



“Cost-Effective Approach to Berea’s AMI and Water Meter Replacement Project”

OTCO PROCRASTINATOR’S WORKSHOP
Columbus, Ohio

December 8, 2016



BURGESS & NIPLE
Engineers ■ Architects ■ Planners



Presentation Outline

- Introductions
- Background of Berea Water Meter Reading System
- Project Approach
 - Planning
 - Design
 - Procurement
 - Implementation
- Lessons Learned
- Q&A

Latest Trends Related to AMR/AMI

Utility Intelligence & Infrastructure (UII) compiled the 2014 Water Professional Survey Summary that portray thinking and trends in water utility industry regarding water meter, AMR, and AMI current practices and future plans.

<http://utilityii.com/category/industry-news/>

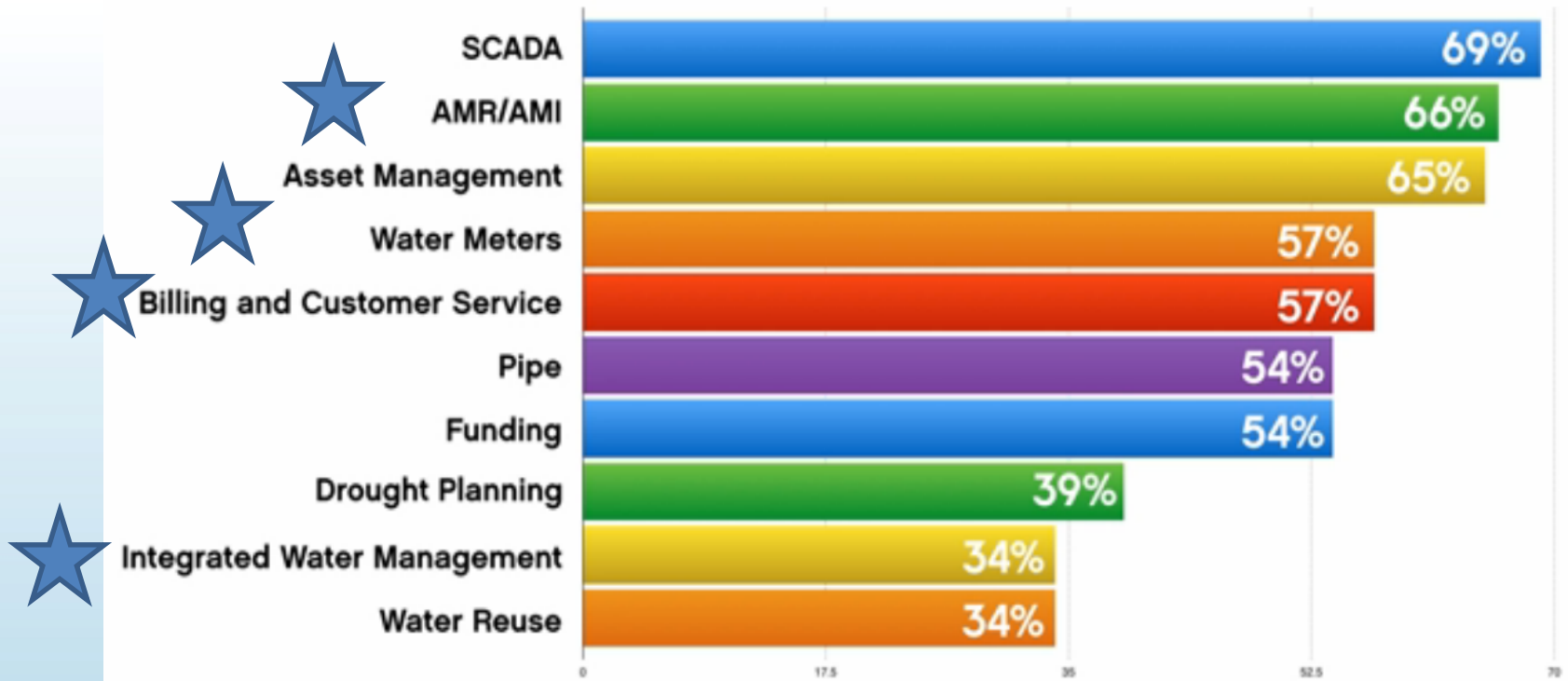


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UII 2014 Survey Results

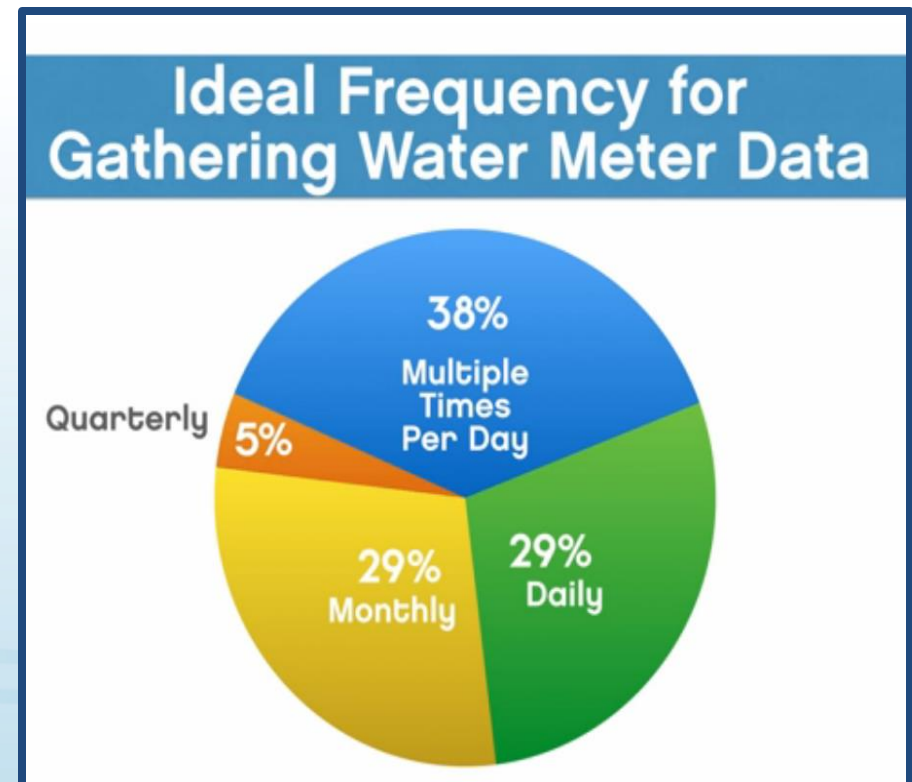
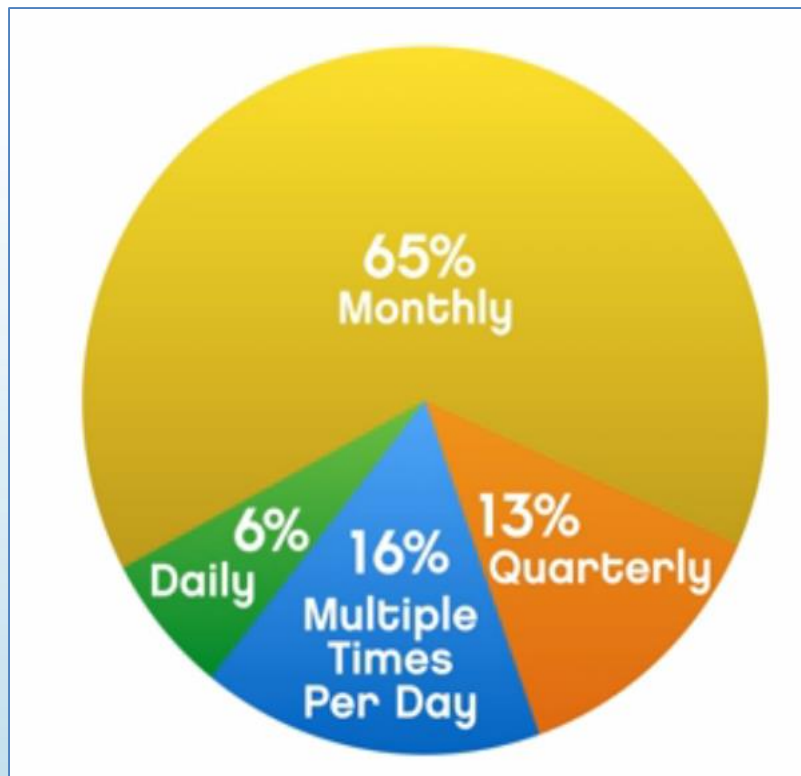
Top Ten Interests



Published: September, 2014

UII 2014 Survey Results

How frequently are water meters read?



Historical Overview

- The Berea Water Department serves approximately 6,900 customer residential customers and commercial/industrial accounts.
- All water and sewer bills are generated through for metered accounts using the meter readings obtained on a quarterly basis.
- Approximately 2/3 of the Water Meter Readers are manually read by read meters each quarter who traveled door to door and read
- In 2006, an ACLARA Automatic Meter Infrastructure (AMI) system was installed on approximately 1/3 of the accounts.
- There are 5 Data Collector Units that receive signals from Meter Transmitter Units via 450 Hz radio communication.
- ACLARA Star system needs to be upgraded to latest software and new server installed to handle hourly meter reads from MTUs

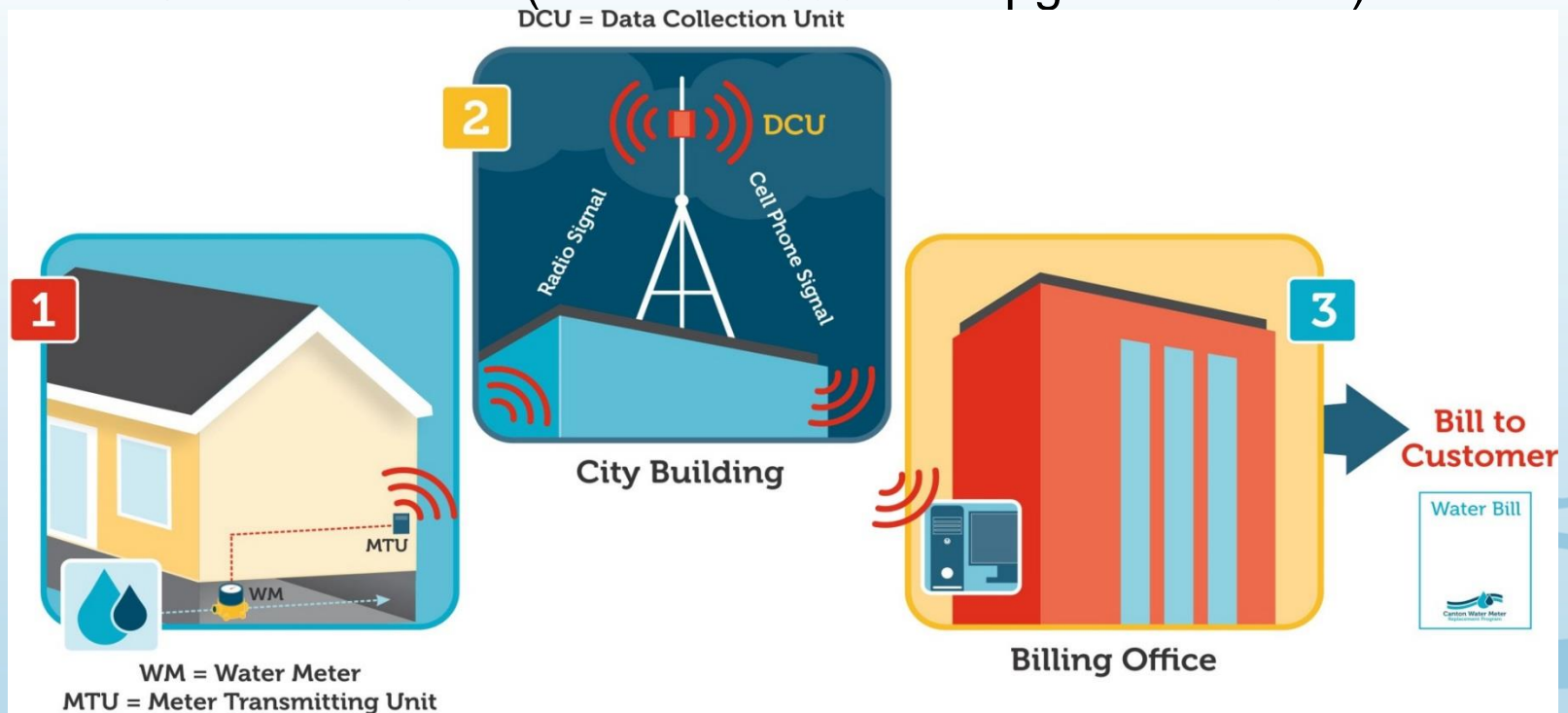
Goals and Objectives for AMI Project

- Goals and Objectives:
 - Automate manually 4,300 manually read meters
 - Install new Meters and Encoders on meters >10 years old
 - Install New Transmitters on new manually read meters
 - Replace Large Compound Meters for Commercial Accounts
 - Upgrade or replace existing ACLARA AMI System
 - Improved customer service through more accurate reads
 - Provide fair and equitable bill for water used
 - Interface with Existing CMI Utility Billing System

Existing Berea AMR/AMI Systems

Develop a migration strategy to avoid stranding assets and leverage previous investments

- AMI System Upgraded to Approximately 7,000 meters
- 4,600 New Badger Meters with ACLARA 2-way transmitters
- 5 Data Collection Units (installed 2006 and upgrade in 2012)



Berea Metering Reading and AMI System

- Hybrid System: Manual and AMI Read Meters
- Meter read every 12 hour reads
- Upload via 1-way radio transmission to Data Collection Units (DCUs)
- 2,600 meters installed in 2006 will be re-used
- Manually read 1/3 of 4,300 meters each Quarter
- Replace 200 Large Meter Commercial Accounts
- Existing ACLARA AMI system will be evaluated
- Existing CMI Utility Billing System will remain

Berea Metering Project Team

- City Meter Replacement Project Team
 - Sandy Vozar, Utility Engineer
 - Patrick Lane, Meter Service Tech
 - Billing Clerk
 - Finance Department and Upload of AMI Data with Utility Billing System (CMI)

- Burgess & Niple (Consultant)
 - Develop Specs for Meters and Installation Contractor
 - Assist with Upgrade and Migration Plan for ACLARA AMI System
 - Construction Assistance



Burgess & Niple – Roles and Responsibilities

PLANNING PHASE

- Assessment of Existing AMI System
- Access existing Meter Count
- AMI Software Evaluation
- Budgetary Cost Estimates
- Schedule

DESIGN PHASE

- Procurement Method
- Prepare Detailed Specs and Bid Packages
 - Meters
 - Installation RFQ/RFP
 - Negotiate ACLARA
Sole-Source
Procurement
- Tabulate Bids and Award of Contracts
- Council Presentation
- OWDA Application Documents

- INSTALLATION PHASE
- Kickoff Meetings
- Schedule Deliveries
- Attend Progress Meetings
- Consult with Project Manage
- Monitor Progress
- Assist with Data Management between Installation Contractor, ACLARA and UBS databases.

Project Approach Through Procurement



Needs Assessment – Approach

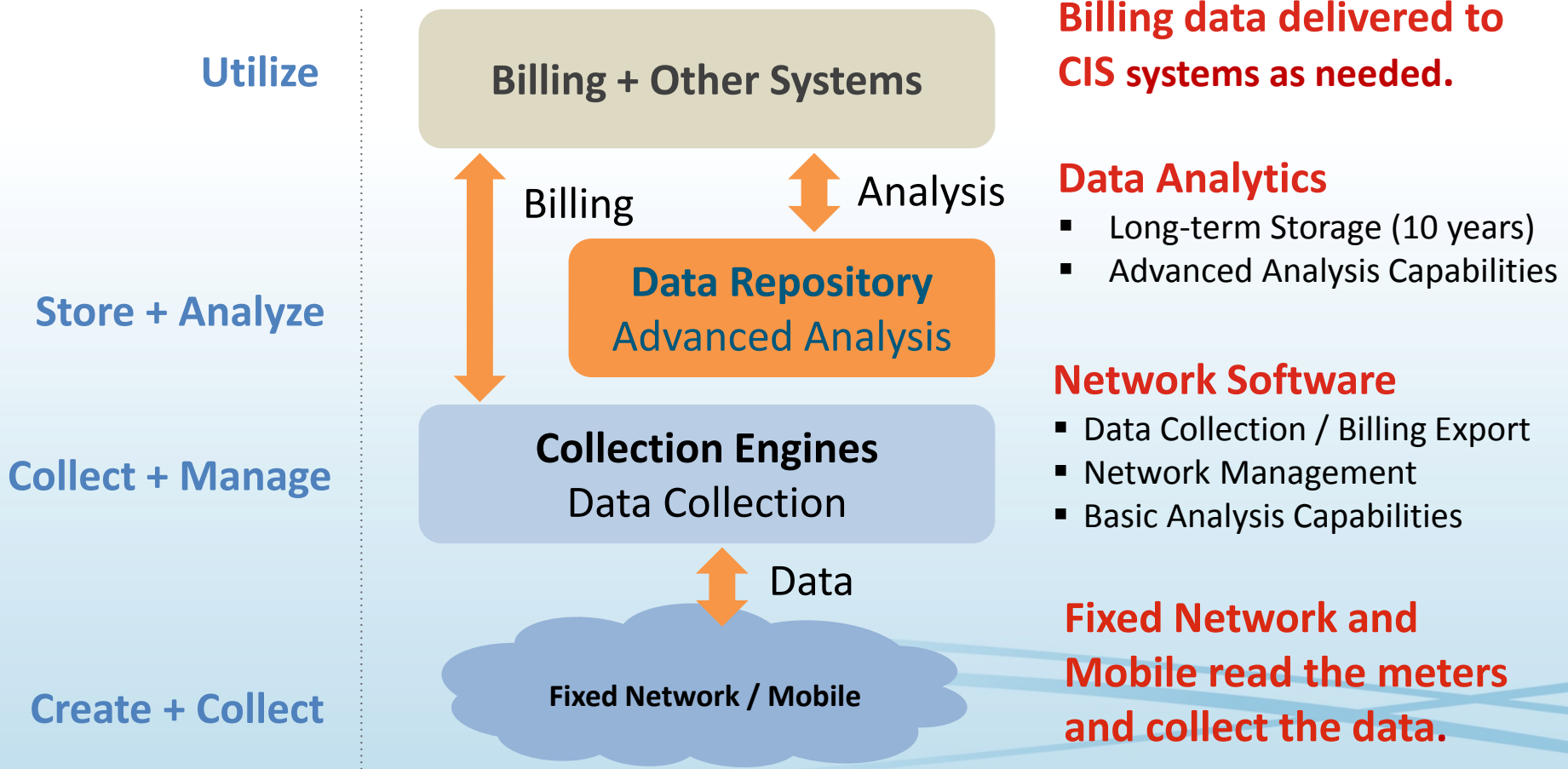
- **Interviews/focus groups with key staff – LISTEN**
 - Determine existing business processes
 - Define AMI impacts on operations
 - Identify unmet needs
 - Identify quantitative and qualitative areas of improvement
 - Assist Project Team in mapping business processes
 - Identify data collection requirements for:
 - *Installation Contractor*
 - *ACLARA STAR database*
 - *CMI Utility Billing System*

Technology Plan

- Meter Technology Assessment
- Data Collection & Communication Systems (1-way/2-way)
- Data Management & Analytics
- IT Infrastructure
- Utility Billing System Integration (CMI)



AMI Data Flow



MODEL OF DATA FLOW

INSTALLER WORK ORDER SYSTEM

- Verify Account Information & Address
- Meter and MTU Serial Number (Double Entry)
- List Water Meter Location
- Describe MTU location
- List Non-standard Work/Authorizations
- Photos of Old and New Installation
- GPS Coordinates (Wireless vs. True GPS)

METER DEPT. ARCHIVE



ACLARA Data Only

“SCRUBBED” Account Data

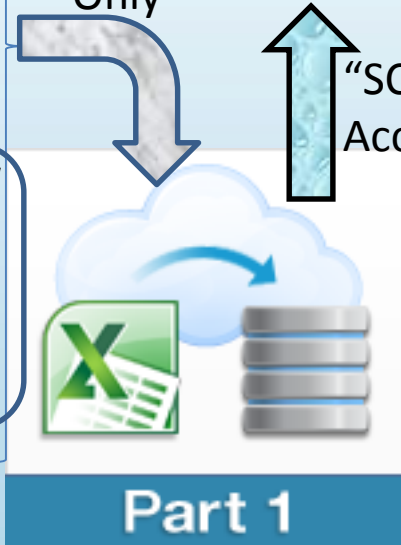
CONSUMPTION DATA TO UTILITY BILLING SYSTEM DATA BASE (CMI)

ACLARA DATA BASE

Account	MTU	Port	Readings	Readings	Missed	Serial #	Meter Type	Address
1010002	41035294	1	9	10	10	19817727	ABB,T3000,2,SCANCODER,100 GAL,(ID=33)	49 SEMINARY ST Berea, OH
1010007	1438564	1	9	10	10	15889517	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	115 SEMINARY ST Berea, OH
1010011	1608348	1	9	10	10	17791338	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	19 E GRAND ST Berea, OH
1010012	46037649	1	9	10	10	45852068	Badger ADE LP 5/8 Encoder 60 10Gal(ID=1809)	25 E GRAND ST Berea, OH
1010016	41134989	1	9	10	10	21879599	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	173 SEMINARY ST Berea, OH
1010020	1866444	1	9	10	10	18841682	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	205 SEMINARY ST Berea, OH
1010021	1847300	1	9	10	10	19853367	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	211 SEMINARY ST Berea, OH
1010022	41001166	1	9	10	10	21879455	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	194 SEMINARY ST Berea, OH
1010027	1438581	1	9	10	10	16803369	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	130 SEMINARY ST Berea, OH
1010030	40140160	1	9	10	10	19853441	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	58 GRAND ST Berea, OH
1010031	40140159	1	9	10	10	19853440	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	58 E GRAND ST Berea, OH
1010032	40140157	1	9	10	10	19853479	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	104 SEMINARY ST Berea, OH
1010035	41002219	1	9	10	10	21879575	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	10 SEMINARY ST Berea, OH
1010037	40140156	1	8	10	20	19853478	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	33 BEECH ST Berea, OH
1010039	41135126	1	9	10	10	12061093	Elster evoQ4 1000 Gal 6D(ID=1456)	63 BEECH ST Berea, OH
1010041	40140163	1	10	10	0	19853443	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	98 SEMINARY ST Berea, OH
1010042	40140162	1	9	10	10	19853442	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	70 E GRAND ST Berea, OH
1010045	41001162	1	9	10	10	21879451	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	137 BEECH ST Berea, OH
1010049	1866446	1	9	10	10	18818975	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	159 BEECH ST Berea, OH
201010050	40140155	1	9	10	10	19853477	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	163 BEECH ST Berea, OH
221010056	40091219	1	9	10	10	18431705	ABB,C3000,6HIFLO,SCANCODER,1000 GAL,(ID=45)	0 EASTLAND RD Berea, OH
231010059	40139931	1	9	10	10	20810987	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	190 BEECH ST Berea, OH
241010060	40140246	1	9	10	10	20810964	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	188 BEECH ST Berea, OH
251010062	41002214	1	9	10	10	21879648	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	176 Beech St Berea, OH 44017
261010063	1646065	1	9	10	10	17800911	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	172 BEECH ST Berea, OH
271010064	40140161	1	9	10	10	16787896	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	101 JACOB ST Berea, OH
281010070	41001227	1	9	10	10	14826144	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	187 BEECH ST Berea, OH
291010071	41001534	1	9	10	10	21879426	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	193 BEECH ST Berea, OH
301010073	1608413	1	9	10	10	18425098	ABB,T3000,4,SCANCODER,100 GAL,(ID=1176)	202 E BAGLEY RD Berea, OH
311010075	1846016	1	8	10	20	17800915	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	106 JACOB ST Berea, OH

Accounts in Work Zone

DCU sends Hourly Meter Reads 2x/Day



Account	MTU	Port	Actual Readings	Expected Readings	Percent Missed	Meter Serial #	Meter Type	Address
1010002	41035294	1	9	10	10	19817727	ABB,T3000,2,SCANCODER,100 GAL,(ID=33)	49 SEMINARY ST Berea, OH
1010007	1438564	1	9	10	10	15889517	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	115 SEMINARY ST Berea, OH
1010011	1608348	1	9	10	10	17791338	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	19 E GRAND ST Berea, OH
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1010016	41134989	1	9	10	10	21879599	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	173 SEMINARY ST Berea, OH
1010020	1866444	1	9	10	10	18841682	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	205 SEMINARY ST Berea, OH
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1010022	41001166	1	9	10	10	21879455	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	194 SEMINARY ST Berea, OH
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1010032	40140157	1	9	10	10	19853479	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	104 SEMINARY ST Berea, OH
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1010037	40140156	1	8	10	20	19853478	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	33 BEECH ST Berea, OH
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1010042	40140162	1	9	10	10	19853442	ABB,C700,5/8x3/4,SCANCODER,10 GAL,(ID=27)	70 E GRAND ST Berea, OH

Design Approach

- Inventory of meters by size and type
- Sample testing of meter accuracy
- Analyze consumption data for commercial and industrial meter right-sizing
- Develop and manage procurement process
- Technical specifications for meter equipment, AMI system, and installation services

Existing Meters to Remain in Service

- Existing Meters with MTU installed since 2006
 - 2,623 residential meters
 - 40 commercial/industrial units
- New Meters w/o MTUs to be upgraded
 - 173 New Meters were installed with since 2006
 - 173 New MTUs to be installed

New Meters and MTUs to be Installed

- Existing Meters installed prior to 2005.

– 3/4": 3,856 meters

– 1": 105

– 1-1/2": 6

– 2": 78

– 3": 3

– 4": 21

– 6": 1

New Meter Type

Positive Displacement

Ultrasonic Flowmeter

Magnetic Flowmeter

Badger Meter



Badger Meter

Recordall® Cold Water Bronze Disc Meter
Size 5/8, 5/8 x 3/4" (DN 15mm) Model LP
NSF/ANSI Standard 61 Certified, Annex G

- **Model 25, 5/8" and 5/8" x 3/4" Five (5) years from date of shipment or registration of 750,000 gallons, whichever occurs first.**
- **Badger Meter warrants Product low flow accuracy of 98.5% at a rate of 1/4 gpm and low flow accuracy of 95% at a rate of 1/8 gpm for five (5) years from date of shipment or registration of 675,000 gallons, whichever occurs first.**



Model LP

Procurement Alternatives

■ Single Prime Contractor

- Meter Vendor
- AMR Supplier
- Installation Contractor
- Construction Management

**HIGHER
COST**

■ Performance Guarantee Contract

- Savings Due to Increased Meter Accuracy
- Single Source Responsibility
- Guarantee Savings for 15 years
- Annual Verification
- Select Meters and MTU

**HIGHEST
COST**

Multiple Contracts (more risk and more coordination effort)

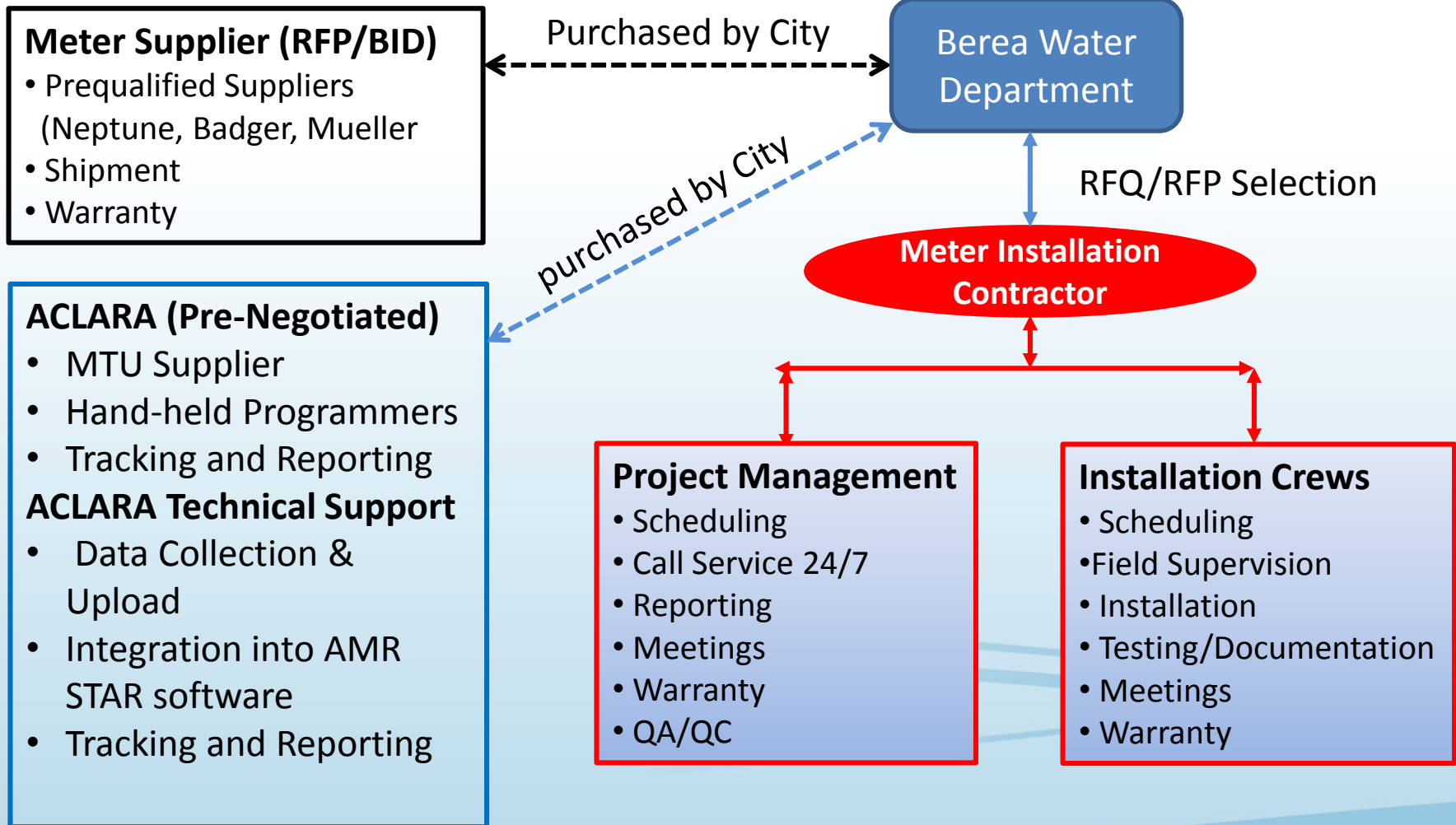
- Contract A: Competitive Bid of Water Meters
- Contract B: Quals-Based Bid for Installation
- Contract C: AMI Vendor or Sole-Source Negotiation
- In-house installation
- Construction Management

**LOWEST
COST**

Procurement Process – Fair & Open

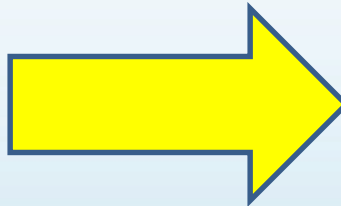
- **Turnkey vs. Separate Contracts**
 - Partnering by vendors limits utility choices
 - Vendors limit availability of their technology
- **Sole source negotiation**
 - Meter or AMI Vendor
- **Procurement for equipment & installation services**
 - RFQ/RFP (qualifications/price proposal)
 - Lowest and best bid
 - Bonding/insurance requirements

Procurement Case Study – Berea



Procurement Process – RFQ/RFP Format

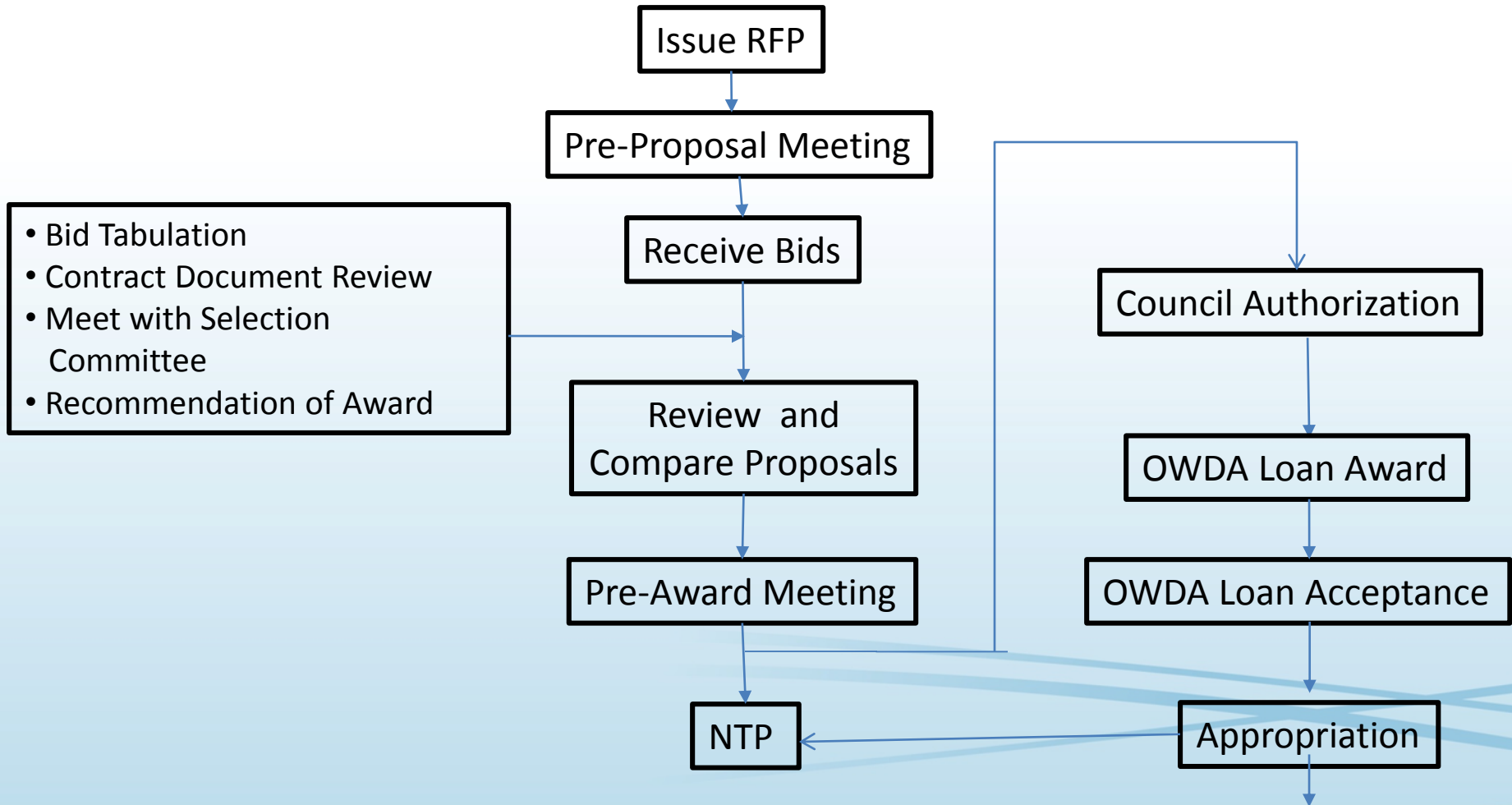
- Compile List of National Meter Contractors
- Prepare RFQ
 - *Corporate Background*
 - *Financial Resources/Bonding*
 - *References*
 - *Experience*
 - *Methodology*
 - *Project Management*
 - *Qualifications*
 - *Call Center and Scheduling*
 - *Field Supervision*
 - *Data Collection Requirements*



Scoring of Statement of Qualifications and Pricing

1. Project Management
2. Qualifications
3. Call Center and Scheduling
4. Field Supervision
5. Data Collection Requirements
6. Price Proposal

Installation RFQ/RFP Process



Data to be Collected by Meter Installer

- Verify Account Information & Address loaded onto Handheld, Laptop, Tablet, Phone)
- Installer Name, Date, Time
- Old Meter and MTU Serial Number (Double entry of meter reading and data to minimize errors)
- New Meter and MTU Serial Number
- GPS Coordinates (Wireless vs. True GPS)
- Description of Water Meter Location (Basement, First Floor, Curb Pit, Vault)
- Description of MTU location (Inside/Outside)
- Program MTU, Test Meter-MTU Communications, (Validate with meter read next DCU Read Cycle)
- Describe Non-standard Work and Authorizations
- Photos of Old and New Installation
- Piping Materials (Copper, Galvanized, PVC, Lead)



Panasonic Toughbook with MTU Programming Puck

Procurement Process– Berea

- Evaluate Procurement Alternatives
- Avoid Total AMR Replacement
 - *HIGH RISK and COST*
- Leverage Existing ACLARA Investment
 - *Meetings with ACLARA*
 - *ACLARA MTU: Upgrade Allows Sole-Source Procurement*
 - *Resolve Software/Hardware Issues*
 - *Evaluate Reuse of 5 DCUs and 2,600 Existing MTUs*
 - *Validate Interface with New Water Meters Data Transmission*
- Use RFP Process for Water Meter Purchase
- Use Quals Based Procurement for Selection of Meter Installation Contractor
- Provide documentation for obtaining OWDA funding

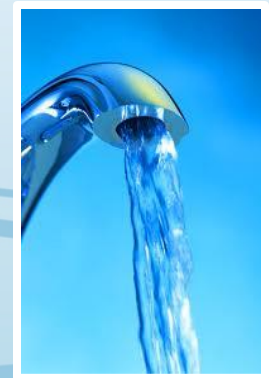
Technology Projects are:

- *High Risk*
- *Costly*
- *Lose Prior Investment*
- *Extended Schedules*
- *Disruptive*

Lessons Learned in Planning/Design

- Conduct workshops to define project requirements
 - Evaluate meter alternatives (functionality, accuracy, battery life, O&M)
 - Evaluate ability to leverage existing investments
 - Commercial/Industrial meters
 - Meter Pits (maintain or upgrade)
- Maintain or upgrade existing AMR Software
- Resolve integration of AMR software with billing system
- Manage new and existing meter readings during implementation

2007	118
2008	412
2009	380
2010	200
2011	400
2012	250
2013	200
	1960



Project Approach



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Project Responsibilities during Implementation

- Coordinate Order/Delivery of Meters, MTUs, AMI System
 - Badger Meters
 - *Positive Displacement, Ultrasonic, and Magnetic Flow Meters.*
 - ACLARA – Hardware upgrade of Server/AMI software, training on new software, and debugging interface to Utility Billing System
- Review submittals for meters and installation materials
- Meet with Installation Supervisor on Daily Basis to discuss work progress, inventory re-order, issues, and problem accounts
- Conduct Monthly Progress Meetings
- Review and approve pay requests.
- Coordinate City efforts for Curb Valve Repairs, shutoff of water service, resolve problem accounts
- Monitor appointment schedule and Returns-to-Utility Accounts

Meter Summary

Active Meters	Displacement Type Meters Inside Homes				Displacement Type Meters in Meter Vaults				Compound Meters in Meter Vaults				Sewer Only		City Accounts		Existing Old Meters to be Replaced	Existing New Meters to be reused w/MTUs	Existing New Meters w/o MTUs (Additional # of MTUs Required)	TOTAL ACTIVE METERS	TOTAL MTU Required		
	<12/2005		>1/2006		<12/2005		>1/2006		<12/2005		>1/2006		<12/2006	>1/2007	<12/2006	>1/2007							
	Inside w/MTU	Inside w/MTU	Inside w/o MTU	Inside w/o MTU	CURB w/MTU	CURB w/MTU	CURB w/o MTU	CURB w/o MTU	Inside Compound w/o MTU	Large Meter Inside Compound w/o MTU	Inside Compound w/MTU	Large Meter Inside Compound w/MTU	Sewer w/o MTU	Sewer w/o MTU	City Accts. w/o MTU	City Accts. w/o MTU							
OLD	NEW	OLD	NEW	OLD	NEW	OLD	NEW	OLD & NEW	NEW	OLD	NEW	OLD	NEW	OLD	NEW								
3/4" New Meters		2537		129													0	2537	129	2666	129		
5/8 x 3/4	32		820			14	18										866	0	18	884	884		
3/4" - Need Lids						2	4											0	0	9	11	11	
No Size Need Lids																		33	0	0	33	33	
No Size Meter			2850				105											2955	0	0	2955	2955	
1" - Need Lids		72	94		11	1												105	73	3	181	108	
1.5"		13	5				1											1	0	0	1	1	
2"		20	43	7	2	2												5	13	0	18	5	
2" Ultrasonic				2						20	13							78	22	11	111	89	
3"		5	2								1							0	0	2	2	2	
4"		8	12															3	5	1	9	4	
6"		4			3					6								21	8	0	29	21	
8"		1								1								1	4	0	5	1	
																		0	1	0	1	0	
																		0	0	0	0	0	
	2864	2660	138			3	22	27	1	13	0	Sub-Total	Meters Purchased				4070						
MTUs Reused or Spares		32				16	3				13		64	Total of Active Meters (All Sizes & Type)				4070	2663	173	6906		
New Meters w/MTUs		2660										0	2660	MTUs to be Remain on Existing New Meters or be Reused							-2660		
												Total	2724								4246		
														# MTUs Required w/o Spares							4243		

- 3/4" – 1-1/2" Positive Displacement
- 2" – Ultrasonic Flowmeters
- 3" – 6" – Magnetic Flowmeter

Meters <Dec 2005 will be replaced.

Pilot Test Program

- Establish Local Warehouse and Offices
- Identify Pilot Test Area
- Initiate Call Center and Scheduling of Appointments
- Conduct Training Programs
- Contractor Training Program for Installation Crews
- Pilot Program Rollout to Field
- Random Checks of Installations
- Expand Program and add New Installation Crews

Door Hangers and Shutoff

1st Door Hanger



2nd Door Hanger



Water Shutoff Notice



Door hanger used after the 4 notifications after failure to Schedule Appointments:

- Mayor letter sent by City
- City Letter in Utility Bill
- 1st Mailed Notification
- 2nd Mailed Notification

Data to be Collected by Meter Installer

- Work Order System track Schedule Appointments
- Download account data to Iphone/IPAD
- Verify Account Information & Address
- Meter and MTU Serial Number
- GPS Coordinates (Wireless vs. True GPS)
- Description of Water Meter Location (Basement, First Floor, Curb Pit/Meter Vault)
- Description of MTU location
- Test communications – Meter encoder to Transmitter
- Program transmitter with Meter size, type,
- Document Non-standard Work and obtain Authorizations
- Photos of Old and New Installation
- Piping Materials (Copper, Galvanized, PVC, Lead)



Installation Work Plan

- Establish Local Field Office/Warehouse at WTP
- Order Meters, MTUs, and AMI software/hardware
- Identify Pilot Test Area and Work Zones
- Create Account Database of Active Accounts from AMI
- Develop data format and management policies for scubbing/uploading
- Initiate Call Center and Scheduling of Appointments
- Conduct Training Programs with ACLARA & Badger
- Contractor Training Program for Installation Crews
- Pilot Program Rollout to Field
- Validate weekly reporting system
- Daily upload of meter data to ACLARA database.
- Expand Program and add New Installation Crews
- Separate storage of installation photos

Pilot Program Schedule

- May 9: expected ship date of ACLARA 1344 MTUs
- May 9 ACLARA programs Dell server with STAR software
- May 9, City of Berea letter, signed by Mayor, mailed to residents
- May 13 – 40 2” ultrasonic meter shipped by Badger
- NECO sends 1st Notification Letter to Pilot Area
- May 18 – $\frac{3}{4}$ x $\frac{5}{8}$ ” meters shipped
- May 23 – Pilot program begins in Zone 1 to install 140 meter

Work Plan - Schedule

Berea, OH

Timeline Prepared On: June 7, 2016

Est. 65% Receive
2nd Letter

Est. 30% Require
Door Tag

Est. 2% Require
Shut Off

Residential Contact Timeline

Area	Attempt	6/6	6/13	6/20	6/27	7/4	7/11	7/18	7/25	8/1	8/8	8/15	8/22	8/29	9/5	9/12	9/19	10/3	10/10	10/17	10/24	10/31	
Work Zone #1 PILOT	1st Letter Mailed by NECO	262																					
	2nd Letter Mailed by NECO		170																				
	No Contact List Given to City				79																		
	Letter or Door Tag from City					39	39																
Work Zone #2 201 - 207	Shut Offs (if necessary)						5	5															
	1st Letter Mailed by NECO		623																				
	2nd Letter Mailed by NECO			405																			
	No Contact List Given to City					187																	
Work Zone #3 301 - 309	Letter or Door Tag from City						93	93															
	Shut Offs (if necessary)								12	12													
	1st Letter Mailed by NECO				613																		
	2nd Letter Mailed by NECO							398															
Work Zone #4 310 - 318	No Contact List Given to City									184													
	Letter or Door Tag from City										92	92											
	Shut Offs (if necessary)												12	12									
	1st Letter Mailed by NECO							839															
Work Zone #5 101 - 112, 114 - 115, 118	2nd Letter Mailed by NECO											545											
	No Contact List Given to City												252										
	Letter or Door Tag from City													126	126								
	Shut Offs (if necessary)														17	17							
Work Zone #6 208 - 217	1st Letter Mailed by NECO											892											
	2nd Letter Mailed by NECO												580										
	No Contact List Given to City															268							
	Letter or Door Tag from City																134	134					
Work Zone #6 208 - 217	Shut Offs (if necessary)																	18	18				
	1st Letter Mailed by NECO														690								
	2nd Letter Mailed by NECO																		449				
	No Contact List Given to City																			207			
Work Zone #6 208 - 217	Letter or Door Tag from City																				104	104	
	Shut Offs (if necessary)																						14

	6/6 - 6/19	6/20 - 7/3	7/4 - 7/17	7/18 - 7/31	8/1 - 8/14	8/15 - 8/28	8/29 - 9/11	9/12 - 10/2	10/3 - 10/16	10/17 - 10/30
Est. # Incoming Phone Calls	138	388	397	491	480	489	530	357	357	179
Est. # Apts Per Day	34	43	44	55	53	54	59	40	40	20

Weekly Report – Post Pilot Program

Berea, OH

July 15, 2016

PROGRESS TO DATE				5/8" & 1" Account Completion			Contact Attempts																																																																																																																																																																																		
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Weekly Report – End of Job

Completion by Work Zone																												
Meter Size (inches)	Zone 1				Zone 2				Zone 3				Zone 4				Zone 5				Zone 6				TOTAL			
	Complete	Scheduled	Open	RTU	Complete	Scheduled	Open	RTU	Complete	Scheduled	Open	RTU	Complete	Scheduled	Open	RTU	Complete	Scheduled	Open	RTU	Complete	Scheduled	Open	RTU	Complete	Scheduled	Open	RTU
Pits	9				6		1		51		16		4		1		22		14		56		5		148	0	37	0
5/8 Inside	248			4	587	1		13	550	2		25	787	6		26	756	5		70	591	12		81	3,519	26	0	219
1 Inside	10				20			2	29			1	18			1	50			3	4				131	0	0	7
1.5									1						1		1								2	0	1	0
2									24		4		4		1		22		13		5				55	0	18	0
3																			1						0	0	1	0
4											5				1				4				2		0	0	12	0
6														1											0	0	1	0
Total	267	0	0	4	613	1	1	15	655	2	25	26	813	6	5	27	851	5	32	73	656	12	7	81	3,855	26	70	226

Other Work Zones									5/8" & 1" INSIDE Accounts					% Complete (Installed, Scheduled, or RTU)		1st Letter From NECO	2nd Letter From NECO	Green Tag (Report Date)	Shutoff Notice (Report Date)									
Meter Size (inches)	BW University				City Meters				Work Zone #1 PILOT (books 113, 116, 117)					100%		6/2/2016	6/10/2016	7/20/2016	7/27/2016									
	Complete	Scheduled	Open	RTU	Complete	Scheduled	Open	RTU	Work Zone #2 (books 201-207)					100%		6/15/2016	7/15/2016	7/27/2016	8/3/2016									
5/8	3		3														7/5/2016	7/18/2016	9/2/2016	9/22/2016								
1	1		2														7/20/2016	8/5/2016	9/8/2016	10/14/2016								
1.5	3																8/19/2016	9/8/2016	10/13/2016	10/20/2016								
2	12		2														9/14/2016	9/29/2016	10/13/2016	10/26/2016								
3			2																									
4	6		5																									
Total	25	0	14	0	0	0	15	0	22	2	1	1	0	Next 5 Days	26	0	0	0	0	0	Next 10 Days	26	Total Future Appointments	26				

Appointment Schedule

Return to Utility - Water Shutoff Policy

- All Notification Attempts Fail
 1. Letter from Mayor sent to all Residents
 2. 1st Notice Mailed to Zone
 3. 2nd Notice Mailed to Zone
 4. 1st Door Tag with Shutoff Notice (Green Tag)

Accounts “Returned to City”

5. City Orange Door Tags with 3-4 day shutoff notice
6. Shutoff (Call City to schedule)

Lessons Learned – Implementation

- Manage work by zones of <1000 meters Work in adjacent zones. to meet project schedule
- Do not move to new zones until >75% complete in previous zone
- Schedule split shift 7-3 and 11-7 pm for customer convenience
- Schedule Saturday Installations 1-2 times per month
- City have standby meter service tech to accommodate “problem accounts”
- Be prepared to replace meter valve by shutoff at curb
- Re-schedule installation if curb shutoffs require repair by City, then notify account.

Lessons Learned – Implementation

- Pilot program essential to test processes
- Final approval of all contractor notification materials essential
- Be willing to enforce shut-off of water
 - Have legislation in place before start pilot program
- Require 24/7 emergency response call center
- City must be prepared to replace broken curb stops
- Plan on rebuilding some meter pits and replacing metallic covers
- Large meter installations will require piping modifications to fit pipe runs
- “Require” homeowners to repair defective plumbing if needed

Data “Scrubbing” prior to Utility Billing Upload

- Weekly reporting to track installation progress
- “Scrub” installation data to minimize errors in billing system
- City evaluates ACLARA “No Reads”, Missing or Incorrect Data
- Upgrade AMI software and hardware before starting data Upload to UBS
- Define data format and data transfer requirements for integration to Databases
- Define databases structures in planning stage, and prior to start of Pilot Program
- Verify radio propagation studies
- Validate performance requirements are met (read rate, data upload, signal strength, etc.)

“A drop in the bucket”... Resident comment

Berea water meter program projected cost 'a drop in the bucket' for residents, businesses



- *It is expected that Berea customers will pay a \$2/month meter fee to cover the cost of the program. In a recent article on Cleveland.com, a resident referred to the rate increase as “a drop in the bucket,” echoing what seems to be a favorable reaction to the program that was outlined during a City Council meeting.*

Project Costs

Project Construction Value based on Bid:

■ Engineering Fee:	\$ 64,000
■ Contact A – Water Meters	\$ 411,400
■ Contact B – AMI Systems	\$ 466,000
■ Contract C: Installation	\$ 509,400
- Contingency Allowance	<u>\$ 100,000</u>
Total Cost	\$ 1,550,800

or \$360/meter

Project completed under budget and on schedule



Questions?

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