



## MEMORANDUM

To: Mayor Miro Weinberger  
Burlington City Council  
Burlington Board of Finance  
Burlington Board of Electric Commissioners

From: Neale F. Lunderville, Interim General Manager 

Date: September 4, 2014

Subject: **BED Billing Issue: Analysis, Resolution, and Next Steps**

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### Executive Summary:

Recently, Burlington Electric Department (BED) discovered significant billing errors that have resulted in the over-billing of two large commercial customers (the City of Burlington and the University of Vermont) and the under-billing of one large commercial customer (ECHO Center). We have corrected these errors and made arrangements to repay the required amounts. The errors discovered are isolated to these specific customers and do not affect residential and small commercial customers. In each case, BED has an action plan to implement procedural improvements and enhanced internal controls to ensure these errors do not occur again.

BED values its customers above all else, and we are taking additional steps to ensure the accuracy of customer billing processes across the board. We have begun an in-depth, multi-part review to validate each billing process, including the following actions: a) hiring KPMG to provide an independent, third-party assessment of BED billing practices and procedures; b) undertaking a comprehensive review of meter configurations to verify accurate data collection and processing; c) launching a thorough field review of “current transformer” (CT) meters similar to the ECHO meter configuration; d) completing a desktop audit of previous CT meter configurations; and e) providing a full report on our findings.

### City of Burlington Street Light Billing:

During a recent update to our citywide load forecast, a BED analyst discovered an odd trend in the data: street light electricity usage was rising, when it should have been falling because of our program to replace old street lights with energy-efficient LED fixtures. Immediately, we began an internal investigation that revealed that BED has not been removing the old lights from the billing system when adding the new replacement lights. In effect, BED has been double billing the City for the replacement street lights.

Based on our research, the street light billing error has existed since at least 2006, which is the earliest benchmark to compare actual inventory against billed lights. In 2006, the City had 3,245 actual street lights, but BED was billing for 3,549 lights. In June 2014, our actual inventory showed 3,275 lights, but BED was billing for 5,052 lights – a difference of 1,777 lights.

The extended timespan of this error, combined with monthly increases as lights were replaced, has resulted in an over-billing by BED to the City of \$1,779,201 since 2006.

*Root cause*

The root cause analysis of this error shows multiple points of failure in the street light billing system. At the core of the error was a complex manual process that lacked the internal controls to validate billed lights against actual inventory on a regular basis. City street lights touch three departments within BED, each with its own variation on how it treated the lights as an asset and considered the City as a customer. These variations caused gaps that led to a breakdown between Operations replacing a light and Finance accounting for that same light. (As an important note: this type of manual billing process differs greatly from the standard billing process used for more than 95% of BED customers. The standard process uses digital data collection from meter to bill with a two-stage validation process to ensure accuracy.)

Further complicating the street light error was a billing arrangement with the City that unintentionally obscured the cost and number of lights. Historically, the City's street light bill has been netted out against BED's payment in lieu of taxes (PILOT), such that the PILOT payment sent to the City would show principally what BED owed, with the street light invoice provided in the attached documentation. That invoice did not show the month-to-month change in the number of street lights or cost increases over time. This arrangement lacked the clarity of standard BED customer bills and was a factor in why this error was not discovered sooner.

*Billing resolution*

BED has met with the City to make payment arrangements for the over-billing. By industry practice, BED looked back six years (i.e., the State statute of limitations) to determine the charges. For the period from July 2008 to June 2014 (six fiscal years), BED will remit \$1,464,604 to the City. BED will make this payment from its operating fund reserves and will not seek rate recovery. The payment will not impact customer rates.

*Improvement plan*

As of August 2014, we have corrected the City's street light bill and will send detailed monthly invoices to the City under their own cover.

We have implemented, or are in process of implementing, a number of distinct procedural improvements and enhanced internal controls to guard against this error occurring in the future. By broad category, these changes include: more transparency in City billing; clarifying and streamlining intra-departmental procedures; street light inventory and billing upgrades; and pre-bill data validation.

- **Next steps:** Implement system improvements and report back by October 31, 2014, as part of the larger report outlined below.

UVM Rubenstein Lab / ECHO Center Billing:

At the request of UVM, BED conducted a comprehensive review of its Rubenstein Lab building on the waterfront, part of which the ECHO Center leases from UVM. During that review, BED staff found an error with a billing determinant in the CT meter configuration that led to ECHO being billed for only half of its actual usage with UVM billed for the other half. The net result of this error is an over-collection by BED from UVM of \$357,794.

*Root cause*

The root cause analysis of this issue points to a series of errors that occurred when the ECHO Center was commissioned in 2003; a secondary error was created when accounts were reconfigured in 2009. The problem was exacerbated by the absence of regular internal reviews of the meter configuration. The explanation of these errors is complex and this memo will only cover the high-level moving pieces.

Initially, at building commissioning in January 2003, rather than providing ECHO with its own account and electric service separate from the Rubenstein Lab, a decision was made to “sub-meter” ECHO’s usage off the Lab’s main service with BED billing UVM for the combined usage of the building and UVM/ECHO internally settling their individual contributions. It is not clear why the decision was made to sub-meter ECHO; electric service through a sub-meter is not a standard procedure and runs counter to Public Service Board orders.

The sub-meter for ECHO is a current transformer (CT) meter, which is a special meter configuration used for high usage commercial and industrial customers. To calculate an accurate customer bill with a CT meter, a “multiplier” must be used to convert meter data into customer usage. For ECHO, the physical CT meter was installed correctly, but the wrong multiplier was entered into BED’s billing system. The multiplier was half of its correct value, which resulted in ECHO being billed for half of its actual usage. The “multiplier error” accounts for the bulk of the underlying issue between UVM and ECHO. (As an important note: this type of error is not applicable to standard residential and small commercial customer meters.)

The incorrect multiplier for ECHO, once entered into the billing system, was never validated against the actual CT meter at any time after the initial installation.

As a final complication, in 2009 BED began providing separate bills to UVM and ECHO, replacing their previous internal settlement process. During this conversion BED’s billing system was incorrectly set up to charge UVM for both the Rubenstein Lab and ECHO’s combined total demand charges; those demand charges should have been separated by customer. The “demand error” is the result of an incorrect manual process (non-standard sub-meter accounting) being carried forward into an updated billing process without being reviewed for accuracy or consistency.

*Billing resolution*

The billing impact to UVM and ECHO is as follows:

- During the period of 2003-2009, BED sent ECHO’s bill to UVM and the electric bill was settled between the lessor and lessee. During this period, because of the multiplier error, UVM was under-billing ECHO for its usage for a total of \$254,662.
- In 2009, BED began to bill UVM Rubenstein Lab and ECHO separately and directly, although still with the sub-meter setup. The multiplier error continued during this period, although it was BED that was now under-billing ECHO and over-billing UVM. From 2009 to the present, because of the multiplier error, BED over-billed UVM by \$259,287.
- From January 2009 to April 2014, because of the demand error, BED over-billed UVM by \$98,506.

The total over-billing by BED of UVM is \$357,794. We have remitted a check in that amount to

UVM. BED made this payment from its operating fund reserves and will not seek rate recovery. The payment will not impact customer rates.

The University of Vermont is BED's largest customer. We will continue to partner with them on energy efficiency projects and to provide exceptional service as the campus grows and changes over the coming years.

We also are working with the ECHO Center to resolve the under-billing and help them move forward. The unfortunate result of this error is that ECHO's electric bill will double. Our energy efficiency team is working closely with ECHO on possible cost saving measures.

#### *Improvement plan*

As of August 2014, we have corrected both UVM's and ECHO's bills and are working with each organization on customer-specific projects.

We have launched a series of reviews targeted at CT meter configurations, which have potential vulnerability for billing errors due to the complexity of the setup. Specifically, we are conducting a meter-by-meter field review of the 522 CT meters in the BED network. This intensive review will be conducted over the next 90 days. We have sent a letter to affected customers and will follow-up with a report of findings specific to their meter(s). In the meantime, we are conducting a desktop audit of CT meter configurations to identify obvious data anomalies and make quick changes as required. Finally, BED will develop and implement a standard, regular review process for complex meter configurations, such as CT meters, where there is an enhanced likelihood for errors.

- **Next steps:** Implement improvements and report back on progress by October 31, 2014, as part of the larger report outlined below.

#### Looking Forward: Assessing Weaknesses and Finding Opportunities

The City and UVM/ECHO billing errors, while separate and distinct, have common attributes that could lead to additional issues: data transitions between manual and automated activities; data transitions between departments within BED; lack of regular data validation or error checking procedures; and non-standard billing arrangements. BED management and staff have raised these issues and have recommended a full system review to ensure the ongoing accuracy of customer billing. The full system review will include:

1. **Hiring KPMG to provide an independent, third-party assessment of BED billing practices and procedures.** In this transparent process, BED will "open its books" to KPMG so it can identify potential points of failure, test and validate the meter-to-bill process for error-prone processes, and provide findings on material weaknesses, process improvements, and industry best practices.
2. **Conduct a comprehensive review of meter configurations to verify accurate data collection and processing.** A preliminary internal audit of these configurations found no active errors or threatening issues with residential and small general accounts. However, the preliminary review did flag potential weaknesses that merit further review; most of the flags relate to the common attributes outlined above.

3. **Flag non-standard billing arrangements for special review.** In addition to City street light billing, BED staff has identified one other non-standard process: our leased light program (outdoor lights for personal or commercial use). While this program was stopped years ago, BED has not converted grandfathered customers to a new system that will allow for better billing and auditing. BED will develop and implement a plan to transition the current leased lights program to either a standardized tariff or metered service. This plan will require Public Service Board approval.

The full system review will also incorporate all of the improvement plans borne from the specific City and UVM/ECHO errors, summarized here:

4. **Implemented procedural improvements and enhanced internal controls for City street light billing,** including: more transparency in City billing; clarifying and streamlining intra-departmental procedures; street light inventory and billing upgrades; and pre-bill data validation.
  5. **Launch a meter-by-meter field review of CT meters in the BED network over the next 90 days.** We have alerted affected customers to the pending review and will follow-up with a report on our findings. As of this report, we have completed 7 field reviews.
  6. **Conduct a desktop audit of CT meter configurations.** Our goal is to identify more obvious errors and work to resolve them quickly. As of this report, we have completed 208 desktop audits and are investigating one flagged issue.
  7. **Develop and implement a regular review process for complex meters.** With complex metering configurations, we want to inspect the physical meter set-up at regular intervals (biennial or triennial) to test for accuracy and share findings with our customers.
- **Next steps:** By October 31, 2014, we will provide the Mayor, City Council, Board of Finance, Board of Electric Commissioners and our customers with a 60-day update report of our findings and progress on resolving any outstanding issues. The report will include findings from KPMG. We'll report every 60 days thereafter until we close out our punch list.

### Conclusion

Billing issues of this significance demand a full and timely response. Although the issues identified affect only three of BED's more than 20,000 customers, we strive for 100% billing accuracy. Once these issues were discovered, BED moved immediately to address them and develop an action plan to ensure the accuracy of customer billing across the board. We will continue to report findings and progress in an open and transparent manner with our customers, City leaders, and State regulators.

Our customers are the center of our universe at BED. We are deeply committed to providing our customers with reliable, exceptional service in everything we do, whether it's installing a meter, answering a billing question, or helping them become more energy efficient. These billing errors are serious business for us and, as a team, we are fully resolved to find the problems, fix the problems, and work diligently to never let them happen again. I want to commend the BED team for discovering these errors, working quickly to correct the issues, and addressing them with our customers in a forthright manner.