

RETAIL ELECTRIC BILLING: REVENUE LOST & FOUND

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Are you billing all
your customers?

Are you billing your
customers accurately?

Are you leaving “money on
the table” which other
customers must subsidize?

This session will show
you how to uncover
unbilled (or overbilled)
revenues...



...so that every customer is
billed appropriately for
improved customer
satisfaction and financial
health of your utility.

AGENDA

1. Metering Process
2. Billing Systems
3. Retail Billing Assessment Program
4. Case Studies
5. Q&A

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IS THE RETAIL BILLING PROCESS AS SIMPLE AS THIS?



Read Meter



Calculate Bill

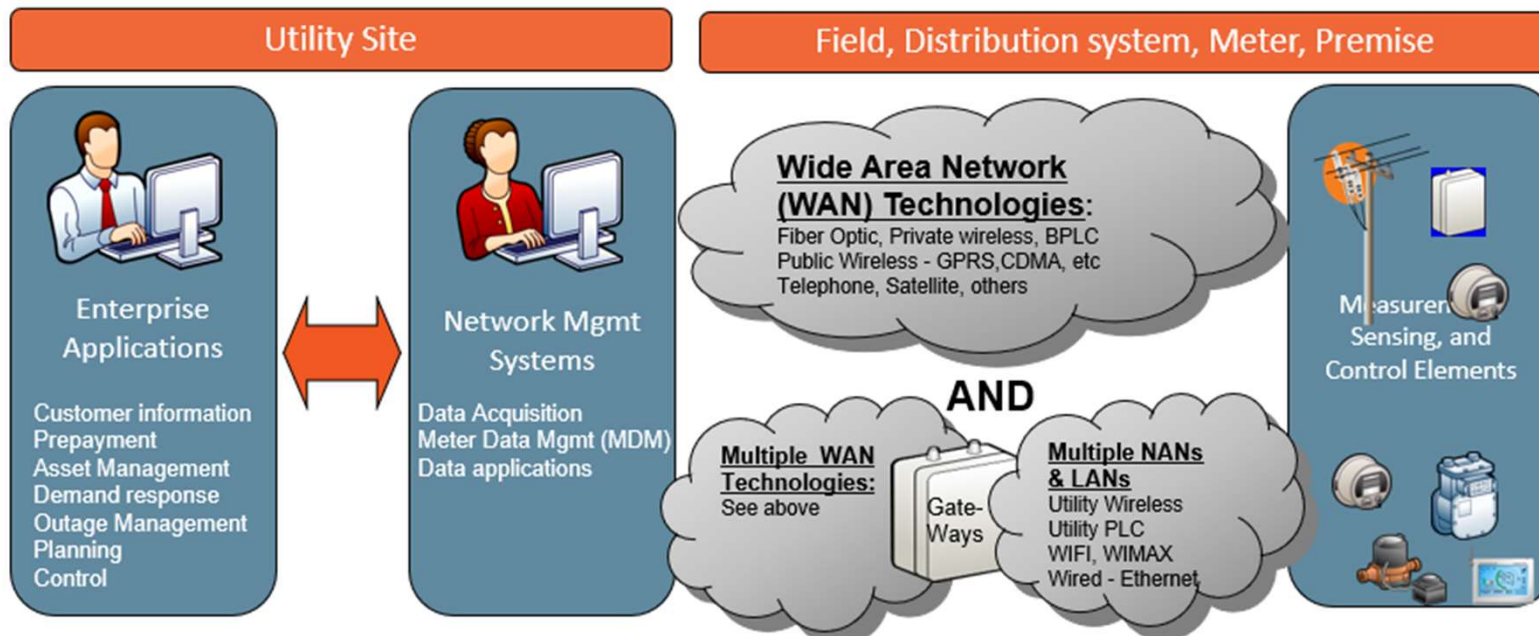


Penalty Date	Cutoff Date	Due Date
8/30/2021	9/7/2021	8/27/2021
PREVIOUS BALANCE		\$63.29
PAYMENTS		(\$63.29)
ADJUSTMENTS		\$0.00
PENALTIES		\$0.00
PAST DUE AMOUNT		\$0.00
USAGE		
0	WATER	27.12
150	ELECTRICITY	24.85
	SEWER	28.00
	LANDLORD CREDIT	-\$5.12
	NC SALES TAX (EL)	\$1.74
CURRENT BILL		\$26.59
AMOUNT DUE		\$26.59

Print & Send Bill
to Customer



COMPLEX PROCESSES



What could possibly go wrong?

Image Credit: Mark Munday (aka "Father of AMI")

METER EVOLUTION:

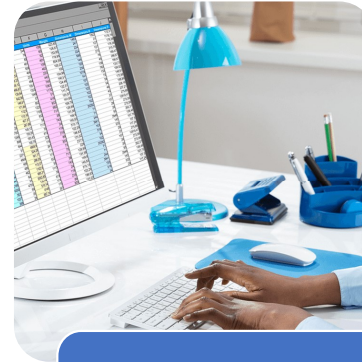
MANUAL METER READING PROCESS



Travel to meter.
Record readings
in logbook.



Return updated
logbooks to
billing office.



Enter meter
readings into the
billing system.



METER EVOLUTION: HANDHELD WITHOUT AMR



Upload
preprogrammed route
and meter information
to the handheld.



Travel to each meter
and enter readings
into the handheld
device.

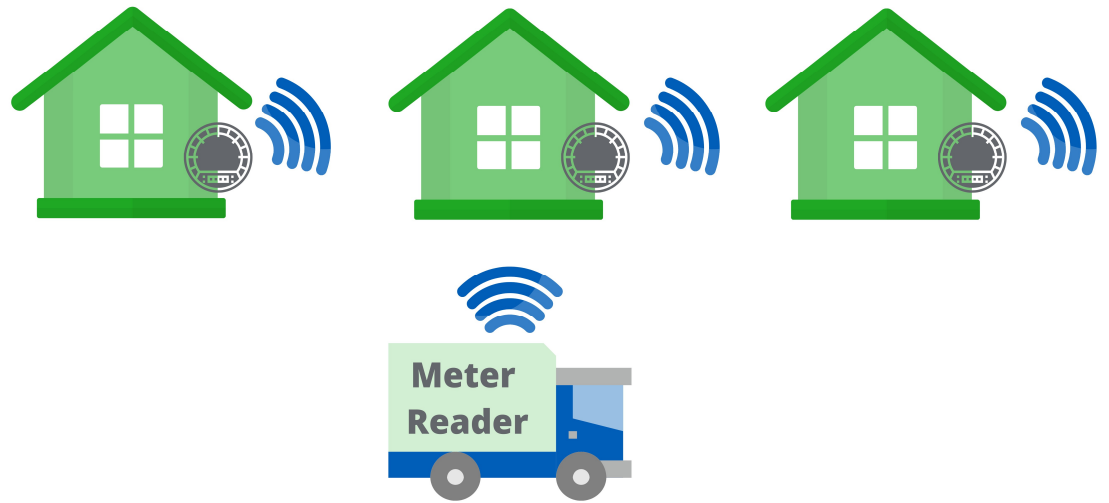


Upload meter readings
to billing system.



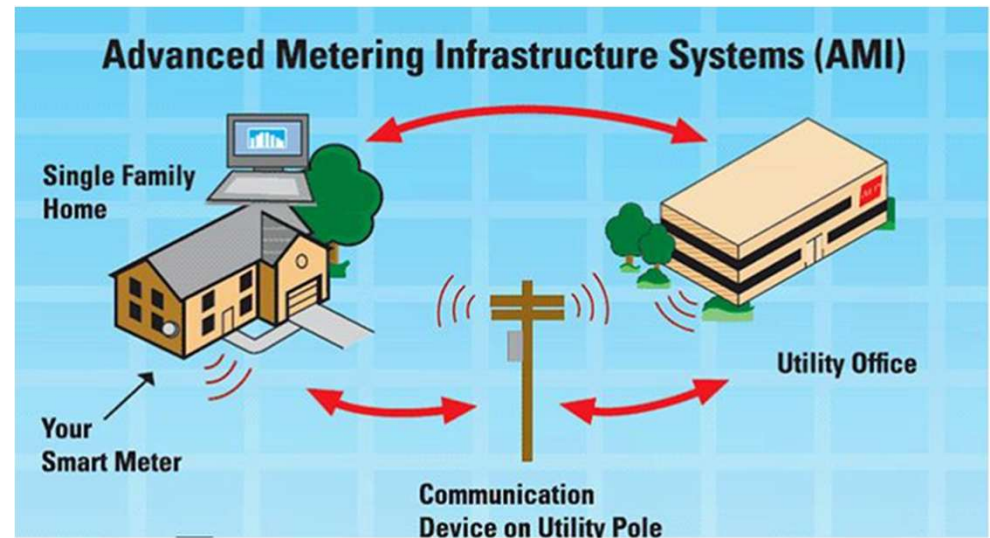
METER EVOLUTION: AMR

- One-way communication
- Walk-by/Drive-by
- Limited functionality
- Utility personnel collect data and transmit to database



METER EVOLUTION: ADVANCED METERING INFRASTRUCTURE (AMI)

- Two-way communication
- Secure, fast, fixed network
- Real-time data
- Broad capabilities for revenue metering, instrumentation & control
- Fully integrated to support utility's strategic plans



Source: <https://www.aeptexas.com/save/residential/SmartMeters/HowSmartMetersWork.aspx>

EVOLVING METERING TECHNOLOGY

Which technology best describes your utility?



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EVOLVING RETAIL BILLING SYSTEMS

Where is your utility on the road to retail billing modernization and customer engagement?

Complex Billing Engine



- Customer-centric CRM
- Cloud-hosted, Software-as-a-Service (SaaS)
- Agile, flexible, sustainable solutions
- Complex metering, rates, billing, and payment capabilities
- Most robust auditing capabilities

Legacy Customer Information System (CIS)



- Mostly transactional, basic account management
- On-premise
- Cannot handle innovative rates or real time, hourly interval data required to address industry demands
- Limited audit capabilities

Modern CIS/Entity Resource Planning (ERP)

- Optimizes customer transactions
- Improves customer experience
- Advanced data analytics and rate capabilities
- Availability of new features may be limited
- Mature/compliant auditing capabilities

Spreadsheets



- Purely transactional
- On-premise
- Fully manual processes
- No audit trail

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RETAIL BILLING SYSTEM COMPARISON

	SPREADSHEET BASED SYSTEM	LEGACY CIS	MODERN CIS/ERP	COMPLEX BILLING ENGINE
Customer Centric CRM with 360 Customer Portal	✗	✗	Limited	👍
Cloud based SaaS	✗	✗	✓	👍
Robust auditing capabilities	✗	Limited	✓	👍
Flexible, Sustainable	✗	✗	Limited	👍
Handles complex modern rates & payment options	✗	Limited	✓	👍

MAGNITUDE OF DATA



Account Details

- Account Number
- Account Status
- Contact Name
- Service Address
- Account Class
- Service Category
- Service Code
- Customer Class
- Rate Code
- Rate Description
- Connect Date
- Route Number

- These are only partial lists.



Metering Data

- Meter Number
 - Meter Serial Number
 - Beginning Reading
 - Ending Reading
 - Demand Scale
 - Hourly demand data
 - CP Demand Reading
 - On-Peak Energy
 - Off-Peak Energy
 - On-Peak Demand
 - Off-Peak Demand
 - Net Energy
 - Power Factor
- 60+ data points per meter
Hourly interval data (AMI)

- 60+ data points per meter
- Hourly interval data (AMI)



Billing Data

- Bill Date
- Detailed Rate Tables
- Basic Facility Charges
- Billed Energy Consumption (kWh Per tier, On/Off Peak, Total kWh)
- Billed Energy Charges (\$ per Rate Tier, On/Off Peak, Ultra Off Peak)
- Billed Demand (NCP, CP, Excess, TOU On/Off Peak kW)
- Demand Charges (NCP, CP, Excess, TOU, On/Off Peak, REPS Charges)
- Load Management & Generator Credits
- Solar Net Billing Charges
- Total Billed Charges
- Account Balance
- Due Date
- Amount Due after Due Date
- Past Due Charge

- 10,000 accounts (average)
- Monthly, daily, or hourly updates

QUESTIONS FOR CONSIDERATION

Given the:

- Variety and complexity of evolving metering, billing, and payment technologies
- Limited capability of older systems to handle current industry demands
- Magnitude of data collected and processed each month
- Limited training of your utility billing staff

Consider:

- What is the probability that billing errors occur?
- How many billing errors typically occur each year?
- How much do these errors cost?
- How can we identify and prevent billing errors?



QUESTIONS FOR CONSIDERATION

What is the probability that billing errors occur?

- Virtually **100%**
- Errors are so common that consultancies offer bill reviews to retail customers and only invoice a portion of the overbilled amount they identify & remediate.
- Our members are much more likely to underbill than overbill.

QUESTIONS FOR CONSIDERATION

How many billing errors typically occur each year?

- From **2,000** to **12,000** findings per utility*

**Values are based on the findings from all Retail Billing Assessments completed over the past two years for member utilities serving between 2,000 and 13,000 customers each.*

QUESTIONS FOR CONSIDERATION

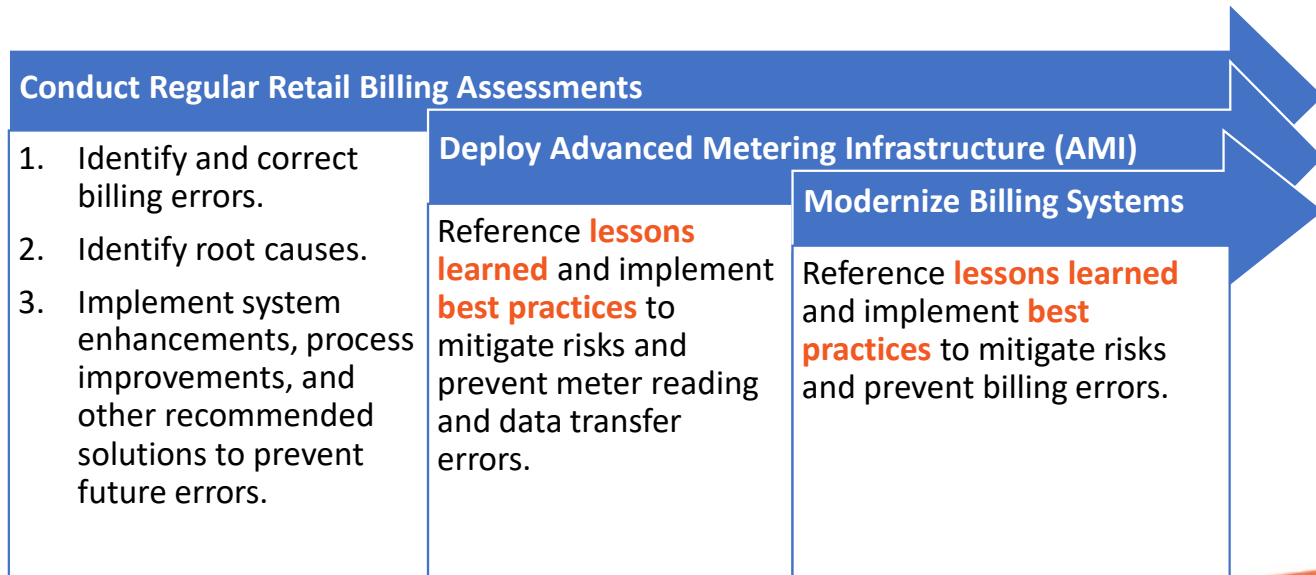
How much do these errors cost?

- One time revenue impact: **up to \$25,000***
- Yearly revenue impact: **\$7,500 - \$627,000***

**Values are based on the findings from all Retail Billing Assessments completed over the past two years for member utilities serving between 2,000 and 13,000 customers each.*

QUESTIONS FOR CONSIDERATION

How can we identify and prevent billing errors?



Retail Billing Assessments build our library of **lessons learned** and our toolkit of **best practices** which help prevent billing errors and mitigate risks during billing system migrations and AMI deployments.

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RETAIL BILLING ASSESSMENT PROGRAM



DEFINITION

A Retail Billing Assessment is a detailed analysis and process review of the utility's retail billing program from the meter to the bill.



GOALS

Identify retail billing errors, sources of unbilled revenue, and opportunities for more accurate and efficient billing to improve both customer satisfaction and the financial health of the utility.



FREQUENCY

- Every two to five years
- Prior to any major system conversions
- Immediately following any major rate, technology, or staff changes.



WHAT WE ASSESS

- Rate Documentation
 - Retail Rate Tariffs
 - Rate Assignments
 - Billing Determinants
 - Billed Charges
 - Sample Bills/Bill Design
 - Load Management*
 - System Reporting*
- *Optional*



TYPICAL OUTCOMES

- Reduced billing errors
- Increased revenue
- Rate consolidation
- Streamlined billing processes
- Reduced energy losses
- Mitigated risks
- Increased transparency and customer trust

WHAT WE ASSESS



RATE DOCUMENTATION

Do you do what your published rate documentation says you do?

SAMPLE FINDING

Published rate documentation does not reflect how billed charges are calculated by the billing system.



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WHAT WE ASSESS



RETAIL RATES

Are retail rates appropriate, simple to understand, and compatible with the billing system?

SAMPLE FINDING

The retail rates are so complex and so numerous that customers do not understand how their bills are calculated, and billing systems cannot calculate bills according to the rate tariff.



WHAT WE ASSESS



RATE ASSIGNMENTS

Is every account assigned to the correct retail rate?

SAMPLE FINDING

Numerous accounts no longer qualify for the assigned rate code due to changes in demand load.

Example: A manufacturing facility is converted into a warehouse.



WHAT WE ASSESS



BILLING DETERMINANTS

Are meter readings accurate?

Are demand and energy consumption billed correctly?

SAMPLE FINDINGS

- Significant load decreases following meter exchanges
- Consecutive duplicate demand readings
- Missed meter readings



WHAT WE ASSESS



BILLED CHARGES

Is the billing system calculating billed charges and sales taxes correctly?

SAMPLE FINDING

Over **\$300,000** in demand charges were not billed each year because the billing system was not applying demand charges correctly.



WHAT WE ASSESS

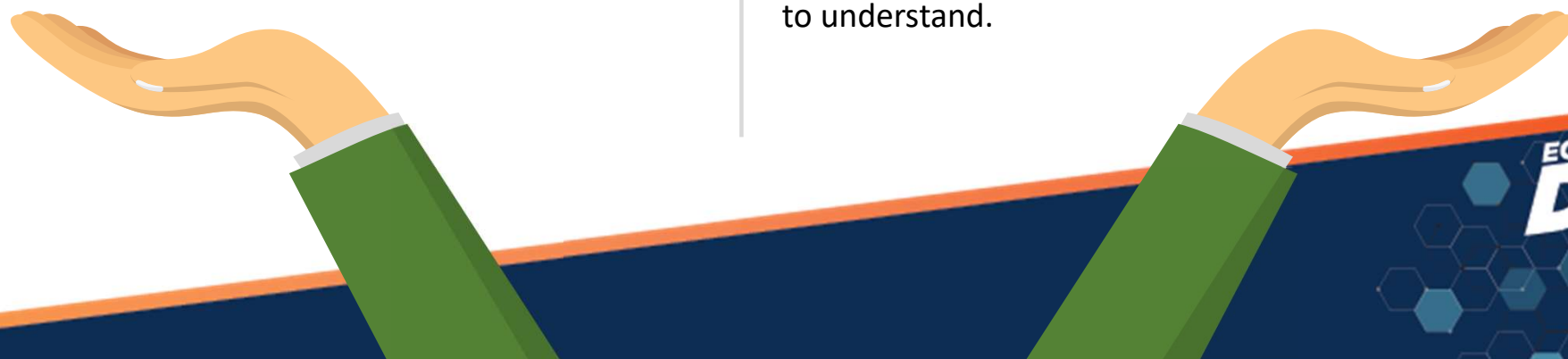
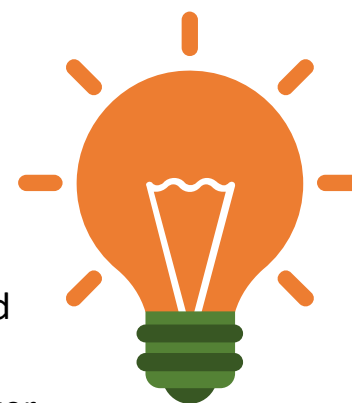


SAMPLE BILLS

Are printed/electronic retail utility bills accurate and easy to understand?

SAMPLE FINDINGS

Bills used incorrect labels, omitted field headers, printed the wrong energy and/or demand units, contained meter reading errors, or were difficult to understand.



MOST COMMON FINDINGS THAT COST UTILITIES MONEY



Unbilled Active Accounts

- Example: A large account was inadvertently marked inactive during account maintenance resulted in underbilling **over \$100,000** per year.
- Unbilled municipal usage has accounted for up to **\$656,000** per year in unbilled revenues for small utilities.

Meter Multiplier Errors

- Missing meter multipliers (Case Study #1)
- Incorrect meter multipliers
- Meter multipliers applied twice

Demand Decimal Place Errors

- Billed demand values were 1/10, 1/100, or 1/1000 of actual demand (Case Study #2)
- Average impact has been approximately **\$100,000** per year for small to medium utilities.

Missing Energy or Demand Readings

- Energy = 0 when Demand > 0
- Demand = 0 when Energy > 0

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CASE STUDY #1:

MOSTLY MANUAL PROCESSES



Utility Details

Manual meter reading
Manual data entry
Legacy CIS
Small size



Challenge

Prepare for migration to
an advanced billing
system.



Biggest Findings

Missing meter multipliers
(\$55,875 unbilled annually)
Too many rates
Complex rates



Benefits

Number of findings: **11,522**
One-time value: **\$6,171**
Yearly value: **\$98,944**
50% fewer, 75% simpler rates
Reduced cost & complexity of
billing system migration

CASE STUDY #2:

ADVANCED TECHNOLOGY



Utility Details

Meter reading:
Handheld & AMI

Billing system:
Advanced ERP

Small size



Challenge

Validate meter readings
and prepare for the next
phase of AMI deployment.



Biggest Finding

Billed demand for all
AMI meters was 1/100
of actual demand (kW).



Benefits

Number of findings: **5,360**

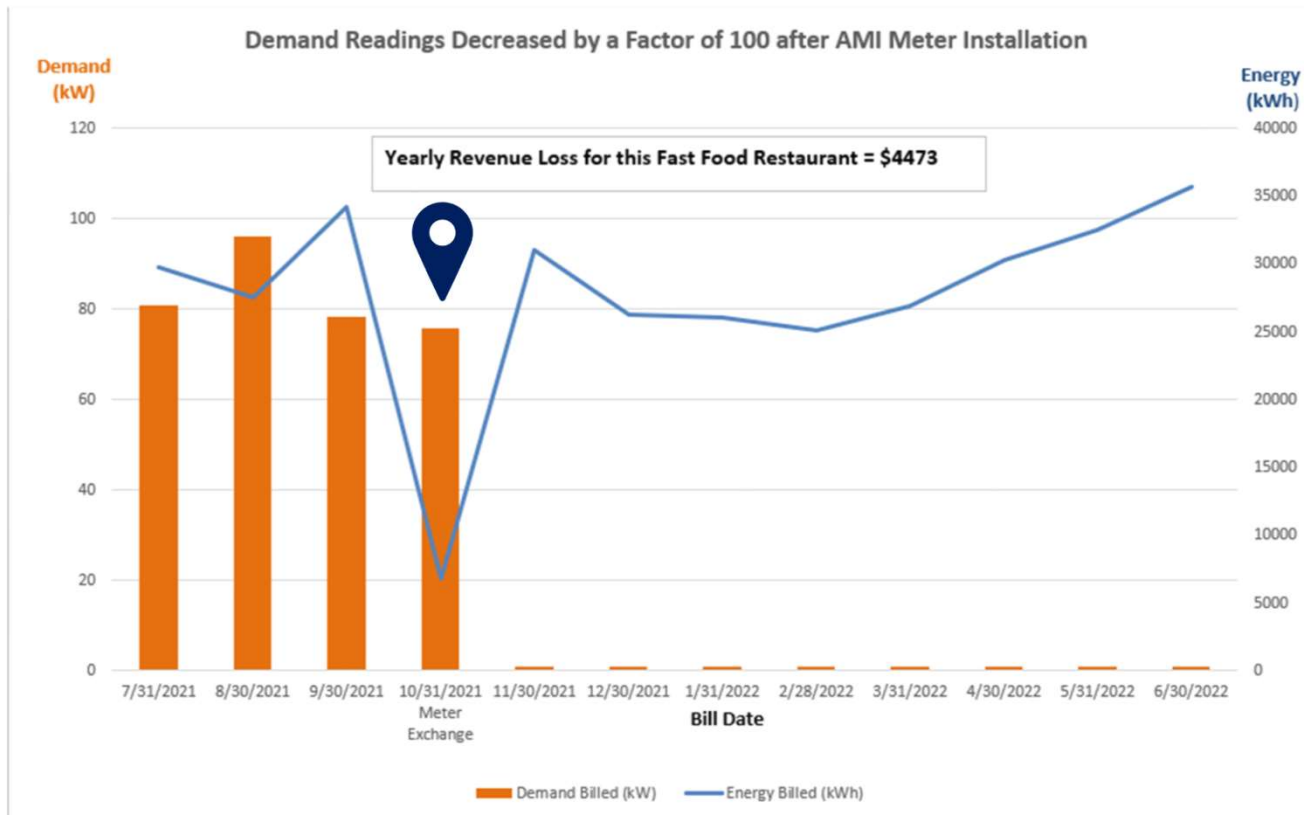
One-time value: **\$10,700**

Yearly value: **\$626,500**

Helped two other member
utilities mitigate up to **\$2.4
million** in revenue losses.

CASE STUDY #2

DEMAND DECIMAL PLACE ERROR



Key Findings

All AMI meters were underbilled demand by a factor of 100, while billed energy usage continued as expected after the AMI meter was installed. For example, 75 kW was billed as 0.75 kW.

CASE STUDY #2

DEMAND DECIMAL PLACE ERROR

Revenue Impact

- Lost revenue YTD: **\$75,000**
- Lost revenue annually without correction = **\$133,000**
- Lost revenue if all meters had been changed out without correction = **\$582,000 per year**

Root Cause

- Meter vendor's file transfer setup parameters to Itron MV-RS/FCS were incorrect.

Solution

- Worked with the vendor to correct the file transfer parameters for all four members utilizing this vendor's metering system.



TAKEAWAY QUESTIONS

- Are we billing all our customers?
- Are we billing all our customers accurately?
- Are our metering and billing systems capable of handling hourly interval data and the innovative rates required to address industry disruptors (distributed generation, solar, EVs, etc.)?
- Are our utility staff equipped with the knowledge and skills to handle complex metering & billing processes effectively?

SUMMARY OF BEST PRACTICES

1. Conduct regular **Retail Billing Assessments!**
2. Invest in flexible, capable, future-focused technologies.
3. Consult with ElectriCities and industry experts when deploying new technology to ensure best practices are followed.
4. Verify billing system capabilities before approving new rate tariffs.
5. Optimize “Read Allocate” and “Bill Review” features to validate meter reads and billed charges before sending bills.
6. Improve process documentation and training.



QUESTIONS?

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