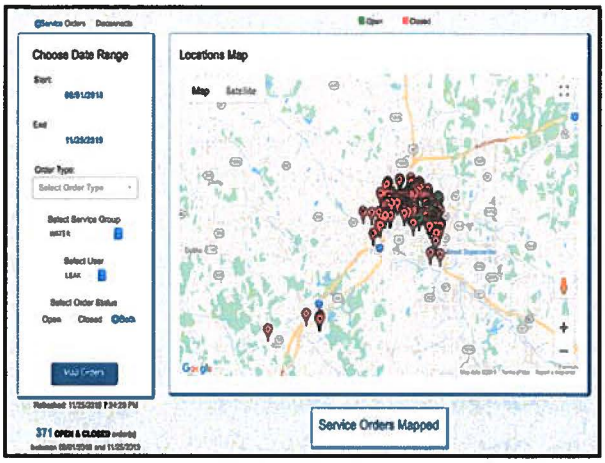

Choose Date Range
Start:
End
1/17/2019
Order Type
Select Order Type
Select Service Group
WATER
Select User
LEAK
Select Order Status
Open
Closed
Both
Locations Map
Map
Satellite
Service Orders Mapp

30



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How much will it potentially save us?

- If we look at our chart it looks like it could potentially save us from where we are now an additional $20,000 per month.
- Real numbers look like this.
  - Treatment chemicals
  - Electricity
  - Operator time
  - Pump maintenance

32

Mayfield by the Numbers

- FY 19 - Pumped & Treated 473,142,350 Gallons
- FY 19 - Reported Water Loss – 151,798,650 Gallons
- FY 19 – 23.98% Loss
- 151,798,650 / 1000 = 151,798
- **FY 20 Goal - <15% Loss**

33

GCWD by the Numbers

- Oct 19 - Pumped & Treated 32,090,860 Gallons
- Oct 19 - Reported Water Loss – 9,501,960 Gallons
- Oct 19 – 30% Loss
- 9,501,960 / 1000 = 9,501.96
- **FY 20 Goal - <15% Loss**

34

Potential Capitol Funding

- **It takes $4,598.94 month for 20 years to finance a $1M dollar project @ 1.0 % Interest**
- **Our Savings will cover $2M in Capitol Projects**

35

Lessons Learned From Electric Department

- Hydro Excavation
- Jan. 27th 2009 - ICE STORM
- One of the most important pieces of Equipment in our fleet for all departments
- $410K purchase tag

36

37

38

Vac-truck facts

- 2 men twice the work of a normal crew with a backhoe and no damages to existing facilities
- Time/Labor = $$ Saved
- Mayfield Currently 2019 (2) – In 2020 (3)

39

40

Marty Ivy C.P.E.
General Superintendent
Mayfield Electric & Water Systems

mivy@mewsbb.com
www. mayfieldews.com

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ALL YOU EVER WANTED TO KNOW ABOUT DEPRECIATION .... AND THEN SOME

Kentucky Rural Water Association – 2020 Management Conference

Katelyn Brown
Stoll Keenon Ogden PLLC
katelyn.brown@skofirm.com
(502) 568-5711

1

ORDER OF PRESENTATION

- What is Depreciation?
- What Does it Mean to "Fully Fund" Depreciation?
- Consequences of Not Fully Funding Depreciation
- Reading Financial Statements

2

ORDER OF PRESENTATION

- PSC Concerns with Depreciation
- Analysis of Various WDs and Cities
- How to Increase or Improve Depreciation Funding

3

WHAT IS DEPRECIATION?

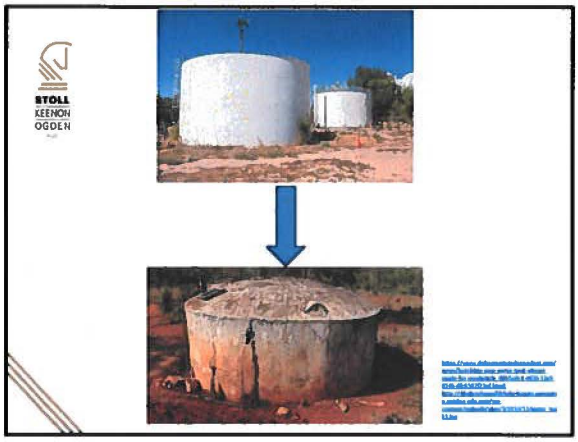
4

Definition of Depreciation

- The process of allocating the cost of a utility plant asset to expense over its service (useful) life in a rational and systematic manner
- Think of initial capital investment as a prepaid expense with a portion of that expense systematically recorded as Depreciation Expense in subsequent accounting periods

5

6



7

Why is Depreciation Important?

- Although non-cash, depreciation expense creates cash flow in regulated entities (like WDs & WAs) and municipal utilities
- Informs management, creditors, investors, and others of the utility's cost of operating
- Helps to more accurately match revenues with expenses
- Who determines your utility's depreciation?

8

Typical Ways that Useful Lives are Determined

- Rural Development (RD)
- Kentucky Infrastructure Authority (KIA)
- CPA
- Engineer
- PSC (NARUC Guidelines)
- Board

9

WHAT DOES IT MEAN TO "FULLY FUND" DEPRECIATION?

10

"Fully Funding" Depreciation means....

- Setting aside cash equivalent to the utility's annual depreciation expense in order to purchase replacement assets in the future
- Set aside in a safe investment (CD or money market account)

11

CONSEQUENCES OF NOT FULLY FUNDING DEPRECIATION

12

Not Fully Funding Depreciation will....

- Cause the utility to have to borrow $$ to purchase the replacement asset
- Cause the utility to seek outside funding (added interest)
- Cause the utility to use funds budgeted for other purposes

13

READING FINANCIAL STATEMENTS

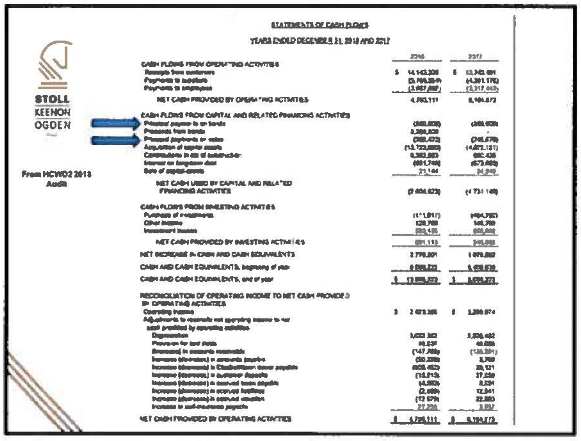
14

From HCWD2 2018 Audit

STATEMENTS OF REVENUES, EXPENSES AND CHANGES IN FUND NET POSITION
YEARS ENDED DECEMBER 31, 2018 AND 2017

	2018	2017
OPERATING REVENUES		
Water sales	[illegible]	[illegible]
Other operating income	[illegible]	[illegible]
TOTAL OPERATING REVENUES	[illegible]	[illegible]
OPERATING EXPENSES		
Power purchased	[illegible]	[illegible]
Purchased water	[illegible]	[illegible]
Pumping and treatment labor	[illegible]	[illegible]
Purification supplies and expense	[illegible]	[illegible]
Transmission and distribution labor	[illegible]	[illegible]
Transmission and distribution supplies and expense	[illegible]	[illegible]
Transmission and distribution maintenance and repairs	[illegible]	[illegible]
Equipment rental	[illegible]	[illegible]
Transportation expense	[illegible]	[illegible]
Water treatment maintenance and repairs	[illegible]	[illegible]
General and administrative expenses	[illegible]	[illegible]
Depreciation	[illegible]	[illegible]
TOTAL OPERATING EXPENSES	[illegible]	[illegible]
OPERATING INCOME	[illegible]	[illegible]
NON-OPERATING REVENUES (EXPENSES)		
Investment income	[illegible]	[illegible]
Other income	[illegible]	[illegible]
Gain on disposal of capital assets	[illegible]	[illegible]
Bond issuance costs	[illegible]	-
Interest expense on long-term debt	[illegible]	[illegible]
Amortization of bond items and utility acquisition	[illegible]	[illegible]
TOTAL NON-OPERATING REVENUES (EXPENSES)	[illegible]	[illegible]
CAPITAL CONTRIBUTIONS	[illegible]	[illegible]
CHANGE IN NET POSITION	[illegible]	[illegible]
NET POSITION, beginning of year	[illegible]	[illegible]
NET POSITION, end of year	[illegible]	[illegible]

15



16

Financial Statements

- Depreciation Expense is an Income Statement account
  - But Income Statement only accounts for Interest Expense, does not take into account the principal of loans/bonds that must be paid
- Accumulated Depreciation is a Balance Sheet account
  - Shown on Statement of Net Position
- Statement of Cash Flows
  - Reflects principal payments

17

PSC CONCERNS WITH DEPRECIATION

18

The PSC is concerned with:

- Long-term financial health of utilities
- Utility's aging infrastructure
- Frequency of rate cases

19

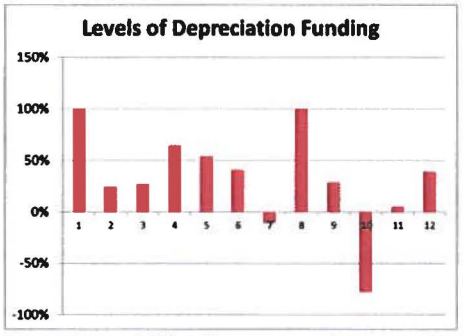
ANALYSIS OF VARIOUS WATER DISTRICTS AND CITIES

20

Analyzed 12 WDs and Cities

- Labeled utilities #s 1-12 for anonymity
- Based on 2018 numbers
- Looked at:
  - Level of Depreciation Funding (% and $)
  - # of customers
  - Depreciation Expense compared to other operating expenses
  - $ of Debt Service Expense (P & I) and Debt Service Coverage

21



High – Utility 1 & 8 at 100%
Median – 34.21%
Low – Utility 10 at -77.64%

22

STOLL KEENON OGDEN

Utility	Depreciation Expense
1	$ 941,370
2	$ 390,702
3	$ 576,885
4	$ 404,238
5	$ 272,221
6	$ 309,108
7	$ 923,626
8	$ 2,935,452
9	$ 151,146
10	$ 404,363
11	$ 228,085
12	$ 217,039

High – Utility 8 at $2,935,452

Median - $397,470

Low – Utility 9 at $151,146

23

STOLL KEENON OGDEN

Utility	Customer Count
1	8,285
2	3,436
3	4,625
4	3,391
5	5,158
6	7,348
7	6,855
8	26,878
9	3,517
10	3,785
11	2,663
12	1,180

High – Utility 8 at 26,878

Median – 4,205

Low – Utility 12 at 1,180

24

Depreciation Expense Compared to Other Operating Expenses

- For 9 of 12 of the WDs and cities analyzed, Depreciation Expense was either the highest operating expense or 2nd highest operating expense behind Water Purchased

25

Debt Service Expense vs. Debt Service Coverage

- Bond Ordinance or Bond Authorizing Resolution dictates the DSC
- Different funding agencies have different DSC requirements
  - KIA: 1.1
  - RD: 1.2
  - Some cities: 1.25 or higher
  - LWC: 1.5

26

Utility	Debt Service Expense	Debt Service Coverage
1	$ 1,312,780	$ 262,556
2	$ 189,317	$ 37,863
3	$ 331,621	$ 66,324
4	$ 213,469	$ 42,694
5	no debt	no debt
6	no debt	no debt
7	$ 1,129,780	$ 225,956
8	$ 1,674,372	$ 334,874
9	$ 70,701	$ 14,140
10	$ 314,767	$ 62,953
11	$ 78,531	$ 15,706
12	$ 95,231	$ 19,046

Debt Service Coverage
High – Utility 8 at $334,874

Median - $40,279

Low – Utility 9 at $14,140

27

How to Increase or Improve Depreciation Funding

- Create a separate fund in which to deposit depreciation expense for future replacement of utility assets
  - FDIC concerns
- Evaluate whether or not you need to request a rate increase
- Discuss useful life of assets with the person/entity who decides your annual Depreciation Expense

28

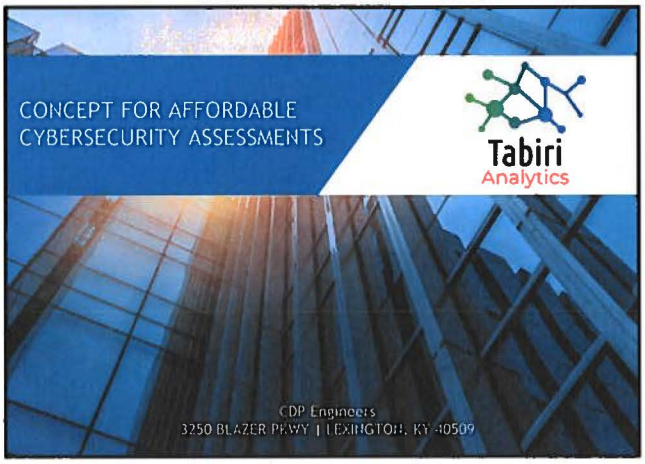
CONCLUSION/SUMMARY

- Evaluate your own water utility's depreciation practices
- Determine whether or not current rates are sufficient
- Board Commissioners/Members must be good stewards

29

QUESTIONS?

30



1

ABSTRACT

The America's Water Infrastructure Act (AWIA) requires each community water system to conduct and certify a risk and resilience assessment. This includes an assessment of the security of any electronic and computer systems utilized by the community water system. Many rural communities across the Commonwealth face a shortage of cybersecurity experts required to conduct effective assessments of these computer systems. This presentation presents an affordable approach to remotely conduct security assessments using a combination of low-cost network sensors, open-source software agents and cloud-based big data analytics.

2

WHO ARE WE

David Carter

CEO & Co-Founder
CDP - MapSync

Professional Engineer (PE) and a Professional Land Surveyor (PLS) with over 37 years of experience in the areas of infrastructure design and planning, surveying, GIS and geospatial data management.

Primary architect of GeoSync Cloud asset management and mapping software products

Actively engaged in visioning and developing data strategies for managing, utilizing and integrating LiDAR, DRONE, and GIS data.

Edwin Kairu

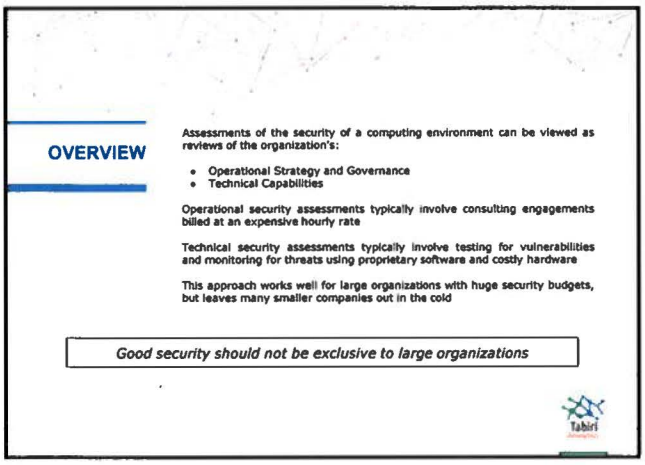
Co-Founder
Tabiri Analytics, Inc.

Instructor at Carnegie Mellon University (CMU) responsible for teaching courses and labs on multiple Information Security topics.

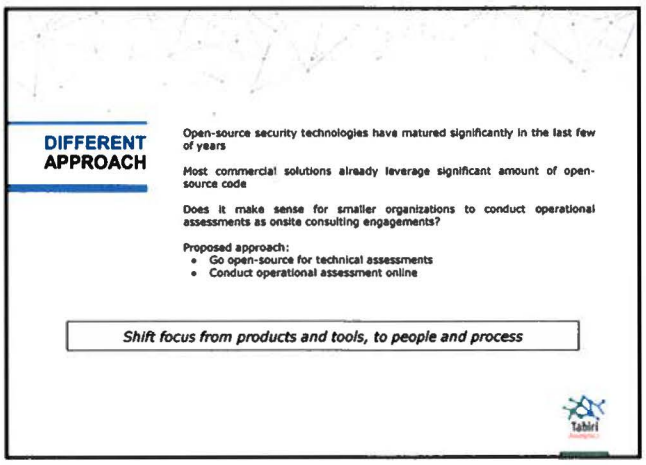
12 years experience working in Information Security, including security assessment, security engineering and security advisory roles.

Passionate about creative, open, scalable solutions that bring security within reach of more organizations.

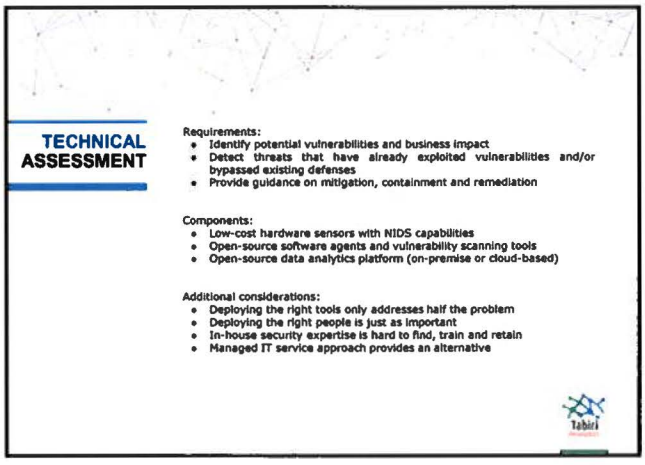
3


OVERVIEW
Assessments of the security of a computing environment can be viewed as reviews of the organization's:
Operational Strategy and Governance
Technical Capabilities
Operational security assessments typically involve consulting engagements billed at an expensive hourly rate
Technical security assessments typically involve testing for vulnerabilities and monitoring for threats using proprietary software and costly hardware
This approach works well for large organizations with huge security budgets, but leaves many smaller companies out in the cold
Good security should not be exclusive to large organizations
Tahiri

4


DIFFERENT APPROACH
Open-source security technologies have matured significantly in the last few of years
Most commercial solutions already leverage significant amount of open-source code
Does it make sense for smaller organizations to conduct operational assessments as onsite consulting engagements?
Proposed approach:
Go open-source for technical assessments
Conduct operational assessment online
Shift focus from products and tools, to people and process
Tahiri

5

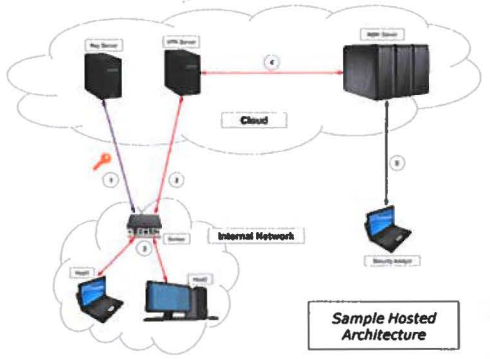

TECHNICAL ASSESSMENT
Requirements:
Identify potential vulnerabilities and business impact
Detect threats that have already exploited vulnerabilities and/or bypassed existing defenses
Provide guidance on mitigation, containment and remediation
Components:
Low-cost hardware sensors with NIDS capabilities
Open-source software agents and vulnerability scanning tools
Open-source data analytics platform (on-premise or cloud-based)
Additional considerations:
Deploying the right tools only addresses half the problem
Deploying the right people is just as important
In-house security expertise is hard to find, train and retain
Managed IT service approach provides an alternative
Tahiri

6

Technical Assessment

PHASE 1: SENSORS	PHASE 2: AGENTS	PHASE 3: REPORTING
Deploy network sensors at every network switch at each company site. The sensors monitor both external traffic from the Internet and internal traffic within the company. Virtual sensors can be deployed on internal or hosted cloud platforms to monitor traffic on virtual systems.	Deploy open-source software agents on every company server, workstation or laptop. The agents collect system and application security logs, then send them to the sensor for processing. Supported operating systems include Windows, Linux and macOS.	Identify vulnerabilities, system misconfigurations and evidence of potential compromise. Prepare detailed vulnerability and incident reports. Provide recommendations on how to mitigate identified threats.

7



Sample Hosted Architecture

8

AVAILABLE TECHNOLOGIES

Network security monitoring:
- **Security Onion** — free and open source Linux distribution for intrusion detection, enterprise security monitoring, and log management.

Endpoint security monitoring:
- **Wazuh** — free, open source and enterprise-ready security monitoring solution for threat detection, integrity monitoring, incident response and compliance.

Data analytics and visualization:
- **Elastic Stack** — free, open technology stack that can take data from any source, in any format, then search, analyze, and visualize it in real time.

Vulnerability assessment:
- **GSM Community Edition** — free virtual appliance with tens of thousands of network vulnerability tests that are updated daily with the newest threat detection routines.

Penetration testing:
- **Kali Linux** — free and open modular penetration testing platform that can be deployed as a virtual appliance.

9

USE CASES

Assess the security of computer systems utilized by the community water system for common **NIST 800-53** security controls, such as:

- **Access Control** — Validate who is accessing what on your network. With employees, contractors and partners accessing your network resources, assess for unusual access to sensitive company systems and data.
- **Audit & Accountability** — Provide time-correlated audit records in a standardized format. These records come from the disparate logs collected from your various systems and can assist in internal investigations.
- **Configuration Management** — Validate if certain configurations on your systems conform to industry standard. Assessment can also provide an inventory of systems communicating on your network.
- **Security Assessment & Authorization** — Validate system interconnections within your network. Provide assessment of these interconnections and the advise on the security risks they pose.
- **System & Communications Protection** — Validate transmission confidentiality and integrity of sensitive data. Ensure communications channels are properly secured and sensitive data is not inadvertently leaking to unauthorized parties.

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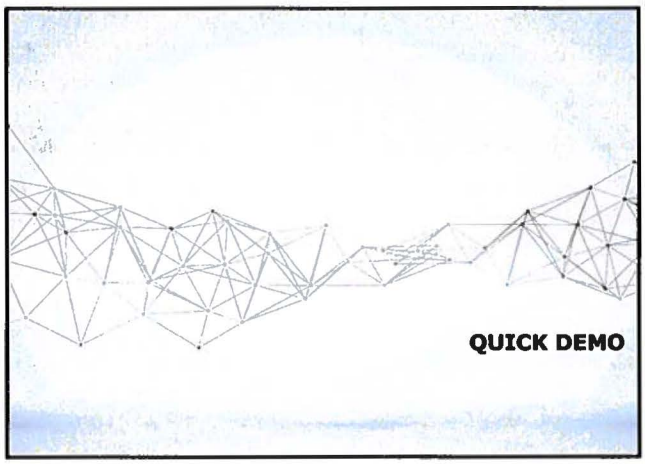


11

OPERATIONAL ASSESSMENT

Requirements:
- Review of existing Information Security policies and procedures
- Determine whether they align with business objectives to manage risk and increase the resiliency of computing systems
- Aligned with security industry frameworks such as NIST 800-53 and ISO/IEC 27001

Components:
- Questionnaire that assess existing capabilities in critical Information Security areas
- Qualitative score on a scale of 1-5 as a measure of level of maturity in each critical Information Security area

Additional considerations:
- Can be conducted as a self-paced online questionnaire
- Deficiencies in operational security eventually manifest as security gaps at the technical level

12

Operational Assessment

PHASE 1: ASSESS | PHASE 2: VALIDATE | PHASE 3: REPORTING

Questionnaire designed to identify your organization's capabilities in critical security areas, such as:

- Governance
- Risk Management
- Data Protection
- Access Management
- Security Architecture
- Incident Response

Benchmark your organization's security capabilities against industry standards

Adjust initial ratings based on actual data from the technical assessment.

Prepare detailed gap assessment with a overall rating of existing security capabilities

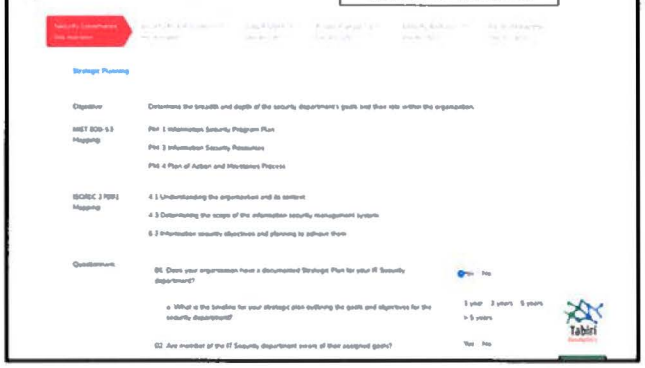
Provide recommendations on how to close identified gaps and enhance overall security hygiene.

Option to reassess as recommendations are implemented

Tabiri

13

Operational Assessment



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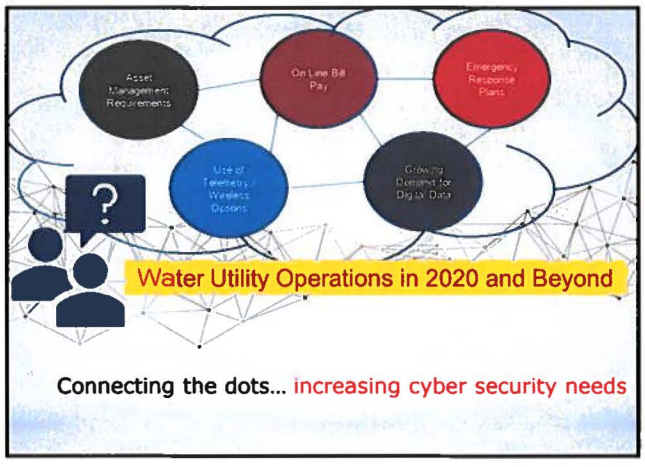

15

Cyber Security Assessment Process

- IT Questionnaire / Inventory
- Implementation / Installation
- System monitoring and reporting
- Interpreting the results
- Overall Impact on daily operations

Lessons learned, findings and actions

- Computers and Networks
- Vulnerabilities and Risks
- IT Operations and Policies
- Low hanging fruit
- Longer Term Action Plan

Case Study 1 – **CDP-MapSync** (Small Business)

16

Cyber Security Assessment Process

- IT Questionnaire / Inventory
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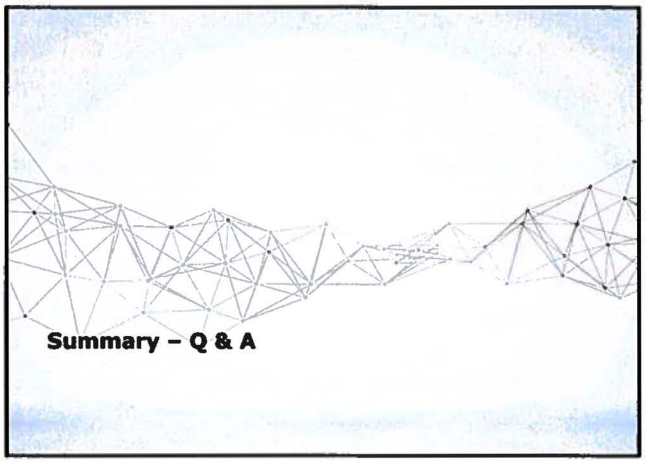
Lessons learned, findings and actions

- Computers and Networks
- Vulnerabilities and Risks
- IT Operations and Policies
- Low hanging fruit
- Longer Term Action Plan

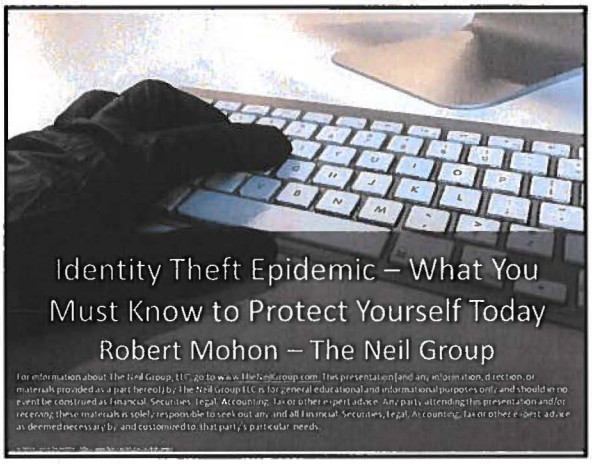
Case Study 2 – Rural Water Utility

17

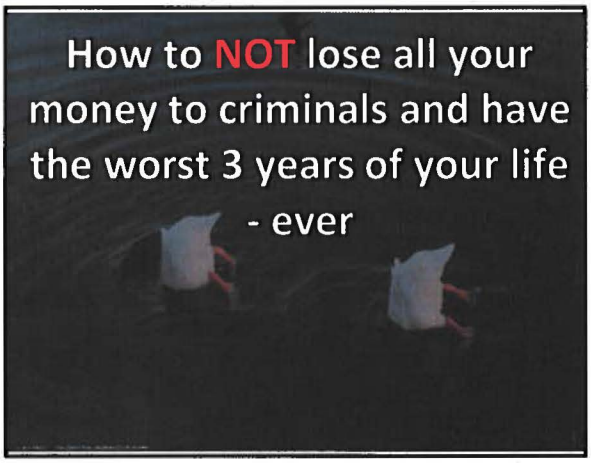


Summary – Q & A

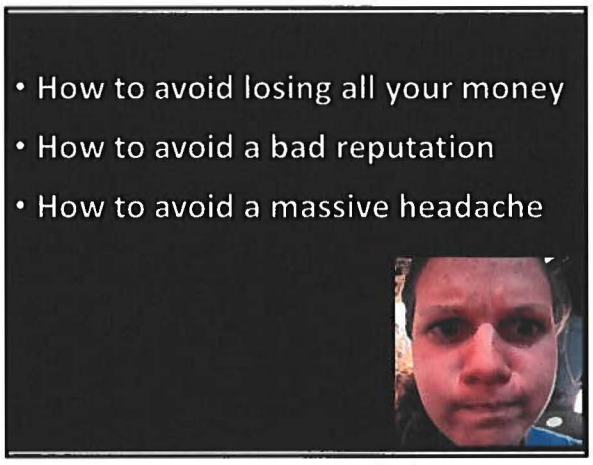
18


Identity Theft Epidemic – What You Must Know to Protect Yourself Today
Robert Mohon – The Neil Group
For information about The Neil Group, LLC, go to www.theneilgroup.com. This presentation [and any information, direction, or materials provided as a part thereof] by The Neil Group LLC is for general educational and informational purposes only, and should in no event be construed as Financial, Securities, Legal, Accounting, Tax or other expert advice. Any party attending this presentation and/or receiving these materials is solely responsible to seek out any, and all Financial, Securities, Legal, Accounting, Tax or other expert advice as deemed necessary by and customized to that party's particular needs.

1


How to NOT lose all your money to criminals and have the worst 3 years of your life - ever

2


• How to avoid losing all your money
• How to avoid a bad reputation
• How to avoid a massive headache

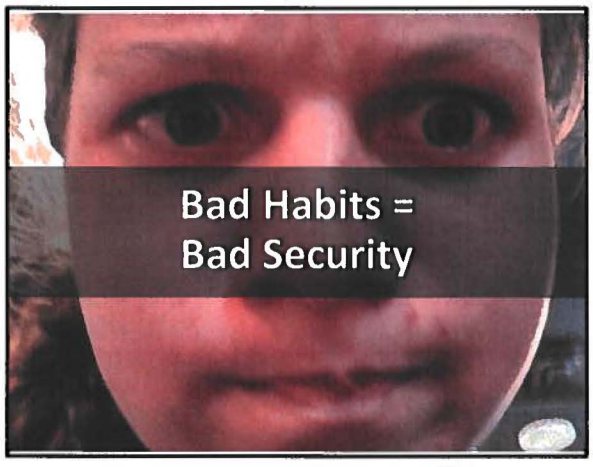
3


No One Will Hurt Us
We are safe in America

4


Most Hacks
Can Be Avoided

5


Bad Habits =
Bad Security

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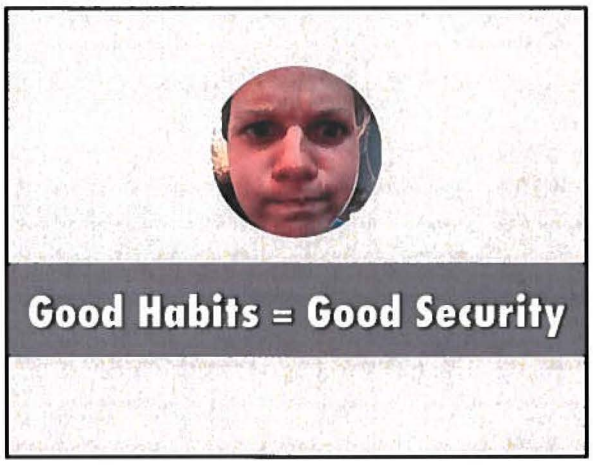
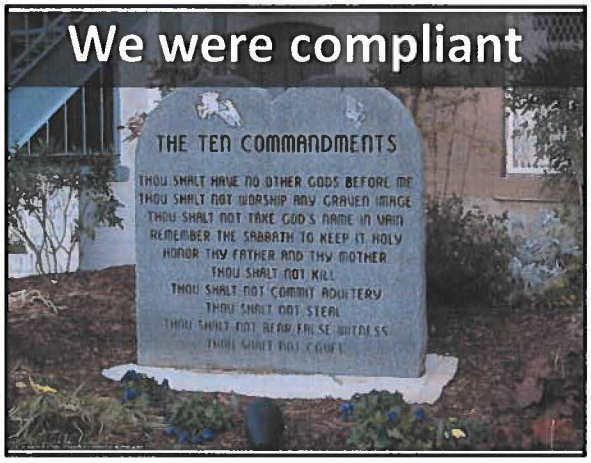

Good Habits = Good Security

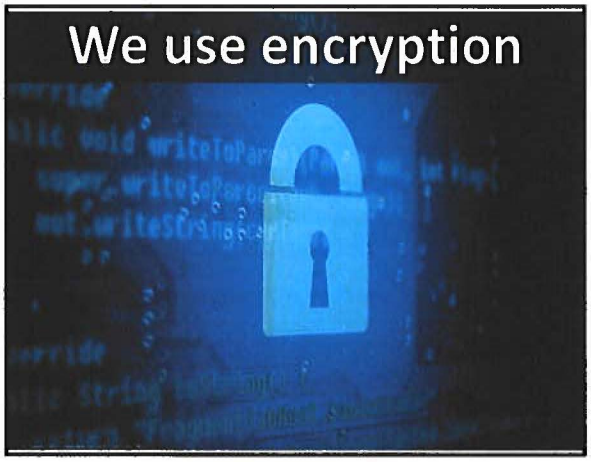
8


Tell me about your security strategy

9


We were compliant
THE TEN COMMANDMENTS
THOU SHALT HAVE NO OTHER GODS BEFORE ME
THOU SHALT NOT WORSHIP ANY GRAVEN IMAGE
THOU SHALT NOT TAKE GOD'S NAME IN VAIN
REMEMBER THE SABBATH TO KEEP IT HOLY
HONOR THY FATHER AND THY MOTHER
THOU SHALT NOT KILL
THOU SHALT NOT COMMIT ADULTERY
THOU SHALT NOT STEAL

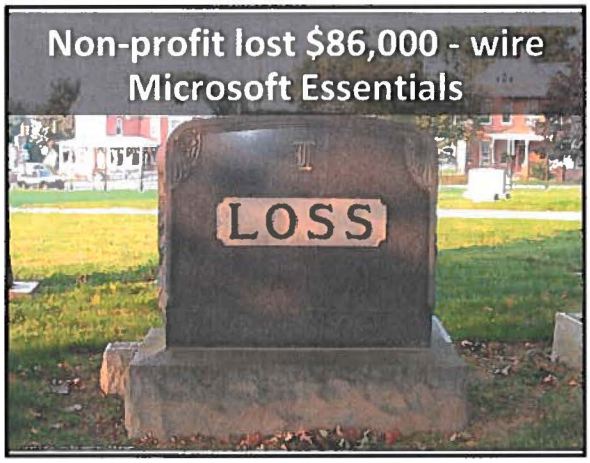
10


We use encryption

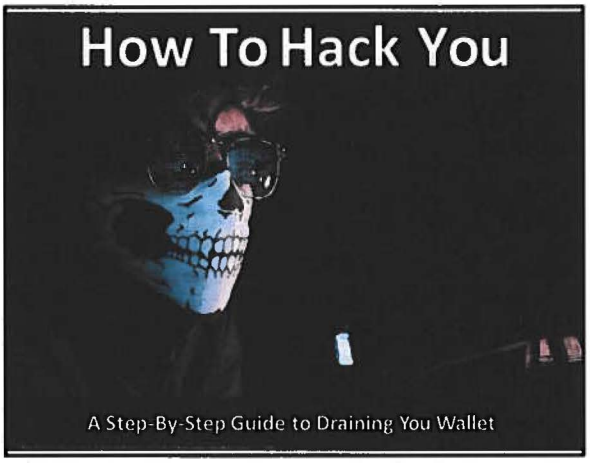
11


Social Engineering
Info you gave out

12


Non-profit lost $86,000 - wire Microsoft Essentials
LOSS

13


How To Hack You
A Step-By-Step Guide to Draining You Wallet

14


1. You are a target

15

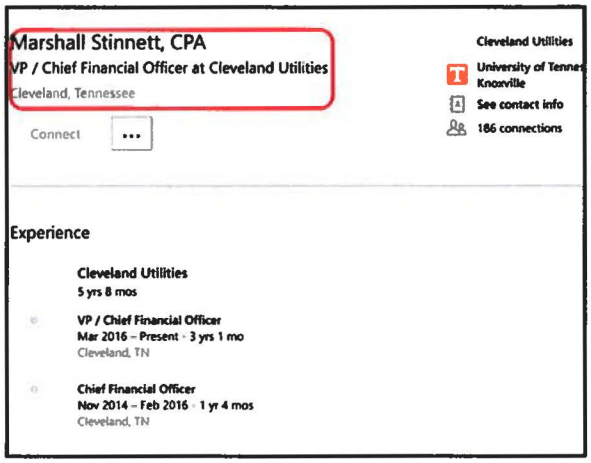
2. Start a file on you

16

17

How do they find you?

18


Marshall Stinnett, CPA
VP / Chief Financial Officer at Cleveland Utilities
Cleveland, Tennessee
Connect
Cleveland Utilities
See contact info
186 connections
Experience
Cleveland Utilities
5 yrs 8 mos
VP / Chief Financial Officer
Mar 2016 – Present · 3 yrs 1 mo
Cleveland, TN
Chief Financial Officer
Nov 2014 – Feb 2016 · 1 yr 4 mos
Cleveland, TN

19


LinkedIn Member
Safety Manager at Cleveland Utilities
Chattanooga, Tennessee Area
Bart Borden · 3rd
Electric Division VP at Cleveland Utilities
Chattanooga, Tennessee Area
Paul Harvey · 3rd
GIS Technician/ I.T. Department at Cleveland Utilities
Chattanooga, Tennessee Area

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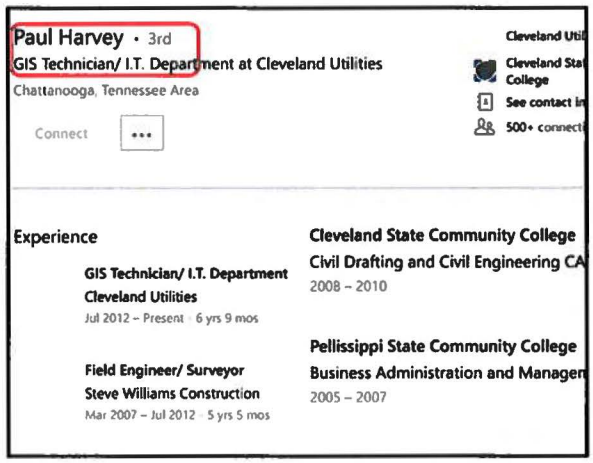
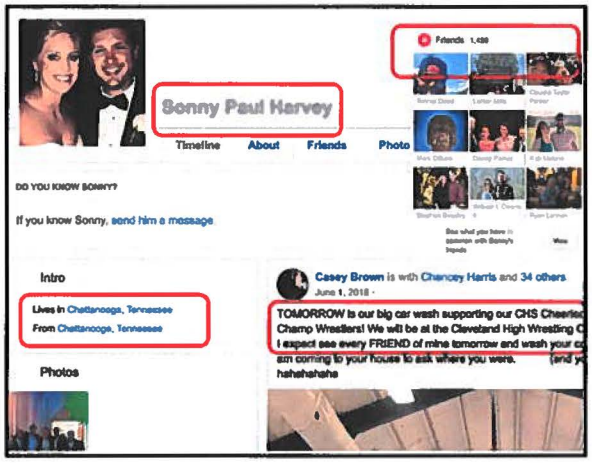
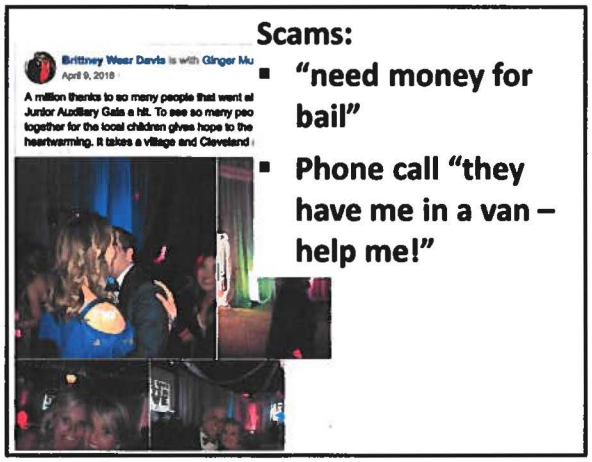

Paul Harvey · 3rd
GIS Technician/ I.T. Department at Cleveland Utilities
Chattanooga, Tennessee Area
Connect
Experience
GIS Technician/ I.T. Department
Cleveland Utilities
Jul 2012 – Present · 6 yrs 9 mos
Field Engineer/ Surveyor
Steve Williams Construction
Mar 2007 – Jul 2012 · 5 yrs 5 mos
Cleveland State Community College
Civil Drafting and Civil Engineering CA
2008 – 2010
Pellissippi State Community College
Business Administration and Manager
2005 – 2007

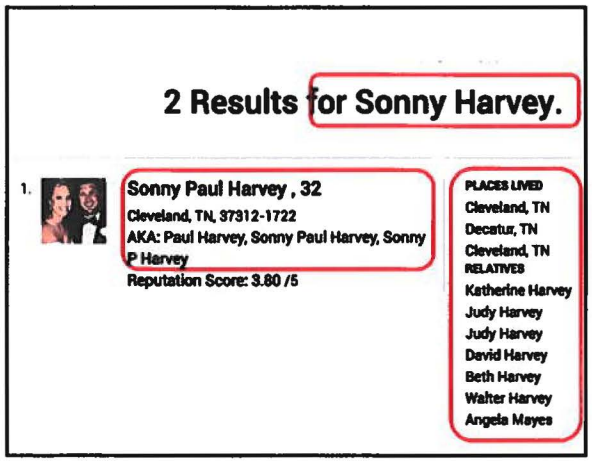
21


Sonny Paul Harvey
Timeline
About
Friends
Photo
DO YOU KNOW SONNY?
If you know Sonny, send him a message
Intro
Lives in Chattanooga, Tennessee
From Chattanooga, Tennessee
Photos
Casey Brown is with Chancey Harris and 34 others
June 1, 2018
TOMORROW is our big car wash supporting our CHS Cheerlea
Champ Wrestlers! We will be at the Cleveland High Wrestling C
I expect see every FRIEND of mine tomorrow and wash your c
son coming to your house to ask where you were.
hahahahaha

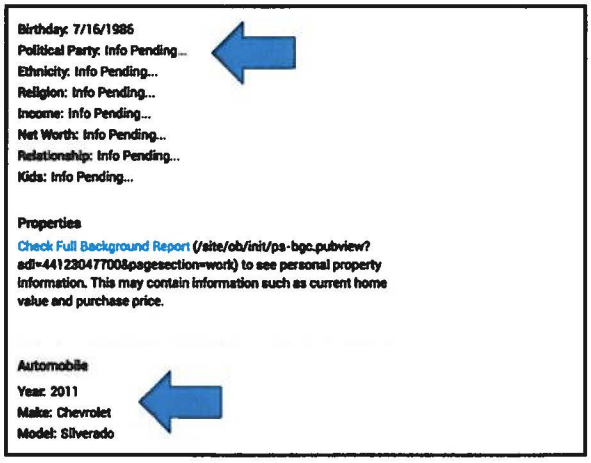
22


Scams:
"need money for bail"
Phone call "they have me in a van – help me!"
Brittney Wear Davis is with Ginger Mu
April 9, 2018
A million thanks to so many people that went at
Junior Auxiliary Gala a hit. To see so many peo
together for the local children gives hope to the
heartwarming. It takes a village and Cleveland

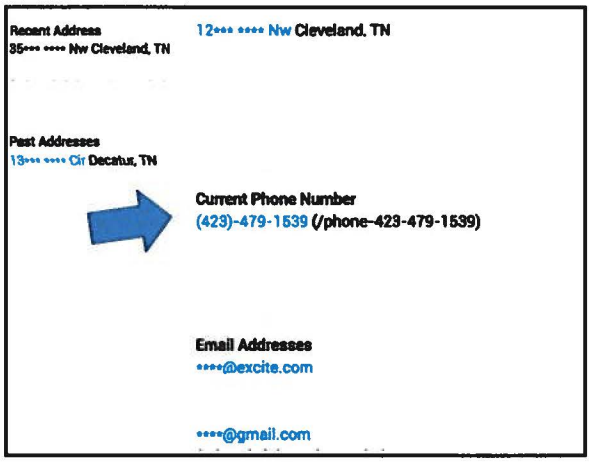
23


2 Results for Sonny Harvey.
1.
Sonny Paul Harvey , 32
Cleveland, TN, 37312-1722
AKA: Paul Harvey, Sonny Paul Harvey, Sonny P Harvey
Reputation Score: 3.80 /5
PLACES LIVED
Cleveland, TN
Decatur, TN
Cleveland, TN
RELATIVES
Katherine Harvey
Judy Harvey
Judy Harvey
David Harvey
Beth Harvey
Walter Harvey
Angela Mayes

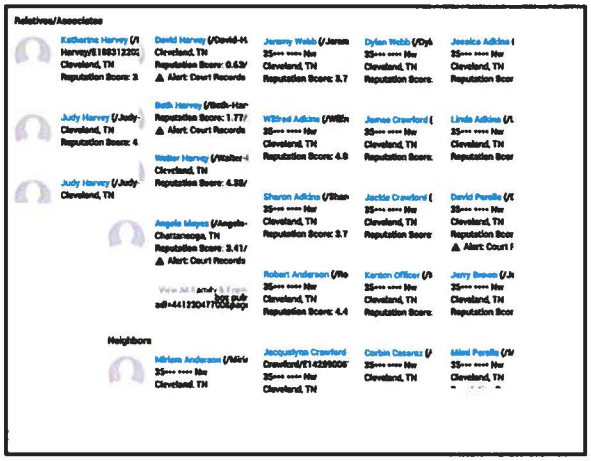
24


Birthday: 7/16/1986
Political Party: Info Pending...
Ethnicity: Info Pending...
Religion: Info Pending...
Income: Info Pending...
Net Worth: Info Pending...
Relationship: Info Pending...
Kids: Info Pending...
Properties
Check Full Background Report (/site/ob/init/ps-bgc.pubview?sdf=441230477008pagesection=work) to see personal property information. This may contain information such as current home value and purchase price.
Automobile
Year: 2011
Make: Chevrolet
Model: Silverado

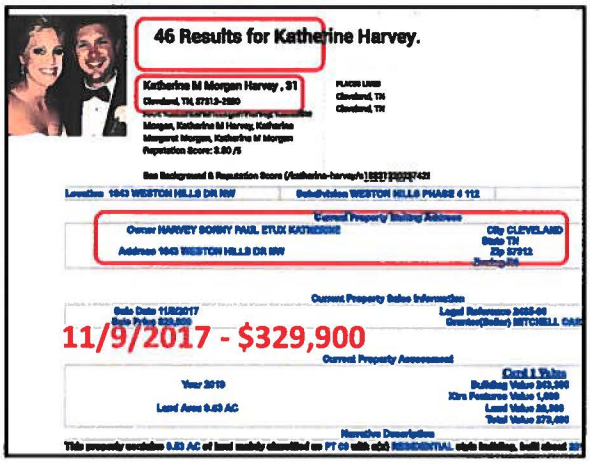
25


Recent Address
35••• •••• Nw Cleveland, TN
12••• •••• Nw Cleveland, TN
Past Addresses
13••• •••• Cir Decatur, TN
Current Phone Number
(423)-479-1539 (/phone-423-479-1539)
Email Addresses
••••@excite.com
••••@gmail.com

26


Relatives/Associates
Neighbors

27


46 Results for Katherine Harvey.
11/9/2017 - $329,900

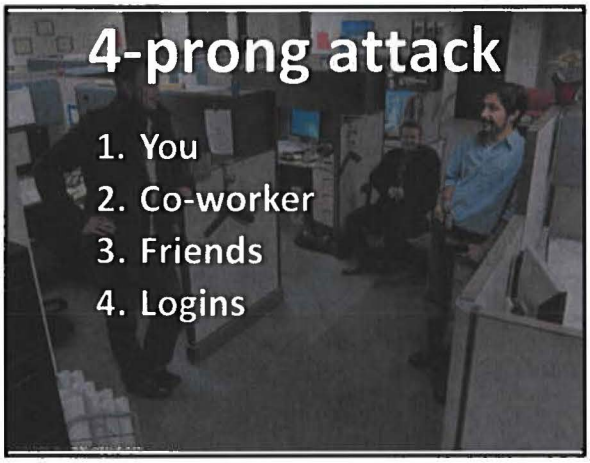
28


(need a barf bag?)

29


4-prong attack

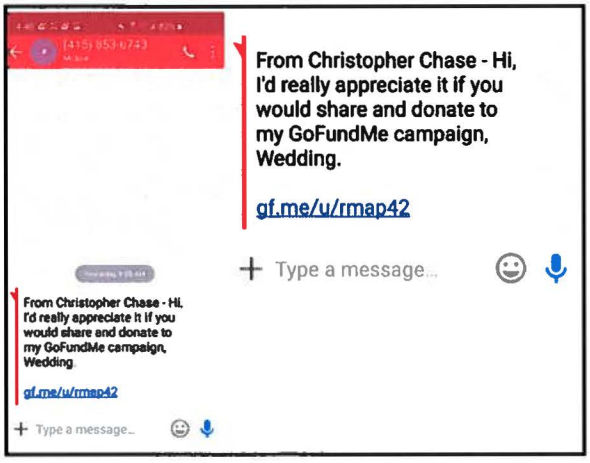
30


4-prong attack
1. You
2. Co-worker
3. Friends
4. Logins

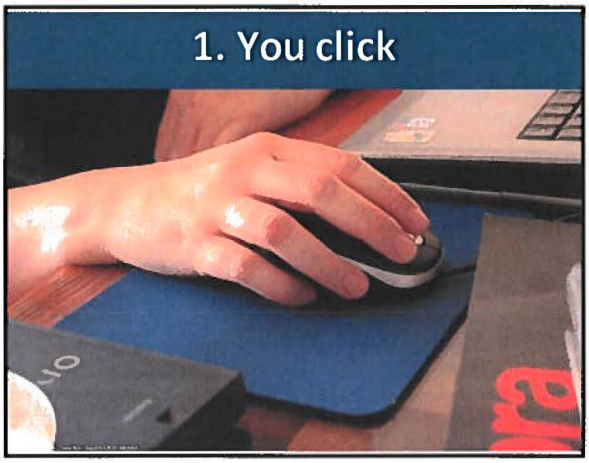
31


Subject You received a payment
From PayPal <
To <robert.mahon@thenellgroup.com>
Date 2018-12-11 09:05
Hello
Thanks for using PayPal. To see all the transaction details, download your PayPal Transaction details file
Questions? Go to the Help Center at www.paypal.com/help

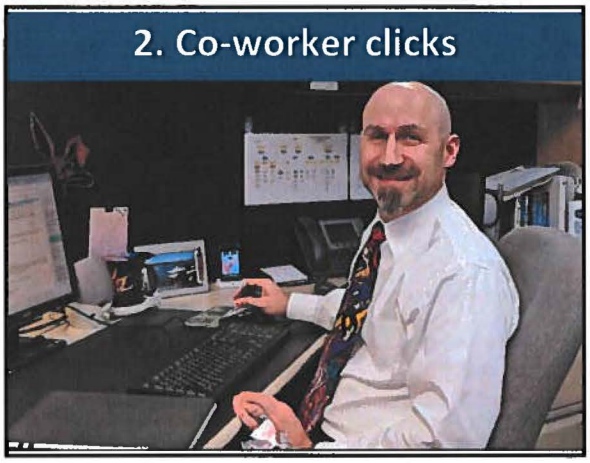
32


From Christopher Chase - Hi, I'd really appreciate it if you would share and donate to my GoFundMe campaign, Wedding.
gf.me/u/rmap42
Type a message...
From Christopher Chase - Hi, I'd really appreciate it if you would share and donate to my GoFundMe campaign, Wedding.
gf.me/u/rmap42
Type a message...

33



34

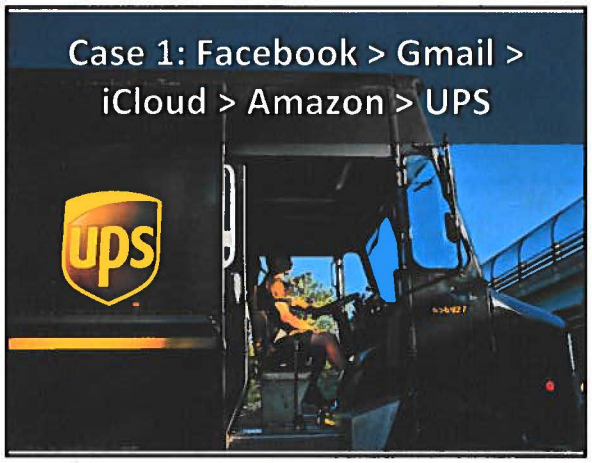


35

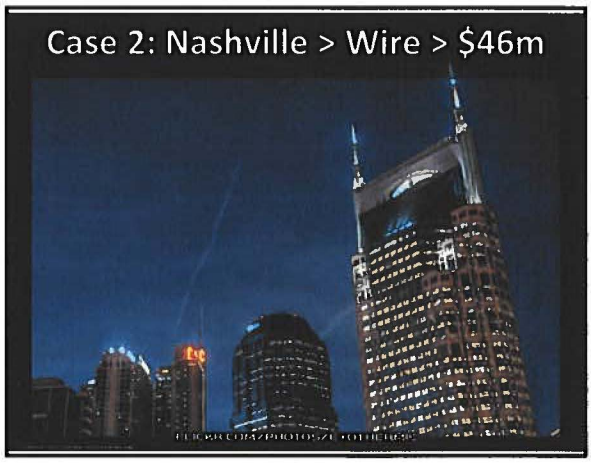
36


Username
Password
4. Try logins

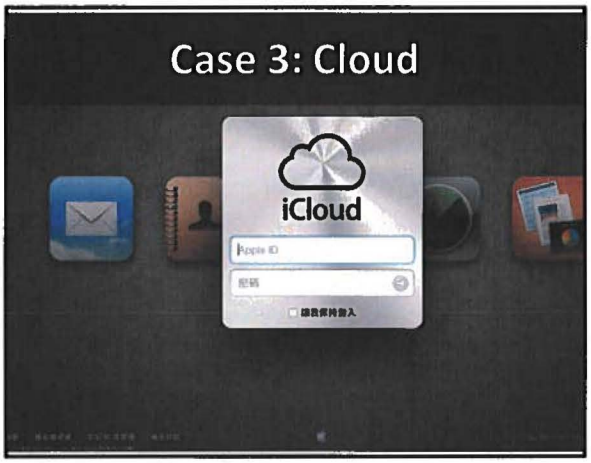
37


Case 1: Facebook > Gmail > iCloud > Amazon > UPS
ups

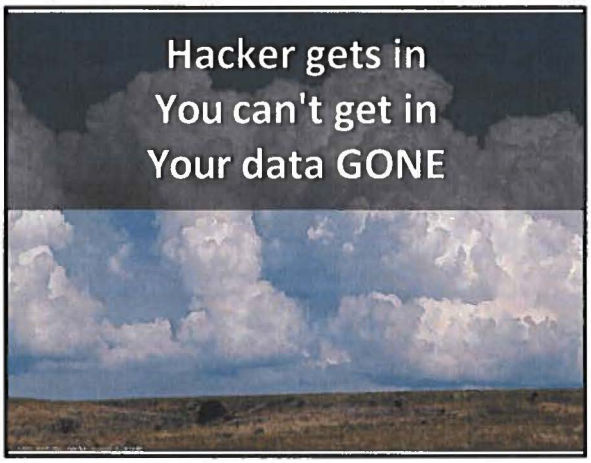
38


Case 2: Nashville > Wire > $46m

39


Case 3: Cloud
iCloud

40


Hacker gets in
You can't get in
Your data GONE

41


Security?
Fuh-getta-bout-it

42


Managment
LIKE A BOSS

43


Problem Statement
Who?
What threat?

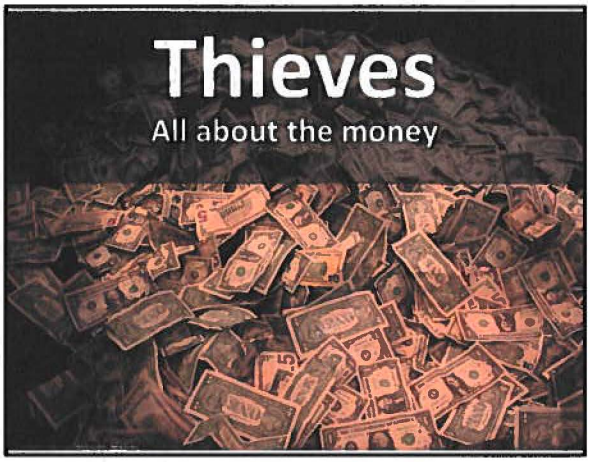
44


Who
1. Activists
2. Thieves
3. Terrorists

45


Activists
Heard, Shame, Mayhem

46


Thieves
All about the money

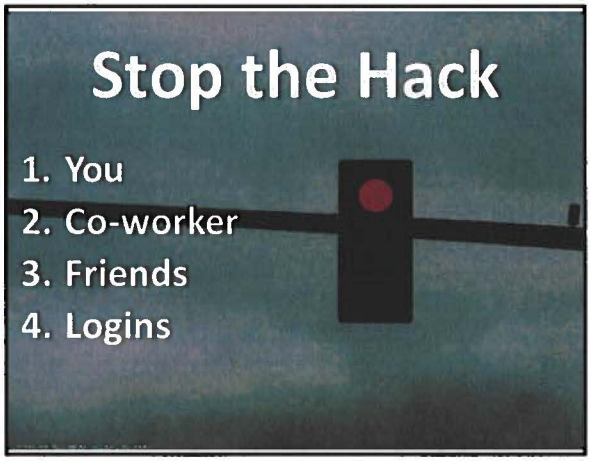
47


Terrorists / State Actors
CBS NEWS
How Chinese hackers steal U.S. secrets

48


What Threats
1. Financial Loss
2. Death
3. Injury
LOSSES

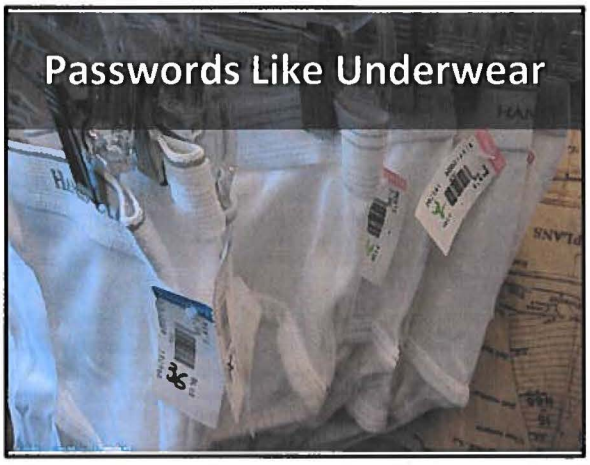
49


Stop the Hack
1. You
2. Co-worker
3. Friends
4. Logins

50


Think before Click
Good Habits = Good Security

51


Passwords Like Underwear

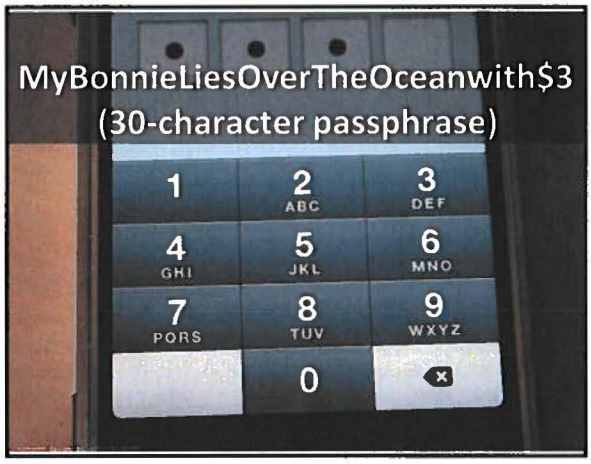
52


Strong
Not shared
Changed regularly

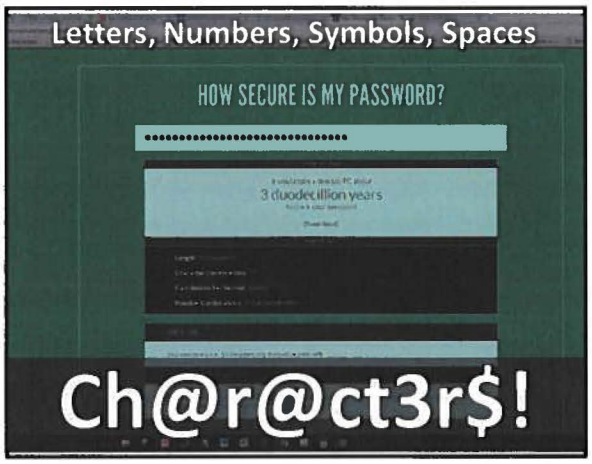
53


Long: 10, 12, 20, 32
1
2 ABC
3 DEF
4 GHI
5 JKL
6 MNO
7 PQRS
8 TUV
9 WXYZ
0

54


MyBonnieLiesOverTheOceanwith$3
(30-character passphrase)
1
2 ABC
3 DEF
4 GHI
5 JKL
6 MNO
7 PQRS
8 TUV
9 WXYZ
0

55


Letters, Numbers, Symbols, Spaces
HOW SECURE IS MY PASSWORD?
3 duodecillion years
Ch@r@ct3r$!

56


keeper
Sticky Password
Enpass
BLUR
PASSWORD BOSS
ZOHO VAULT
1Password
LastPass
Dashlane iOS App Icon
LogmeOnce
Password Security with Convenience

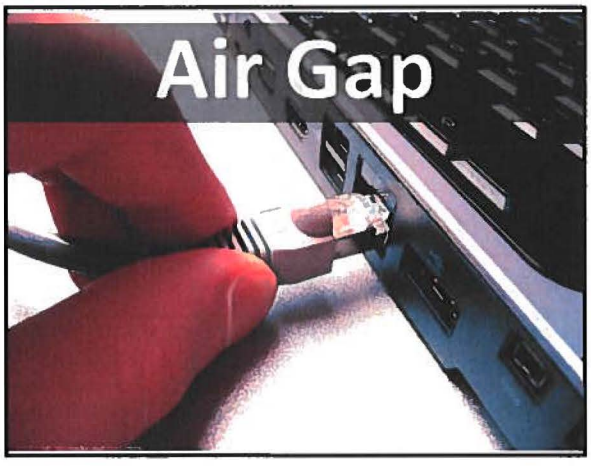
57

58

No Sharing

- Kids
- Networks
- Outsiders
- Unplug

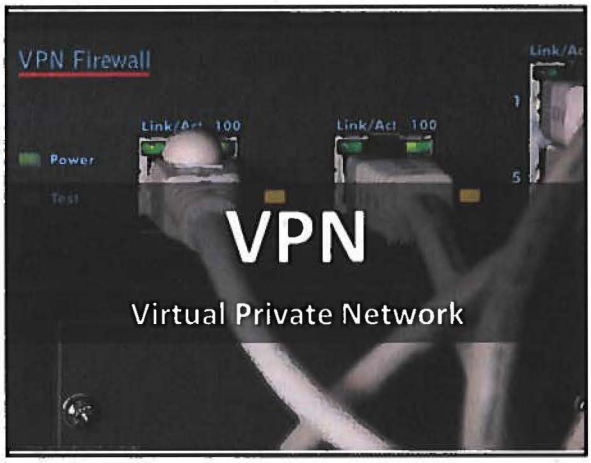
59



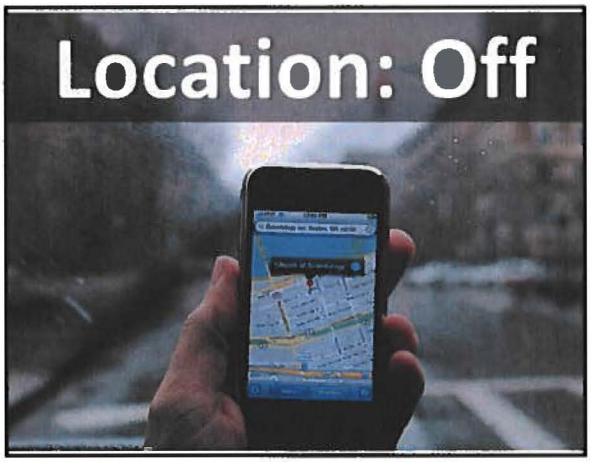
60


Free Wi-Fi =
Hooker Wi-Fi

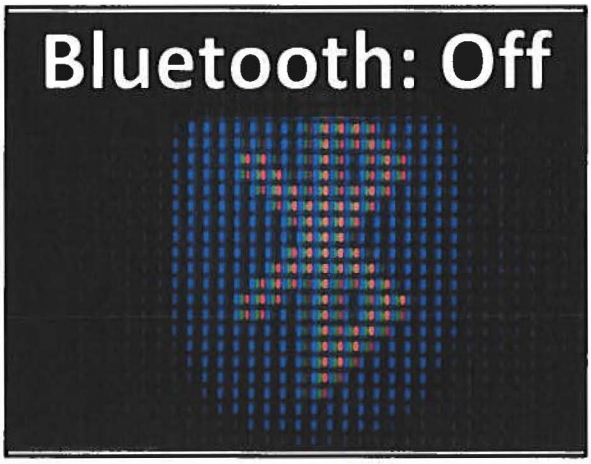
61


VPN Firewall
Power
VPN
Virtual Private Network

62


Location: Off

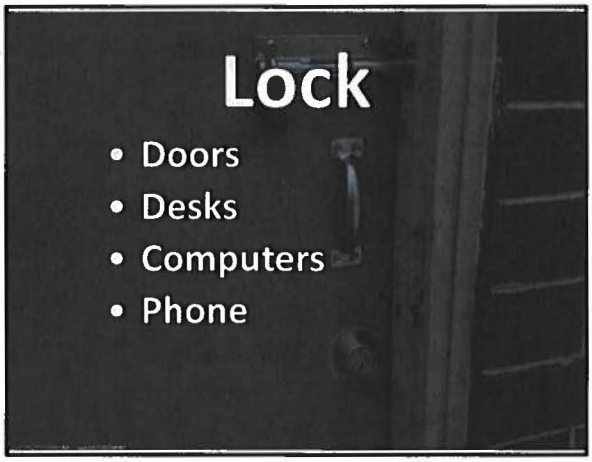
63


Bluetooth: Off

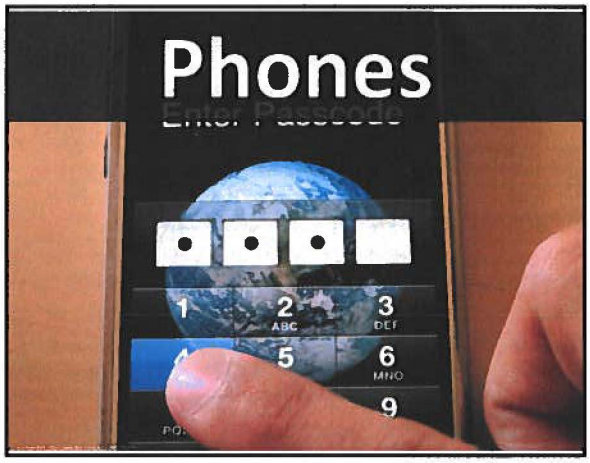
64


Update ASAP

65


Lock
• Doors
• Desks
• Computers
• Phone

66



67

Daily Mail .com

Android lockscreen can be hacked using a simple text password: Overloading the software with long words makes it unlock

- Vulnerability was found by researchers at the University of Texas at Austin
- Hack involves entering a string of text when the camera app is active
- This causes the camera to crash and expose the homescreen
- This bypasses phone's lockscreen and leaves personal details exposed

By VICTORIA WOOLLASTON FOR MAILONLINE

PUBLISHED: 09:45 EST, 16 September 2015 | UPDATED: 19:35 EST, 16 September 2015

68

69

Need all this?

- DL
- Bank draft
- Card numbers
- Customer PWs

70

Are you liable?

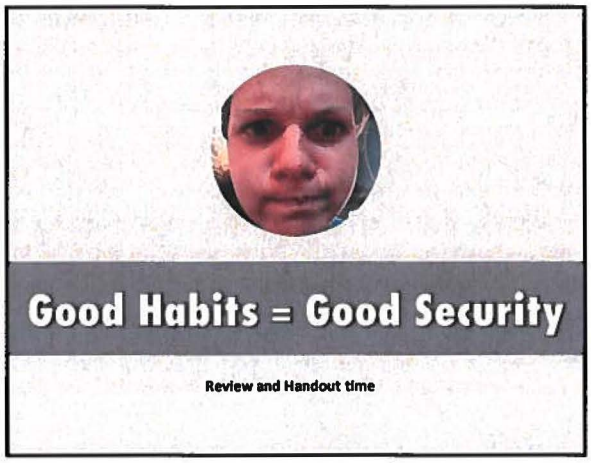
71

72

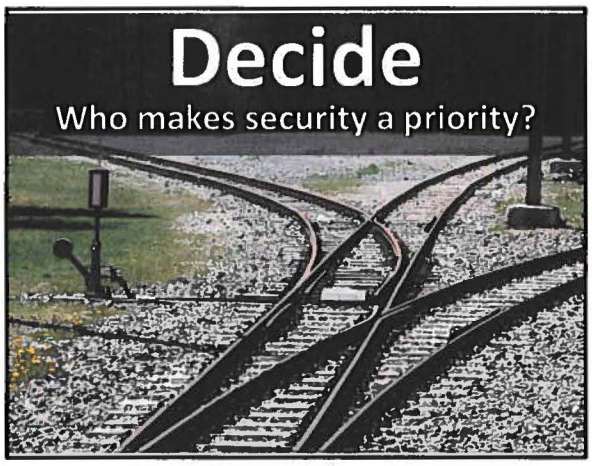

Bad Habits = Unemployment, Reputation, Lawsuit
UNEMPLOYMENT INSURANCE CLAIMS OFFICE

73

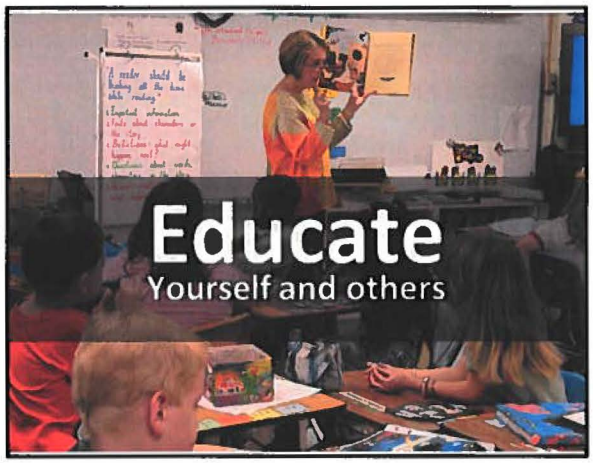
74


Good Habits = Good Security
Review and Handout time

75


Decide
Who makes security a priority?

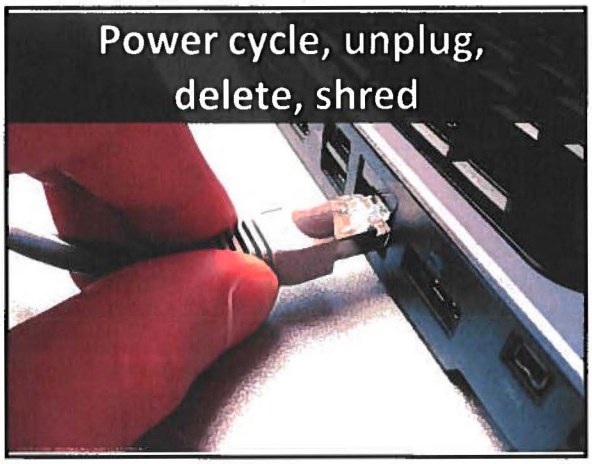
76


Educate
Yourself and others

77


Passwords
Strong, not shared, changed often

78


Power cycle, unplug,
delete, shred

79


No Sharing
Computers, Networks, Info

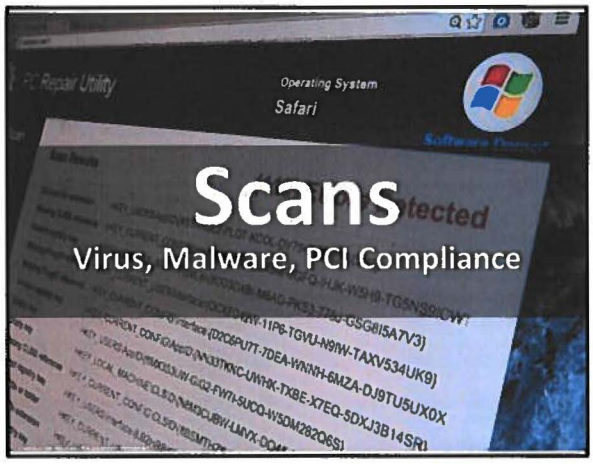
80


Data Storage
Do I need this?

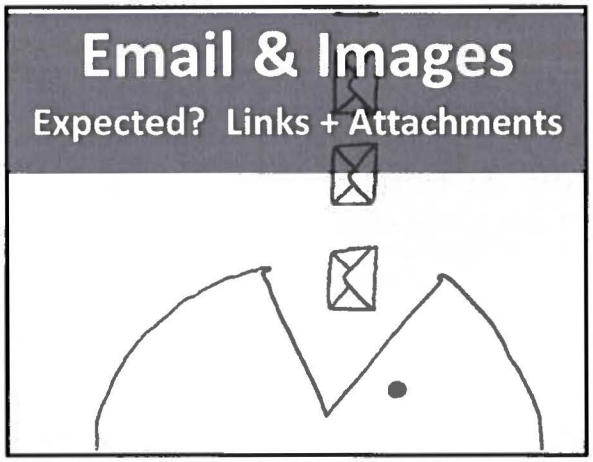
81


Software
PURR: Patch, Update, Restart Regularly
KPT

82


Operating System
Safari
Scans
Virus, Malware, PCI Compliance

83


Email & Images
Expected? Links + Attachments

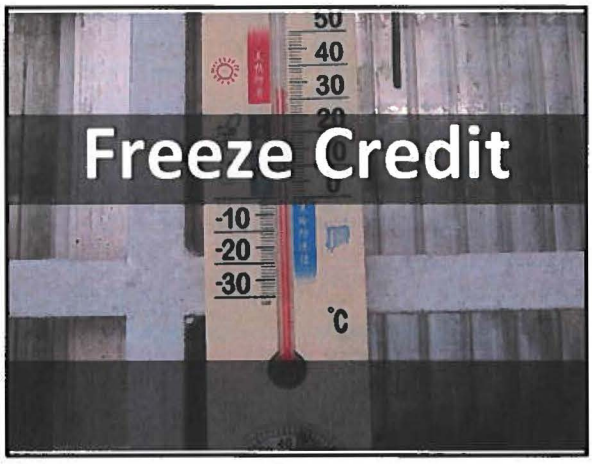
84


Sensitive info
New Prevention Software
SECRET

85


Be a Human Firewall

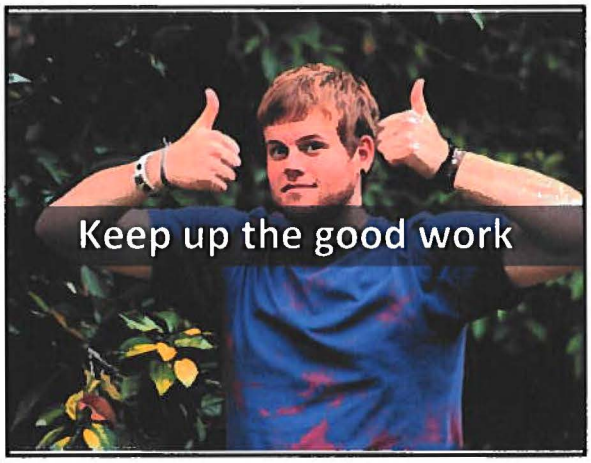
86


Freeze Credit
50
40
30
-10
-20
-30
°C

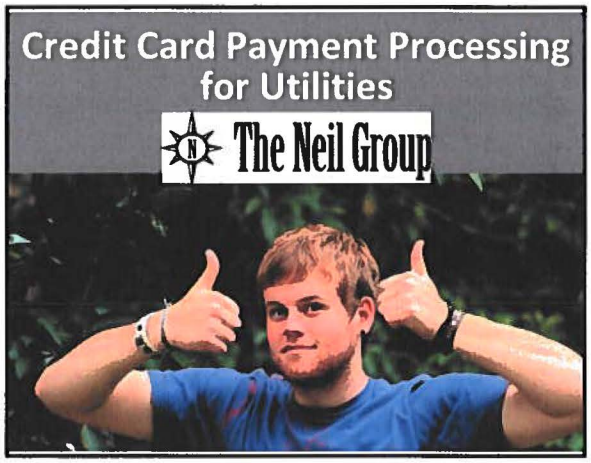
87

88

89



90


Credit Card Payment Processing
for Utilities
The Neil Group

91

KRWA MANAGEMENT CONFERENCE

BOWLING GREEN, KY

IMPROVING COMMUNICATION VIA A NOTIFICATION APP

cdp·mapsync

1

DOWNLOAD/INSTALL APP

- CLICK ON THE PLAY OR APPLE STORES
  - THEN, TYPE CDP ADVISORY,
  - THEN, CLICK ON THE APP,
  - THEN, CLICK INSTALL.
  - YOU ARE COMPLETE, YOU WILL NOW RECEIVE ALERTS/NOTIFICATIONS
  - ALERTS WILL BE SILENT,
  - NOTIFICATIONS ARE FOR EMERGENCIES AND WILL DING OR VIBRATE.
  - YOU DO NOT HAVE TO CREATE A PROFILE OR SHARE ANY PERSONAL INFORMATION

cdp·mapsync

2

IS COMMUNICATION IMPORTANT?

- HAS COMMUNICATION WITH YOUR SPOUSE ALWAYS BEEN PERFECT?
- COULD MORE CAREFULLY SELECTED WORDS POSSIBLY HAVE IMPROVED YOUR SITUATION?

- DO YOU THINK BETTER COMMUNICATION WOULD ALSO IMPROVE YOUR RELATIONSHIP WITH YOUR CUSTOMERS?

cdp·mapsync

3

COMMUNICATION QUOTES

"WISE MEN SPEAK BECAUSE THEY HAVE SOMETHING TO SAY; FOOLS BECAUSE THEY HAVE TO SAY SOMETHING." - PLATO

"LET YOUR TONGUE SPEAK WHAT YOUR HEART THINKS." – DAVY CROCKETT

"A GOOD HEAD AND GOOD HEART ARE ALWAYS A FORMIDABLE COMBINATION. BUT WHEN YOU ADD TO THAT A LITERATE TONGUE OR PEN, THEN YOU HAVE SOMETHING VERY SPECIAL" – NELSON MANDELA

"OUR NOTIFICATION APP IMPROVED OUR PROFESSIONAL IMAGE WITH OUR CUSTOMERS. EVERY UTILITY IN THE STATE NEEDS THIS APP TO HELP NOTIFY THEIR CUSTOMERS IN THIS ELECTRONIC AGE." – DAVID PETERSON, MANAGER, CAVELAND ENVIRONMENTAL AUTHORITY

4

WHAT INFORMATION MIGHT YOU NEED TO COMMUNICATE?

- BOIL WATER ADVISORIES
- CONSTRUCTION ACTIVITIES
- MAINTENANCE ACTIVITIES
- ROAD/LANE CLOSURES – DETOURS
- EDUCATIONAL INFORMATION
- CONSUMER CONFIDENCE REPORTS
- PAYMENT REMINDERS
- COUNCIL/BOARD MEETINGS
- SCHEDULE CHANGES
- POLICE/FIRE DEPARTMENT NEWS
- STAFF RECOGNITION
- ANYTHING YOU MIGHT ADVERTISE

5

401 KAR 8:020 (10) HOW TO ISSUE AN ADVISORY

- (A) A BOIL WATER ADVISORY OR CONSUMER ADVISORY SHALL BE ISSUED THROUGH NEWSPAPERS, RADIO, TELEVISION, OR OTHER MEDIA HAVING AN IMMEDIATE PUBLIC IMPACT. (B) AS A HEALTH AND SAFETY MEASURE, THE WATER SYSTEM SHALL REPEAT THE NOTIFICATION DURING THE PERIOD OF IMMINENT DANGER AT INTERVALS THAT MAINTAIN PUBLIC AWARENESS. (C)1. THE ADVISORY SHALL BE READILY UNDERSTANDABLE AND SHALL INCLUDE INSTRUCTIONS FOR THE PUBLIC, AS WELL AS AN EXPLANATION OF THE STEPS BEING TAKEN TO CORRECT THE PROBLEM. 2. BOILING INSTRUCTIONS SHALL CAUTION TO BOIL WATER TO BE USED FOR CONSUMPTION BY BOILING THE WATER FOR AT LEAST THREE (3) MINUTES AT A ROLLING BOIL

6

METHODS OF COMMUNICATION

- LOCAL TELEVISION
- LOCAL RADIO
- ROBO CALL SYSTEMS
- NEWSPAPER
- FACEBOOK
- WEBSITE
- DOOR HANGERS
- SMOKE SIGNALS
- NOTIFICATION APP

cdp·mapsync

7

FLAWS WITH FORMS OF COMMUNICATION

- FEW PEOPLE WATCH LOCAL TELEVISION
- FEW PEOPLE LISTEN TO LOCAL RADIO
- ROBO CALLS REACH < 45%, MANAGING PHONE #'S & EMAIL ADDRESSES IS VERY DIFFICULT
- NEWSPAPER CIRCULATION IS DECREASING
- NOT EVERYONE HAS COMPUTERS OR LIKES FACEBOOK
- HANGING DOOR HANGERS CAN BE DANGEROUS
- FEW PEOPLE CAN READ SMOKE SIGNALS THESE DAYS

cdp·mapsync

8

ADVANTAGES OF A NOTIFICATION APP

- 85% OF ALL HOUSEHOLDS HAVE AT LEAST 1 SMARTPHONE
- THIS NUMBER CONTINUES TO RISE
- MOST PEOPLE KEEP THEIR PHONE WITH THEM AT ALL TIMES
- SMARTPHONE/APP ALERTS CAN BE REVIEWED AT ANY TIME
- FASTEST WAY TO GET INFORMATION TO CUSTOMERS

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9

BEST FEATURES OF NOTIFICATION APP

- BRANDED TO YOUR ORGANIZATION
- TOTAL CONTROL OF COMMUNICATION
- NO COST TO YOUR CUSTOMERS
- DO NOT SHARE PERSONAL INFO
- EASY ACCESS ON PLAY OR APPLE STORE
- UNLIMITED NOTIFICATIONS CAN BE SENT
- WEB-BASED, CAN BE SENT FROM ANYWHERE
- ALERTS ARE SILENT
- NOTIFICATIONS CAN INCLUDE SOUND OR VIBRATION
- CAN INCLUDE PHOTO OR IMAGE
- CAN INCLUDE MAP
- NO NEED TO MANAGE PHONE #'S OR EMAIL
- QUICKEST BEST WAY TO COMMUNICATE
- AFFORDABLE AND EASY TO USE

10

OTHER KEY FEATURES OF APP

- ABILITY TO SCHEDULE ALERTS/NOTIFICATIONS
- PROVIDE CONTACT INFORMATION OF KEY MEMBERS
- PROVIDE LINK TO CUSTOMER SERVICE EMAIL
- HYPER-LINKED TO BILL PAY
- ADMINISTRATIVE USER NAME & PASSWORD PROTECTED
- CAN PROVIDE MULTIPLE USERS FROM DIFFERENT DEPARTMENTS
- YOU HAVE TOTAL CONTROL OF YOUR EXTERNAL COMMUNICATION

11

ALERT/NOTIFICATION EXAMPLES

12

CITY ALERT/NOTIFICATION EXAMPLES




13

WHY PHOTOS / IMAGES?

- PEOPLE LIKE PHOTOS / IMAGES BETTER THAN READING
- PHOTOS / IMAGES ENTICE PEOPLE TO READ ALERT/NOTIFICATION
- PHOTOS / IMAGES CAN BE STORED IN THE APP FOR FUTURE USE
- MAY GAIN MORE APPRECIATION FROM YOUR CUSTOMERS


14

CARROLL COUNTY WATER DISTRICT




15

WHY DO I NEED TO MESS WITH THIS COMMUNICATION NONSENSE?

- *SINCE YOUR PASSION / RESPONSIBILITY IS KEEPING YOUR SYSTEM OPERATIONAL AND PROVIDING GOOD WATER / WASTEWATER SERVICE*
- *WHETHER YOU LIKE IT OR NOT, WE LIVE IN AN INFORMATION AGE AND CUSTOMERS EXPECT INFORMATION*
- *IF YOU CAN STAY AHEAD OF YOUR CUSTOMERS WITH GOOD COMMUNICATION, YOU CAN PREVENT ISSUES FROM DEVELOPING AND BLOWING OUT OF PROPORTION*
- *IF YOU CAN PREVENT ISSUES FROM DEVELOPING, YOU CAN FOCUS ON WHAT YOUR PASSION/ RESPONSIBILITY IS...KEEPING YOUR SYSTEM OPERATIONAL*

16


LIVE EXAMPLE
BOIL WATER ADVISORY

17

QUESTIONS???

18


CONTACTS
C. LEWIS DIXON, PE, PLS
EXECUTIVE VICE PRESIDENT, CO-FOUNDER
CDP – MAPSYNC
3250 BLAZER PARKWAY
LEXINGTON, KENTUCKY 40509
LDIXON@CDPENGINEERS.COM
859-333-5366 (MOBILE)
OBE COX
GENERAL MANAGER
CARROLL COUNTY WATER DISTRICT # 1
205 MAIN CROSS STREET
GHENT, KENTUCKY 41045
OCOX@CARROLLCOUNTYWATER.COM
502-347-9500 (OFFICE)

19

Hiring Contractors and the Financial Risks at Stake

2020 Kentucky Rural Water Association
Management Conference
February 20, 2020

Christopher "Kick" Barger
National Program Director
Utility Services Program

Chip Wilkins
Senior Account Executive
Lawton Insurance

1

Disclaimer

I am not an attorney.

None of the opinions stated here are intended as legal advice and the Cincinnati Insurance Company does not warrant that opinions will result in compliance with any laws, regulations, codes or standards. Opinions are intended solely for educational purposes.

2

2

I

Insurance

3

3

I

Insurance

4

Water Industry Exposures

- Property
- Equipment Breakdown
- Auto
- Inland Marine
- Employee Dishonesty
- General Liability
- Workers Compensation
- Directors and Officers
- Terrorism
- Errors and Omissions
- Cyber

5

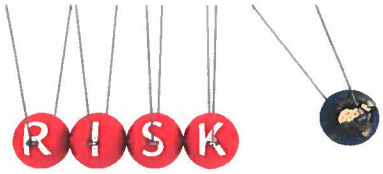
Who's to blame???

- Backhoe injury
- After hours injury
- Digging up a utility line
- Traffic accident

6

What's the solution?

Risk Transfer = Protection



7

7

Risk transfer defined

- Responsibility for payment shifted
- Higher tier v. lower tier

8

8

Higher Tier/Lower Tier: Huh?

Highest Tier – Owner (utility)

General Contractor or sub you hire

Subcontractor hired by GC

Sub-sub hired by sub

9

9

The Contract: Belt and suspenders

Indemnity Agreement

- One party stands good for the obligation of another
- Provides responsible party with an economic avenue of recovery (lower tier).
- Not all risk assumed is covered by insurance.
- An invalid agreement means the higher tier could retain risk it meant to transfer.

Insurance requirements

- Additional Insured
- Primary
- Products/completed operations
- Limits
- Time requirements

In Illinois, the suspenders are necessary!

10

10

Additional Insured Endorsements

- What are they?
- What do they accomplish?
- How do insurance companies view them?

11

11

Additional Insured Endorsements

- Primary
- Including Premises/Operations and Completed Operations (ISO CG2010 11/85)
- Specified time period.
- Does the endorsement accomplish what you intend it to accomplish?

12

12

Other insurance requirements

- Minimum limits
- Per project/per location general aggregate
- No limiting endorsements:
  - Contractual liability exclusion
  - Damage to work by subcontractors exclusion
  - Earth movement exclusion

13

13

Other requirements

- Additional insured on auto

- Waiver of subrogation
- Noncontributory
- Separation of insureds

14

14

Beware

- Additional insured requirements of you as the higher tier
- Understand the terms of the contract
- Discuss with
  - Attorney
  - Insurance professional

- Contract terms that aren't covered by insurance

15

15

Questions?

What do you wish I had covered?

Where did I confuse you?

How can I clarify?

16

Thank You!!!

Christopher "Kick" Barger
Christopher_barger@cinfin.com
513-870-2459

17

INSTRUMENTATION, CONTROLS AND ENERGY MANAGEMENT 101

1

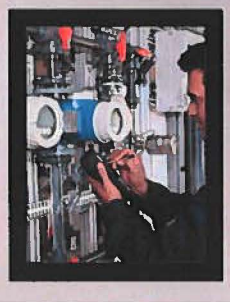
WHAT IS INSTRUMENT AND CONTROLS?

- Instrumentation is the science of measurement used for indication, measuring and recording physical quantities such as flow, temperature, level and pressure.
- Controls are the devices, systems, networks and computers used to give a desired output with a given input.

2

EXAMPLES OF INSTRUMENTATION

- Pressure Transmitters
- Level Transmitter
- PH Meters
- flow Transmitters
- Thermocouples



3

CONTROL LOOPS

There are two types of control loops

- Open Loop
- Closed Loop

4

OPEN LOOP

In an open-loop control system, there is no feedback into the controller. The output has not control over the input

5

EXAMPLE OF OPEN LOOP

6

CLOSED LOOP

- A closed-loop control system looks at the current output and alters it to the desired condition; also known as a feedback system, the control action in these systems is based on the output.

7

CLOSED LOOP EXAMPLE

8

CONTROL LOOP INPUTS

The inputs are the eyes and ears of your control systems.

- Pressure Transmitters
- Thermocouples
- Level Transmitters
- Flow Transmitters
- Etc.

9

CONTROLLERS

Controllers are the brains of the control system

- PID controllers
- Programmable Logic Controllers
- Process Controllers

10

PROGRAMMABLE LOGIC CONTROLLERS

AKA "The Magic Black Box"

The adoption of a **PLC** system allows the rational **use** of energy and equipment to save energy, reduce energy consumption and achieve significant economic benefits.

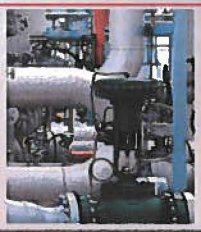
11

CONTROLLER OUTPUTS

The outputs are the brawn of the control loops. They do all the work.

They are also known as Final Control Elements

- Pumps
- Valves
- Cylinders
- Etc.



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IMPORTANCE OF CALIBRATING INPUTS AND OUTPUTS

One of the most overlooked maintenance downtime prevention methods is calibration.

Calibration:

- Insures reliability
- Determines accuracy
- Prolongs equipment life
- Increases efficiency of equipment and entire control loops

13

VARIABLE FREQUENCY DRIVES

A variable frequency drive (VFD) is a type of motor controller that drives an electric motor by varying the frequency and voltage of its power supply.

Benefits

- Energy cost savings
- Expands motor's life
- Increases motor control options
- Eliminates drive components that can be problematic

14

SUPERVISORY CONTROL AND DATA ACQUISITION

SCADA Systems:

- Control industrial processes locally or at remote locations
- Monitor, gather, and process real-time data
- Directly interact with devices such as sensors, valves, pumps, motors, and more through human-machine interface (HMI) software
- Record events into a log file

15


Thank you
If you have questions please feel free to contact us
jhildebrant@chastainengineers.com
270-883-1160

16

Preserving Utility Assets and Improving Manpower Productivity Through the Use of Technology

Richard Sanders
Zenner USA

KRWA MANAGEMENT CONFERENCE
FEBRUARY 19-20
2020

1

Additional Facts To Remember

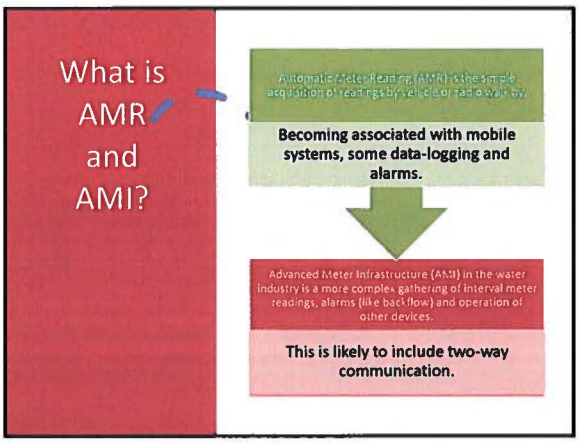
- By 2025 20% of the Worlds population will not have enough water.
- Billions of gallons of treated water is lost daily.
- Another 900 billion gallons is lost annually in our households
- In the U.S. this represents 20 to 40 Billion Dollars of lost annual revenue
- The World Bank and Sargent Research with say that the average water loss in a U.S. city is 30%
- Ageing infrastructure is a major U.S. issue with Flint Michigan being the tip of the iceberg

2

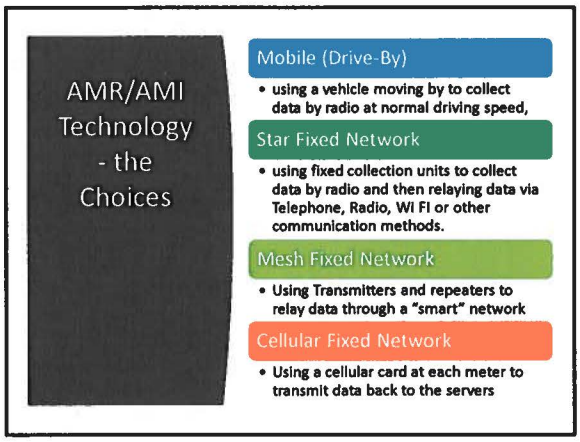
AMR/AMI is No Longer a Two-Part Question

- Meter reading costs
- Better utilization of manpower
- Customer service
- Asset management
- ROI for the utility
- NPV for the community
- AMI Systems when selected and bid properly are within 4% of a drive by system and provide an 80% better ROI than a drive by system

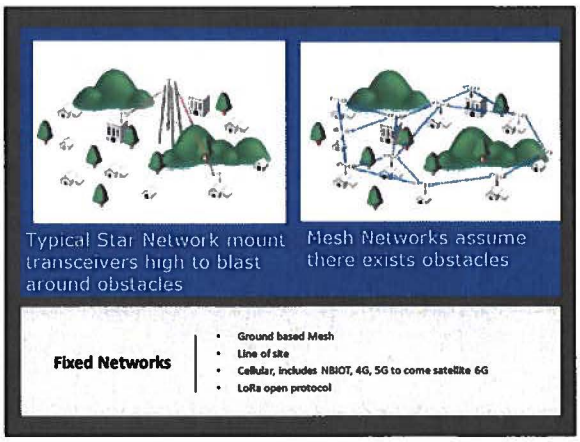
3


What is AMR and AMI?
Automatic Meter Reading (AMR) is the simple acquisition of readings by vehicle or radio walk by.
Becoming associated with mobile systems, some data-logging and alarms.
Advanced Meter Infrastructure (AMI) in the water industry is a more complex gathering of interval meter readings, alarms (like backflow) and operation of other devices.
This is likely to include two-way communication.

4


AMR/AMI Technology - the Choices
Mobile (Drive-By)
• using a vehicle moving by to collect data by radio at normal driving speed,
Star Fixed Network
• using fixed collection units to collect data by radio and then relaying data via Telephone, Radio, WI FI or other communication methods.
Mesh Fixed Network
• Using Transmitters and repeaters to relay data through a "smart" network
Cellular Fixed Network
• Using a cellular card at each meter to transmit data back to the servers

5


Typical Star Network mount transceivers high to blast around obstacles
Mesh Networks assume there exists obstacles
Fixed Networks
• Ground based Mesh
• Line of site
• Cellular, includes NBIOT, 4G, 5G to come satellite 6G
• LoRa open protocol

6

Automatic Meter Infrastructure System

The Evaluation of an AMI System and the customer interaction capabilities of an AMI System.

The components of the AMI System that the System operator should consider during the evaluation process.

7

Customer Interaction Capabilities of AMI Systems

- AMI Systems generally give utility customer service personnel a tool to enhance their ability to provide services and defuse billing discrepancies.

8

General List of AMI System Customer Services Capabilities

- Leak detection (next day customer notification)
- Storage of reading data and history of usage (Billing discrepancy)
- Tamper detection
- Reverse Flow
- Customer Interface allows the customer to view Daily Usage Data
- Enhanced Customer Communications

Note: This is the most useful customer service data an AMI System offers. It helps customers better understand their bill, it arms customer service employees with data and information to inform customers and defuse billing usage confrontations and allows customer service personnel to proactively inform customers of leaks or tampering.

9

Other useful information an AMI System provides to the Utility.

- Low battery alarm
- Battery life after alarm
- Leak detection
- Stopped meter
- Conservation
- Revenue

Note:
- Staff member dedicated to contact customers daily about usage issues.
- Utility can deploy a customer portal

10

SUMMARY POINTS OF AMI BENEFITS

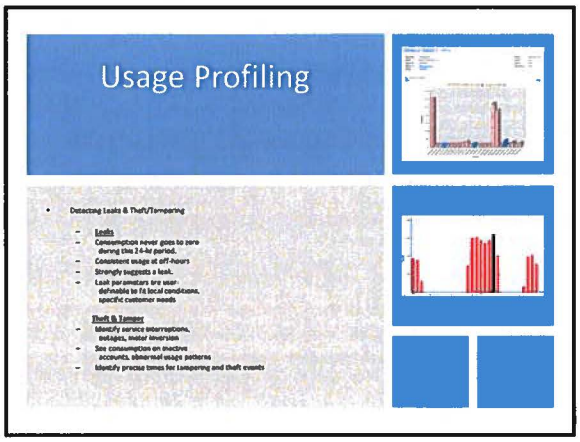
- Cost Savings are real and recognizable
- Enhanced Customer Service
  - Leaks
  - Data
  - Usage
  - Theft
- Increased Revenue
  - Efficiency (Redeployed Staff Time)
  - Meter Change Out
- Dedicate field and office personnel to learn and trouble shoot equipment and software

(You get out of the AMI System what you put into learning about it.)

11

SUMMARY POINTS OF AMI BENEFITS
Usage Profiling

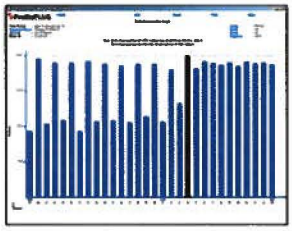
12



13

Key Success Factors
Applications of Data Logging

- **Monitor Water Conservation**
  - Monitor compliance with conservation measures
  - Graph at right shows customer stopped complying with odd-even watering restrictions halfway through this period
  - Objective data for enforcement when necessary



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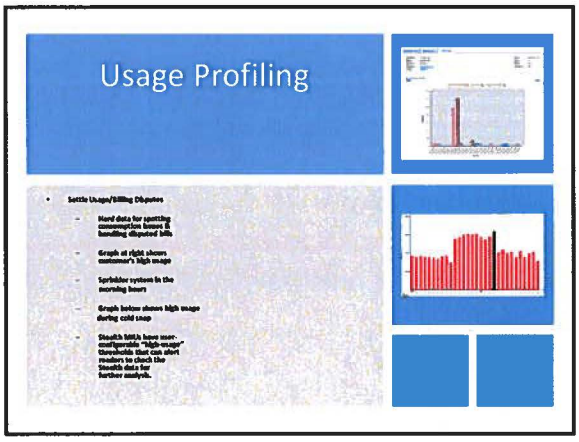

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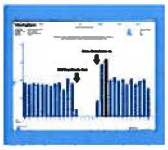
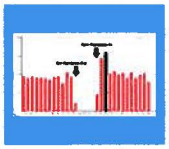
Key Success Factors
Applications of Data Logging





- **Eliminate Off-Cycle Reads**
  - Perform a "Virtual" Turn-off
  - Profile data can be retrieved anytime, regardless of actual move out date
  - Graph will show move out date and enable bill to be accurately split between old and new residents

16

Key Success Factors
Applications of Data Logging

- Water Meter Right-Sizing
  - Water graph shows usage with near-perfect consistency, often indicates a meter being pushed beyond what it can accurately register.
  - Data Logging graph showed that the current meter couldn't keep up with new usage levels.
  - Meter was replaced with a larger meter and registered usage increased more than 30%!
  - Increased revenues

17

AMI Accomplishments

Utility Benefits

- Monthly Billing
- True enforcement of policies
- Dispute resolution
- Tamper detection
- Targeted use of staff time
- Increased level of customer service
- Resource in water loss identification

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AMI Accomplishments

Customer Benefits

Education
- Water use patterns (indoor vs. outdoor)
- Landscape education

Leak detection
- Proactive notification
- Daily/hourly profiles help to identify source

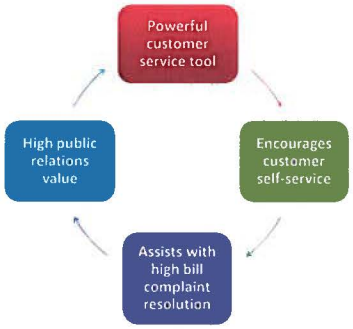
Customer Portal

19

Customer Portal

20

Utility Benefits



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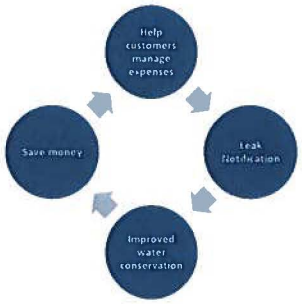
Customer Benefits



22

RFP Development

First Steps

- Educate - Yourself & Staff
- Involve - I.T., Engineering, Operations, Finance, Legal
- Tours - Tour Facilities that have different AMI systems

Project Key Personnel

- Project Manager – Imperative to Success
- MDM –Data Transfer/Management Process
- Plan - Implementation Plan
- Price – Separate Envelope, evaluate system first

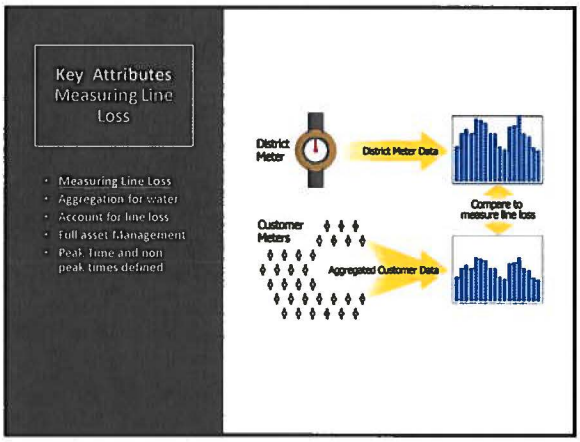
23

RFP Key Items

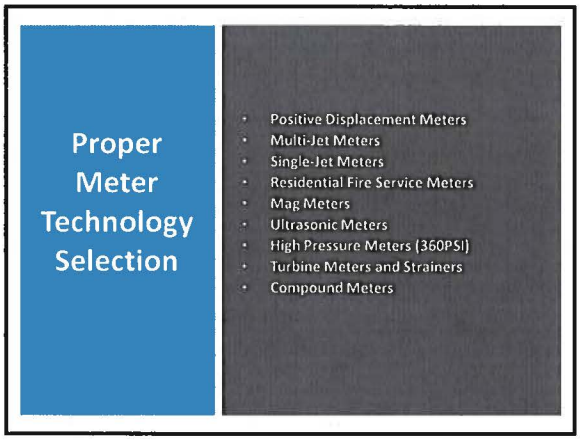
- Full Two-Way Communication
- Guaranteed Reporting Percentage
- Failover Redundancy
- Guaranteed Cost, any additional cost to achieve RFP requirements is on Vendor
- Understand and compare your Warranty and costs, pay attention to how many years carry a full warranty and how many are prorated. Warranty, read the fine print and requirements
- Field Changeable Batteries in the MIU
- Software should have three pieces
  - MDM for staff and customer service
  - Meter Data Management for technical staff
  - Customer Portal Availability
- Proper Meter selection for your water conditions
- Upgradeable for the future

Internet of Things (IoT)

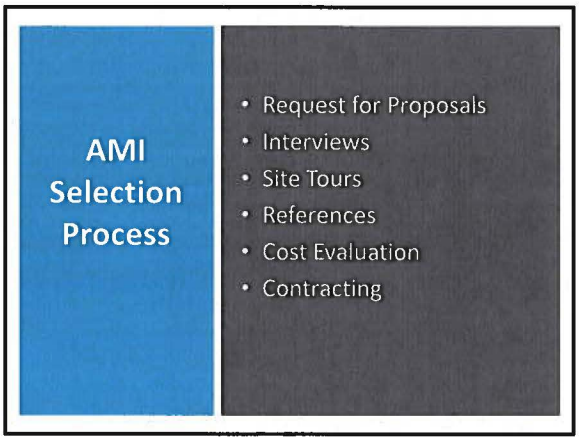
24


Key Attributes Measuring Line Loss
Measuring Line Loss
Aggregation for water
Account for line loss
Full asset Management
Peak Time and non peak times defined
District Meter
District Meter Data
Compare to measure line loss
Customer Meters
Aggregated Customer Data

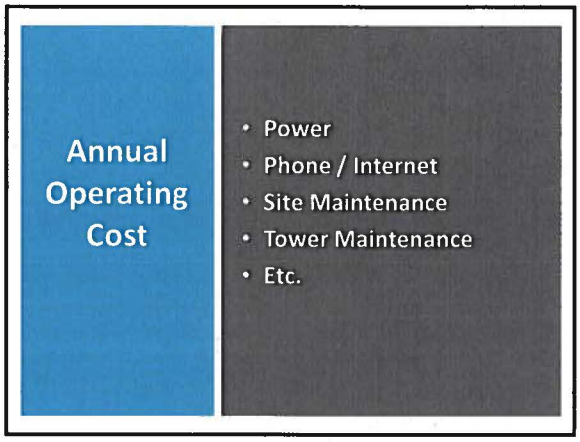
25


Proper Meter Technology Selection
Positive Displacement Meters
Multi-Jet Meters
Single-Jet Meters
Residential Fire Service Meters
Mag Meters
Ultrasonic Meters
High Pressure Meters (360PSI)
Turbine Meters and Strainers
Compound Meters

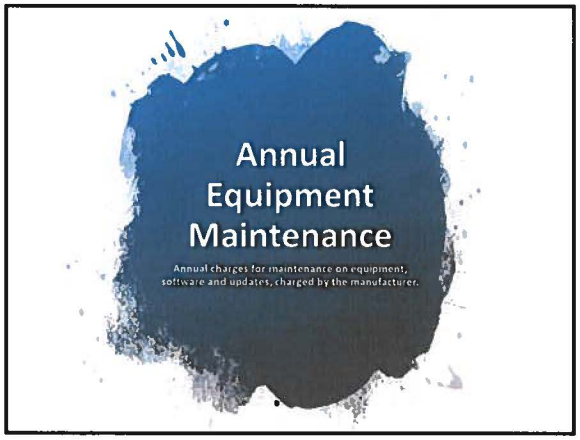
26


AMI Selection Process
Request for Proposals
Interviews
Site Tours
References
Cost Evaluation
Contracting

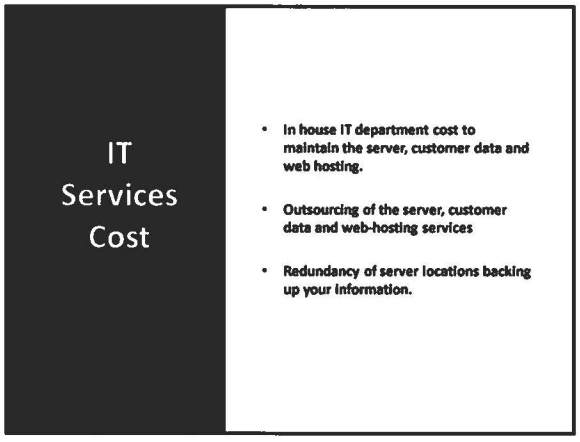
27


Annual Operating Cost
• Power
• Phone / Internet
• Site Maintenance
• Tower Maintenance
• Etc.

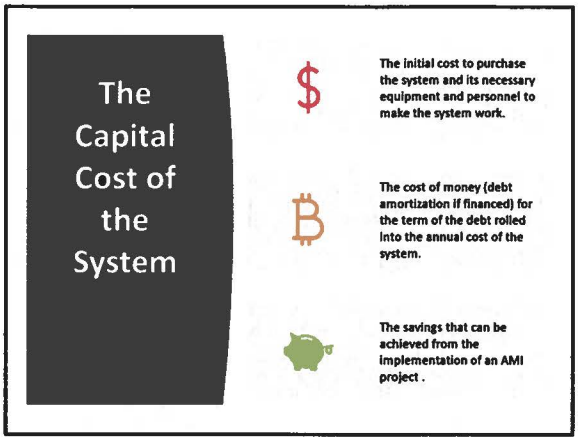
28


Annual Equipment Maintenance
Annual charges for maintenance on equipment, software and updates, charged by the manufacturer.

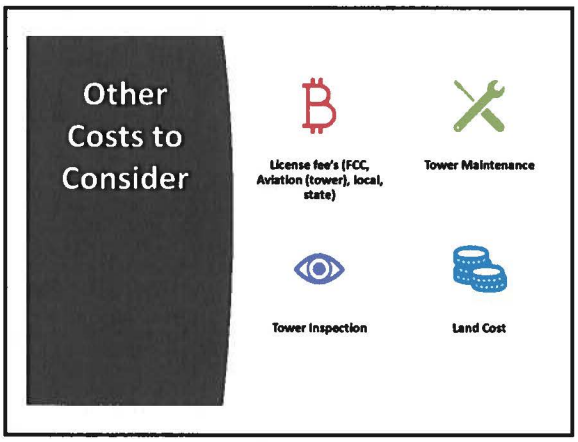
29


IT Services Cost
• In house IT department cost to maintain the server, customer data and web hosting.
• Outsourcing of the server, customer data and web-hosting services
• Redundancy of server locations backing up your information.

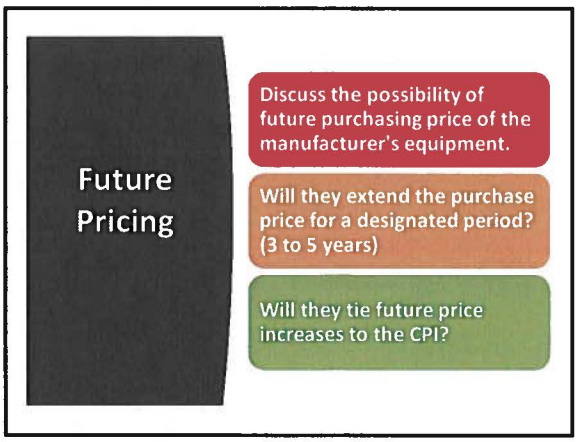
30


The Capital Cost of the System
The initial cost to purchase the system and its necessary equipment and personnel to make the system work.
The cost of money (debt amortization if financed) for the term of the debt rolled into the annual cost of the system.
The savings that can be achieved from the implementation of an AMI project .

31


Other Costs to Consider
License fee's (FCC, Aviation (tower), local, state)
Tower Maintenance
Tower Inspection
Land Cost

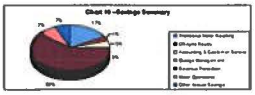
32


Future Pricing
Discuss the possibility of future purchasing price of the manufacturer's equipment.
Will they extend the purchase price for a designated period? (3 to 5 years)
Will they tie future price increases to the CPI?

33

Typical ROI of Two To Four Years On a Well-Designed System

- The estimated total savings for this utility was $326,590 per year
- NPV of the project over 15 years is estimated at $5,195,194
- Annual Maintenance and data hosting of the system is $3,740 per year
- Initial cost of the system was $319,430
- Savings calculated as follows,
  - -Meter reading savings $54,129
  - -Off cycle reads $12,336
  - -Accounting and customer service $15,025
  - -Revenue Protection $199,500



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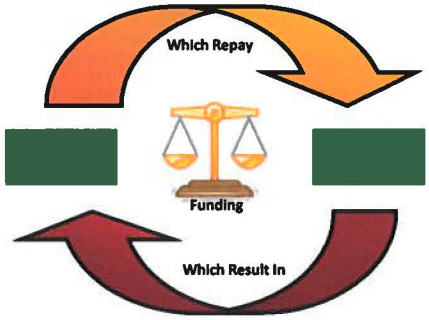
Pay As You Go



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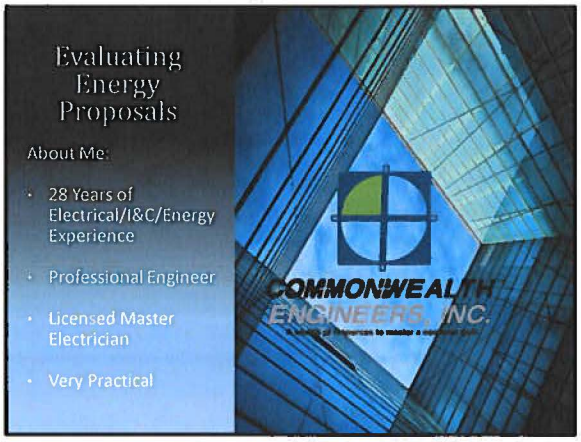
AMR/AMI Overview Q&A

36



1

My presentation today will focus on the benefits of energy savings with a **heavy focus** on what to watch out for in evaluating a proposal from a Contractor or an ESCO.

2

- Many of you often receive energy conservation info and sales pitches in relation to energy savings.
- I am certainly concerned about giving a presentation on a topic that many are tired of hearing about – but this is why it's critical we all stay educated on the topic – its not going to go away and we all need to know what to believe and what not to believe.
- Much of the energy conservation can be done by Plant and City staff.
  - At a minimum get the low hanging fruit – which can often be obtained at minimal cost.

3

In today's economy less money is available for operations and maintenance and government regulations continue to become more stringent. With budgets tightening the need for efficiency is ever increasing.

Becoming more energy efficient can help municipal water treatment plants lower operating costs, free up funds for maintenance needs, fund projects, and the benefits of efficiency go on and on.

4

Simple Items to Watch Out For:

1. Find out the real cost
    1. Take all of the nonsense away
        cost to install vs. savings
2. Who will be receiving the rebates?
3. Who will be monitoring the power saved?
    1. Pre vs. Post Project
    2. How easy is it for the ESCO to not be held accountable – if influent is higher for a length of time is the contract adjusted or null?
4. What happens if the ESCO does not deliver?
    1. Sometimes its not about savings – define your end game
5. Be CAREFUL when manpower savings are calculated in – do you really glean these savings? You can but you must be diligent.

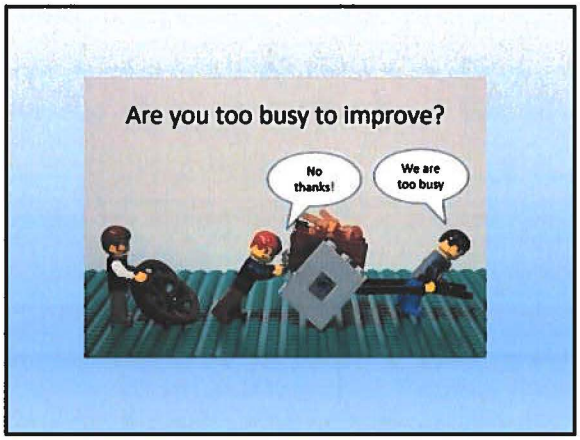
5

Get the real costs.

Cost vs. Savings

Capitol, Installation, Payback

6



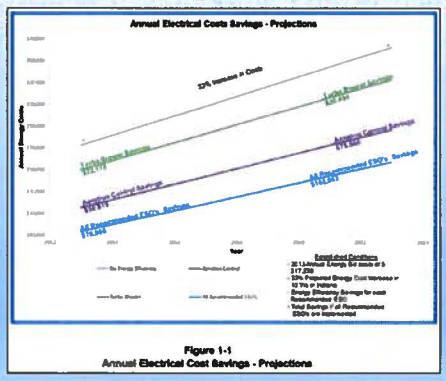
7

I have seen this water/wastewater energy use estimate in other documentation stated as high as 6% - its a big number!!

Energy Use in the Water and Wastewater Sector
Water and wastewater systems are significant energy consumers. An estimated 3%–4% of U.S. electricity consumption is used for the movement and treatment of water and wastewater [1,2]. The exact cost of energy use can vary widely from one utility to the next, with estimates ranging from 2%–60% of total operating costs [3,4]. Energy represents a substantial cost to wastewater utilities, as it is typically required for all stages in the treatment process, from the collection of raw sewage to the discharge of treated effluent. Given that water and wastewater treatment plants are not primarily designed and operated with energy efficiency as a chief concern, these systems can be overlooked when communities find energy improvement projects.

This equates to approximately 50 billion kWh/year or $4 billion in electricity and 1% of U.S. greenhouse gas emissions.
Our energy costs here in Indiana and in the midwest are low compared to the east and west coast. As a reference our costs are typically 7 cents/kWH while New England and California are 18 cents/kWh.
Because of this difference in energy costs our payback times are longer.

8



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Not that any sales people are dishonest but they may have motivations that do not keep your best interest in mind.

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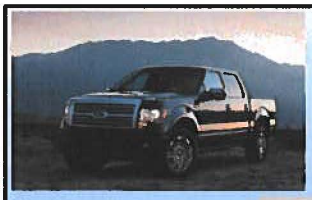


Be cautious when taking advice from someone that can only benefit when you buy their device or equipment.

You may end up buying additional equipment that provides you little savings and puts extra money in someone else's pocket.

11

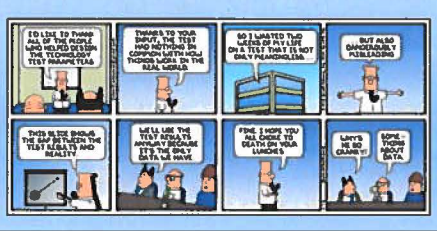
Choosing an Auditor

- Make sure your Energy Auditor is someone that can provide an honest opinion on various pieces of equipment and does not benefit from the size of a project or from the equipment used.

12

Get Real World Data

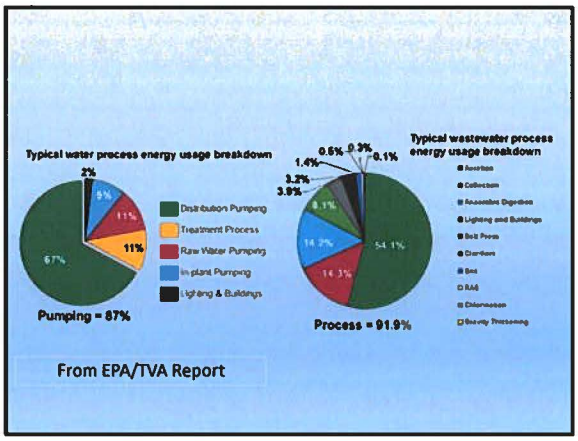
- Motor/Pump efficiencies, HVAC equipment, and Lighting can add up to savings and this information is readily available.
- I often hear "we put in VFD's to save money". Applied properly they will save money – improperly they can cost you money.



13

- Be thorough in your investigation.
- Be sensible about who is providing you with the information.
- Spend your money and your savings on the things **you** want and need!!

14



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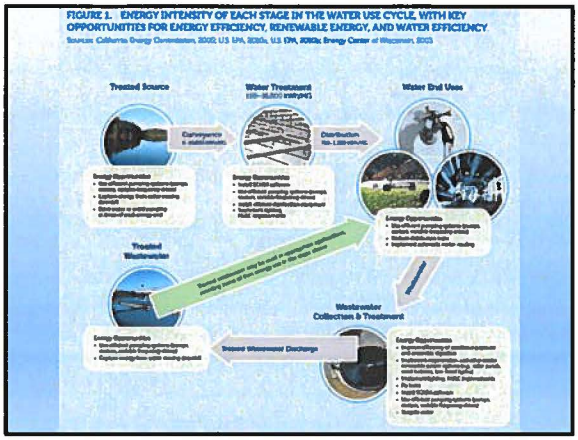
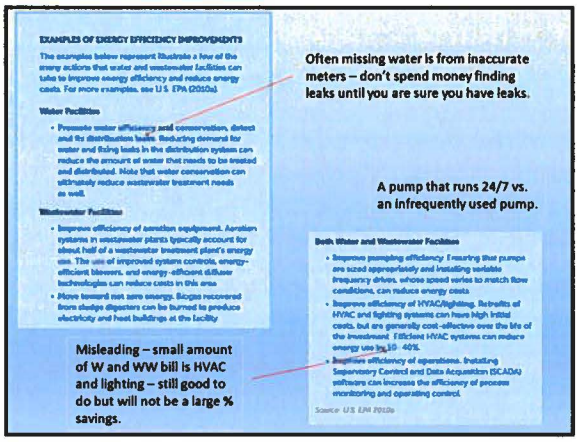
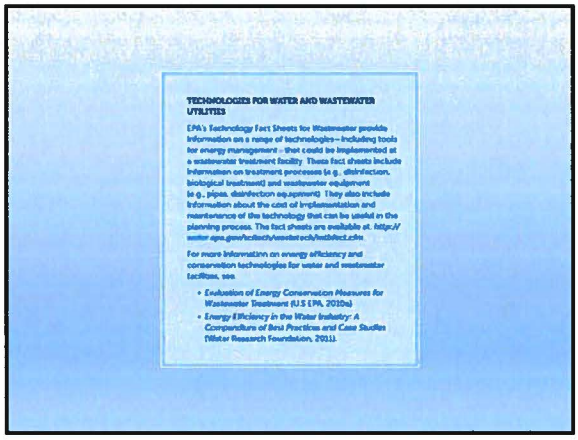


FIGURE 1. ENERGY INTENSITY OF EACH STAGE IN THE WATER USE CYCLE, WITH KEY OPPORTUNITIES FOR ENERGY EFFICIENCY, RENEWABLE ENERGY, AND WATER EFFICIENCY
Treated Source
Water Treatment
Water End Uses
Treated Wastewater
Wastewater Collection & Treatment

16


EXAMPLES OF ENERGY EFFICIENCY IMPROVEMENTS
Water Facilities
Wastewater Facilities
Both Water and Wastewater Facilities
Often missing water is from inaccurate meters – don't spend money finding leaks until you are sure you have leaks.
A pump that runs 24/7 vs. an infrequently used pump.
Misleading – small amount of W and WW bill is HVAC and lighting – still good to do but will not be a large % savings.

17


TECHNOLOGIES FOR WATER AND WASTEWATER UTILITIES

18

CEI Case Studies

19

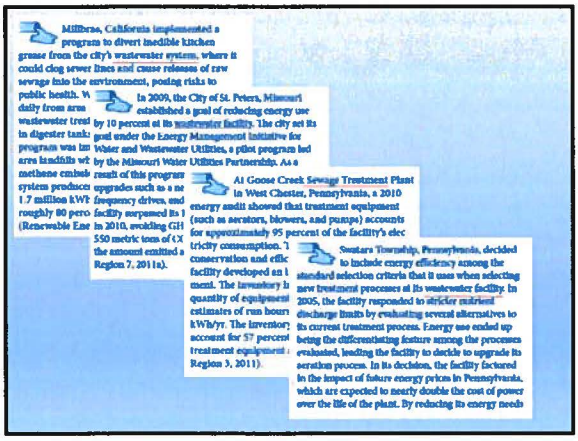
When we talk about Going Green everyone thinks about saving energy.

Process modifications can save the most money, energy, and chemical.

As an example:
Commonwealth has an existing client that we are currently performing a WTP upgrade on. We were asked by the town council to evaluate their plant and its operation.
We discovered some savings opportunities but the largest opportunity was not energy or manpower.

It was chemical. We were able to reduce the monthly chemical costs from $15,000/month to $5,000/month.

20



21

The City of Columbus, Georgia, decided to reduce operating costs by improving energy efficiency at the municipally owned Columbus Water Works. It took the leadership of the facility's president and senior vice president of operations to switch to an energy-efficient operation. Using a team approach, senior leaders encouraged operators, team leaders, and other staff members to propose plans to increase efficiency. Managers and team leaders also have biannual seminars on energy efficiency. The results from this approach have been impressive. Columbus Water Works has re-engineered and fully automated its entire plant. The facility retrofitted older equipment, installed adjustable speed drives, and automated speed controls for pumps. It has made significant investments in energy -efficient motors, with one project alone saving the facility $250,000 in energy costs (a 25 percent reduction). The motor retrofit project had less than a 1-year payback period and received the Governor of Georgia's Award for Pollution Prevention (Alliance to Save Energy, 2011).

22

Case Study #1:

ESO #	Recommendation	Annual Potential Energy Savings	20 Year Energy Potential Savings	Annual Potential Demand Reduction	20 Year Potential Demand Reduction	20 Year Total Savings (Energy + Demand)	Estimated Implementation Cost ($)	Simple Payback (years)	Available Capital (4% APR over 20 years)
1	Aeration Control	$51,120	$1,022,400	$15,100	$302,000	$1,324,400	$150,000	2.3	$910,000
2	Filter Pump and Backwash Pump Elimination	$67,884	$1,357,680	$20,500	$410,000	$1,767,680	na	na	$1,215,000
3	Cogeneration	$60,000	$1,200,000				$2,500,000	42.67	
4	Solar	$215,738	$4,314,765	$69,901	$1,398,026	$5,712,791	$3,300,000	11.55	
5	New Turbo Blowers	$10,800	$216,000	$3,100	$62,000	$278,000	$190,000	13.7	$190,000
	TOTAL for Items 1, 2, and 5 (recommended to implement)	$129,804	$2,596,080	$108,681	$2,172,026	$3,370,080			$2,315,000

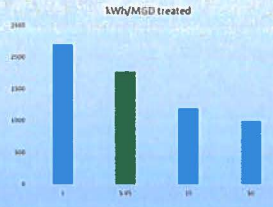
A recent audit for a client yielded a recommendation from CEI to implement Aeration Control, New Filtration Process, and New Turbo Blowers.

These energy savings provide for improvements costing $2,315,000 with NO RATE INCREASE.

23

Case Study #2:

During a preliminary audit we performed a comparison between the WWTP's kW/h usage vs. Million Gallon Treated compared to the national average.



The client was very close to the national average.

The Plant Superintendent and CEI knew there were savings available in the plants aeration so further investigation was contracted to CEI.

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After Further Investigation:

Aeration Evaluation:
The existing blowers consist of:
Three 250 HP Centrifugal Blowers on Variable Frequency Drives (VFD's).
Five 75 HP Centrifugal Blowers on across the line starters with no modulation.
The aeration modifications require the 250 HP blower lines and the 75 HP blower lines to be connected into a common header allowing for tighter DO control. This will give us the option of staging the small blowers in 75 HP increments followed by modulating the 250 HP blowers or controlling strictly from the 250 HP blowers.

25

The advantages of the common header include:
1. Tighter DO control for energy savings
2. Increased protection against blower failure
   a. Additional blower backup capability
   b. All of the blowers into a common header allows all of the blowers to be used as backup blowers

Capital Costs to Implement Proposed Changes:

Common Header Piping Modifications:	$45,300.00
Control Modifications:	$ 6,500.00
	$ 51,800.00
Annual Savings:	$ 48,112.23

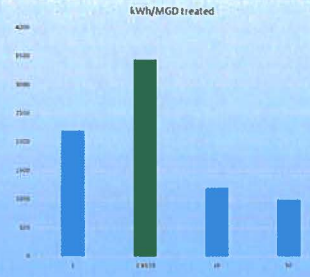
Payback: 1.08 years with a DO controlled at 2 mg/L.

26

Case Study #3:

Client maintains a DO in excess of 6 mg/L.

Currently working with the client to resolve this issue.



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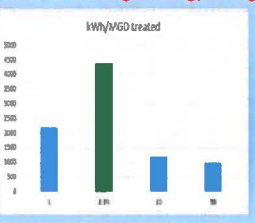
Case Study #4:

Client maintains a DO in excess of 6 mg/L.

This is a special case as the client has a very high BOD due to local industry. This problem can be addressed with available technology.

We are currently working with this client with a target energy savings of $90,000/year

Size of Plant MGD	kWh/MGD treated
1	2200
5.85	4425
10	1200
20	1200



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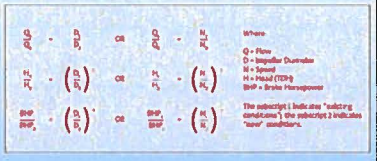
Affinity Law

1. The flow (GPM) varies proportionally with the change in speed. This means that twice the speed is twice the flow. One-third speed is one-third the flow.



2. The pump head (pressure) varies with the square of the change in the speed. Two times the speed is four times (2^2) the head generated. Eighty percent speed is 64 percent ($.80^2$) the head generated.
3. The power requirement (horsepower or kilowatts) varies by the cube of the change in speed. Two times the speed would burn eight times (2^3) the power. One half the speed would require one-eighth ($.50^3$) the power to drive the pump.

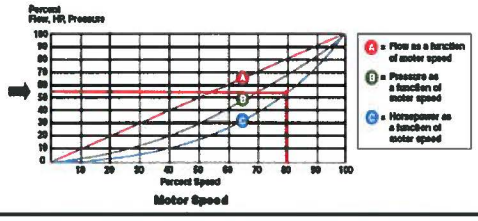
29

VFD Benefits with Pumps

- Physical Laws for Centrifugal Loads

A motor running at 80% of full speed requires 51% of the electricity of a motor running at full speed.

(.8 x .8 x .8 = .512)



30

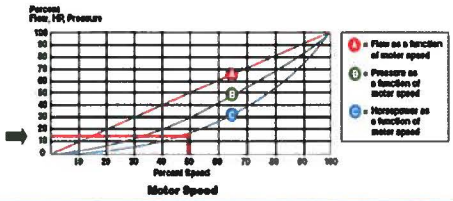
VFD Benefits with Pumps

Red Flag:
Must pay close attention to pump minimum speeds

- Physical Laws for Centrifugal Loads

A motor running at 50% of full speed requires 12.5% of the electricity of a motor running at full speed.

(.5 x .5 x .5 = .125)



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Caution! As you can see on the left if we turn the pump speed down we use less energy. That does not mean we put VFD's on all pumps and turn their speed down to save energy. VFD's are only applicable for energy savings if the motor capacity is not needed and we can turn it down without effecting the process.

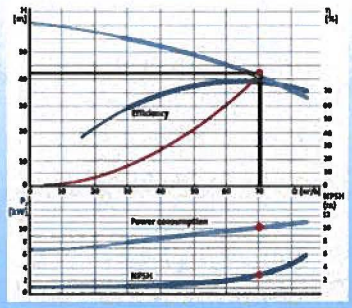
VFD's are about 97% efficient.

32

Putting VFD's on pumps and running them at full speed actually costs money from an efficiency standpoint. Reduced starting current is a benefit and reduces generator size.

Other benefits from the VFD's are gained in this example but we are not guaranteed energy savings.

33



Pumps and other equipment have optimum efficiency points. Even at a WTP running a pump at its optimum efficiency point will save you money. EG – my truck likes 60mph.

34

Applications:

So even on applications where we have to pump a given amount we can save money by pumping at reduced speed (optimum efficiency point) when acceptable.

Low flow times

WTP – 2 to 5 AM can fill tanks when demand is low

Often the capacity is built into a system that allows pump at the optimum efficiency point in lieu of pumping at a pumps highest output point. Controls can be programmed with different urgency settings deviating from high efficiency to high output only when necessary.

35

Lighting – though a small portion of the overall power used at a WTP or WWTP it is worth considering – especially during new construction.

This number just continues to improve. Lower than this now.

Cost Comparison between LEDs, CFLs and Incandescent light bulbs

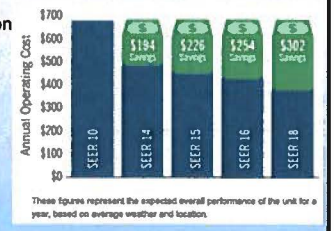
	LED	CFL	Incandescent
Light bulb projected lifespan	50,000 hours	10,000 hours	1,200 hours
Watts per bulb (equiv. 60 watts)	10	14	60
Cost per bulb	$35.95	$3.95	$1.25
KWHs of electricity used over 50,000 hours	500	700	3000
Cost of electricity (@ 0.10per KWh)	$50	$70	$300
Bulbs needed for 50k hours of use	1	5	42
Equivalent 50k hours bulb expense	$35.95	$19.75	$52.50
Total cost for 50k hours	$85.75	$89.75	$352.50

Energy Savings over 50,000 hours, assuming 25 bulbs per household:

Total cost for 25 bulbs	$2143.75	$2243.75	$8812.50
Savings to household by switching from incandescents	$6668.75	$6568.75	0

36

HVAC – though a small portion of the overall power used at a WTP or WWTP it is worth considering – especially during new construction.



From Duke Energy

Government Standards:

What's changing?

New Seasonal Energy Efficiency Ratio (SEER) standards will be enforced for air conditioners and heat pumps installed on or after January 1, 2015; however, standards differ by region. The current 13 SEER standard for air conditioners will move to 14 SEER in most areas, but 13 SEER air conditioning units can still be sold in the northern region.

37

Cooling Efficiency:

Seasonal Energy Efficiency Ratio (SEER) (From Wikipedia)

The SEER rating of a unit is the cooling output during a typical cooling-season divided by the total electric energy input during the same period. The higher the unit's SEER rating the more energy efficient it is. In the U.S., the SEER is the ratio of cooling in British thermal unit (BTU) to the energy consumed in watt-hours. The coefficient of performance (COP), a more universal unit-less measure of efficiency, is discussed in the following section.

The annual total cooling output would be

8000 BTU/h × 8 h/day × 125 days/year = 8,000,000 BTU/year

With a SEER of 10 BTU/W·h, the annual electrical energy usage would be about

8,000,000 BTU/year / 10 BTU/(W·h) = 800,000 W·h/year

The average power usage may also be calculated more simply by

Average power = (BTU/h) / (SEER) = 8000 / 10 = 800 W

If your electricity cost is 20¢/kW·h, then your cost per operating hour is

0.8 kW × 20¢/kW·h = 16¢/h

38

For example, consider a 5,000-British-thermal-unit-per-hour (1,500 W) air-conditioning unit, with a SEER of 10 BTU/W·h, operating for a total of 1000 hours during an annual cooling season (e.g., 8 hours per day for 125 days).

The annual total cooling output would be

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39

Heating Efficiency:

Annual Fuel Utilization Efficiency (AFUE) (From Wikipedia):

The annual fuel utilization efficiency (AFUE; pronounced 'A'-'Few' or 'A'-'F'-'U'-'E') is a thermal efficiency measure of combustion equipment like furnaces, boilers, and water heaters. The AFUE differs from the true 'thermal efficiency' in that it is not a steady-state, peak measure of conversion efficiency, but instead attempts to represent the actual, season-long, average efficiency of that piece of equipment, including the operating transients.[1] It is a dimensionless ratio of useful energy output to energy input, expressed as a percentage.

For example, a 90% AFUE for a gas furnace means it outputs 90 BTUs of useful heating for every 100 BTUs of Natural Gas input (where the rest may be wasted heat in the exhaust). A higher AFUE means higher efficiency.

40

The method for determining the AFUE for residential furnaces is the subject of ASHRAE Standard 103. A furnace with a thermal efficiency (nth) of 78% may yield an AFUE of only 64% or so, for example, under the standard's test conditions. When estimating annual or seasonal energy used by combustion devices, the AFUE is the better efficiency measure to use in the calculations.[2] But for an instantaneous fuel consumption rate, the thermal efficiency may be better.

Note that the theoretical limit for a conventional furnace's instantaneous efficiency is 100%, whereas a heat pump used for building heating may exceed 100%. For example, a COP of 1.5 is equivalent to 150%. Heat pumps are readily available for electric and gas sources, eg.[3] So from a theoretical perspective, in some use cases the name "efficiency" may be misleading.

Also consider fuel costs. Electric resistive heat is 100% efficient but it is much cheaper to heat with natural gas than electric heat.

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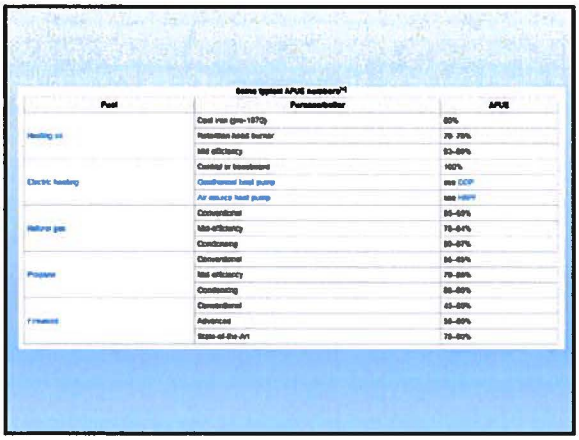
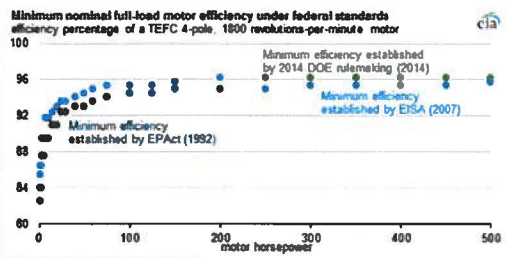


Fuel	Furnace/boiler	AFUE
Heating oil	Cast iron (pre-1970)	60%
	Rotation head burner	70–75%
	Mid efficiency	83–86%
	Central or baseboard	100%
Electric heating	Coal/wood heat pump	one COP
	Air source heat pump	one HSPF
Natural gas	Conventional	65–68%
	Mid-efficiency	78–84%
	Condensing	89–97%
Propane	Conventional	84–85%
	Mid efficiency	78–88%
	Condensing	89–96%
Firewood	Conventional	45–60%
	Advanced	65–80%
	State-of-the-Art	75–82%

42

Motors:

Minimum efficiency standards for electric motors will soon increase



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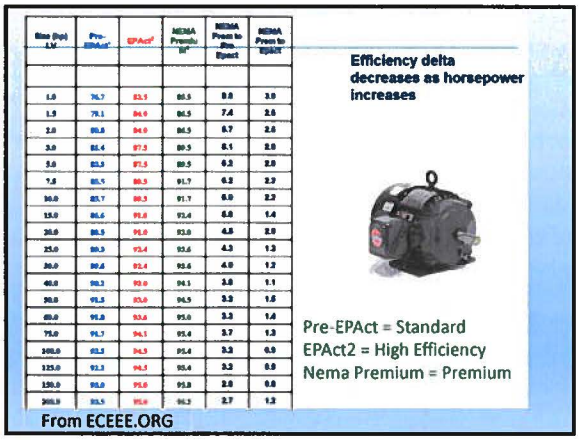

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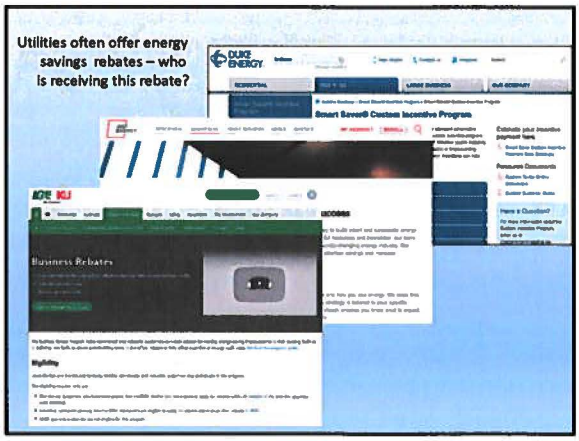

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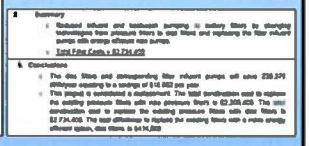
On the Crown Point Filter Project we applied for a Rebate with NIPSCO. NIPSCO has a given amount of funds available annually. With this project we were able to apply for the difference in installing the energy efficient option (Disk Filters) vs. the inefficient option (Pressure Filters). The efficient Pressure Filter option was $434,000 more installed.



NIPSCO also offers an energy savings rebate – they will pay you an amount equal to your annual savings.

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- Develop a plan for maintaining the energy efficiency of equipment. Maintaining any energy-using equipment that has been installed is vital to the continued success of an energy program. The maintenance schedule for each piece of equipment or system needs to be noted, considering the following questions:
  - Who is responsible for maintenance? Does the vendor provide maintenance?
  - How often does maintenance need to be performed? What are the actions for maintenance?
  - If the facility is performing the maintenance, are all of the necessary resources available (e.g., fuel, spare parts, filters, etc.)?
  - Will outside contractors need to be brought in to perform maintenance?
  - Is the performance evaluated with the maintenance?
  - Where are the records kept for the maintenance and performance evaluations?

Determining the answer to these questions is important to maintaining the program and the operation. Large equipment typically has high repair costs that may be prevented through regular maintenance.

https://www.epa.gov/sites/production/files/2015-08/documents/wastewater-guide.pdf

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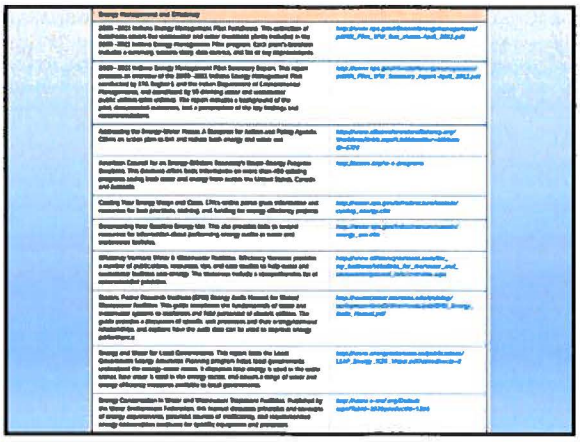

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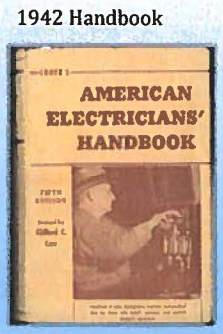
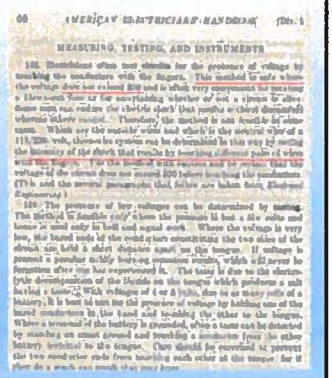
1942 Handbook





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Questions?

- **Commonwealth Engineers, Inc.**

Toby Church, P.E., C.E.A.

Electrical Engineer

tchurch@contactcei.com

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EXHIBIT 4

Mail to:	Commonwealth of Kentucky Department for Environmental Protection	*For Official Use Only* *Do not write in this space*
Division of Compliance Assistance Certification and Licensing Branch Operator Certification Program 300 Sower Blvd. Frankfort, KY 40601	**Application for Approval of Courses for Continuing Education Credit** *Drinking Water Treatment, Drinking Water Distribution, Bottled Water, Wastewater Treatment and Collection System* Telephone: 1-800-926-8111 www.dca.ky.gov/certification	COPY

I. Course Sponsor Information: **Agency Interest Number:** 108571

A. Sponsoring Organization (school, business, association, etc.):

Kentucky Rural Water Association

Key Contact Person:

Name and Title: Janet Cole, Education Coordinator

Address: 1151 Old Porter Pike

City, State and Zip: Bowling Green, KY 42103

Phone and Fax: Ph: 270.843.2291 Fx: 270.796.8623

E-mail: j.cole@krwa.org

Web Page: www.krwa.org

☒ One-Time Approval Requested ☐ Two-Year Approval Requested

B. If individual requesting approval is different than the key contact person for the sponsor, please complete the following information:

Name and Title:

Address:

City, State and Zip:

Phone and Fax:

E-mail:

II. General Course Information:

A. Title: Kentucky Rural Water Association's 2020 Management Conference

B. Location and Date/s: Holiday Inn University Plaza/Sloan Convention Center, Bowling Green, KY / February 19-20, 2020

C. Cost per Student or Group: $ $75-$250

D. Delivery Format or Media (check those that apply):

☒ Classroom	☐ Web/Online	☐ Laboratory	☐ Exhibition
☐ Field	☐ CD-ROM	☐ Video/Audio	☐ Correspondence
☐ Other (Explain)			

E. Continuing Education Credits **(hours)** Requested for Target Audience:

Drinking Water Treatment, Distribution and/or Bottled Water: **12 hours**

Wastewater Treatment and/or Collection: **11 hours**

(Attach a detailed description explaining how this training relates to the wastewater treatment process.)

III. Required Items (must be attached to submittal, check off as completed):

- A. ☒ Course Learning Objectives
- B. ☒ Criteria for Successful Completion by Operators
- C. ☒ Agenda (timed with instructors identified and brief description of topics)
- D. ☒ Credentials for All Instructors

IV. Additional Attachments (required for distance learning courses, optional for other training):

- A. ☐ Instructional Design (developed by whom/their credentials)
- B. ☐ Curriculum Content (subject matter experts/their credentials)
- C. ☐ Required Assignments and/or Examinations (type, passing score, etc.)
- D. ☐ Mandatory Time Constraints (deadlines, granting of extensions, etc.)

V. Signature of Sponsor's Contact Person

I confirm that all information provided with this application is accurate to the best of my knowledge. A complete list of attendees and credits to be awarded to them will be forwarded on a "Continuing Education Activity Report" to the Kentucky Division of Compliance Assistance (within 30 days of completing the course when possible).

Printed Name and Title: **Janet Cole, Education Coordinator**

Signature and Date: Janet Cole **December 31, 2019**

EXHIBIT 4A

COPY

DLG
DEPARTMENT FOR LOCAL GOVERNMENT

Elected County Officials Training Incentive Program Training Approval Request Form

Training Approval Requested By: Janet Cole

Title: Education Coordinator **Agency:** Kentucky Rural Water Assn.

Phone: 270.843.2291 **E-mail:** j.cole@krwa.org

Requester: Please complete both pages of this form, attach a copy of the detailed agenda that lists the start and end times of all training sessions while also indicating any breaks that may be given and submit to: **Department for Local Government, 100 Airport Road, 3rd Floor Frankfort, KY 40601 Phone: 800-346-5605 Fax: 502-227-8691 E-mail: Wendy.Thompson@ky.gov**

Training Event Information

Training Title: 2020 Management Conference

Training Provider: Kentucky Rural Water Association

Contact Name: Janet Cole **Title:** Education Coordinator

Phone: 270.843.2291 **E-mail:** j.cole@krwa.org

Fax: 270.796.8623 **Website:** www.krwa.org

Training Intended For: ☑ *Fiscal Court* ☐ *County Clerk* ☐ *Sheriff* ☐ *Jailer* ☐ *All*

Registration Fees: ☑ *Yes: Dollar Amount:* $ $75-$250 ☐ *No*

Enrollment Limitations: ☐ *Yes: Maximum Enrollment:* # _____ ☐ *No*

Proof of Attendance: ☑ *Individual POA Form* ☐ *Sign-In/Out Sheets* ☐ *Individual Certificate*

Training Dates with Locations: February 19-20, 2020

Holiday Inn University Plaza/Sloan Convention Center

Bowling Green, KY

FOR DLG USE ONLY

Approved By: _____ **Date:** _____ **Hours:** _____

Denied By: _____ **Date:** _____

Elected County Officials Training Incentive Program Training Approval Request Form
Page Two

Training Title: 2020 Management Conference **Provider:** Kentucky Rural Water Association

Has this training been specifically designed for Kentucky's elected county officials? ☐ *Yes* ☑ *No*

Describe the learning objectives and how the content pertains to improving job knowledge or skills.

Attendees of this conference will gain increased knowledge of issues facing water and wastewater utilities, including water districts and municipal water utilities. Participants will hear discussions on trends and ideas affecting the industry and will be presented with ideas for planning and preparing for the future of drinking water and wastewater services in the Commonwealth.

List Trainers and their Titles/Qualifications (attach short Bio's if necessary):

See attached training summary which includes biographical information for speakers.

Describe any training materials that will be provided to the trainees:

Upon request, attendees may receive handouts of presentations or a flash drive containing the information.

Is this training a requirement for County Officials? (If Yes check applicable officials) ☐ *Yes* ☑ *No*

☐ *Fiscal Court* ☐ *County Clerk* ☐ *Sheriff* ☐ *Jailer* ☐ *All*

List corresponding KRS, KAR or other requiring entity:

KRS 74.020 (6) and KRS 74.020 (7) - Water District Commissioners

401 KAR 11:050, Section 3 - Water and Wastewater Operators