



# Vendor Performance Assessment & Risk Remediation Plan

*Last revised: October 5, 2018*

BUSINESS  
CONSULTANTS

DEEP  
TECHNOLOGISTS



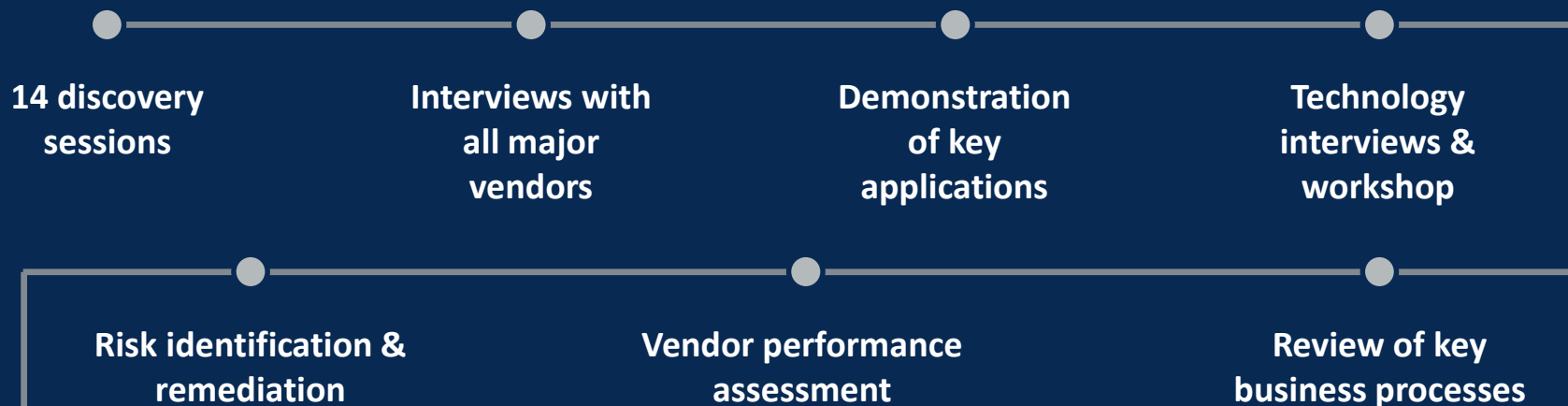
# Contents

- ◆ Project Approach
- ◆ Operational Timeline
- ◆ Key Questions
- ◆ Major Processes
- ◆ Vendor Performance
  - Siemens Performance
  - Origin Performance
  - Mueller Performance
- ◆ City of Jackson Performance
- ◆ Customer Impacts
- ◆ Vendor Remediation Activities
- ◆ COJ Internal Initiative Impact
- ◆ COJ Internal Timeline
- ◆ Team Contact Information
- ◆ Appendix



# Our team has worked closely with the City of Jackson DPW staff to understand the current environment and immediate & longer-term risks

## Project Approach



Thank you to you and your teams for providing input and documentation on DPW's current state!



# COJ operational issues and stranded bills have been an ongoing problem for years

Stop work order is issued;  
Raftelis study is completed

**February 2015**

15k bills are stranded;  
temporary billing staff are  
contracted to assist with  
backlog (paid for by Siemens)

**June 2016**

Meter installation is  
substantially complete

**End of 2017**



**August 2013**

Siemens begins ordering meter  
inventory



**August 2015**

Oracle CC&B goes live, meters  
are still being installed, city  
staff noticeably struggle with  
new software



**October 2016**

Origin stranded bill #1 effort is  
completed, including an  
assessment identifying various  
COJ operational issues  
contributing to stranded bills



**June 2018**

Contract amendment four  
results in another operational  
assessment and remediation of  
23k additional stranded bills;  
similar operational issues are  
identified and vendor contracts  
are coming to a close

**Findings in this report are very similar to past operational assessments, and operations will not improve until significant changes are made**

*Note: This assessment was completed over the course of 3 weeks and is based on interviews with COJ leadership, staff, vendors, and supporting documentation provided by Siemens. Not all information has been independently verified.*

## The following are key questions from City of Jackson leadership and were answered throughout this assessment

Did Siemens complete their contractual obligations and are they on-track to complete the scope of amendment 4?

◆ Based on interviews conducted and review of the contract and its amendments, Siemens fulfilled the contractual obligations. Siemens also provided mitigation services to address system performance issues, though ongoing issues with to dos/stranded bills still have not been fully resolved.

*This observation does not reflect an endorsement of the original contract nor its terms and conditions*

Did Siemens compute savings accurately?

◆ Siemens' savings calculations are consistent with what was agreed to contractually, although assumptions on metering accuracy degradation are questionable. The American Water Works Association (AWWA) presentation referenced by Siemens would require more detailed analysis to clarify if the study's sampling is reflective of the Jackson metering population makeup & performance.

What key issues exist?

- ◆ Managerial insight into & accountability for operational performance; work backlogs exist in billing and meter maintenance & reading
- ◆ Paper-based processes and manual workarounds are inefficient and compromise data integrity
- ◆ Unstable CC&B environment
- ◆ Lack of inventory and associated processes to monitor and maintain appropriate inventory levels

How big of a gap is there in where we perform today vs. how we should be performing?

◆ Observations indicate that there is a large gap in control and oversight to operations. Additionally, it is not apparent the necessary skills are present at a functional level to own and operate an AMI system.

Can improvement work be completed internally or is additional support needed?

◆ Additional support will be needed to address current issues, particularly in management and implementation of recommendations within this report.

## The following key processes were reviewed as part of this assessment

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**01**

### **PROCURING & MANAGING METER INVENTORY**

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This process includes acquiring, tracking, and disposing of meters, accuracy testing of new and decommissioned meters, as well as the return material authorization (RMA) process

**02**

### **MANAGING FIELD ACTIVITIES**

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This process includes creating, assigning, overseeing, and tracking field activities that support day-to-day operations of the meter services and meter reading groups

**03**

### **EXCHANGING AND COMMISSIONING AN AMI METER**

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This process includes replacing a water meter (manual or AMI), including commissioning the meter on the AMI network and syncing data between Mi.Host and Oracle Customer Care & Billing

**04**

### **PROCESSING A CUSTOMER BILL**

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This process includes generating customer bills, from processing meter read files, to working to-dos, to issuing field activities, and to running batch processes

# Process Assessment – Narrative & Items to Address

01

## PROCURING & MANAGING METER INVENTORY

This process includes acquiring, tracking, and disposing of meters, accuracy testing of new and decommissioned meters, as well as the return material authorization (RMA) process

### Process Narrative

Processes for forecasting, acquiring, tracking, and disposing of meters are undocumented. There is little visibility into current inventory, which has led to a shortage of small meters - despite nearly \$400k of small meters sitting in a warehouse waiting to be returned to Mueller under warranty. The return material authorization (RMA) process is managed by one individual, and there is little tracking or validation of meters returned to Mueller vs. credited to the city. Meter accuracy is not tested for new or decommissioned meters, making it challenging to validate tests performed by Siemens. Overall a significant amount of money is being spent on meter hardware (\$400/meter), and there is little oversight or accountability in making sure this money is well spent.

### Items to Address

1. Identify an owner of meter procurement & inventory management
2. Validate process to procure meters and return meters to Mueller
3. Return pulled/bad meters to Mueller under warranty
4. Obtain meter inventory to work ongoing meter issues & non-AMI meters
5. Establish and manage key metrics for inventory management (inventory on hand, warranties recovered, inventory forecasted)
6. Document meter test results and warranty outcomes

*Note: These items are further defined on pages 15 – 26 of this report.*



# Process Assessment – Narrative & Items to Address

02

## MANAGING FIELD ACTIVITIES

This process includes creating, assigning, overseeing, and tracking field activities that support day-to-day operations of the meter services and meter reading groups

### Process Narrative

Field activities (FAs) are received via email from the customer service and billing groups. FAs are printed and sorted into two groups: (1) meter services and (2) meter reading, then distributed based on skill set and volume. Supervisors provide printed paper to staff to complete. There is no routing/sequencing, electronic tracking, or GPS monitoring of field activity.

Once dispatched, technicians complete work and handwrite outcomes on paper. Papers are then sent to the office for manual data entry into CC&B.

Quality assurance of individual work or daily supervisory oversight of workgroup productivity is not performed.

### Items to Address

1. Document FA processes
2. Cross-train all employees to read meters, install/commission meters, and troubleshoot meters; institute a proficiency test
3. Acquire sufficient city vehicles and handheld devices for all technicians.
4. Establish and manage key metrics for field activities (backlog of FAs, quantity worked per day, quantity worked per technician, FAs requiring a second field visit, etc.)

*Note: These items are further defined on pages 15 – 26 of this report.*



## Process Assessment – Narrative & Items to Address

03

### EXCHANGING AND COMMISSIONING AN AMI METER

This process includes replacing a water meter (manual or AMI), including commissioning the meter on the AMI network and syncing data between Mi.Host and Oracle Customer Care & Billing

#### Process Narrative

Currently one group sets meters and another group commissions meters, which means two field visits are performed.

To commission a meter, a technician selects the address from their handheld, enters meter information (wiring diagram, meter type, multiplier, units, size, lid type), scans the meter, tests RF connectivity, obtains GPS coordinates, and enters any relevant installation notes. Overall, this process is not particularly complicated and is a reasonable skillset for meter readers to learn.

Commissioned meter data should go to CC&B via a file transfer process, but this process is currently broken. Technicians are noting meter numbers by hand and then this is manually keyed into CC&B.

#### Items to Address

1. Fix the meter exchange file format
2. Cross-train all employees to read meters, install/commission meters, and troubleshoot meters; institute a proficiency test (note: training documents from Mueller are available)
3. Acquire sufficient city vehicles and handheld devices for all technicians
4. Establish and manage key metrics for meter exchanges and commissioning (backlog of meters to be commissioned, commissioned meters that do not transmit reads, meter exchange errors/exceptions, etc.)
5. Validate that commissioned meters are transmitting reads on a weekly basis; work any errors on a weekly basis (not reading, battery alarms, tampering, etc.)

*Note: These items are further defined on pages 15 – 26 of this report.*

## Process Assessment – Narrative & Items to Address

04

### PROCESSING A CUSTOMER BILL

This process includes generating customer bills, from processing meter read files, to working to-dos, to issuing field activities, and to running batch processes

#### Process Narrative

Meter reads from Mi.Net and Sensus handheld devices are brought in via an upload process. Reads and accounts are compared to historic consumption and other quality standards within CC&B; if there are anomalies CC&B will generate a to-do to be worked by the billing department.

Billers should review to-dos on a daily basis, but this oftentimes does not happen. If to-dos are not worked, bills are estimated and may become stranded, or bills do not go out (in the event of configuration errors).

Billers work to-dos by reviewing past consumption history, adjusting reads (as necessary), issuing field activities, and correcting data issues within an account. Once this is complete, billers release the account to bill.

#### Items to Address

1. Document billing processes and train billers to work all to-do types; institute a proficiency test
2. Use system functionality to assign to-dos to billers and report on to dos completed (rather than tracking this manually)
3. Establish and manage key metrics for billing, such as number of accounts billed, percent of bills estimated, total dollars billed, processing time of batch, quantity of to-dos, quantity of to-do backlog with aging, etc.

*Note: These items are further defined on pages 15 – 26 of this report.*

# Siemens Performance

RISK LEGEND  LOW  MODERATE  HIGH

## CONTRACT STATUS

- ◆ At a macro-level, Siemens has fulfilled contractual terms of the performance-based contracts, although many of the contractual terms and conditions are unfavorable to the city (e.g., baseline metering accuracy sample size, assumed vs. realized savings, etc.).
- ◆ Siemens selected industry-leading technologies for deployment at the City of Jackson, including Oracle Customer Care and Billing (CC&B) as the city's customer information system, as well as Mueller for the city's advanced metering infrastructure.
- ◆ Inconsistent qualitative information was provided regarding the total number of AMI meters that were installed, successfully commissioned, and transmitted at least one read via AMI.
- ◆ Siemens did not use standard key performance indicators (KPIs) for implementation of CC&B and AMI, making it challenging to assess the health of the systems. Typically the following metrics are tracked on an ongoing basis and can be early indicators of issues: estimated bills, meter reading errors, meter exchanges processed, mis-matched meter information, no reads, network communication health metrics (i.e. MRSSI, parent assignment of node), meter reading errors, billing exceptions, batch processing time, accounts billed by ledger, dollars billed by ledger (water, waste water, sanitation).
- ◆ Operations with Oracle CC&B are not yet stable, including pervasive and recurring to dos & stranded bills, resulting in inaccurate bills going to customers and inconsistent cash flow for the department.

## REMEDIATION SUMMARY

1. Provide a project closeout executive summary that addresses project methodology, key assumptions, successes, challenges, overall results, and items for COJ to address
2. Provide a final report on total number of AMI meters installed, successfully commissioned, and that transmitted at least one read via AMI (listed by meter ID and date of commissioning)
3. Provide monthly KPIs from CC&B deployment to today, listing estimated bills, meter reading errors, meter exchanges processed, meter exchange errors, billing exceptions, batch processing time, accounts billed, dollars billed (water, waste water, sanitation)

# Origin Performance

RISK LEGEND ● LOW ▲ MODERATE ■ HIGH

## CONTRACT STATUS ▲

- ◆ Origin demonstrates a deep functional and technical understanding of operations at the City of Jackson. In earlier phases of the project Origin has identified many similar issues as those noted within this report.
- ◆ There appear to be data quality issues within CC&B resulting in numerous to dos and stranded bills. Some of these issues stem from 2015 – 2016, and result in complex bill presentment and payment arrangements and/or high bills for customers. Underperformance in working field activities results in missing or incorrect data in CC&B, which also drive a higher workload in billing (e.g., missing meter reads result in estimated and eventually stranded bills).
- ◆ To do types are not well documented, and it appears only certain types are being addressed by Origin (bill segments in error, high/low error, create bill using bill cycle error). Until underlying data quality issues (e.g., meter exchange file) and operational issues (e.g., to dos not being worked in a timely manner) are addressed, estimated and stranded bills will continue to increase.
- ◆ Origin has been contracted on two occasions to work stranded bills, but there is limited data on overlap of stranded bills between engagements and if/how this effort is truly addressing the root cause of stranded bills.
- ◆ Although training documents were provided to the City of Jackson, staff members feel under-trained on CC&B. Staff members interviewed do not use any reporting functionality to support their daily operations (e.g., report of estimated bills, exceptions, etc.).

## REMEDIATION SUMMARY

1. Provide an analysis of accounts included in the original stranded bill project vs. the current stranded bill project, including account number, meter number, date of stranded bill(s), and cause(s) of stranded bills by account
2. Provide a user guide listing all to do types as well as detailed steps on how to resolve each to do type
3. Provide a user guide list all causes of stranded bills as well as detailed stops on how to resolve each stranded bill type
4. Provide a list of known data quality issues to be worked by the City of Jackson (e.g., meter number mismatches, meter sizes with incorrect number of digits, etc.)

# Mueller Performance

RISK LEGEND ● LOW ▲ MODERATE ■ HIGH

## CONTRACT STATUS ■

- ◆ Mueller provided COJ with initial training and ongoing support that goes well above and beyond what is provided for a typical AMI deployments. Maintenance activities were also provided that extended standard implementation responsibilities.
- ◆ 8,079 AMI meters do not transmit reads, and are coded by Mueller as disqualified from read rate calculations based on pit lid issues, bad installations, cannot locate meters, etc. This has a significant impact on COJ operations as these meters must be read manually on a monthly basis. Validation of these exceptions is needed to confirm these issues are Jackson's responsibility (e.g., tampering, wear/tear), rather than Mueller's (battery issues, not transmitting). These 8,079 meters are in addition to an unknown quantity of meters where AMI was never installed, which also must be read manually on a monthly basis.
- ◆ The October 1 three-day read rate (based on Mueller's NOC report) is 90.44% (after removing qualified exceptions), which is below industry standards of 98.5% - 99.5%. COJ must read the remaining ~10% of meters manually (which are spread all throughout this city), making this time consuming and operationally inefficient. Mueller's endpoint acceptance plan lists performance criteria at 98.5%.
- ◆ 185 active battery alerts exist; these should be addressed immediately as they are still under warranty.
- ◆ 35,566 V3 nodes are installed, which historically have had battery issues. These present an ongoing risk to Jackson if they fail prematurely (both in hardware and in labor costs).
- ◆ The format of Mueller's meter exchange file changed in early 2018 and cannot be processed by the City of Jackson. The city has resorted to tracking meter numbers on paper and keying data into CC&B, which is time consuming and has resulted in data quality issues.

## REMEDATION SUMMARY

1. Validate all disqualified meters with COJ employees to address issues or confirm that AMI cannot be installed
2. Provide a comprehensive summary of system reporting percentages from contract inception to completion
3. Validate all read rate exception meters with COJ employees to confirm these are COJ issues
4. Address all current battery alarms; provide an assurance that any V3 failures will be replaced at no cost to Jackson (including both hardware and labor), and receive a new/full 5-year warranty on the new module installed
5. Provide an updated meter exchange file format
6. Provide a comprehensive list of all meter exchanges from the date of the last successful file transfer through today

# City of Jackson Performance

RISK LEGEND  LOW  MODERATE  HIGH



## PEOPLE, PROCESS, TECHNOLOGY

- ◆ There is very limited accountability across the department and critical tasks are not being completed (e.g., meter testing, AMI commissioning, warranty rebates, field activities, billing to dos). Managers have limited visibility into staff performance and productivity.
- ◆ Key processes are undocumented, and many processes are paper-based (e.g., meter exchanges, field activities), which results in missing and inaccurate data. Data from these processes has to be manually keyed into CC&B.
- ◆ Staff have been provided training and manuals, but do not utilize these tools, particularly for CC&B. Staff today do not have a sense of ownership over this system. There has been significant turnover throughout the department, at both the leadership and line level, which compounds training issues.
- ◆ Technology systems used within the City of Jackson (CC&B, Mueller) are industry-leading. Data quality and unworked to dos are resulting in estimated and stranded bills.
- ◆ CC&B has had performance issues on multiple occasions, attributed to insufficient disc space and long processing time for batch jobs.

## RISK SUMMARY



- ◆ Risk observations and suggested remediation are called out in detail on subsequent pages

# Improvement Opportunities – City of Jackson (Reporting & Oversight)


	Observation	Impact Level	Suggested Remediation
<b>1. Operational Metrics</b>	COJ does not use key performance indicators to understand work backlog and staff productivity. There is limited understanding of work volumes and productivity.		<ol style="list-style-type: none"> <li>1. Establish and manage key metrics for inventory management (inventory on hand, warranties recovered, inventory forecasted, etc.).</li> <li>2. Establish and manage key metrics for field activities (backlog of FAs, quantity worked per day, quantity worked per technician, FAs requiring a second field visit, etc.).</li> <li>3. Establish and manage key metrics for meter exchanges and commissioning (backlog of meters to be commissioned, commissioned meters that do not transmit reads, meter exchange errors/exceptions, etc.).</li> <li>4. Establish and manage key metrics for billing, such as number of accounts billed, percent of bills estimated, total dollars billed, processing time of batch, quantity of to dos, quantity of to do backlog, etc.</li> <li>5. Scrub billing to do data to provide visibility into how many account have issues that need to be worked.</li> </ol>
<b>2. Project Ownership &amp; Management</b>	Numerous individuals cited the lack of COJ project managers for AMI and CC&B deployment as an ongoing issue. Lack of project ownership & management continues to be an issue for the stranded bill remediation project.		<ol style="list-style-type: none"> <li>1. Identify a project manager for COJ projects, including the current stranded bill effort.</li> <li>2. Dedicate a team of individuals to resolving issues with billing, field activity, and AMI devices.</li> </ol>



# Improvement Opportunities – *City of Jackson (AMI Management, page 1 of 2)*

	Observation	Impact Level	Suggested Remediation
<b>3. Broken Meter Exchange File</b>	A formatting issue with the meter exchange file is preventing automated syncing between Mi.Host and CC&B, resulting in lost data, to dos, and stranded bills. Meter exchanges are now paper-based and being manually entered in CC&B, which is time consuming and error prone.		<ol style="list-style-type: none"><li>1. Request an updated meter exchange file format from Mueller.</li><li>2. Request updated meter data on all meter exchanges since the last time the file was successfully processed.</li><li>3. Complete a data review/cleansing exercise between meter data in Mi.Host and CC&amp;B.</li></ol>
<b>4. No Follow-Up on AMI Events/Alarms</b>	No one is assigned to review events and alarms from the AMI system, including leaks, low battery, missing reads, etc. Customers who have leaks identified in Mi.Host are not being proactively notified of the leak.		<ol style="list-style-type: none"><li>1. Task an office individual with reviewing events/alarms, then notifying customers and/or issuing FAs as appropriate.</li><li>2. Task a field technician to address AMI system events/alarms.</li><li>3. Validate that commissioned meters are transmitting reads on a weekly basis; work any errors on a weekly basis (not reading, battery alarms, tampering, etc.).</li></ol>




# Improvement Opportunities – *City of Jackson (AMI Management, page 2 of 2)*

	Observation	Impact Level	Suggested Remediation
<b>5. Procurement &amp; Return Material Authorization (RMA)</b>	AMI device procurement and RMA process are undocumented and informally managed. Approximately \$400k in small meter inventory is in a warehouse awaiting return to Mueller (and could be losing warranty eligibility).		<ol style="list-style-type: none"> <li>1. Identify an owner of meter procurement &amp; inventory management.</li> <li>2. Formalize AMI device forecasting, procurement, inventory management, and RMA processes.</li> <li>3. Validate process to procure meters and return meters to Mueller.</li> <li>4. Ship meters in need of testing to Mueller for possible warranty rebates.</li> <li>5. Obtain meter inventory to work ongoing meter issues &amp; non-AMI meters.</li> <li>6. Establish and manage key metrics for inventory management (inventory on hand, warranties recovered, inventory forecasted).</li> <li>7. Document meter test results and warranty outcomes</li> <li>8. Investigate options for excess large-meter stock (e.g., sale to another utility).</li> </ol>




# Improvement Opportunities – *City of Jackson (Meter Maintenance & Reading)*

	Observation	Impact Level	Suggested Remediation
<b>6. Two-Step Meter Setting/Reading &amp; Commissioning</b>	Employees who set meters and read meters are either (1) not trained, or (2) do not have the appropriate equipment to commission AMI meters. This results in two field activities/truck rolls to read a meter (or set a meter) and to install/repair AMI.		<ol style="list-style-type: none"> <li>1. Document FA processes.</li> <li>2. Cross-train all employees to read meters, install/commission meters, and troubleshoot meters; institute a proficiency test.</li> <li>3. Acquire sufficient city vehicles, handheld devices, and splicing kits for all technicians.</li> </ol>
<b>7. In-Person Execution of Water Turn On/Off</b>	Field staff are traveling to customer/meter locations to turn water on and off, despite the majority of meters supporting remote disconnect.		<ol style="list-style-type: none"> <li>1. Develop a call center script to authorize remote service restoration, including release of liability for water left running and water damage.</li> <li>2. Train call center agents to record calls for liability release; determine process for after-hours support.</li> <li>3. Provide dedicated CC&amp;B credentials for any individuals performing disconnects/service restoration.</li> <li>4. Perform remote disconnects/service restoration.</li> </ol>
<b>8. Paper-Based Processes &amp; Limited Accountability</b>	Field activities are paper-based and there is limited tracking on field activity backlog or progress. Paper-based FAs are cumbersome for both field & office staff and compromise data integrity.		<ol style="list-style-type: none"> <li>1. Assign field technicians to specific areas of the city based on FA volume and backlog.</li> <li>2. Assign FAs to individual technicians; provide each technician a daily workload and suggested route.</li> <li>3. Develop an audit process for completed paperwork.</li> </ol>




# Improvement Opportunities – *City of Jackson (Meter Maintenance & Reading)*

	Observation	Impact Level	Suggested Remediation
<b>9. Meter Testing</b>	The City of Jackson does not have a functioning meter test bench or processes to follow for controversy meter complaints. No decommissioned meter tests are performed on a regular basis.		<ol style="list-style-type: none"> <li>1. Repair or replace the test bench, or find a local provider who is capable of providing certified meter test results.</li> <li>2. Assign accountability for the meter testing function to one individual.</li> <li>3. Test a statistically significant sample of decommissioned meters on an annual basis (at time of decommissioning) to document metering accuracy and degradation.</li> </ol>
<b>10. Siemens Contract Management</b>	No one from the City of Jackson volunteered information about which meters Siemens was testing, when, or how as part of the performance-based contract.		<ol style="list-style-type: none"> <li>1. Familiarize department leadership with the Siemens contract and ongoing meter testing procedures.</li> <li>2. Support reporting period meter tests, including random selection of meters for testing and validation of results.</li> </ol>
<b>11. Meter Replacement</b>	There is not an established meter replacement schedule. Although almost all small meters were replaced as part of the AMI program, an ongoing replacement program is needed for future operations.		<ol style="list-style-type: none"> <li>1. Using meter testing results, determine the ideal meter replacement timeline by meter size (typically 15 – 20 years for small meters).</li> <li>2. Include ongoing meter replacement costs in the annual budgeting process.</li> </ol>

# Improvement Opportunities – City of Jackson (Billing)

	Observation	Impact Level	Suggested Remediation
<b>12. To Do/Exception Backlog</b>	There is a significant backlog of unworked to dos, which snowball to generate additional to dos and eventually stranded bills.		<ol style="list-style-type: none"> <li>1. Document billing processes and train billers to work all to do types; institute a proficiency test.</li> <li>2. Scrub billing to do data to provide visibility into how many account have issues that need to be worked.</li> <li>3. Use system functionality to assign to dos to biller and report on to dos completed (vs. manual tracking).</li> <li>4. Validate all high/low exceptions are worked on a daily basis. If this is unsustainable, determine if the high/low cutoff can be increased (high is currently at 250%).</li> <li>5. Provide evening/weekend overtime and/or hire temporary billers to work the to do/exception backlog.</li> </ol>
<b>13. Limited Reporting</b>	Billing is not using standard reports to track workload, such as estimated bills, to dos worked by biller, cancel/rebills per biller, adjustments, and total accounts billed.		<ol style="list-style-type: none"> <li>1. Determine a list of critical vs. nice-to-have reports; request assistance from Origin in running these reports within CC&amp;B (likely via the business intelligence module).</li> <li>2. Assign an individual to review reports on a daily basis to determine if there are errors within billing (e.g., meter reading file wasn't processed).</li> </ol>
<b>14. Data Quality</b>	Account clean-up efforts are needed to address known data issues, such as small meters with too many/few digits.		<ol style="list-style-type: none"> <li>1. Provide evening/weekend overtime and/or hire temporary billers to address data quality issues.</li> <li>2. Develop data quality standards that outline what information is needed to perform key processes (e.g., open an account, update a bill cycle, close an account).</li> </ol>

# Improvement Opportunities – *City of Jackson (Customer Service/Research)*

	Observation	Impact Level	Suggested Remediation
<b>15. Complex Payment Arrangements &amp; Bill Adjustments</b>	Recurring estimated bills and stranded bill corrections have resulted in multi-period cancel/rebills. CC&B prints every transaction on the bill, resulting in an extremely long and difficult to understand bill.		<ol style="list-style-type: none"> <li>1. Ask Utilitec if a modified payment arrangement bill format can be used for customers with multi-period cancel/rebills.</li> <li>2. Train agents on bill components, adjustments, and explaining these concepts to customers.</li> <li>3. Work stranded bills as soon as possible to prevent these complex bills from going to customers in the future.</li> </ol>
<b>16. Manual Call Recording</b>	Call recording only happens if an agent manually clicks record at the beginning of a call. The majority of calls are not recorded, which can be an issue if a customer disputes their call content (e.g., liability release for water turn on).		<ol style="list-style-type: none"> <li>1. Implement automated call recording.</li> <li>2. Create a grading rubric for calls (e.g., warm introduction, restating of issue, resolution of issue, after call notes, etc.).</li> <li>3. Audit 3 – 5 calls per agent per month, grading agents against the rubric.</li> <li>4. Provide training and coaching as needed based on call audit outcomes.</li> </ol>
<b>17. Shared CC&amp;B Credentials</b>	Customer Service is using shared/generic credentials for CC&B, which presents security and accountability risks.		<ol style="list-style-type: none"> <li>1. Provide each staff member with unique CC&amp;B credentials.</li> </ol>

# Improvement Opportunities – City of Jackson (Technology, page 1 of 5)



	Observation	Impact Level	Suggested Remediation
<b>18. IS Communications</b>	<p>Communications between Information Services (IS) and Water Sewer Business Administration (WSBA) are limited. A key meter exchange interface stopped working in the spring of 2018, it was a known issue by IS and WSBA staff, yet was not communicated widely or resolved. When issues are identified COJ primarily relies on word-of-mouth communication. This limited and informal communication prevents issues from being properly identified and remediated.</p>		<ol style="list-style-type: none"> <li>1. Develop a standard notification/communication process for system and technology issues (e.g., planned maintenance, outages).</li> </ol>
<b>19. Network Connectivity</b>	<p>The City of Jackson is in the process of upgrading local (COJ) networks. This includes migrating from 1Gig to 100Gig fiber connections, with redundancy between locations.</p> <p>COJ Internet connections are also being reviewed for increased bandwidth.</p>		<ol style="list-style-type: none"> <li>1. Ensure a full network support plan is part of the upgrade project.</li> <li>2. Add automated monitoring and alerting to network upgrade plans.</li> </ol>



# Improvement Opportunities – *City of Jackson (Technology, page 2 of 5)*

	Observation	Impact Level	Suggested Remediation
20. IT Support Processes & Change Control	Today there is no documentation of processes, support responsibilities, or change control procedures. Lack of change control and support methodology has created at least one documented multi-day outage, which prevented COJ from creating/sending bills and accepting payments in the lobby. Note: This occurred on Monday/Tuesday Sept. 24-25.	■	<ol style="list-style-type: none"> <li>1. Develop formal support plans. COJ needs a standard template for supporting interfaces and systems with specific documentation for each system. At minimum this should include notification plans, escalation plans (with time limits), and a responsibility matrix.</li> <li>2. Develop a common method of problem notification and tracking, used by both IS and WSBA.</li> <li>3. Develop a change control process, in which IS and WSBA work together to determine how changes are planned and scheduled (including testing, notification, risk evaluation, acceptance, and roll back).</li> </ol>
21. COJ Data Center	<p>Requested information related to the current COJ facilities has not been received. This will be added to the report once provided by COJ.</p> <p>Requested information:</p> <ol style="list-style-type: none"> <li>1) Power (UPS, Gen, Diversity of Routing/Grid)</li> <li>2) AC (CRAC vs Building AC)</li> <li>3) Available Space</li> <li>4) Etc.</li> </ol>	■	


# Improvement Opportunities – *City of Jackson (Technology, page 3 of 5)*



	Observation	Impact Level	Suggested Remediation
<b>22. Integration &amp; Batch Processes</b>	<p>There are multiple batch processes that the teams (IS and business) must manually initiate or respond to.</p> <p>The current batch process is working, however, the overall interface and batch environment would benefit from detailed documentation and workflow diagrams.</p> <p>The IS team and business customers would benefit greatly from automation of batch processes where possible.</p>		<ol style="list-style-type: none"> <li>1. Create formal documentation and agreement on all batch processes. This should happen in conjunction with a documented batch communication and support plan (e.g., how and when to communicate if a batch fails, when to re-run batch to minimize business impacts).</li> </ol>


# Improvement Opportunities – City of Jackson (Technology, page 4 of 5)



IT Comms.	Observation	Impact Level	Suggested Remediation
<p><b>23. CC&amp;B Infrastructure</b></p>	<p>CC&amp;B is hosted by the City of Jackson with production servers and a database located in the COJ IS building. There is a database backup at 300 N. State Street and connected by COJ fiber. This backup was configured by Origin and has not yet been tested for reliability.</p> <p>End users at Metrocenter, DPW, and city finance access CC&amp;B via the COJ network.</p> <p>Billing information is transmitted to Utilitec for processing and printing. This interface is handled in a batch process based on the GL areas that are scheduled for billing.</p>	<p style="text-align: center;"></p>	<ol style="list-style-type: none"> <li>1. Refresh server hardware. All servers supporting CC&amp;B are beyond end of life.</li> <li>2. Obtain more production storage. Production storage is critically low. IS staff is manually deleting system logs on a daily basis to ensure required storage is available for batch.</li> <li>3. Perform a disaster recovery test. Currently there is no mechanism in place to test the database backup.</li> </ol>

# Improvement Opportunities – *City of Jackson (Technology, page 5 of 5)*



IT Comms.	Observation	Impact Level	Suggested Remediation
<p><b>24. Mueller Hosting and Performance</b></p>	<p>Mueller systems are hosted by Mueller. Collectors relay meter data via cellular backhaul provided by AT&amp;T wireless. There is a dedicated circuit through AT&amp;T to Mueller. Information is relayed to CC&amp;B through an FTP file copy to an IS desktop, then the file is moved to CC&amp;B servers for batch processing.</p> <p>There is an outstanding issue with the meter exchange file that started in early 2018. The current file from Mueller cannot be processed by CC&amp;B. This causes mismatched account data and prevents certain accounts from billing.</p>	<p style="text-align: center;"></p>	<ol style="list-style-type: none"> <li>1. Create a long term hosting agreement with Mueller.</li> <li>2. Resolve issues with the meter exchange file format.</li> <li>3. Address collectors that have been struck by lightning. Lightening suppression and grounding at the towers and utility poles should be reviewed.</li> </ol>

## Based on issues within COJ operations and vendor contracts, customers are directly impacted in the following manner -

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1

**Limited realization of AMI benefits** – Until customers are registered on the portal or being contacted with AMI alerts, they will not see or realize the value of AMI

2

**Estimated and/or inaccurate bills** – Ongoing issues with missing meter reads and to dos are resulting in estimated bills, stranded bills, and inaccurate bills

3

**Call center/lobby disruption** – Performance issues on CC&B have halted operations in the call center and lobby for hours/days at a time, preventing customers from getting answers/making payments

4

**High bills** – Back-billing consumption for customers who were previously estimated or had a stranded bill results in high bills for customers; this can also happen if an incorrect multiplier is used

5

**Eroding customer confidence** – Ongoing internal issues reduce customers' confidence in the department

# The following vendor remediation activities should be discussed and addressed prior to contract close-out

## SIEMENS

1. Provide a project closeout executive summary that addresses project methodology, key assumptions, successes, challenges, overall results, and items for COJ to address
2. Provide a final report on total number of AMI meters installed, successfully commissioned, and that transmitted at least one read via AMI (listed by meter ID and date of commissioning)
3. Provide monthly KPIs from CC&B deployment to today, listing estimated bills, meter reading errors, meter exchanges processed, meter exchange errors, billing exceptions, batch processing time, accounts billed, dollars billed (water, waste water, sanitation)

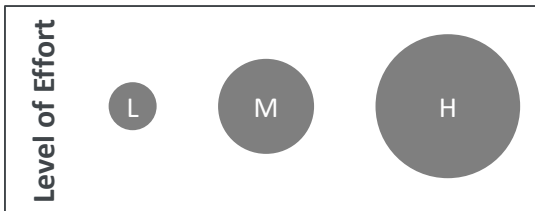
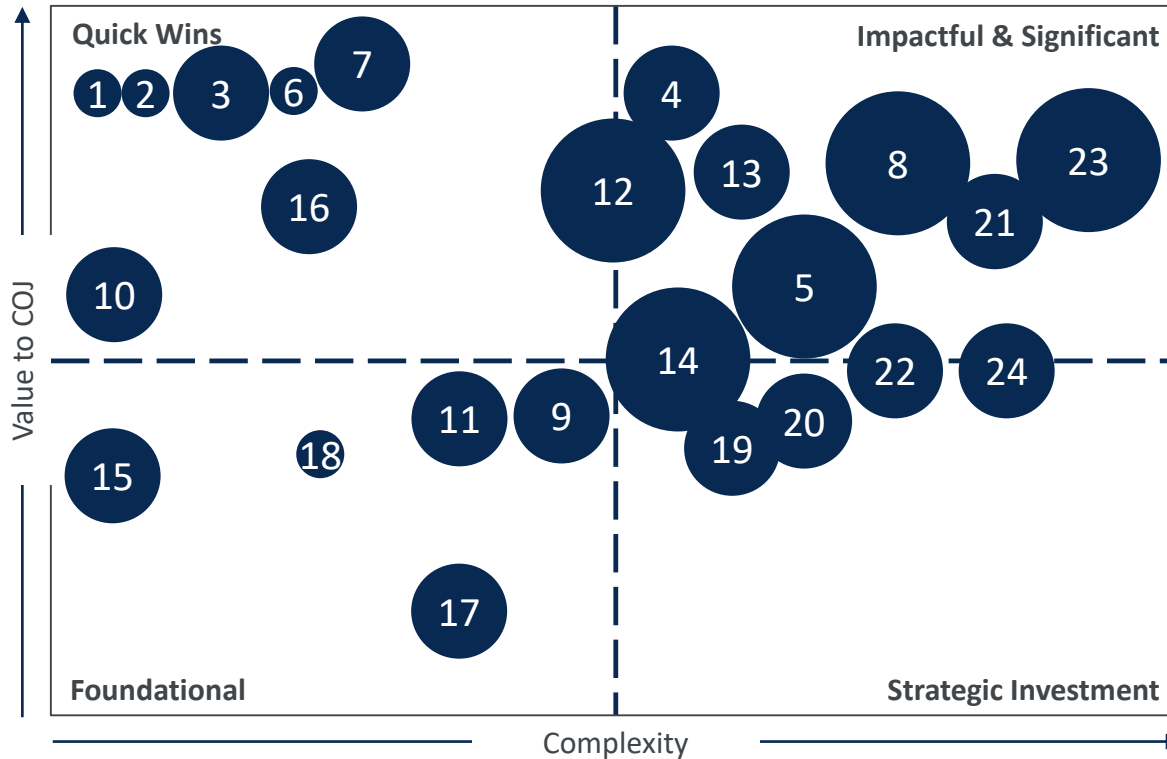
## ORIGIN

1. Provide an analysis of accounts included in the original stranded bill project vs. the current stranded bill project, including account number, meter number, date of stranded bill(s), and cause(s) of stranded bills by account
2. Provide a user guide listing all to do types as well as detailed steps on how to resolve each to do type
3. Provide a user guide list all causes of stranded bills as well as detailed steps on how to resolve each stranded bill type
4. Provide a list of known data quality issues to be worked by the City of Jackson (e.g., meter number mismatches, meter sizes with incorrect number of digits, etc.)

## MUELLER

1. Validate all disqualified meters with COJ employees to address issues or confirm that AMI cannot be installed
2. Provide a comprehensive summary of system reporting percentages from contract inception to completion
3. Validate all read rate exception meters with COJ employees to confirm these are COJ issues
4. Address all current battery alarms; provide an assurance that any V3 failures will be replaced at no cost to Jackson (including both hardware and labor), and receive a new/full 5-year warranty on the new module installed
5. Provide an updated meter exchange file format
6. Provide a comprehensive list of all meter exchanges from the date of the last successful file transfer through today

# Internal COJ initiatives are plotted based on value, complexity, and anticipated level of effort



- ◆ Each initiative is comprised of multiple projects; some projects are high value and low complexity, while others are much more complex
- ◆ Initiatives are plotted based on overall value and complexity of all supporting projects

## Recommended COJ Initiatives (Internal)

1	Develop & Manage Operational Metrics
2	Establish Project Ownership & Management
3	Fix Meter Exchange File
4	Follow-Up on AMI Events/Alarms
5	Develop Procurement & RMA Processes
6	Eliminate Two-Step Commissioning
7	Use Remote Disconnect Functionality
8	Improve Processes to Hold Field Staff Accountable
9	Begin Meter Testing
10	Manage Siemens Contract
11	Begin Ongoing Meter Replacement
12	Work To Do/Exception Backlog
13	Enhance Billing Reporting
14	Improve Billing Data
15	Train CSRs on Payment Arrangement & Adjustments
16	Automate Call Recording
17	Provide Dedicated CC&B Credentials
18	Improve IS Communications
19	Improve Network Connectivity
20	Formalize IT Processes & Change Control
21	Address Data Center Risks
22	Document Integrations & Batch Processes
23	Upgrade CC&B Infrastructure & DR
24	Formalize Mueller Hosting & Performance Needs





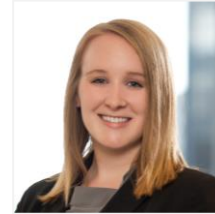
# This roadmap represents internal COJ initiatives and a proposed timeline – based on COJ’s priorities & constraints

LEGEND	Duration	Contingency	2018				2019				2020		
			Q4	Q1	Q2	Q3	Q4	Q1					
1	Develop & Manage Operational Metrics		■	■									
2	Establish Project Ownership & Management		■	■									
3	Fix Meter Exchange File		■										
6	Eliminate Two-Step Commissioning		■	■	■								
17	Provide Dedicated CC&B Credentials		■	■									
16	Automate Call Recording		■	■	■								
7	Use Remote Disconnect Functionality		■	■	■								
15	Train CSRs on Payment Arrangement & Adjustments		■	■									
12	Work To Do/Exception Backlog		■	■	■	■	■	■					
14	Improve Billing Data		■	■	■	■	■	■					
5	Develop Procurement & RMA Processes		■	■	■	■	■	■					
4	Follow-Up on AMI Events/Alarms		■	■	■								
24	Formalize Mueller Hosting & Performance Needs		■	■	■	■							
13	Enhance Billing Reporting		■	■	■	■							
8	Improve Processes to Hold Field Staff Accountable		■	■	■	■	■	■	■	■	■	■	■
20	Formalize IT Processes & Change Control		■	■	■								
18	Improve IS Communications		■	■	■								
21	Address Data Center Risks		■	■	■								
19	Improve Network Connectivity		■	■	■	■	■	■					
22	Document Integrations & Batch Processes		■	■	■								
23	Upgrade CC&B Infrastructure & DR		■	■	■	■	■	■					
9	Begin Meter Testing					■	■	■	■	■	■		
11	Begin Ongoing Meter Replacement								■	■	■	■	■
10	Manage Siemens Contract		■	■	■	■	■	■	■	■	■	■	■

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# Appendix

- ◆ Billing To Do Backlog
- ◆ IT Risk Dashboard



# Billing To Do Backlog (as of October 1, 2018)

## Supervisor To Do Summary

Main

User Name Winn, LaNikia

To Do Type	Priority	Total	Open	Being Worked On
Adjustments Requiring Approval	10	76	36	40
Batch processing errors	10	4	4	0
Bill segments in error	10 (3868), 30 (1550)	5418	3494	1924
Bills in error	10	1	1	0
New consumption for stopped SP	10	6	2	4
Pending start/stop SA for too long	10	99	82	17
Accounts without bill cycle	20	39	39	0
Field activity upload error	20	3	3	0
Meter Read High/Low Error	20 (166), 40 (55)	221	0	221
SP with no MR cycle	20	3	0	3
Unbalanced pay events exist	20	344	343	1
Customer contact callback	30	14	0	14
Dep/tender control stg error	30	2	1	1
Meter reads in error	30	159998	159998	0
Activate pending start/stop SA Errors	80	31	31	0
Create Bill Using Bill Cycle Errors	80	1346	1259	87
Pending SA/SP monitor Errors	80	1	1	0
Sync Request Monitor Errors	80	5	0	5
Write off monitor process Errors	80	19	0	19



## City of Jackson, MS Water/Wastewater Billing Technology

