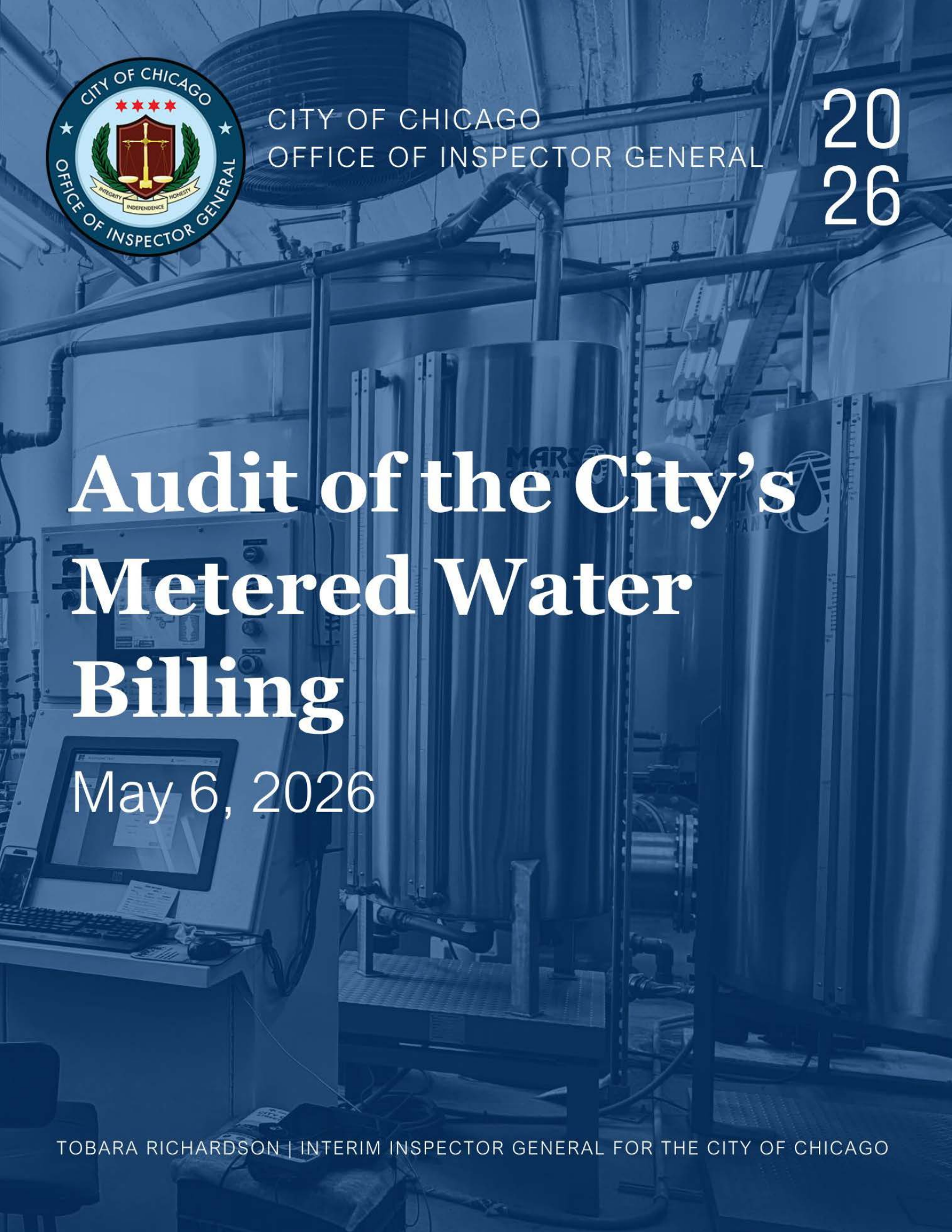

CITY OF CHICAGO
OFFICE OF INSPECTOR GENERAL

2026

Audit of the City's Metered Water Billing

May 6, 2026

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Acronyms

AWWA	American Water Works Association
CEDA	Community and Economic Development Association of Cook County
CIT	Customer Inquiry Tracker
CSR	Customer service representative
DOF	Department of Finance
DWM	Department of Water Management
EAM	Enterprise asset management
LRP	Leak Relief Pilot
MCC	Municipal Code of Chicago
OIG	Office of Inspector General
TGal	Thousand-gallons
UBCS	Utility Billing and Customer Service
UBR	Utility Billing Relief

Water Bill Relief Resources

The City of Chicago offers resources to customers facing difficulty paying their water bills.

The City of Chicago's Utility Billing Relief Program (UBR) offers reduced water and sewer rates and debt forgiveness for qualifying Chicago residents. Customers can apply online at https://www.chicago.gov /city/en/depts/fin/ provdrs/ utility_billing/svcs/utility-bill-relief-program.html or call the Community and Economic Development Association of Cook County (CEDA) at 800-571-2332.

The City of Chicago is currently piloting the Water Leak Relief Pilot (LRP) program, which provides debt relief to eligible customers who experience service line water leaks that cause unexpected increases in their bills. Customers can apply online at https://www.chicago.gov/city/en/sites/leak-relief-program/home.html.

City of Chicago Office of Inspector General (OIG)

Audit of the City's Metered Water Billing

OIG conducted an audit of the Department of Finance (DOF) and Department of Water Management's (DWM) processes for billing water use at metered properties, and for addressing customer billing issues including billing spikes and inconsistencies.

OIG found:

Billing spikes can come out of nowhere.

While rare, billing spikes can amount to thousands of dollars in unanticipated charges. Resolving these can be a confusing, scary, and months-long process for those impacted.

Water meters do not cause billing spikes.

Billing spikes at metered properties are rare, but may be caused by leaks, unusual water use, or errors in DWM and DOF's billing processes. The meters themselves do not cause these spikes.

Poor communication prolongs issues.

Infrequent written notices and unhelpful customer service can compound the frustration customers face when attempting to resolve errors.

OIG recommends:

DOF and DWM should work together and with their vendors to:

- **ensure their meter reading and billing system has features to minimize errors;**
- **define roles and responsibilities within the service order process; and**
- **thoroughly train customer service representatives to explain billing and service policies.**

I | Executive Summary

The City of Chicago Office of Inspector General (OIG) conducted an audit of the Department of Finance (DOF) and Department of Water Management's (DWM) processes for billing water use and addressing customer billing issues.

The objectives of OIG's audit were to determine whether,

- DOF and DWM correctly identify and respond to the causes of unexpected increases in water bills—also known as billing spikes—for metered accounts;[1]
- DOF consistently applies payment plans, credits, and adjustments to customer accounts; and
- DOF uses consistent and reliable procedures for verifying unusual water use and calculating estimated water use.

A | Conclusion

DWM and DOF are jointly responsible for ensuring Chicagoans are billed accurately for their water use. OIG concluded that while the water meters of the size typically installed in single-family homes, two-flat, and three-flat residential buildings are accurate and unlikely to lead to billing spikes, DWM and DOF's processes related to service orders, billing exceptions, and estimate and credit calculations may introduce errors that lead to or worsen spikes for some customers. Further, poor communication practices can extend the time the City takes to resolve these errors and compound customer frustration as they attempt to resolve them.

B | Findings

OIG found errors in DOF's bill review process, poor service order coordination between DOF and DWM, and incorrect manual credit calculations that created or increased the magnitude of customer billing spikes. DOF's process for estimating bills does not fully align with the Municipal Code of Chicago (MCC) and introduces billing errors. DOF's exceptions reports—used to identify accounts that may have billing errors—do not reliably detect and prevent such errors. Furthermore, poor coordination and incomplete documentation of service orders can contribute to billing spikes and a slower complaint resolution process. OIG also found that DWM service orders were sometimes duplicated. DWM did not ensure completed service orders were promptly and thoroughly documented, causing staff to complete multiple orders for the same problem. This not only wasted DWM staff time and resources, it also directly caused the City to overcharge at least one customer.

OIG further found that water meters typically installed in residential buildings such as single-family homes, two-flats, and three flats do not cause billing spikes. OIG reviewed 2,200 DWM meter tests and concluded that meters generally measure water use accurately. The design of the meters makes it unlikely they will measure more water than the amount that flows through them.

Finally, OIG found that poor communication via DOF and DWM's written notices and poor customer service can add to customer frustration, prolong resolution time, and compound billing errors.

[1] For purposes of this audit, OIG uses the term "spike" to describe a bill with an increase of at least twice the customer's previous water use.

Written notices, such as water bills, lack real-time information on water use. Because customers are not promptly informed of spikes in their water use, they cannot quickly take action to resolve potential leaks. After DOF resolved billing complaints, the department did not always follow up with the customer. DOF's policy places the responsibility on customers to call for updates on billing issues. Some customer service representatives did not thoroughly review customer accounts and provided inaccurate information, thereby delaying the resolution of billing issues.

C | Recommendations

OIG recommends that, as DOF and DWM look to modernize the City's meter reading system and Banner billing system, the departments should ensure that the new system(s) include features designed to prevent duplicate service orders, and ensure that calculations of estimated water use and credits to correct account balances are thoroughly documented and reviewed.[2] DOF should work with its information systems vendor to ensure that its exceptions reports capture billing errors. DOF and DWM should work together to define roles and responsibilities for the entire service order process, from an order's creation through its completion.

In addition, to reduce customer misunderstandings, DOF and DWM should distribute clarifying information on water meter functionality and the water distribution system. In its role as contract manager, DOF should ensure that customer service representatives are trained to accurately explain these topics, and to thoroughly review account histories and take detailed call notes. DOF should also ensure that customer service representatives keep customers up to date on the status of complaints and respond to customer inquiries, including emails, in a timely manner.

D | DOF and DWM Response

In response to OIG's audit findings and recommendations, DOF and DWM stated that they will continue to work together on process changes and training to ensure meter readings are properly recorded and bills are correct, and will distribute information about water meter functionality to customers. DOF stated that it will correct some of the account adjustment calculation errors identified in OIG's report, that it has already improved its customer service training and quality management, and that it will continue to work with its customer service vendor to improve response times. DWM stated that it will continue to train staff completing service orders and to review their accuracy. The departments also stated that the City intends to move from Automated Meter Reading to Advanced Meter Infrastructure technology, at which point it plans to acquire a customer-facing portal that will allow account holders to access their water use information. However, the departments also stated that other improvements, such as modifying Banner to identify excessive or deficient readings and modifying DOF's meter change-out report to identify all meter change-outs, would require substantial additional cost to the City. DOF and DWM agreed with some of the report's conclusions and disagreed with others, and thus have not committed to all corrective actions. Without appropriate corrective actions, the issues identified in the report are likely to persist.

The specific recommendations related to each finding, and DOF and DWM's response, are described in the "Findings and Recommendations" section of this report.

[2] When DWM cannot collect a meter reading, DOF estimates the customer's water use and bills the customer based on their previous use. DOF can also credit a customer's account to resolve a billing error. See Background section B and Finding 2 section A for more information.

II | Background

Unexpected spikes in City of Chicago water bills can sometimes reach thousands of dollars and create significant financial burdens for customers.[3] Over the last decade, the City of Chicago Office of Inspector General (OIG) has received numerous complaints related to high water bills. Figure 1 provides six examples of unanticipated billing spikes affecting Chicago homeowners, which OIG used as case studies for analysis in this audit.[4]

Figure 1: Billing Spikes Have Increased Some Water Bills by As Much as One Thousand Times.

Home Location	Building Type	Billing Spike Amount (Total Bill)	Compared to Previous Bill
Austin	Three-flat	$1,331	3.2 times
Belmont Cragin	Three-flat	$1,824	2.7 times
South Chicago (South)	Two-flat	$2,003	3.4 times
Portage Park	Two-flat	$5,806	21.3 times
Lincoln Park	Small multi-unit	$7,047	32.0 times
South Chicago (North)	Single-family	$23,179	1,201.0 times

Source: OIG complaints and Department of Finance (DOF) billing data.

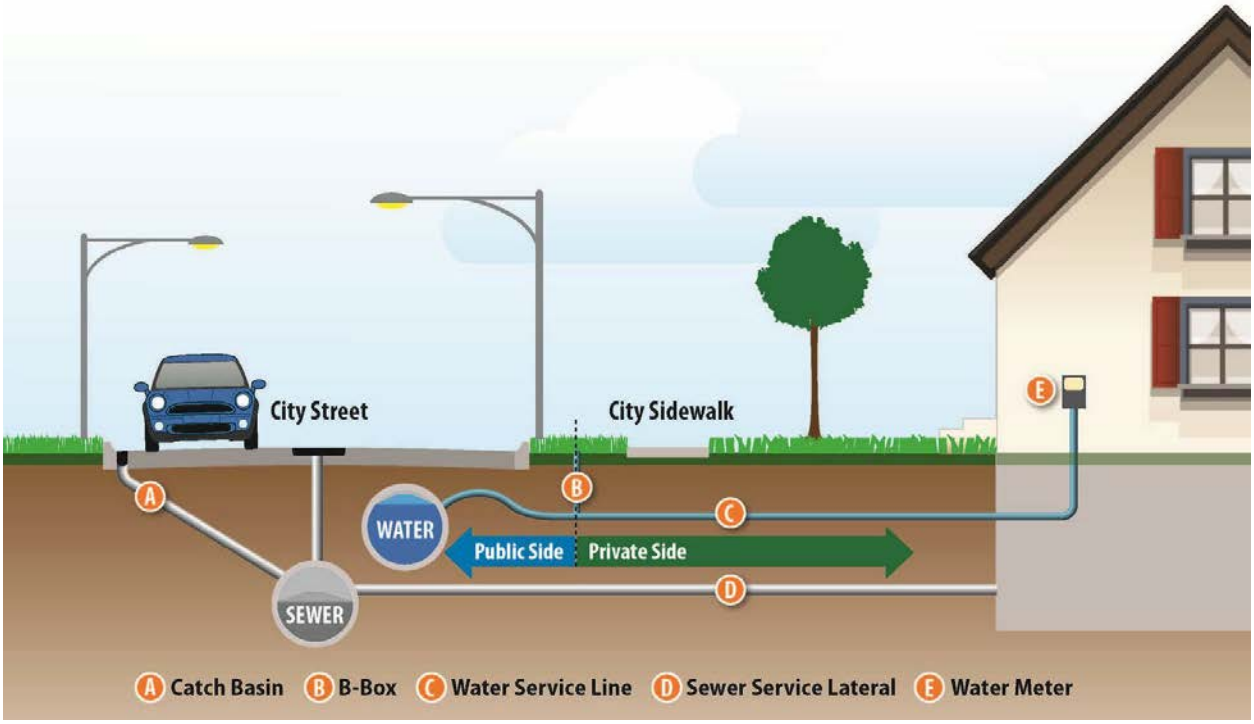
The reasons for these increases are often a mystery to account holders, but may include rate increases, unknown water leaks, actual water use, accumulated penalties for non-payment, or errors on the City's part. Some water customers who experience billing spikes have taken their complaints to the media; between January 2020 and October 2022 more than 20 customers appeared in CBS Chicago's *Getting Hosed* series claiming that their water bills spiked despite no increase in water use. Many of these customers reported they had first attempted to resolve the bills with the City but were unsuccessful.[5]

A | How the City Delivers Water

The Department of Water Management (DWM) is responsible for purifying and delivering "approximately 750 million gallons of drinking water to residents of Chicago and 120 suburbs daily."[6] First, water from Lake Michigan is processed by one of the City's two purification plants. Next, the water travels to one of twelve pumping stations located across Chicago. The pumping stations pressurize the water, then deliver it through a system of large pipes—called water mains—to homes and business. Finally, as shown in Figure 2, service lines carry water from the water mains to individual properties.

[3] For purposes of this audit, OIG uses the term "spike" to describe a bill with an increase of at least twice the customer's previous water use.
[4] See Appendix A for a summary of each case study. See the Methodology section of this report for a description of OIG's process of selection and analysis.
[5] CBS News Chicago, "Getting Hosed," updated May 23, 2024, accessed April 22, 2025, https://www.cbsnews.com/chicago/feature/getting-hosed/.
[6] City of Chicago Department of Water Management, "Water Management," accessed April 22, 2025, https://www.chicago.gov/city/en/depts/water.html. The City sells water to suburban municipalities on a wholesale basis, rather than to individual homes.

Figure 2: The City Delivers Water through Water Mains and Service Lines. Used Water Returns through Sewer Lines into the Sewer.



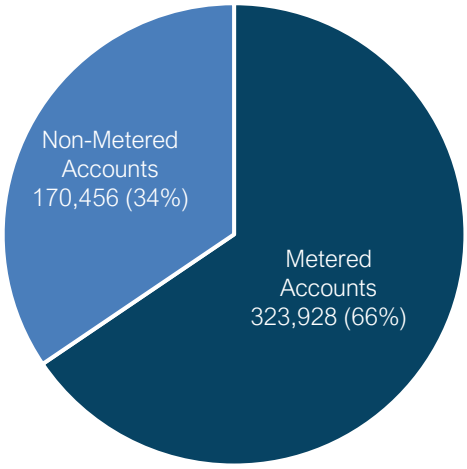
Source: City of Chicago DWM, "Water Service Line Inventory," accessed April 22, 2025, https://sli.chicagowaterquality.org/. The catch basin is the system that drains water from the street into the sewer. The B-Box or "buffalo box" houses a property's water shut-off valve.

If a property has a water meter, it will be located along the service line, either in the home or in a vault beneath the sidewalk or street. Once water flows through a property's meter, the property owner is liable for the cost of the water.

B | How the City Charges for Water

Of the City's 494,384 total water accounts active in DOF's billing system at the end of 2023, about two-thirds used a meter to measure water use. One-third did not have a meter, as shown in Figure 3.

Figure 3: About Two-Thirds of the City's Water Service Accounts Use Water Meters.



Source: City of Chicago DWM, "Water Fund: Annual Comprehensive Financial Report for the Year Ended December 31, 2023," June 28, 2024, accessed April 22. 2025, https://www.chicago.gov/content/dam/city/depts/fin/supp_info/CAFR/2023CAFR/Water2023.pdf.

The Municipal Code of Chicago (MCC) establishes two distinct methods to charge customers for their water use, depending on whether a property has a meter.

Non-Metered Service

The City bills properties that do not have water meters the same amount each billing period. Factors such as building size, lot size, and the number of plumbing fixtures determine a flat rate that the City bills each account, as established in the MCC.[7] Because non-metered properties pay flat water rates based on property characteristics rather than water volume, they do not experience unexpected billing spikes.

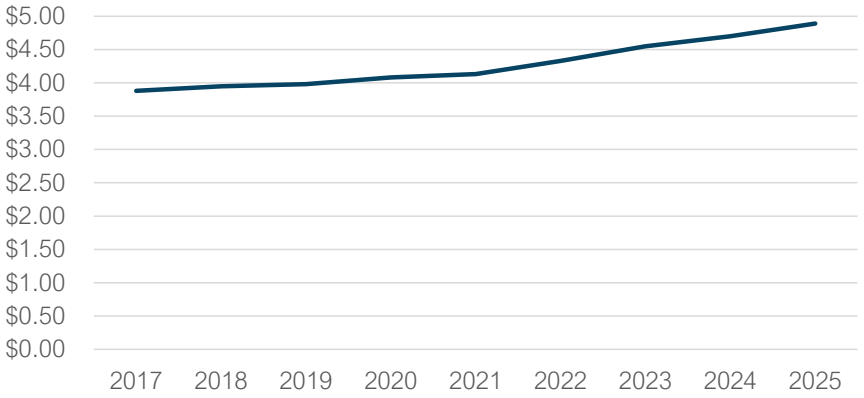
In 2022, the *City of Chicago Water Affordability Analysis*, a report by nonprofit policy organizations Elevate and the Metropolitan Planning Council, found that water affordability was a significant challenge for water customers with non-metered properties.[8] The report also found that these customers typically have higher water bills than those with metered properties.

Metered Service

The City bills metered water accounts based on the volume of water used as measured on their meters. The MCC establishes the rate the City charges for metered water service.[9] At of the time of this report's publication, the rate was $36.51 per 1,000 cubic feet of water. The City converts cubic feet to thousand-gallons ("TGals") to calculate charges; both measures are included on a customer's water bill. The cost of water, as shown in Figure 4, rises each year with inflation but the MCC places a 5% cap on the annual increase.[10]

[7] City of Chicago, Municipal Code, § 11-12-270.
[8] Metropolitan Planning Council, Elevate, "City of Chicago Water Affordability Analysis," January 18, 2022, accessed March 12, 2025, https://metroplanning.org/resources/city-of-chicago-water-affordability-analysis/.
[9] MCC § 11-12-310.
[10] MCC § 11-12-315. The City uses the Consumer Price Index - Urban Wage Earners and Clerical Workers (Chicago All Items) published by the U.S. Bureau of Labor Statistics to calculate the inflation-based increase.

Figure 4: Customers' Water Cost per Thousand Gallons Rises with Inflation at a Variable Rate.



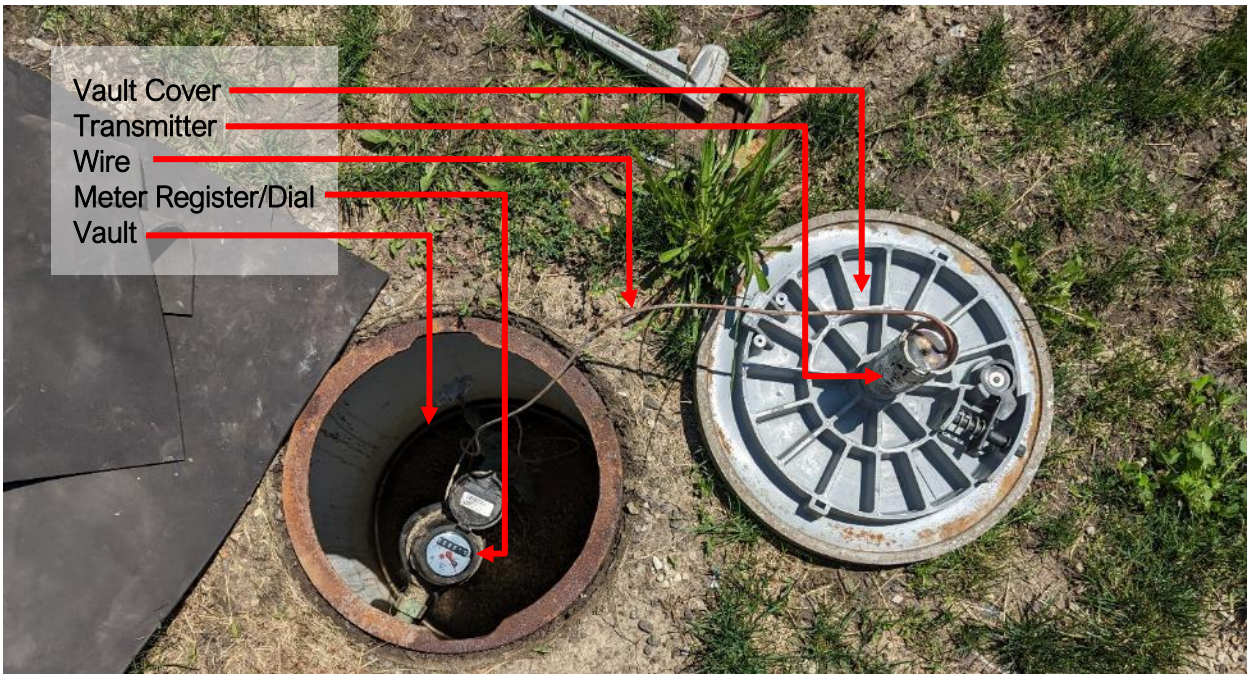
Effective Date	Water Rate per 1,000 Cubic Feet	Approx. Rate per 1,000 Gallons	Percent Increase
6/1/2025	$36.51	$4.89	4.00%
6/1/2024	$35.10	$4.70	3.37%
6/1/2023	$33.95	$4.55	5.00%
6/1/2022	$32.33	$4.33	5.00%
6/1/2021	$30.79	$4.13	1.10%
6/1/2020	$30.46	$4.08	2.45%
6/1/2019	$29.73	$3.98	0.82%
6/1/2018	$29.49	$3.95	1.54%
6/1/2017	$29.04	$3.88	1.83%

Source: City of Chicago Department of Finance, "Water and Sewer Rates," accessed April 23, 2025, https://www.chicago.gov/city/en/depts/fin/supp_info/utility-billing/water-and-sewer-rates.html.

The City also charges customers for sewer service. The City applies the same volume of water to determine the charge for both water and sewer.[11] For example, if a customer's meter reading indicates they used 1,000 gallons of water, the City charges that customer $4.89 for water and $4.89 for sewer, or a total of $9.78. The City also charges a tax of $1.255 per thousand-gallons each on water and sewer use. Thus, this customer's total bill would be $12.29.

DWM purchases, installs, reads, and tests the City's water meters. DWM is also responsible for completing on-site service orders at homes and businesses, which can include inspecting or replacing meters. Water meters can be located inside homes or businesses or in small underground vaults. These vaults are typically located in the parkway, the strip of grass between the sidewalk and road.

[11] Under the MCC, since 2015, the rate the City charges for sewer service has been the same as the rate charged for water service. MCC § 3-12-020.



An open meter vault in a parkway. Source: OIG photo.

DWM uses meters of different types and sizes based on the size of the service line and the water demands of the property. A typical meter set-up has three key components:

- A device that *measures* the amount of water passing through it. These are typically mechanical, such as a disc that rotates as water flows through it, or a turbine in the case of larger buildings with larger service lines.[12] A small number of buildings instead use ultrasonic meters to measure water use.
- A register that *records* the amount of water used. The register functions similarly to an odometer in a car: it starts at zero and counts upward without resetting. On the register, a dial displays this information. A dial may be analog or digital.
- A transmitter, attached to a meter by a wire, that *sends* a radio signal with information from the meter. This allows DWM to read the meter without entering the property to visually inspect it.

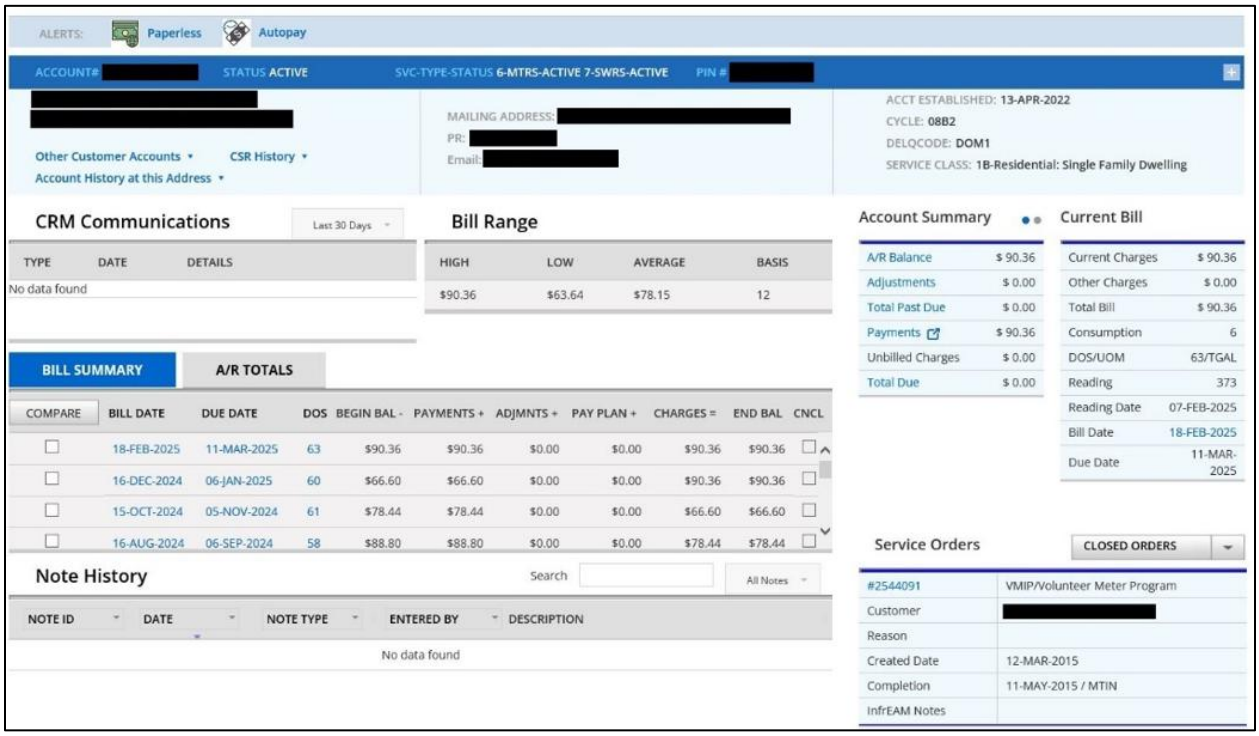
If any of these components malfunction, the transmitter will not transmit the inaccurate reading, but will instead generate a "trouble code." For example, if the transmitter does not receive information from the meter, the transmitter produces a *cut wire* trouble code. If a meter does not show 2 consecutive hours without water use in a 24-hour period, the transmitter produces a *run continuous* trouble code.

DWM aims to read meters on a monthly basis and staffs a team of rate takers to collect meter readings. Rate takers drive along pre-determined routes to bring their equipment close enough to each property's meter transmitter to capture the reading. With assistance from information technology vendor SDI Presence, DWM then uploads meter readings into Banner, the City's

[12] Because this audit's scope concerns residential buildings such as single-family homes, two-flats, and three-flats, OIG's analysis included 5/8-inch and 1-inch sized "disc" meters. See Scope and Methodology sections of this report.

software system for water account management. If the City missed or could not read a property's meter, Banner will automatically estimate the account's water use based on its previous 12 readings.[13]

DWM and the Department of Finance (DOF) use Banner to manage information from both metered and unmetered accounts. This includes customer names and addresses, billing histories, service orders, meter readings, trouble codes, payments, and customer service notes.



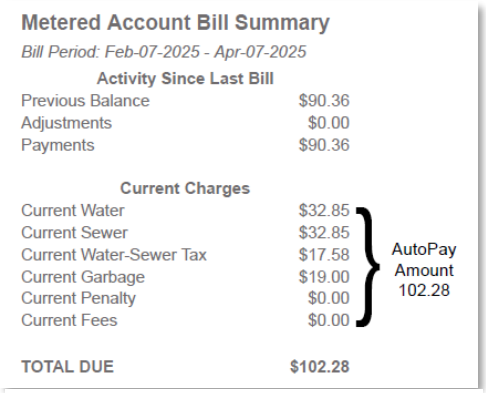
An example Banner account homepage with redacted identifying information. Source: Banner, accessed April 7, 2025.

Billing and Customer Service

Customers with metered accounts receive their water bill either monthly or every other month. Water bills list charges for water and sewer use, water and sewer tax, and garbage collection service.[14] Bills also reflect any adjustments to the account balance or penalties for late payment.

[13] MCC § 11-12-320.
[14] The garbage fee is charged only to properties that receive the City's garbage collection service.

In addition to water bills, DWM mails notices to property owners whose meters have not recorded 2 hours without water use in a 24-hour period, which could signify a leak. As explained above, this use pattern triggers a *run continuous* trouble code that DWM rate takers collect in their monthly meter readings in the field. Using this information, DWM generates and mails *run continuous* notices to the customers. These notices may arrive days, or even weeks, after the nonstop water use that triggered them.[15] Moreover, the information in these notices is limited, identifying only one particular date on which the customer's meter ran continuously.



Metered Account Bill Summary

Bill Period: Feb-07-2025 - Apr-07-2025

Activity Since Last Bill

Previous Balance	$90.36
Adjustments	$0.00
Payments	$90.36

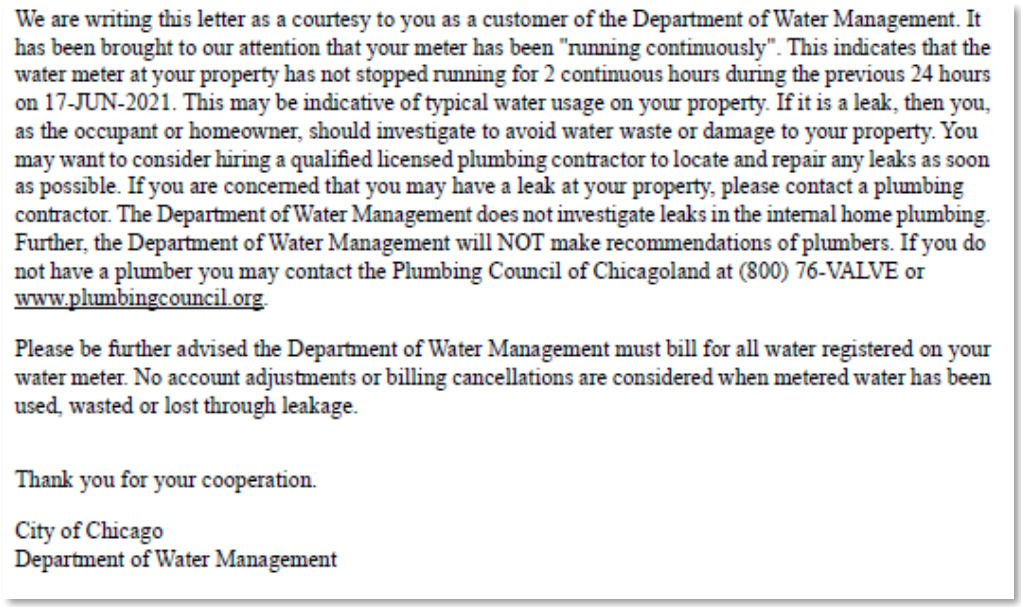
Current Charges

Current Water	$32.85
Current Sewer	$32.85
Current Water-Sewer Tax	$17.58
Current Garbage	$19.00
Current Penalty	$0.00
Current Fees	$0.00

AutoPay Amount 102.28

TOTAL DUE $102.28

A bill excerpt showing an account's charges. Source: DOF.



We are writing this letter as a courtesy to you as a customer of the Department of Water Management. It has been brought to our attention that your meter has been "running continuously". This indicates that the water meter at your property has not stopped running for 2 continuous hours during the previous 24 hours on 17-JUN-2021. This may be indicative of typical water usage on your property. If it is a leak, then you, as the occupant or homeowner, should investigate to avoid water waste or damage to your property. You may want to consider hiring a qualified licensed plumbing contractor to locate and repair any leaks as soon as possible. If you are concerned that you may have a leak at your property, please contact a plumbing contractor. The Department of Water Management does not investigate leaks in the internal home plumbing. Further, the Department of Water Management will NOT make recommendations of plumbers. If you do not have a plumber you may contact the Plumbing Council of Chicagoland at (800) 76-VALVE or www.plumbingcouncil.org.

Please be further advised the Department of Water Management must bill for all water registered on your water meter. No account adjustments or billing cancellations are considered when metered water has been used, wasted or lost through leakage.

Thank you for your cooperation.

City of Chicago
Department of Water Management

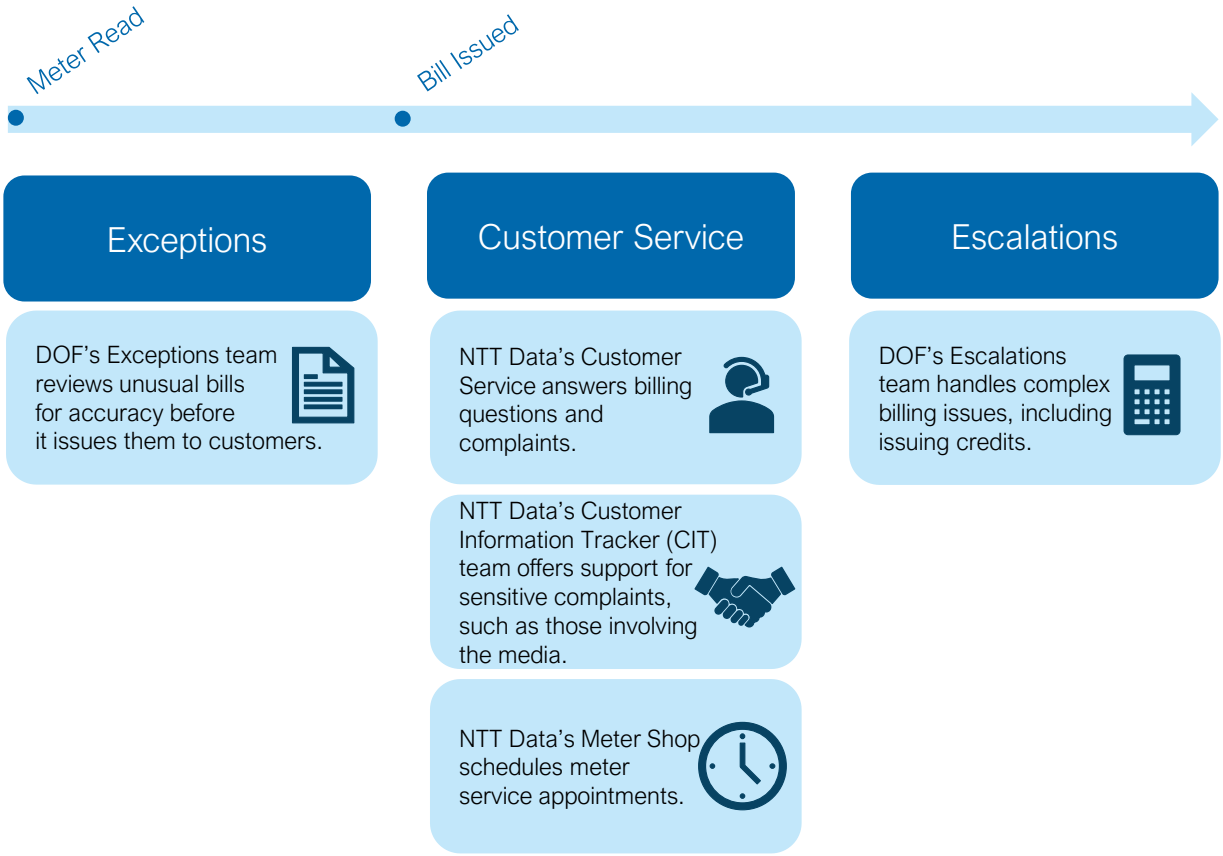
An example of a *run continuous* notice. DWM sent this notice on June 28, 2021, 11 days after the event that triggered it. Source: DWM.

DOF's Utility Billing and Customer Service (UBCS) division is made up of three groups that handle billing issues: Exceptions, Customer Service, and Escalations, shown in Figure 5.[16]

[15] DOF sends most customers these notices by mail, although it reports that 36% of customers have signed up for paperless billing, under which bills and notices are sent electronically instead. However, these notices can still only be generated once rate takers collect trouble code information from meters in the field during the regular billing cycle, which may be days or weeks after the triggering event.

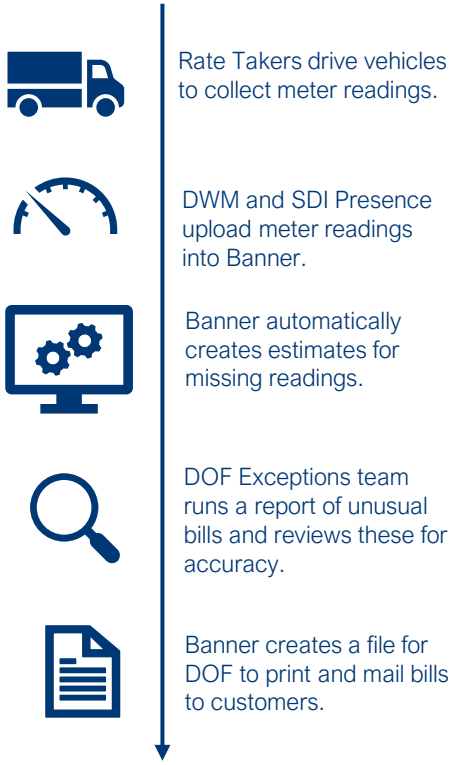
[16] DOF's Legal Services team assists with bankruptcy processing and litigation involving the City but does not play a regular role in the billing or customer service processes.

Figure 5: DOF's Exceptions and Escalations Teams Handle Different Aspects of the Billing Process. DOF Contracts Out Its Customer Service Function to Vendor NTT Data.



Source: OIG visualization of information provided by DOF.

Figure 6: Exceptions Reviews Unusual Bills Before Sending.



Source: OIG visualization of information provided by DOF.

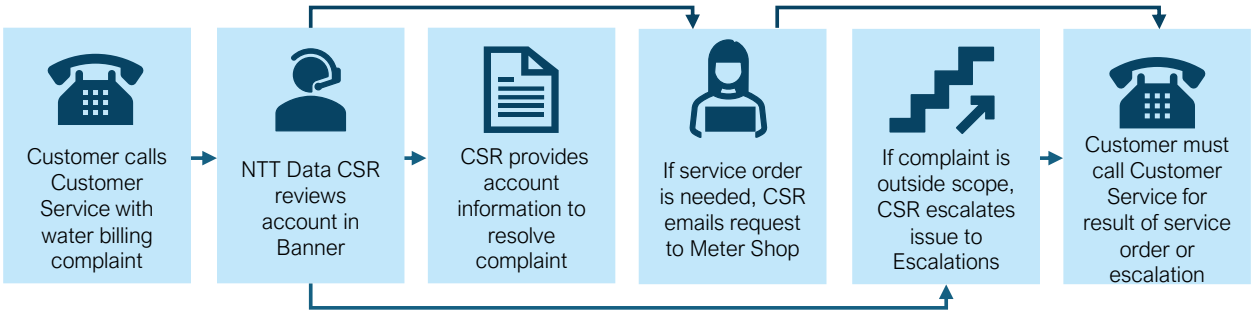
As illustrated in Figure 6, DOF uses Banner to generate water bills. Once DWM and SDI Presence upload meter reading data to Banner, the system creates estimated meter readings for accounts from which it could not collect actual readings. SDI Presence then generates "exceptions reports" of accounts with unusually high or low readings or recently replaced meters. DOF's Exceptions team reviews the accounts identified in these reports. Where deemed appropriate, the team replaces "actual" reads it thinks may be erroneous with its own estimates. Finally, Banner generates a bill print file so DOF can mail the bills to customers.

Banner can also automatically apply credits to correct an account's balance. For example, when an actual meter reading shows that previous estimated readings were too high, Banner automatically adjusts the amount recorded in the account's water use record to reflect the actual meter reading. The account's next bill will show the updated water use and will apply the appropriate credit to the account's balance. Sometimes, to the customer's favor, this will leave the account with a negative balance. When this happens, DOF deducts the overpayment from future billed amounts.

Customers unsatisfied with their bills may contact DOF Utility Billing and Customer Service by phone or email.[17] DOF contracts with vendor NTT Data to provide direct customer service.[18] NTT Data customer service representatives (CSRs) provide account information, address billing complaints, and help customers enroll in payment plans. Figure 7 illustrates the customer service and complaint process.

[17] This number is (312) 744-4426. City of Chicago Department of Finance, "Utility Billing & Customer Service," accessed May 1, 2025, https://www.chicago.gov/city/en/depts/fin/provdrs/utility_billing.html.
[18] City of Chicago, "Contract Number 26625," November 14, 2024, accessed April 23, 2025, https://webapps1.chicago.gov/vcsearch/city/contracts/26625.

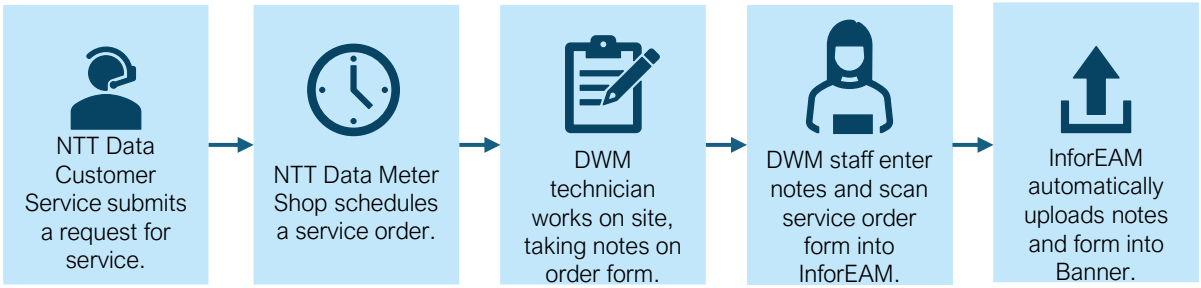
Figure 7: NTT Data Fields DOF's Customer Complaints and Service Requests.



Source: OIG visualization of information provided by DOF.

If a customer requests a meter inspection or related service, the CSR forwards their request to a separate NTT Data coordinator that handles such matters. NTT Data refers to this function as the "Meter Shop." The Meter Shop coordinator schedules service appointments and creates service order forms, as shown in Figure 8. DWM technicians then complete a service order form. Other DWM staff then enter the technicians' notes into an enterprise asset management (EAM) system known as InforEAM, to be uploaded into Banner.

Figure 8: Customer Service Staff Can Initiate Service Requests, but DWM Performs Service.



Source: OIG visualization of information provided by DOF, DWM, and NTT Data.

For complaints that DOF considers sensitive, such as those where the customer states an intention to take their concern to the media or their alderperson, NTT Data's Customer Information Tracker team (CIT) offers an additional level of support. CIT assigns a staff member to contact the customer to gather additional information, review the complaint, and eventually share the complaint resolution with them. CIT reviews ongoing customer issues at biweekly meetings with DOF and DWM supervisors.

NTT Data Customer Service refers billing issues beyond its contract scope to DOF's internal Escalations team. This team reviews complex billing complaints and can issue credits or refunds to resolve billing errors. However, Escalations does not interact with customers directly. Instead, it notes in Banner the actions taken to resolve issues. From there, DOF relies on NTT Data Customer Service to communicate this information back to the customers. Typically, customers must make additional calls to customer service for updates about their accounts.

III | Objectives, Scope, and Methodology

A | Objectives

The objectives of the audit were to determine whether,

- DOF and DWM correctly identify and respond to the causes of unexpected increases in water bills—also known as billing spikes—for metered accounts;
- DOF consistently applies payment plans, credits, and adjustments to customer accounts; and
- DOF uses consistent and reliable procedures for verifying unusual use identified by Banner and calculating estimated water use.

B | Scope

This audit examined the water billing process for metered homes in Chicago, focusing on properties that use 5/8-inch or 1-inch sized water meters. These are typically residential properties like single-family homes, two-flats, and three-flats. OIG used six case study accounts to assess the accuracy of water meters and water bills as well as the efficacy of City's response to customer water billing complaints. OIG analyzed all activity within these accounts over the five-year period from April 2019 through March 2024.

OIG did not review the water billing process for unmetered properties, because these properties pay flat rates that do not fluctuate based on use and therefore do not experience billing spikes. OIG also did not analyze high-density residential, commercial, and industrial properties or customer accounts located outside of Chicago.

C | Methodology

For all objectives, OIG interviewed staff and management from DOF, DWM, and NTT Data. OIG observed the field operations of a DWM meter rate taker as they collected meter readings and a meter service team as they examined and replaced a customer's water meter.

To determine whether water meter malfunctions cause billing spikes, OIG reviewed the full population of water meter tests conducted over a six-month period for 5/8-inch and 1-inch water meters. This comprised 2,200 tests conducted on 995 water meters between February 9, 2023, and August 9, 2023. OIG compared the test results to American Water Works Association (AWWA) standards, which state that the volume of water recorded by a meter must be within 1.5% of the volume of water sent through the meter. OIG also observed a DWM technician performing water meter tests and the procedure for tagging and storing the meters it removed from properties.

To understand program requirements and best practices, OIG reviewed relevant portions of the MCC, the City's customer service contract with NTT Data, DOF's Customer Service Manual and its documentation of the exceptions process, and a water affordability analysis published by the Metropolitan Planning Council and Elevate, in partnership with the City of Chicago.[19] OIG also

[19] Metropolitan Planning Council, Elevate, "City of Chicago Water Affordability Analysis."

interviewed two community organizations, Elevate and Blacks in Green, to understand water affordability issues facing Chicago residents.

OIG also reviewed all intakes related to water billing which it received from Chicago water account holders from January 2019 through December 2023. To select complainant accounts for in-depth analysis, OIG chose a targeted sample of the ten most recent complaints that involved billing spikes at metered residential properties. Of these, OIG ultimately analyzed six accounts with broad geographic representation across the city. While this sample provides insight into program-wide practices and controls related to the risk of billing spikes, it is not statistically representative of all water accounts. OIG refers to each case study by its community area, as follows:

- South Chicago (South)
- Portage Park
- Belmont Cragin
- Lincoln Park
- Austin
- South Chicago (North)

To understand each customer's experience and the steps taken by DOF and DWM to remedy the sampled complaints, OIG collected and reviewed the available account documentation from DOF and the City's Banner information system and customer billing portal. This documentation included customer service call recordings, notes, billing histories, logs of meter readings, service orders, meter test results, exceptions reports, and estimate calculations. OIG logged and reviewed the events of each complaint chronologically in six case study memos.

To determine whether DOF used consistent and reliable procedures to prevent issuing erroneous bills to customers, OIG reviewed SDI Presence's exceptions reports and assessed whether they flagged customer bills according to their defined tolerances for water use deviations. OIG also sought clarification on these tolerances from SDI Presence.

To determine whether DOF and DWM identified and responded to the likely causes of billing spikes, OIG compared the steps the departments actually took to the procedures required by their relevant policies, such as DOF's Customer Service Manual.

To determine whether written communications were easy for account holders to follow and understand, OIG analyzed the format and timeliness of DOF's billing, *run continuous*, payment delinquency, and payment plan notices. OIG also reviewed customer responses to written communications to determine whether the customers understood them.

To determine whether DOF and NTT Data applied payment plans to customer accounts in a manner that aligned with its procedures, OIG compared the department's payment plan program requirements with the way NTT Data CSRs actually recommended and applied payment plans.

Finally, to determine whether DOF applied credits and estimates to customer accounts in a manner that aligned with its procedures, OIG received a walkthrough of the department's process for calculating credits and estimated water use, and then reviewed each credit and estimate issued to the accounts in the case studies for accuracy and alignment with the MCC.

D | Standards

OIG conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that OIG plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for its findings and conclusions based on its audit objectives. OIG believes that the evidence obtained provides a reasonable basis for its findings and conclusions based on its audit objectives.

E | Authority and Role

The authority to perform this audit is established in the City of Chicago Municipal Code § 2-56-030, which states that OIG has the power and duty to review the programs of City government in order to identify any inefficiencies, waste, and potential for misconduct, and to promote economy, efficiency, effectiveness, and integrity in the administration of City programs and operations.

The role of OIG is to review City operations and make recommendations for improvement.

City management is responsible for establishing and maintaining processes to ensure that City programs operate economically, efficiently, effectively, and with integrity.

IV | Findings and Recommendations

Finding 1: Errors and delays in DOF and DWM's water bill review process, service orders, and estimate and credit calculations can create or increase billing spikes and impede their resolution.

While some water billing spikes accurately reflect excessive water use caused by water leaks or continuously running fixtures, other spikes do not accurately reflect use and are caused by administrative errors within and between DOF and DWM. These include errors in estimate and credit calculations, errors resulting from decentralized service order management, and even problems within the process for identifying inaccurate bills itself. Billing spikes are rare, but these unanticipated charges can greatly impact the people who experience them. Receiving unexpectedly large and possibly inaccurate water bills can place immense stress on customers. Even if DOF and DWM eventually resolve billing errors, customers may face difficult financial decisions in the interim, believing they owe the City thousands of dollars.

The process for generating water bills is complex, requiring the coordination of two City departments and multiple data systems. Procedures to ensure billing accuracy are critical to reducing the risk of either overcharging customers or losing City revenue. OIG performed six case studies and found that errors in DOF's bill review process, poor service order coordination between DOF and DWM, and DOF's manual credit calculations contributed to or prolonged customer billing spikes.

OIG analyzed many DWM and DOF processes intended to prevent, detect, address, or notify customers of billing errors. These processes are DWM and DOF's standard procedures; some are directly related to billing spikes and others apply to any billing error, no matter the amount. A single account with a billing spike may have experienced breakdowns or deficiencies in multiple processes. The discussion below is broken down by process, to highlight each particular process's impact on the accounts reviewed in OIG's case studies. Accounts that were impacted by multiple processes are therefore mentioned multiple times in the findings of this report. For individual summaries of OIG's case studies, see Appendix A.

A | DOF's Process of Estimating Bills Does Not Fully Align with the MCC and Introduces Billing Errors

When DOF cannot obtain a water meter reading, it creates an estimate based on past use. MCC § 11-12-320 states that these estimates should be "based on the average of 12 preceding readings of such meter, excluding excessive or deficient readings."[20] "Excessive or deficient" is not defined in

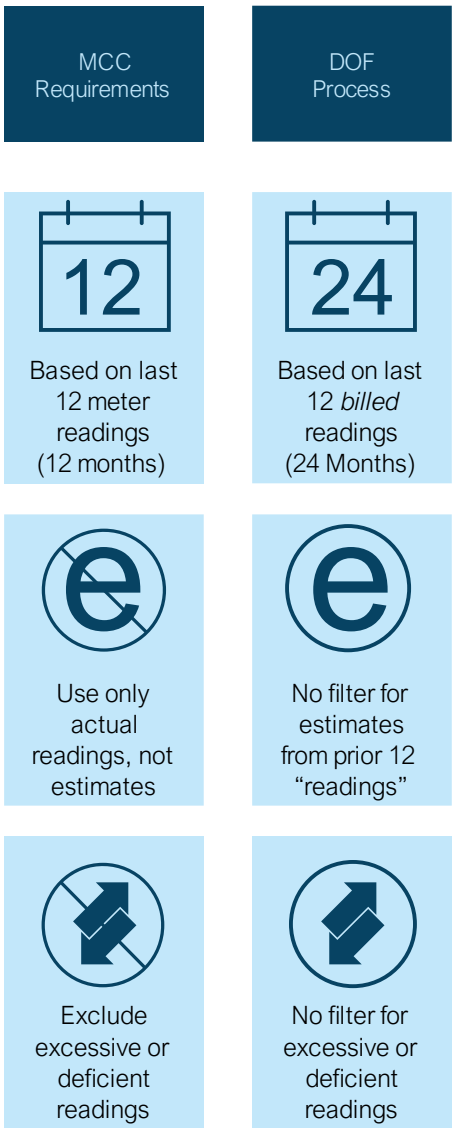
[20] City of Chicago, Municipal Code, § 11-12-320.

the MCC. DOF generated 34 estimates for 4 of the 6 accounts OIG examined as case studies.[21] The department calculated 22 of these estimates correctly, but made 16 errors in the remaining 12.

As illustrated in Figure 9, deviations from MCC requirements led to each of these errors. Some of these deviations are built into Banner, which automatically calculates an estimate when an actual reading is missing. DOF's Exceptions team can also enter estimates into Banner manually. Because Banner does not identify which estimates are automatic and which are manual, DOF acknowledged that it cannot always determine the source or calculation behind a given estimate. The 16 estimation errors OIG discovered in the case studies fell into four general categories:

- **Estimates Based on Estimates (5 errors affecting 2 of 6 case study accounts):** Banner does not exclude previous estimated readings from its estimate calculations, meaning that it may base new estimates on previous estimates made during its review period. The MCC, however, requires estimates to be based on *readings.* Notably, Banner is *able to* distinguish estimated readings from actual readings. Thus, the cause of this error type is not a limitation in Banner's functionality but rather a problem with its instructions regarding which readings to use in estimate calculations. Errors of this type contributed to one underestimation of 2 TGals (an undercharge to the customer of $8, given the water rates in effect when the errors were made) and overestimations as high as 19 TGals (an $82 overcharge). Factoring in sewer charges and water and sewer taxes, these errors ranged from a total underbilling of $13 to a total overbilling of $212.
- **Excessive or Deficient Readings (4 errors affecting 2 accounts):** Although upon later review by DOF some very large readings are found to be inaccurate, Banner still uses them to generate estimates. DOF stated that the system cannot tell whether a given reading is "excessive or deficient," and thus subject to exclusion under the MCC, even if it is much

Figure 9: DOF's Process of Estimating Bills Does Not Fully Align with the MCC.



Source: MCC § 11-12-320 and DOF.

[21] Between April 2019 and March 2024, the 6 case study accounts received 197 bills in total. Thirty-four of these bills were based on estimates.

higher than the account's previous readings.[22] The errors contributed to overestimates of 18 to 24 TGals, adding $78 to $104 to the customers' bills. Factoring in sewer charges and water and sewer taxes, the total overcharges ranged from $201 to $268.

- Multiplication Errors (3 errors affecting 1 account): DOF made minor errors in multiplying the average daily water use over the review period by the number of days in the estimated period.[23] This resulted in estimates that were 2 to 3 TGals higher than they should have been, adding $9 to $13 to the affected customer's bills. Factoring in sewer charges and water and sewer taxes, the total excess charges ranged from $22 to $34.
- Specific Error is Unclear (4 errors affecting 3 accounts): OIG calculated the estimates at issue under this category in the manner prescribed by the MCC and found they did not match DOF's estimates. OIG could not duplicate 4 of DOF's estimates using the 12 prior actual readings on the accounts, as required by the MCC, nor various combinations of 12 other recent readings or estimates. When asked, DOF did not provide explanations for its calculations. The four errors led to one underestimation of 6 TGals ($27 underbilling), and overestimations as high as 28 TGals ($121 overbilling). Factoring in sewer charges and water and sewer taxes, these errors ranged from a total underbilling of $70 to a total overbilling of $313.

DOF eventually corrected the over- and undercharges above once DWM read the affected customers' meters. This is because even when an amount due is estimated, Banner automatically recalculates the account's balance when DWM captures an actual meter reading (except when water use has been estimated for over 24 months, as discussed further below). If the actual reading is lower than DOF's estimate, the customer will receive a credit. If, on the other hand, the actual reading is higher than the estimate, the revised amount will appear on future bills and the customer is responsible for paying the difference.

Furthermore—in addition to the specific errors described above—DOF's general process for calculating estimates does not strictly follow the process prescribed in MCC § 11-12-320. DOF uses only readings that *have been billed to the customer* to calculate its estimates; it does not use the previous 12 meter readings *collected by DWM*. DWM reads water meters monthly, but DOF sends water bills to most customers every other month. Therefore, DOF ultimately uses every other reading over the past 24 months to calculate the estimate. Although the department stated that unused readings are more likely to be erroneous, OIG did not find evidence of this in its analysis of the six case studies.

The MCC also provides that if a customer's water use has been estimated for 24 months, they are not responsible for the difference (if any) between the final estimate and the next reading of the customer's meter.[24] DOF, however, does not have a process to ensure it does not charge this difference to the customers in these situations. For example, the Belmont Cragin account among OIG's case studies received estimates for more than 24 months, but the estimates were low relative

[22] The fact that the readings in question were "excessive or deficient" is known because each was many times higher than the account's previous readings, and DOF later discovered the errors and corrected them. These errors were attributable to problems with the service order process, as discussed below in subsection C.
[23] Although the root causes for these errors are ultimately uncertain, the nature of this type of error suggests the calculations were completed manually by DOF, rather than automatically by Banner.
[24] MCC § 11-12-320.

to the water the customer actually used during this period. After DWM ultimately read the meter, DOF improperly charged the customer the difference.[25]

B | DOF's Exceptions Reports Are Unreliable

DOF takes measures to avoid sending erroneous bills to customers. The department's Exceptions team reviews accounts showing water use that is out of line with expected use patterns. As discussed in detail below, DOF uses two distinct reports to review bills for accuracy. These reports, however, do not reliably flag accounts with unusual use patterns to identify potential billing errors before the department bills the customers.

High/Low Exceptions Report

The high/low report combines two reports. The first report identifies accounts with unusually high or low water use, which SDI Presence defines as use exceeding a 100% tolerance relative to an account's previous recorded use. A second report, according to DOF, lists *all* accounts with outgoing bills so that DOF may take a last look for unusual water use.

DOF's high/low report did not consistently capture accounts with water use increases of 100% or more over previous use in OIG's six case studies.

- The South Chicago (South) account did not appear despite recording 171 TGals, 3.5 times more than the account's previous use of 49 TGals.
- The Portage Park account did not appear despite recording 474 TGals,19.8 times more than its previous use of 24 TGals.
- The Lincoln Park account did not appear despite recording 625 TGals, 48.1 times more than its previous use of 13 TGals.

In some cases, although accounts with erroneous billing spikes appeared on the high/low report, DOF did not correct them.

- The Belmont Cragin account's recorded use of 156 TGals, 300% greater than its previous use of 52 TGals, appeared on the high/low report. However, DOF Exceptions did not identify the underlying error and took no corrective action, stating that it reviewed this water use and believed it was accurate.[26]
- The South Chicago (North) account's recorded use of 2,156 TGals, which followed several months of zero recorded water use, appeared on the high/low report. However, DOF Exceptions took no action to correct this account because it had previously registered *run continuous* trouble codes.[27]

SDI Presence's own documentation is not clear or consistent about how the high/low report works; one source states that the report's tolerance is relative to the account's previous reading; another states that an exception is triggered "if the reading taken is higher than the average consumption

[25] DOF and DWM also incorrectly recorded the date DWM installed this customer's new water meter. This error, combined with DOF charging the customer the difference between the estimated and actual water use, resulted in the customer being overcharged $1,150. DOF did not identify this billing error and has not corrected this customer's account. This episode is further explored in discussion of the Meter Changeout Report below.
[26] The underlying error is explored in subsection C below.
[27] This issue is further explored in Finding 2.B.

on the account," but does not define a time scope for computing the average. DOF stated that SDI Presence developed this report a long time ago and had no specification sheet on it. Consequently, lacking internal guidance, SDI Presence has tried to determine the report parameters from its programming logic. DOF further stated that bills may be left off the report if DOF changes the date the bill is sent, or the report was run on the same day the bill was sent.

Without clear parameters, DOF cannot determine whether the high/low report reliably captures what the department intends. This makes it less likely that DOF will identify errors in recorded water use before billing customers.

Meter Changeout Report

The meter changeout report is intended to list accounts that have had a meter replaced. DOF reviews the listed accounts to ensure it properly bills for the final reading on the old meter and the first reading on the new meter. However, of the six accounts OIG reviewed, two had replaced meters that did not appear on the meter changeout report.

- DWM replaced the meter for the Portage Park account in February 2023. A recording error during the replacement led DWM to erroneously log 474 TGals of water use during this period, many times the customer's normal use.[28]
- DWM replaced the meter for the Belmont Cragin account in September of 2022. Banner captured the wrong service date for this meter replacement, which eventually led to an overbilling as DOF charged the customer for both estimated and actual use for the same period.[29]

DOF inaccurately billed both of these accounts, as described in the next section. Had the reports included these accounts, DOF's review may have prevented the inaccurate billings.

C | Poor Coordination and Incomplete Documentation of Service Orders Can Contribute to Billing Spikes and a Slower Complaint Resolution Process.

Poor service order coordination among DWM, DOF, and NTT Data, and inadequate documentation of the service performed, have in some cases created or exacerbated customer billing spikes.

DOF and DWM Opened Multiple Service Orders for the Same Issue

Duplicate service orders opened for the same meter and issue led to unnecessary additional visits to the meter location for some accounts, wasting City resources. In one case, the duplicate service directly created the customer's billing spike.

- In January 2023, DWM scheduled a service order to replace the Portage Park account holder's meter as a "courtesy" following complaints from the customer. Before DWM completed this service order in February, DWM created a second service order to replace the customer's meter, noting it as an "emergency job." The next day, DWM completed the first order and replaced the customer's meter (although this service was not logged in

[28] This error is further explored below in subsection C, where service order issues are discussed.
[29] This error is further explored below in subsection C, where service order issues are discussed.

Banner until nine days afterward). The day after the first service, a different DWM technician completed the second, duplicate service order, replacing the customer's meter for a second time in as many days. This technician apparently had no knowledge of the prior day's meter replacement. Potentially owing to this confusion, the second technician mistakenly recorded the old meter's out-reading of 474 TGals, instead of the correct figure of 0 TGals, on the meter that had been installed the day prior. This directly led to a billing spike of $5,806, which DOF ultimately corrected.

- A service order to inspect a cut wire at the Belmont Cragin account was created in August 2020. Banner has no documentation of the specific reason for this order or who created it. DOF stated that this service order was created automatically by Banner. This service order remained open for over two years. In the meantime, DWM created a second service order in June 2022 to inspect the customer's meter, which DWM completed six days later by replacing it.[30] Three months later, in September 2022, another DWM technician completed the first service order from 2020, inspecting the meter and determining it worked properly. Since DWM had recently inspected and replaced the customer's meter, completing this older service order appears to have been unnecessary.
- DWM completed two separate service orders on consecutive days to inspect the Austin account's meter. DWM completed the first service order three days after its creation, while the second order was created and completed the same day. Both technicians found the meter working properly. Notably, DWM had replaced the customer's meter just six months prior.

NTT Data, DOF, or DWM itself may initiate orders for DWM to perform on-site water meter service, such as meter inspections or replacements. According to DOF and DWM, Banner may also automatically generate service orders. Because so many entities can create service orders, the risk of creating duplicate orders to address the same issue is high. Early in this audit engagement, DOF stated that once a service order is opened on an account, another service order of the same type for the same account cannot be created until the initial one is closed. As discussed above, however, account records reviewed by OIG show that very similar service order types can be created for the same account.[31] DWM acknowledged challenges with promptly conducting and documenting service orders, which can lead to duplicate orders to address the same issue.

DWM Left Service Orders Open for Long Periods of Time

Some service orders remained open for long periods of time, contributing to delays in resolving the billing issues facing customers.

- As noted above, a service order to inspect the Belmont Cragin account's meter remained open for over two years, from August 2020 to September 2022. The customer received estimated instead of actual readings throughout this period.
- A service order to retrieve a data profile from the South Chicago (North) account's meter, created in August 2021, was still open during OIG's audit three years later.

[30] The results of the June 2022 service order were not entered into Banner until September 2022, leading to an erroneous installation date for the customer's new meter and causing a billing spike. This issue is explored below in the discussion of DOF and DWM's failure to enter service orders in a prompt manner.

[31] For example, two service orders to replace a meter were created for the same account. One service order type was "Replace / Repair Meter," and the other was "Replace Meter / Yellow Tag for Test."

DOF and DWM have not established target timelines (or service level agreements) for closing service orders and do not have a process to identify service orders that have been open for significant periods of time.[32] DWM stated that it first gives priority to completing emergency service requests, followed by scheduled appointments, then all remaining service orders.

DOF and DWM Did Not Promptly Record Service Order Results In Banner

The results of some completed service orders remained in pending status in Banner awaiting DOF's approval. This contributed to billing spikes in two of the cases OIG examined.

- As noted above, the initial January 2023 service order to replace the Portage Park account's meter was not logged in Banner until nine days after its completion. Meanwhile, DWM completed a duplicate service order for the same issue, during which it happened to misrecord the account's meter reading, causing a billing spike of $5,806. Had the initial service order's completion been finalized promptly in Banner, the DWM staff member who created the duplicate service order—or the DWM technician who completed it—may have seen the record and cancelled the duplicative order.
- DWM replaced the Belmont Cragin account's meter in June 2022. However, this service order was not logged as completed in Banner until September 2022, and the meter replacement was erroneously recorded as having happened in August. As a result, DOF billed the customer for estimated water use for June through August, and the customer paid the bill. When DOF subsequently billed the customer for actual use recorded on the newly installed meter, this included all of the water use logged on the meter since June, not just since September, as DOF's meter read records incorrectly showed.[33] This means that DOF charged the customer for the estimated water use on the old meter and the actual water use on the new meter from June to September. These errors resulted in an overcharge of $1,150. DOF has since taken action to correct the account.[34]

Both DOF and DWM noted that DWM's completed meter replacement service orders stay in pending status in Banner until DOF approves them. DOF does not always promptly review pending service orders, thus delaying the appearance of service order results in Banner. When this happens, CSRs cannot determine an account's status. Furthermore, if DOF does not review a completed meter replacement service order before the account is billed again, Banner automatically applies a later, incorrect installation date for the new meter. DOF stated that it experienced a backlog of unreviewed pending service orders due to being short-staffed in 2022 and 2023, but this staff shortage has been resolved.

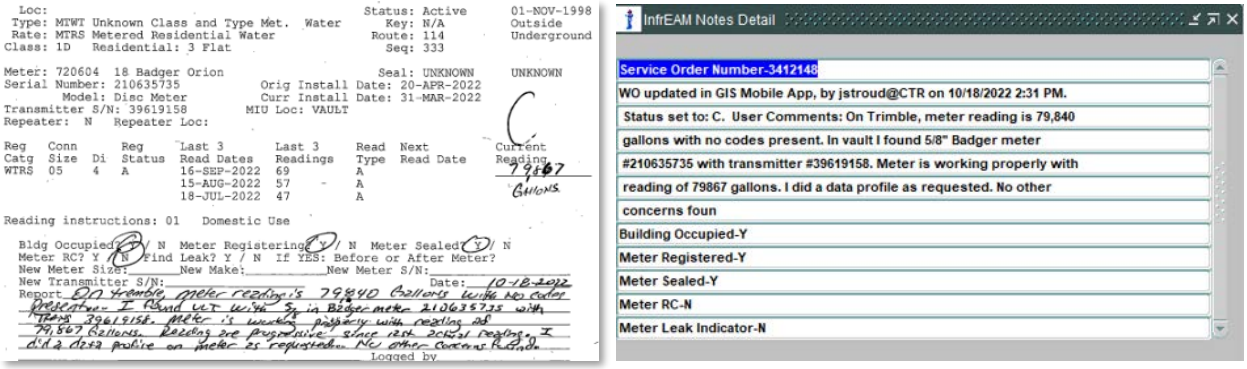
DWM Entered Incomplete Technician Notes in Banner

In some cases, DWM technician notes in Banner lacked critical information that would inform others relying on the system to help them service the account.

[32] The City of Chicago's 311 system defines timeliness goals associated with service provision as service level agreements.
[33] Also at issue is the fact that DOF billed the customer the difference between its previous estimate and their actual water use on the old meter. Under MCC § 11-12-320, because the account had been estimated for more than 24 months, this should not have occurred.
[34] OIG did not confirm the accuracy of DOF's credit calculations for this correction.

- The technician's discovery that the Belmont Cragin account's meter transmitter wire had been cut appeared in their handwritten notes, but not in the InforEAM write-up or in Banner. CSRs on subsequent customer service calls therefore would have needed to review the handwritten notes to accurately advise the account holder.
- The technician who replaced the Austin account's meter observed that even the new meter ran continuously, and noted, "Leak is after meter" in their handwritten notes. However, this observation did not appear in the InforEAM write-up or in Banner. Subsequently, CSRs referencing previous notes in Banner incorrectly believed there were no leaks present while advising the customer.

According to DWM, incomplete service order notes in InforEAM data system may have been due to a limited character count in this system. DWM technicians use a printed service order form when working on site and write their notes by hand. After they complete the service, the technician or a DWM administrative staff member enters their field notes into InforEAM, along with the scanned service order form. InforEAM automatically uploads the digital field notes and scanned service order form into Banner. However, InforEAM may cut off important details the technician observed at the account site.



An example of a completed service order. On the left is a portion of the printed form the DWM technician completed in the field. On the right are the field notes as seen in InforEAM. Source: DWM.

D | DOF Introduced Billing Errors Through Its Manual Credit Calculations.

In two of the cases OIG examined, DOF's Escalations team introduced billing errors as it manually calculated account credits. Most of these examples add up to small dollar amounts, but illustrate a lack of process control that could allow larger errors:

- To correct an overstatement of the customer's water use, DOF credited the Portage Park account by calculating the dollar amount of water-sewer tax it believed the customer had overpaid. Instead, DOF should have calculated the correct volume of water used, applied the tax rate to the difference, and then credited that amount. This resulted in an incorrect $5 credit to the customer.
- DOF made multiple errors calculating a credit for the South Chicago (North) account. DOF first correctly calculated an estimated average daily water use using six months of readings from the new meter. However, the department then applied this daily rate to the wrong length of time: instead of estimating the customer's water use beginning in December 2020

(when the customer took over the account), DOF applied this rate only to the period from June 2021 until August 2021, when it began to collect actual readings from the customer's meter. As a result, DOF did not charge the customer for water use from December 2020 until June 2021. DOF also applied the wrong water and sewer tax amounts to the credit and neglected to credit a small portion of the account's refuse penalties. These errors amounted to a net over-credit of $1,389. In April 2025, DOF took action to correct the account.[35]

Additionally, DOF did not issue a timely credit to the Belmont Cragin account. This was not due to an error on the part of DOF Escalations team. Instead, as the result of an incorrectly dated service order, DOF charged the account for estimated *and* actual use for the same time period.[36] Because the account had been estimated for over 24 months, under the MCC the customer should not have been held responsible for the difference between the final estimate and actual meter reading. The customer called to complain, but NTT Data Customer Service did not raise the issue to Escalations for closer examination. Therefore, Escalations did not have an opportunity to diagnose the error and calculate a credit at the time, although DOF has since taken action to correct the account.

DOF's Escalations team manually calculates credits to correct large errors in customer accounts, which is important where there are complex billing issues.[37] But manual calculations also introduce opportunities for human error, and DOF does not review or approve these calculations before Escalations enters them into Banner. As a result, DOF cannot prevent calculation errors in customer accounts.

The errors described above have the potential to inflate customer water bills or create unanticipated billing spikes. Even when these errors are eventually corrected, having a large water bill creates financial stress. This could also worsen existing inequities if customers of limited means, believing they may have to pay the City thousands of dollars for water, are forced to make difficult financial decisions in other areas of their lives—a concern highlighted in Elevate and the Metropolitan Planning Council's *City of Chicago Water Affordability Analysis*.[38] Further, the City itself may lose revenue if it mischarges water customers, and may waste resources such as meter equipment and staff time pursuing the wrong solutions to customer complaints. DOF and DWM do not proactively review customer complaints and resolutions to identify systematic causes for common billing issues. Doing so might allow DOF and DWM to address these causes through process improvements and better coordination.

Recommendations

1. DOF and DWM should ensure that Banner (or any subsequent meter reading and billing system) incorporates features to,
    a. establish service level agreements, such as the amount of time needed to address service orders once they are created;[39]

[35] OIG did not confirm the accuracy of DOF's credit calculations for this correction.
[36] This error is explored above in subsection B.
[37] Any credits that result appear as monetary adjustments in Banner's financial records. Four components need to be adjusted: the dollar balances on the customer's water use, water tax, sewer use, and sewer tax.
[38] Metropolitan Planning Council, Elevate, "City of Chicago Water Affordability Analysis."
[39] Service level agreements are agreed-upon performance standards—usually quantitative—for parties who have responsibility for a process. For example, the service level agreements in NTT Data's customer service contract states that it must resolve 90% of customer issues with a re-call rate of 5% or less.

   b. prevent duplicate service orders;
   c. ensure estimate and credit calculations are thoroughly documented and reviewed to minimize errors;
   d. ensure automatic estimate calculations are based only on competent readings per the MCC; and
   e. flag accounts that have been estimated for over 24 months, so that DOF does not violate the MCC by charging to reconcile estimated water use amounts of these accounts after they receive actual readings.
2. DOF and DWM should work together to define roles and responsibilities from service order creation through to service order completion. Both departments should ensure that,
   a. only one service order is open for a given account issue at a time, and the orders are addressed promptly according to defined service level agreements;
   b. DWM's paper service order notes, including meter change-out dates and technician notes, are accurately and completely entered into InforEAM; and
   c. service order results are promptly entered into Banner and finalized, a process that should include developing a timeline to efficiently resolve an order's pending status.
3. DOF should work with SDI Presence to,
   a. define agreed-upon tolerances for its high/low exceptions reports and ensure these reports capture accounts with uses beyond these tolerances. Additionally, DOF should thoroughly review bills flagged as exceptions on the high/low reports, even when coupled with *run continuous* codes; and
   b. ensure the meter change-out exceptions report captures all meter change-outs.
4. DOF should work with DWM to establish protocols to reduce common errors in the meter change out process.
5. DOF and DWM should complete a comprehensive billing process review to identify other control gaps and potential customer billing issues not captured in OIG's six case studies.
6. DOF should resolve the calculation errors identified in OIG's case studies and credit or charge the accounts as appropriate. OIG has provided DOF with evidence demonstrating the errors.

Management Response[40]

1. *"DWM is committed to responding to water meter issues as quickly and as efficiently as possible. Not all issues are the same, making it difficult to standardized service level agreements. We evaluate and prioritize our work to ensure we are responding to the highest priority issues in a timely manner and will continue to do so.*

   "The Banner system already prevents a duplicate service order of a given type from being opened on the same account until after the initial service order is closed.[41]

   "DOF's Billing Team currently consists of one manager, one supervisor, and five front-line staffers, when fully staffed. DOF's Escalations Team currently consists of one manager, one supervisor, and nine front-line staffers, when fully staffed. DOF's staff are trained to

[40] OIG replies to the management response assertions via inserted footnotes. See Appendix B for DOF and DWM's complete management response.
[41] OIG Reply: As noted in the Finding, Banner contains some very similar service order types, which allows for duplicate orders to be open for essentially the same service. For example, one case study account had open service orders for both "Replace / Repair Meter" and "Replace Meter / Yellow Tag for Test" types.

accurately calculate estimated readings and adjustments. In order to add a process to review all manually calculated estimated readings and adjustments DOF would require at least four additional resources. DOF is exploring adding resources to perform additional review.

"We agree that all manual estimated meter readings and manual credit calculations should be thoroughly documented and it is our policy to do so.

"On page 22 of the OIG's report, the OIG writes that DOF failed to respond to a request for information from them.[42] See page 22, second bullet. DOF made every effort to be responsive to OIG's requests for information, and OIG has verbally confirmed this with DOF. Additionally, OIG stated in writing with respect to alleged miscalculations that: 'OIG, DOF, and DWM discussed each of the errors noted on these accounts at a December 9, 2024, virtual meeting. [OIG] followed up with written itemizations of each issue on December 31, 2024, to which DOF responded on February 14 and again on February 28.' So, we are unsure what information they were seeking that was not provided.

"On page 22, in the first bullet, the OIG's draft report states:
'DOF made minor errors in multiplying the average daily water use over the review period by the number of days in the estimated period. This resulted in estimates that were 2 to 3 TGALs higher than they should have been, adding $9 to $13 to the affected customer's bills. Factoring in sewer charges and water and sewer taxes, the total excess charges ranged from $22 to $34.' OIG clarified to DOF that this account was the account they identify as the Lincoln Park account. The meter reading in question was calculated automatically by the Banner CIS. The difference between the Banner CIS's calculation and the OIG's calculation is that the OIG included a meter reading in their calculation that occurred in the same month as the estimated reading to be calculated.[43] The billing system does not consider prior readings taken in the same month as the estimated reading to be billed. Additionally, estimated billing is generally trued-up when we receive an actual reading from DWM, which then will give the customer credit or bill the customer for any amounts not yet billed. In cases where the estimates cannot be trued up (e.g., the customer or someone other than DWM removed the meter without permission and a final out reading cannot be determined), DOF will review the estimates compared to later actual usage and adjust the estimates according to that actual usage. DOF provided the OIG with this information in an email to them dated 2/14/25.

"OIG further stated in bullet 2, which they have clarified to us pertains to this account, that:

[42] OIG inserted a summary of DOF and DWM's responses in the Executive Summary of this report, as well as the departments' full response beneath each finding. Therefore, the page numbers referenced in DOF and DWM's response no longer align with the actual page numbers of this report.
[43] OIG Reply: DOF's explanation does not address the root of this error and is inaccurate: OIG's calculation did not include an improper meter reading date. In fact, OIG used the same meter reading dates as DOF's estimate. DOF provided OIG the total actual water consumption and total number of days it used to generate these estimates, allowing OIG to pinpoint the exact reading dates used to generate these estimates from the account's meter read history. DOF correctly calculated the average water use per day over that period; however, it then did not correctly multiply this amount by the number of days of service in the billing period being estimated. OIG discussed this error with DOF and DWM in December 2024; it then followed up in writing itemizing the bills at issue, including itemizing the specific days of service times average use miscalculations. While DOF responded in writing in February 2025 with explanations of other billing issues on this account, its response did not address the calculations affecting these three bills.

'When asked, DOF did not provide explanations for its calculations.' However, DOF did provide the explanation above by email to OIG on 2/14/25.

"OIG clarified that the other two accounts referenced in bullet 2 on this page were the Austin and Portage Park accounts. With respect to the Austin account, DOF provided a file showing how the estimates for that account were calculated, as well as a written explanation, also on 2/14/25.[44] *While we acknowledge that the manually-calculated estimate should have been 5 TGAL higher than what was actually estimated, this account was then true-ed up shortly thereafter when we received an actual meter reading from DWM.*

"With respect to the Portage Park account, there were no issues related to calculations of estimates raised to us by the OIG in the communications between December 2024, and February 2025.[45] *A review of the Portage Park account's service history does not reveal any bills generated based on estimated readings from 2020 through 2022. There was a brief period of estimation from February 2023 through July 2023; however, we do not show a record that OIG asked us about these estimated calculations. Further, DOF did respond to OIG's request for other information related to this account in an email dated 2/14/25.*

"The OIG states in their report, on page 21, that 'Banner does not exclude previous estimated readings from its estimate calculations, meaning that it may base new estimates on previous estimates made during its review period. The MCC, however, requires estimates to be based on readings*.' The departments note that estimated readings are, in fact, categorized as readings in the Banner billing system, as well as by the departments as a matter of practice. Further, an estimated reading is based on the average prior consumption at that property, which will typically cause the estimated reading to be in line with other prior actual meter readings. This is likely why the OIG found that differences between our calculations and theirs were typically de minimis.*

"The OIG also states in their report, on page 22, that 'The fact that the readings in question were "excessive or deficient" is known because each was many times higher than the account's previous readings, and DOF later discovered the errors and corrected them.' However, billing is done within a few days of a meter reading being taken. We can, and do, check to ensure anything obviously wrong with an actual reading is not billed, and instead we issue a bill based on an estimated reading. However, a full investigation of the validity of a meter reading simply cannot be effectively undertaken within a couple of days. This is especially true since a site visit would usually be required. Information we find out later, after

[44] OIG Reply: While DOF provided OIG a billing spreadsheet on February 14, 2025, it did not explain how the estimate on this particular bill was calculated. The file did not provide the reading dates used to calculate this estimate, the days of service and total consumption in that period, nor the days of service in the period being estimated, as it did for the other estimated bills sent to this account. This is especially important because this account's meter read history lists an incorrect meter installation and reading date during this period. This makes it difficult to decipher the actual dates used from the notes of the staff member who calculated this estimate, as DOF acknowledged in its February 2025 written response to OIG.

[45] OIG Reply: OIG inquired about the basis for estimates on this account in July 2024, to which DOF responded in August. DOF's response explains that the estimate in question—from June 2023—was created manually by a clerk to avoid billing for a clearly erroneous use amount owing to an incorrect meter "out" reading. However, this response does not explain the basis for this clerk's calculation, which does not appear to be based on the account's 12 previous actual readings, nor various combinations of 12 other recent readings or estimates which OIG tested.

a site visit or other in depth investigation has been concluded, is simply not available prior to issuing a bill based on a meter reading that appears, on its face, to be valid, although high. Further, most meter readings that are many times higher than prior readings are due to actual water passing through a customer's meter. Pursuant to MCC 11-12-460, we are required to charge and collect for all water passing through a working meter. So, most of the time, even readings many times higher than prior consumption are for charges validly owed by a customer. Delaying billing or issuing a bill based on an estimated reading would only serve to delay a customer in understanding that they have an issue at their property that they need to address and would prolong their resolution of that issue, thus resulting in further negative financial consequences for our customers.

"With respect to the OIG's recommendation to exclude certain meter readings from the automatic calculation of estimated readings - is difficult to imagine how the system would be able to automatically know that these high readings were 'excessive' without human intervention versus constituting a valid change in consumption at the property. If the system were to be reprogrammed to ignore readings much higher than prior readings, in situations where there is a continuing water leak followed by estimated billing we will likely see an increase in under-estimation as compared to actual usage, which later results in customers experiencing very large 'true up' bills, creating more complaints and financial stress for customers.

"With human intervention we could mark 'excessive or deficient' readings from known reading errors as such to prevent the system from using them to calculate estimated billing. However, the system currently does not have the ability to do this. Custom modifications of the system, at an additional cost to the City, would be required.

"On page 22 of the OIG's report it states '…DOF ultimately uses every other reading over the past 24 months to calculate the estimate. Although the department stated that unused readings are more likely to be erroneous, OIG did not find evidence of this in its analysis of the six case studies.' DOF notes that the analysis conducted by OIG focused on specific accounts with complaints. It did not take a statistically relevant or random sample of accounts, which is likely why OIG did not find evidence of this in its analysis.

"Finally, it is important to note that typically, when a customer is billed based on estimated readings, the meter will eventually be read again, and an actual meter reading will true-up the difference between what was estimated and what was actually used. This can result in a high bill if we have under-estimated their actual water consumption, a credit if we have over-estimated their actual water consumption, or no significant difference if the customer uses the same about of water as they used historically, in alignment with the estimated bills. This makes the issue of de minimis differences between calculated estimated readings found by the OIG mostly irrelevant for customers, since those estimates will be trued up to actual readings.

"In March 2024, DOF worked with SDI Presence (the vendor engaged to provide maintenance and support for the Banner CIS) to develop a daily report to capture all potential accounts eligible for adjustments under this provision of the MCC after the true-up actual readings are billed out. After a period of review and testing, the report began to be distributed daily beginning in late September/early October 2024. Staff are assigned to work

the report each day and are expected to review and adjust accounts as a high priority. Most accounts are adjusted within a few days. More complex accounts requiring a higher level of review, or high balance accounts requiring management- or deputy-level approval, may take slightly longer to adjust. We do not believe this process can be automated due to the need for human review. Human review is required to ensure delays in resolving the issues preventing actual readings from being obtained were through no fault of the customer/person who controls the property, pursuant to MCC 11-12-320.

"Additionally, DOF disagrees with both the amount of the OIG's calculated overcharge and that DOF did not correct the customer's billing account for the Belmont Cragin account. See p. 26. On 2/14/2025, DOF notified the OIG by email that the OIG had incorrectly interpreted the MCC. The MCC states that if a meter has not been read for over 2 years, then an estimate is charged rather than all usage. While the old meter at the property had not been read for over 2 years, the new meter at the property had been read in less than 2 years. So, DOF calculated that the bill should have been reduced by $555.69 (water, sewer, and tax charges of $468.46 plus penalties of $87.23). The account was then adjusted on 2/18/2025."

2. *"The Banner system already prevents a duplicate service order of the same type from being opened on the same account until after the initial service order is closed. However, an additional service order of a different type can be opened at the same time.*

   "Additionally, OIG writes in their report on page 25, in the second bullet: 'Banner has no documentation of the specific reason for this order or who created it.' That service order was generated by the system due to a cut wire trouble code, as noted in Banner CIS and on the work order.[46]

   "DWM will continue to train and review daily work with the crews and with the foremen to ensure accuracy.

   "DOF has a process in place to review accounts where a service order is being closed including a meter changeout, and where the meter's final reading as compared to prior readings violates business process rules and is moved into Inbound Exceptions. The process has existed for some time and is handled by the Billing Team. However, during the period of time the OIG reviewed for this audit we were severely understaffed. All three manager positions were vacant from January 2022 through May 2023 and there were two vacancies on the billing team during 2022 (only one supervisor and three staff were reviewing bills). Since that time, we have been able to fill most vacancies in a more timely manner.

   "However, we are now adequately staffed to work the Inbound Exceptions in advance of the daily billing. If an account has a meter changeout in Inbound Exceptions and is scheduled to bill on a given day, that Inbound Exception is now processed prior to completing that day's billing, if at all possible. Occasionally there are accounts which require more in depth analysis and for us to estimate until it can be completed in order to ensure accuracy when processing the exception. However, this is not common."

[46] OIG Reply: The service order in question was created in August 2020. The Banner notes for this account have no entries between June 2018 and June 2022.

3. *"OIG has been provided with information about a third report that DOF uses to review metered account charges prior to issuance of the bills: the combination UBPCALC/UZRCONS report. This was discussed with them verbally and information was provided in writing as well during the course of their audit. However, OIG does not discuss how this report is used in detail, indicating they may not have considered it when coming to their conclusions about exceptions reporting.*[47]

   "The combination UBPCALC/UZRCONS report is used after the accounts are charged to take a 'last look' at the charges prior to bills being generated for the accounts. This report is used to catch any accounts that may not have met the very specific criteria of the High/Low report. This additional reporting was implemented around 2020 after DOF discovered that some accounts with high metered bills were not captured by the High/Low report. This report has been in use since that time and has very successfully been used to trigger review of accounts which would not otherwise have been subject to review. Therefore, DOF disagrees with OIG's conclusion that DOF's exceptions reports are unreliable.

   "On page 23 of the OIG's report it states '…[the High/Low Exceptions Report] did not consistently capture accounts with water use increases of 100% or more over previous use. The South Chicago (South) account did not appear despite recording 171 TGALs, 3.5 times more than the account's previous use of 49TGAL. The Portage Park account did not appear despite recording 474 TGALs, 19.8 times more than its previous use of 24 TGALs. The Lincoln Park account did not appear despite recording 625 TGALs, 48.1 times more than its previous use of 13 TGALs.'

   "The South Chicago (South) account appeared on the combination UBPCALC/UZRCONS report dated 07-25-23.[48] *Additionally, the resulting charges were for actual water passing through the customer's water meter. We are required to charge and collect for all water passing through a water meter pursuant to MCC 11-12-460. Therefore, there was nothing to correct based on this reporting.*

   "In their report, OIG states that two of the six accounts they reviewed did not appear on the Meter Changeout (Inbound Exceptions) Report: the Portage Park account and the Belmont Cragin account. See p. 24. While it is true that the Portage Park account did not appear on the Inbound Exceptions Report, the Belmont Cragin account did.[49] *The Portage Park account experienced a very niche issue which is uncommon and unlikely to reoccur.*

[47] OIG Reply: Finding 1 section B describes both components of the high/low exceptions report. The Finding reflects the information DOF provided about these reports as well as the efficacy testing OIG conducted: the UZRCONS component does not reliably identify accounts whose use exceeded a 100% tolerance relative to previous recorded use, while the UBPCALC component does not use criteria to identify unusual use, but rather lists *all* accounts being billed. According to DOF, this provides an opportunity for the department to take a "last look."

[48] OIG Reply: This account appears on a spreadsheet of accounts to be billed, but it is marked "#N/A" in a column identified as UZRCONS. As noted above, UZRCONS is the component of the report that is supposed to identify unusually large water use relative to an account's previous use.

[49] OIG Reply: DOF did not provide a meter change out report listing the Belmont Cragin account. In June 2024, OIG requested in writing ". . . all of the exception reports (high/low, unbilled, or inbound exceptions/meter change out) for the time periods that align. . ." with the bill in question, and listed the Belmont Cragin account and this billing period specifically. The resulting package DOF sent included a large consumption and high/low exceptions report, along with service orders, but no inbound exceptions/meter change out report associated with this account.

"The Inbound Exceptions Report and the related exceptions table captures meter changeouts that meet certain business rules. By design, it does not capture all meter changeouts, but rather captures accounts based on pre-defined business rules that require deeper review. Based on 2023 data, reviewing all meter changeouts would increase the total annual number of meter changeouts from approximately 4,150 to approximately 8,800. We would require an additional resource in order to review twice as many meter changeouts. Based on the fact that OIG has identified one niche issue that could have been prevented by the account appearing on the Inbound Exceptions Report, it does not seem cost efficient to review all meter changeouts and increase the cost of that review process."

4. *"DOF and DWM note that the analysis conducted by OIG focused on specific accounts with complaints. It did not take a statistically relevant or random sample of accounts. OIG did analyze one account with a very niche, unusual issue that caused a billing error. The Portage Park account was billed out of cycle, and so it was not caught on the High/Low, UBPCALC/UZRCONS, or Inbound Exceptions reports.*

   "DOF and DWM will continue to work together to make appropriate process changes and training enhancements wherever appropriate and necessary to ensure proper entry of meter readings and correct billing."

5. *"DOF and DWM note that the analysis conducted by OIG focused on specific accounts with complaints. It did not take a statistically relevant or random sample of accounts. Therefore, their conclusions about potential process or control gaps cannot be applied to the system as a whole.*[50]

   "DOF and DWM regularly review the billing process and make improvements to the process. In addition, DOF does continue to make process improvements as needed based on commonalities identified in customer complaints.
   Here are examples of recent improvements:
   - *Additional reporting added related to billing exceptions circa 2020*
   - *Implementation of reporting to identify accounts estimated for more than 2 years which may be eligible for an adjustment and adoption of a process to adjust them*
   - *Additional process for reviewing accounts quick-billed through OFPC process to catch very high and very low bills and review them*
   - *Re-program the process nonmetered accounts registered as vacant go through when applying for an FPC to reorder when in the process the vacancy status is removed so that when the applicant abandons the FPC process accounts are not improperly billing when they should still be registered as vacant."*

6. *"Several of the OIG's statements about miscalculations were not accurate; however, DOF acknowledges that the OIG did identify some occasions on which DOF did miscalculate a*

[50] OIG Reply: OIG designed methodology and objectives to address risks related to billing spikes. Thus, as explained in the Methodology section of this report, OIG chose a targeted sample which provides insight into program-wide practices and controls related to the risk of billing spikes. Also in the Methodology section, OIG acknowledges the sample is not statistically representative of all water accounts and makes no attempt to extrapolate quantifiable results. Per Government Auditing Standards, 8.54 through 8.58 and 8.107, OIG is responsible for evaluating internal control deficiencies on an individual as on an aggregate basis, according to the audit's objectives. OIG gathered documentary and testimonial evidence from DOF and DWM to inform that evaluation.

few adjustments. Any miscalculations which were still able to legally be corrected, which were not in the customer's favor, or which were in the customer's favor but were not de minimis, have since been corrected."

Finding 2: Poor communication via DOF and DWM's written notices and customer service provider can add to customer frustration, prolong issue resolution time, and compound billing errors.

The only way for customers to access information about their water use patterns is to request it from DOF and DWM, but the departments do not always provide complete and timely information through their written communications and customer service. If customers' billing issues are not promptly and accurately resolved, this can cause frustration and decrease their trust in the City, as customers have expressed to CSRs, water affordability researchers such as Elevate and the Metropolitan Planning Council, and local media.[51]

A | DOF and DWM's Written Communications Do Not Provide Customers with Adequate and Timely Information to Address Their Water Billing Issues.

DOF's written communications, such as water bills and *run continuous* notices, do not notify customers of spikes in their recorded water use quickly enough to address leaks that could cause billing spikes. While DOF and DWM reported during a City Council committee meeting that they intend to modernize the meter reading technology and Banner system, the City's current meters and transmitters do not allow for real-time notifications. To get water use information from meter transmitters, DWM rate takers must be in close proximity to customers' properties to receive signals. Moreover, rate takers only visit each property once per month. This creates a lag wherein crucial information reaches customers only via bills and other written notices.

Customers Do Not Have Timely or Detailed Use Information on Water Bills

Water bills, issued every other month for most accounts, list the total amount of water used since DOF last billed the customer. Therefore, customers cannot determine pertinent detailed use information—such as hourly, daily, and weekly water use—from their bills.

YOUR METER READING DETAILS — 1000 Cubic Feet = 7480 Gallons

METERED UNITS IN THOUSAND	READINGS PREVIOUS | CURRENT	USAGE IN THOUSANDS Cubic Feet = Gallons	ACTUAL or ESTIMATED READ
Gallons	373.0 | 380.0	0.9 = 7.0	Actual

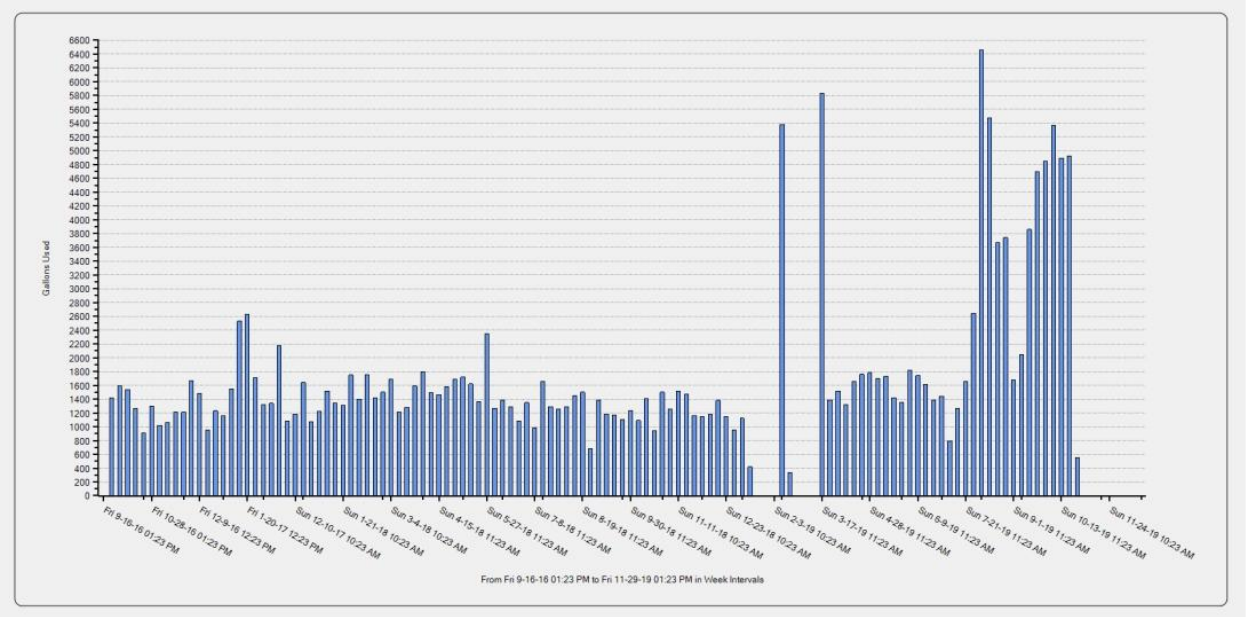
An example of the water use section of a customer's water bill. Source: DOF.

[51] Metropolitan Planning Council, Elevate, "City of Chicago Water Affordability Analysis."

A Trimble Ranger 7 device used to collect information from a meter transmitter. Source: OIG photo.

To learn more about their water use patterns, customers can call DOF Utility Billing and Customer Service and request a data profile. This requires an on-site technician visit. The technicians must download detailed use information from the customer's meter transmitter directly to a handheld device, shown at left. Data profiles can show weekly, daily, and hourly water use.

But in OIG's six case studies, the data profiles customers received showed water use only by week, not by day or hour. In at least one case, the customer who requested a data profile reported they found it difficult to understand and of little use.



A customer's data profile, showing water use by week only. Source: DWM.

Detailed and granular information of their use patterns may enable customers to identify a potential leak or aid them in diagnosing the cause of a billing spike, for example by prompting their recollection of an occasion when they used more water than usual. Similarly, customers cannot take quick action to resolve potentially expensive water use issues without timely notification of them. Elevate and Metropolitan Planning Council's *City of Chicago Water Affordability Analysis* recognized that Chicago's practice of billing for water every other month makes it more difficult for customers to budget and pay for the water they use. The report ultimately recommended that the City move to monthly billing and issue real-time leak alerts.[52]

Some municipal water systems are capable of providing this kind of rapid, detailed information on water use. For example, Kansas City aims to send customers high-use notices in 24 to 48 hours,

[52] Metropolitan Planning Council, Elevate, "City of Chicago Water Affordability Analysis."

including by email and text, well before it sends a bill. The City of Baltimore collects water use information remotely and in real time. There is no need for rate takers to drive meter read collection routes, because the city has not only installed transmitters on each meter, but maintains a grid system of receivers throughout the city to relay the transmissions to a central location. Because Chicago does not have this kind of receiver infrastructure, DOF and DWM receive water use information only once per month when rate takers collect readings from the field. Therefore, while Chicago could conceivably move to billing metered accounts monthly, real-time notification capabilities will likely remain out of reach without a major capital investment.

DOF and DWM Do Not Consistently Send Customers Notices of Potential Water Leaks

In OIG's six case studies, five customers did not receive *run continuous* notices, which could have indicated potential leaks on their properties, in a timely or consistent manner.

- DWM did not issue any *run continuous* notices to the Belmont Cragin and Austin accounts despite the accounts registering multiple *run continuous* trouble codes. The Austin account, in particular, registered *run continuous* codes 29 times from January 2016 to November 2020.
- DWM sent *run continuous* notices to the South Chicago (North) and South Chicago (South) accounts 7 to 14 days after their meters had generated *run continuous* trouble codes. Further, the owner of the South Chicago (North) account did not receive the first two notices due to the entry of an inaccurate, and in fact nonexistent, mailing address in Banner.
- The Portage Park account registered *run continuous* codes at every monthly meter reading for over a year, but DWM only issued *run continuous* notices every other month with the customer's regular bill. Between billing cycles, the customer received no information about their continuously-running water.

DOF's Customer Service Operations Manual states that *run continuous* notices are issued when a meter registers *run continuous* codes for more than 2 to 3 billing cycles. DWM stated that it begins issuing *run continuous* notices once a meter registers three *run continuous* codes, regardless of the timing of the billing statement. In practice, however, the departments do not consistently issue *run continuous* notices according to these schedules; the Austin account, for example, registered dozens of *run continuous* codes for over four years without ever receiving a *run continuous* notice. DOF stated it will review the Customer Service Operations Manual to ensure it reflects DOF's actual practice for issuing *run continuous* notices. Additionally, Banner does not have a feature to prevent the entry of nonexistent mailing addresses.[53]

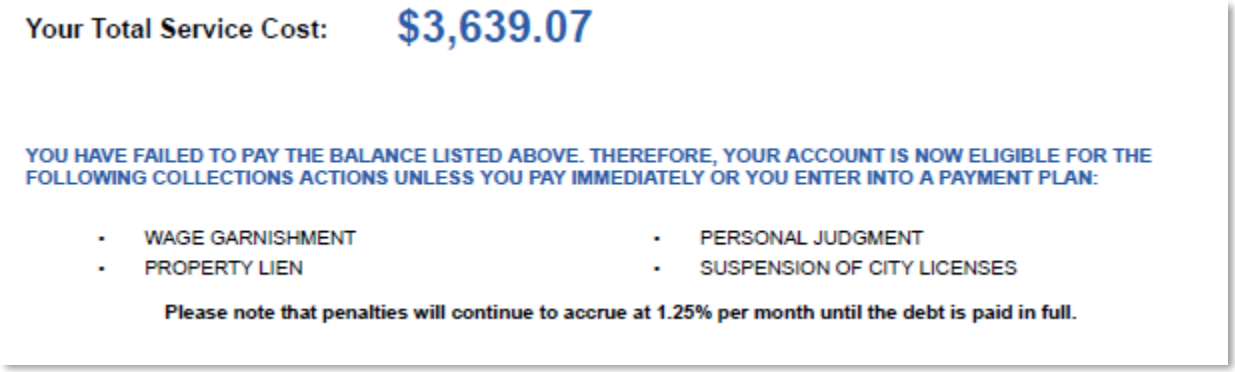
As with a customer's water bills, *run continuous* notices do not provide real-time information and each identifies only a single date on which the account's use was elevated, even if the meter ran continuously for many days or was, in fact, still running. The notices therefore lack the detail customers need to quickly isolate and resolve potentially expensive issues with their water use.

[53] For example, the United States Postal Service's website links to several online and software-based options for verifying address lists. United States Postal Service, "Checking the Accuracy of Your Address List," accessed February 18, 2026, https://pe.usps.com/businessmail101?ViewName=CheckTheAddresses.

DOF Sent a Customer Erroneous Delinquent Notices

DOF mistakenly sent the South Chicago (North) account six inaccurate delinquent notices. The department is responsible for mailing these notices to inform customers of unpaid charges on their accounts. DOF had already determined that it had overcharged the customer by more than $22,000.[54] Despite informing the customer verbally that they were not liable for the balance and that it would correct their bill, DOF continued to mail delinquent notices. The customer paid $1,000 which was not due, though this amount was eventually applied to the customer's corrected account balance.

If a customer's bill remains unpaid, the department sends a Collections Notice. The Collections Notice states that the customer may be liable for penalties and collection actions if they do not pay the balance or enter into a payment plan.



Your Total Service Cost: **$3,639.07**

YOU HAVE FAILED TO PAY THE BALANCE LISTED ABOVE. THEREFORE, YOUR ACCOUNT IS NOW ELIGIBLE FOR THE FOLLOWING COLLECTIONS ACTIONS UNLESS YOU PAY IMMEDIATELY OR YOU ENTER INTO A PAYMENT PLAN:

- WAGE GARNISHMENT
- PROPERTY LIEN
- PERSONAL JUDGMENT
- SUSPENSION OF CITY LICENSES

Please note that penalties will continue to accrue at 1.25% per month until the debt is paid in full.

An example of a Collections Notice. Source: DWM.

Banner sends these notices automatically. DOF does not have a process to prevent Banner from sending potentially erroneous notices to customers, such as those where the balance is under review or already known to be incorrect.

Inaccurate, infrequent, or uninformative written communications can compound the anxiety and difficult financial decisions facing customers with unexpectedly high water bills, as expressed in customer complaints to CSRs. Customers may choose to pay large amounts toward balances they believe are delinquent, potentially postponing other important payments. They may also overpay on their water accounts relative to the water they actually used. Poor quality information in these communications may also leave billing errors undetected and unresolved, preventing the City from understanding and collecting on the amounts actually owed.

B | DOF Escalations and NTT Data Customer Service Do Not Always Provide Prompt Service and Accurate Insights into Customer Issues.

From initial complaint to resolution, DOF's customer service process can be extremely lengthy, leaving some customers with unresolved billing spikes for long periods of time. Further, the process can be prone to error.

[54] The reasons for this error are explored in Finding 2.B.

Delayed action on customer service issues can prolong unexplained billing spikes and other water billing issues. This increases the length of time some customers may be exposed to undue financial hardship. OIG reviewed recordings of customer calls for assistance, in which customers expressed both financial anxiety about their bills and frustration with the customer service process itself.

DOF's Customer Service and Escalations Teams are Sometimes Slow to Begin Resolving Customer Complaints.

NTT Data Customer Service and DOF's Escalations team can be slow to address customer complaints, unduly prolonging the resolution of potential billing issues.

> "One of your colleagues didn't even place the request for the meter department . . . You don't have any system to confirm that I've placed a request . . . There is no way for me to make sure that this request has been placed."
>
> - *Customer Complaint*

DOF's contract with NTT Data outlines several promptness and customer satisfaction expectations. For example, CSRs should respond to emails within 2 to 6 business days, depending on the number of emails received, and 90% of customers should express satisfaction with the service they received on follow-up surveys.[55] DOF's Customer Service Operations Manual assigns CSRs the responsibility to provide customers with account information and offer guidance for resolving billing complaints.

Yet in OIG's six case studies, three accounts experienced significant delays in receiving help to resolve their concerns:

- NTT Data Customer Service took six weeks to respond to an emailed complaint from the South Chicago (South) account concerning a billing spike. DOF stated that this happened because its email management system's lack of a response reporting tool can make it difficult to track response times, but the department planned to implement a response reporting tool.
- After NTT Data escalated customer billing complaints from the Austin and South Chicago (North) accounts, DOF's Escalations team took six weeks to begin reviewing them. The department stated that Escalations handles hundreds of issues per month, some of which go far beyond billing complaints, including bankruptcies, property liens, and sewer charge exemptions for senior citizens.[56] This volume of work can delay initiation of the complaint resolution process.

DOF's Customer Service and Meter Shop are Sometimes Slow to Schedule Meter Service

Once NTT Data's Customer Service sends a request for service to the Meter Shop, DOF's Customer Service Operations Manual states that the shop is required to "follow up on all meter

[55] Because OIG focused on accounts that experienced a billing spike and did not examine a representative sample of accounts or customer service documentation, it did not assess the contractor's overall performance regarding the contract's quantitative requirements. See Methodology section.
[56] City of Chicago Department of Finance, "Utility Charge Exemptions & Rebates," accessed February 18, 2026, https://www.chicago.gov/city/en/depts/fin/provdrs/utility_billing/svcs/apply-for-utility-charge-exemptions.html.

related requests including calling customers to schedule an appointment." Nevertheless, some customers did not receive follow-ups from the Meter Shop, leading to delays in scheduling services:

- The Lincoln Park account holder called NTT Data Customer Service on two different occasions to request a meter inspection. During each call, a CSR informed the customer they would submit a request for service to the Meter Shop. But when the customer called back later for updates—after three weeks in the first instance and after two weeks in the second—the service order still had not been scheduled. In both instances, the customer had to speak with a supervisor before NTT Data actually scheduled the service.
- NTT Data created a service order for the Austin account which was subsequently cancelled. The customer called a week later to follow up, but NTT Data did not create a new service order until nearly a month later. NTT Data finally called the customer to schedule the service for the following week.

Delays in scheduling service orders contribute to long wait times for solutions to customer billing concerns. Furthermore, these service orders were only scheduled after the customers called back.

CSRs may not be able to provide updates to customers on the status of their service orders because Meter Shop coordinators do not consistently document critical elements of their work in Banner. These include the reason for a meter service request, who made the request, the basis for the decision when the Meter Shop denies the request, and any follow-up required once the service is complete.

DOF's CSRs Made Errors in Diagnosing Issues

While NTT Data CSRs took some steps to resolve customer issues, they did not always help the customers identify and address the actual roots of the problems. Distinct customer service errors affected four accounts in OIG's case studies:

- CSRs misadvised both the Portage Park and Belmont Cragin account holders about how their water meters function. In each case, the respective CSR told the customer that meters produce inaccurate reads when first installed and take two to three billing cycles to work correctly, which is not true according to DWM's detailed explanation to OIG that water meters begin accurately logging water use as soon as they are installed. See Finding 3 for more information about the accuracy of water meters.
- The CSR serving the Portage Park account holder did not record in Banner that the customer had already hired a private plumber who found no leaks on the property. Consequently, other CSRs on subsequent calls recommended that the customer hire a plumber to find leaks. Nor did the CSR recognize from existing account documentation that the date DWM replaced the customer's water meter had been misrecorded by twelve weeks. The CSR therefore never sent the issue to DOF Escalations team for correction. As a result, the underlying issue persisted, leading to DOF charging the customer being charged simultaneously for estimated and actual water use.
- A CSR advised the South Chicago (North) account holder to hire a plumber to look for leaks, despite the fact that a previous CSR recognized the customer's billing spike was not due to a leak and sent the account to DOF's Escalations team.
- On two separate occasions, CSRs told the Lincoln Park account holder that they would create a request for DWM to service the account's water meter on-site. However, in both

instances, Meter Shop did not create the request until prompted by the customer weeks later.

> "They literally just replaced the meter. It caused a $6,000 bill. You [DOF] fixed that. But all you ever want to do is a meter inspection."
> - *Customer Complaint*

CSRs did, however, follow the guidelines in the Customer Service Operations Manual by consistently offering and explaining payment plans to customers expressing concern about large balances on their accounts. CSRs set up plans for the Lincoln Park and Austin accounts directly, while the South Chicago (South) account holder set up a plan themselves via DOF's website.

DOF's Customer Service Operations Manual requires NTT Data CSRs to service customer calls thoroughly, which includes reviewing account documentation stored in Banner and taking notes during the call. CSRs, the Meter Shop, and DOF's Escalations team therefore rely on Banner to provide accurate, thorough, and up-to-date account information. This includes service orders, billing histories, and especially call notes from DOF employees and agents who have previously communicated with the account holders.

When CSRs and other customer-facing personnel do not update these notes and documents—or when they do not consult them in-depth when speaking with customers—they risk misdiagnosing the billing issue at hand. This could lead to unnecessary costs to a customer, such as hiring a plumber when account documentation shows that a water leak is not at issue.

> "If I was to call any other provider I have and say, 'Hey, what's this charge for?' they should be able to just look on the account and tell me . . . The department is a total scam."
> - *Customer Complaint*

DOF has acknowledged some inaccurate information that CSRs have relayed to account holders. The department stated that in May 2022 it began implementing a new quality management program with NTT Data to improve customer service, in part by hiring more quality managers. This effort focuses both on increasing the empathy CSRs show toward customers and improving the factual accuracy of responses to their concerns.

DOF Escalations Team Accurately Diagnosed Issues but Did Not Consistently Follow-Up with Customers

DOF Escalations team accurately diagnosed and took corrective actions on billing issues raised to it by NTT Data Customer Service, but did not always follow up with the affected customers to communicate the resolutions. The customers were thus left not knowing whether DOF had taken any action to address their concerns. This gap in communication can place customers in a position of financial stress and frustration, as expressed in customer complaints to CSRs, as well as at risk of over- or underpayments.

In OIG's six case studies, NTT Data Customer Service raised four customer issues to DOF Escalations team:

- Escalations determined that the Portage Park account's billing spike had been due to a misrecorded "out" reading when DWM replaced a meter at the property. DOF credited the account $5,300 to correct the spike. This series of events took less than a week to complete, but DOF did not explain the action it took to the customer; it merely noted the credit on their next bill. This led the customer to continue questioning the basis for the billing events in their subsequent communications with NTT Data and DOF.
- Escalations and CIT determined that an incorrect digit transcription on a meter reading caused the Lincoln Park account's billing spike. The issue was corrected more than three months later when a DWM technician collected an in-person reading from the meter. Entry of the new reading in Banner caused it to record an automatic credit for the erroneous amounts billed based on the higher estimates generated following the incorrect reading. In this case, DOF did attempt to update the customer via phone, but the customer would not take the department's calls.
- Escalations determined that the charges on the Austin account accurately reflected the water use and were not caused by a problem attributable to the City. However, DOF did not communicate this back to the customer, who only learned they actually owed the full amount of the bill when they called customer service for an update 116 days after the determination. Moreover, as noted above, none of this occurred until after Escalations had taken six weeks to begin working on the customer's complaint. In the meantime, the customer continued to contest their bill and requested an additional meter service order, an unnecessary use of City resources.
- Escalations determined that the South Chicago (North) account's billing spike was caused by a previous owner's water use, not the current property owner. Because the wire between the property's meter and transmitter had apparently been broken for eight years, all of the previous owner's water use during that time was backlogged on the meter, and this information did not reach DOF until the wire was repaired after the new owner took possession of the property. DOF therefore concluded that the new customer would not be liable for approximately $22,000 in billed charges, though the exact amount of the customer's credit would have to be calculated using 6 months of actual use to complete an estimate for the billing period.[57] However, DOF did not notify the customer of this determination until nearly two months later; in the meantime, the customer contacted OIG.

DOF's Customer Service Operations Manual does not require the City or its agents to update customers on the status of their billing complaints. Instead, it leaves it up to account holders themselves to call customer service for updates. CSRs therefore do not typically follow up with customers. For its part, Escalations does not communicate directly with customers, according to DOF, but instead communicates through NTT Data Customer Service.

> "I have no rights; I was liable, and I had to pay the $7,000 . . . And it is for three months I am in this situation. Recognize that I have a reason to be upset."
>
> - *Customer Complaint*

Within these four OIG case studies, Escalations appears to have been effective in isolating and remediating the issues that lead to billing spikes, provided that NTT Data Customer Service elevates the issues to the team. Due to its work, DOF has issued credits to overbilled customers.

[57] As noted in Finding 1, DOF's Escalations team also made some errors in calculating this credit.

Access to detailed information on their water use is critical for customers to identify if their property has a leak or if they need to conserve water. Likewise, understanding their account information, such as their meter reading and service order history, can help customers better understand the water use shown on their bill, any problems with their account, and the action DOF and DWM may be taking in response. Opportunities exist for the departments to improve information sharing with customers and help expedite the resolutions of billing issues.

Recommendations

7. DOF and DWM should ensure that Banner (or any subsequent meter reading and billing system) incorporates features to,
    a. quickly notify customers of excessive or continuously running water;
    b. allow customers to review their water use in real time and over specific time periods;
    c. allow customers to track the progress of their complaints and service requests, and notify them when their complaints are resolved; and
    d. allow DOF to pause the accrual of penalties, delinquent notices, and related consequences for non-payment when an account is under review or waiting for resolution.
8. DOF should facilitate training to ensure that NTT Data customer service representatives follow the policies of reviewing account history thoroughly and taking detailed call notes.
9. DOF should ensure that its customer service apparatus keeps account holders up to date on the status of their service requests and complaints, and responds in a timely manner to customer inquiries, including inquiries via email. This may require revising the department's Customer Service Operations Manual.
10. DOF should establish and adhere to a timeline for its Escalations team to begin its review of customer complaints.

Management Response

7. *"Currently, we only receive meter readings once a month. A running continuously trouble code is used as a trigger to issue letters to customers to notify them of continuously running water at their properties. These letters are only issued to single family homes and 2-flats, since larger properties with greater occupancy levels are more likely to use water continuously without there being a leak or waste of water on site. A risk of sending running continuously letters to a wider range of properties is that customers may become unnecessarily alarmed by being notified of continuous water usage and spend time, effort, and money investigating water usage that is normal for them.*

    "When the City moves from using AMR to AMI technology, DWM and DOF plan to acquire a customer-facing portal that will allow customers to access information about their water usage themselves and in more frequent increments (e.g., daily, hourly, or perhaps even more frequently). Many such customer-facing portals also allow for customers to set up their own email and/or text message alerts for water usage that they believe would be unusual for their own specific property.

    "See response in 7.a. above.

"Currently, we do not have technology capable of allowing customers to track the process of their complaints and service requests and to notify them when their complaints are resolved in the Banner CIS. However, technology like this does exist. Moving to such a system would be a project of such a large scope that it is most cost efficient to implement it when the Banner CIS is replaced. DOF and DWM will look to include technology like this when a replacement billing system is acquired.

"DOF does adjust off penalties where a customer's account balance has been determined to be incorrect. Penalties are adjusted from the start date of the adjustment through present to ensure no penalties remain that were calculated based on the balance that was determined to be incorrect. DOF also adjusts off penalties from the beginning of a dispute until a final determination about the dispute has been made.

"If we were to modify our processes to stop penalties and stop bad debt referrals when an account is in dispute, we would also have to implement a process to ensure that accounts in these statuses are regularly reviewed to make sure that penalty accrual and bad debt referral activities have resumed when appropriate. We currently do not have sufficient resources available to do this. Given the volume of incoming disputes each month, at least one additional resource would be required.

"DOF's current practice is to continue to send notices when an account is past due, even if the amounts owed are in dispute by the customer. The continued mailing of notices ensures that the customer is aware that there is still an unresolved past due balance. We also encourage customers to enter into a payment plan until the review process has concluded. This is because, pursuant to MCC 11-12-460, we are required to charge for all water passing through a meter, regardless of whether it was lost through leakage or waste. Typically, we do find that customers are responsible for the balance owed. If they do not begin making payments right away they will fall further and further behind, which makes it increasingly difficult for them to catch up. Entering into a payment plan also prevents penalty accrual, since the customer is no longer considered delinquent because they are paying according to an agreed payment schedule.

"The OIG writes in its report: 'Poor quality information in these communications may also leave billing errors undetected and unresolved, preventing the City from understanding and collecting on the amounts actually owed.' See p. 33. We send reminder notices so customers are aware of their past due balances, which should trigger them to reach out to us if they disagree with or don't understand why they owe a balance. Running continuously letters are sent out to alert customers that they may need to fix a leak/waste of water occurring at their property."

8. *"Because OIG did not review a random and statistically significant sample of accounts, we do not agree that they are able to reach a conclusion that many, most, or all CSRs were failing to follow policies of reviewing account history thoroughly and taking detailed call notes.*

   "Regardless, DOF provides regular feedback to NTT Data on any customer service failures, including failure by customer service representatives to review account history and take

detailed call notes. NTT Data has a training program for its new employees (who are City contractors) and also provides refresher trainings to all of its relevant staff as needed.

"Additionally, from 2022 to present, we have continued to evolve and mature our Quality Monitoring and Analytics (QMA) program, building on a foundation established in prior years. During this period, our focus has been on strengthening scoring consistency, improving coaching effectiveness, and aligning quality measurement more directly to customer outcomes. As part of this evolution, we established the Essential Development Group for Excellence (EDGE), introducing a more dedicated quality structure that includes a QA Specialist and QA Leads focused on calibration, coaching, and performance development.

"This progression led to the development and implementation of our 2026 Service Reliability Evaluation (SRE) model, an 11-question, 3-section framework designed to evaluate interactions through a reliability and outcome-based lens, with emphasis on accuracy, ownership, and resolution. In parallel, we introduced a more structured quality operating rhythm, including weekly agent-level performance reporting, enhanced CALIBRATE coaching sessions, and targeted training aligned to specific performance gaps.

"Together, these enhancements have strengthened our ability to drive scoring consistency, identify performance trends, and focus coaching on the behaviors that most directly impact customer experience and operational reliability."

9. *"DOF is committed to responding to customer inquiries via its customer service team in a timely manner, including by email. DOF will continue to work with its customer service vendor to improve response times, as it has done over the last several years. For example:*

Average call wait time:
- *2022: 7 minutes 19 seconds*
- *2023: 1 minute 57 seconds*
- *2024: 1 minute 33 seconds*
- *2025: 0 minutes 55 seconds*

Average email response time:
- *2022: 8.76 days*
- *2023: Reporting unavailable due to change in technology*
- *2024: 0.55 days*
- *2025: 1.73 days*

Meter appointment scheduling wait time:
- *2023: 5.68 days*
- *2024: 4.40 days*
- *2025: 1.06 days*

"Currently, we do not have technology capable of allowing customers to track the process of their complaints and service requests and to notify them when their complaints are resolved in the Banner CIS. However, technology like this does exist. Moving to such a system would be a project of such a large scope that it is most cost efficient to implement it

when the Banner CIS is replaced. DOF and DWM will look to include technology like this when a replacement billing system is acquired.

"OIG may have misunderstood some of DOF & NTT Data's processes, as they stated: 'CSRs may not be able to provide updates to customers on the status of their service orders because Meter Shop coordinators do not consistently document critical elements of their work in Banner. These include the reason for a meter service request, who made the request, the basis for the decision when the Meter Shop denies the request, and any follow-up required once the service is complete.' See p. 35.

"DOF would like to clarify that the process is as follows:

- *CSRs own the intake and documentation of the request, including the reason and all supporting details, which are required fields within the Microsoft Forms submission.*
- *Meter appointment schedulers operate downstream, using that information to coordinate scheduling and managing requests.*
- *Meter appointment schedulers do not typically deny requests. However, if a request does not meet the qualification criteria, a meter appointment scheduler notifies the CSR, who then follows up with the customer for clarification or resolution.*
- *Both the front-line and meter appointment schedulers enter a Banner note anytime they service the account.*
- *Meter appointment schedulers notate the account with confirmation of the appointment. If they cannot contact the customer for any reason, they also note this information.*[58]

"The Customer Service Operations Manual is already regularly reviewed and updated, and DOF and its customer service vendor will continue to review and update it regularly."

10. *"DOF is committed to reviewing and adjusting accounts via its Escalations Team as quickly as available resources allow. DOF is exploring technological and personnel changes to address this."*

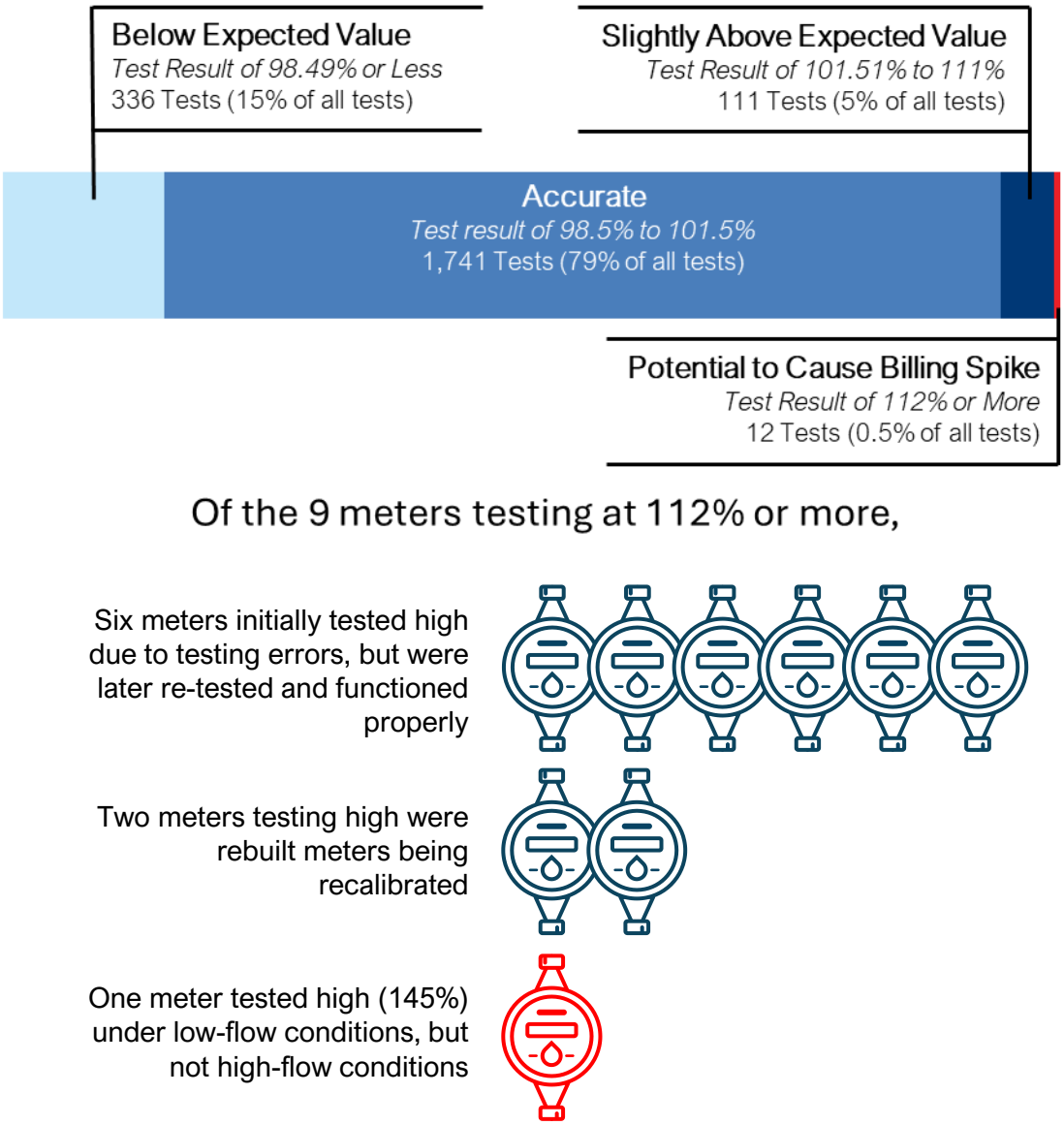
[58] OIG Reply: While this may reflect the process DOF expects its customer service teams to follow, OIG's review of account documentation shows that this was not always closely followed in practice.

Finding 3: Water meters typically installed in residential buildings such as single-family homes, two-flats, and three flats are not likely to cause billing spikes.

Water meters that DWM typically installs in residential buildings such as single-family homes, two-flats, and three-flats are reliable tools for measuring water use. As discussed below, these meters generally measure the water that flows through them accurately and are not likely to run "high" in a way that would lead to billing spikes. Account holders can therefore trust that unusually high readings marked as "Actual" on their water bills are not due to a deficient meter. However, water customers often falsely attribute billing spikes to meter functionality, and DWM and DOF contribute to this misunderstanding by not actively educating customers on this functionality and on the water distribution system as a whole.

DWM regularly tests water meters when they are removed from service or in the process of being rebuilt. The department performs these tests under both low-flow conditions, using 10 gallons of water at a rate of 2 gallons per minute, and high-flow conditions, using 100 gallons at a rate of 15 gallons per minute. DWM follows the American Water Works Association's testing standards, which provide that the meter's recorded volume should fall within 1.5% (test results of 98.5% to 101.5%) of the known quantity of water sent through it. As shown by Figure 10, of the 2,220 tests DWM conducted on 995 distinct 5/8-inch and 1-inch meters between February 9 and August 9, 2023, 2,188 tests (99.5%) came in either fully accurate, below the expected value, or slightly above the expected value. Only 12 meter tests showed results that could potentially cause a billing spike. These 12 tests (0.5%) were conducted on 9 distinct meters (0.9% of the 995 meters tested). However, high tests on 8 of these meters were due to testing errors or the process of adjusting and recalibrating rebuilt meters, rather than problems with the meters themselves. Recalibrated meters may be tested multiple times as adjustments are made to their mechanisms. In summary, only 1 meter of 995 tested high enough to potentially cause a billing spike, and only under low-flow conditions.

Figure 10: 99.5% of Residential Meter Tests Registered Below, Within, or Reasonably Close to Expected Values. Most of the High Tests Were Due to Errors or Recalibrations.[59]



Source: OIG visualization of DWM meter testing data.

[59] These tests were of meters typically installed in residential buildings such as single-family homes, two-flats, and three-flats.


A DWM technician tests a meter. Source: OIG photo.

Meter testing technicians manually enter the readings from the beginning and the end of each test, as well as the meter's identification number. This leads to occasional data entry errors that require the technician to re-test. DWM encountered this error while testing 4 of the 9 high-testing meters discussed above. These were each subsequently re-tested and determined to be functioning properly.

Similarly, some tests showed the wrong volume of water run through the meter, or no water at all. DWM encountered this error while testing two of the nine high-testing meters.[60] The department re-tested one, which was determined to be functioning properly. DWM did not re-test the other meter.

Only one meter registered a significantly high reading, 45% over the expected value, that could not be attributed to errors or recalibrations. This reading came under low-flow testing conditions and was not duplicated in the high-flow test on the same meter. DWM did not subsequently re-test this meter and OIG did not identify a likely testing or data entry error that would have caused this result, although these are still possibilities.


The inside of a disc meter of the kind used in small residential homes. Source: OIG photo.

These residential water meters rarely record erroneously high use due to their design. 5/8-inch and 1-inch water meters are mechanically simple devices comprising few components. Inside the chamber of this type of meter is a flat disc set at a slight angle. Water moving through the chamber causes the disc to rotate and pivot on its central vertical axis. Each movement of the disc allows a measured amount of water to flow through the meter. This means that meters only record use when water is drawn through them, and the registration disc will not move faster than the water moving through the device. In fact, water meters are more likely to run slower over time due to calcification of the disc and sediment build-up. Furthermore, if the meter or transmitter does malfunction, the transmitter will generate trouble codes rather than transmit an inaccurate reading.

[60] The data entry and incorrect water volume errors described here also account for some portion of the unexpected negative and significantly low values shown in Figure 10, according to DWM's testing data. However, because low meter readings do not contribute to the risk of customer billing spikes, OIG did not perform an in-depth analysis of the reasons for low testing values.

Water customers often attribute billing spikes to meters inaccurately measuring water use. Chicago's water distribution system is not widely understood, and quality information can be difficult to find. Customers may be unfamiliar with their own internal plumbing and may not even know if they have a water meter installed. DWM and DOF do not actively educate customers on water meter functionality and the water distribution system. Instead, the departments reinforce the public perception that water meters cause billing spikes by scheduling unnecessary service appointments and replacing working meters based on customer complaints, which wastes resources and staff time. By resolving the process issues leading to billing spikes—described in the other Findings of this report—and educating the public on water meter functionality, DOF and DWM can provide themselves the opportunity to correct these misunderstandings and focus their efforts on the most effective solutions.

Recommendations

11. To reduce unnecessary meter replacements, DOF and DWM should seek to correct customer misunderstandings by actively distributing clarifying information on water meter functionality and the water distribution system. For example, DOF may consider sending customers a primer on meter functionality with their water bills, as well as publishing this information on the City's website.
12. In its role as contract manager, DOF should ensure that NTT data staff are trained to explain water meter functionality and the water distribution system to customers.

Management Response

11. *"DOF's customer service team are trained to make sure customers are aware that:*
    - *We're required to charge for all water passing through a water meter.*
    - *Customers are responsible for water even if it was lost due to leakage or waste.*
    - *Customers should check their property for leaks. This is important because if no issue is found with the water meter and billing (as is typical) they will be responsible for all charges.*
    - *If the customer cannot locate the leak themselves, they should hire a licensed plumber to assist them.*

    "The OIG states in their report that: 'DWM and DOF do not actively educate customers on water meter functionality and the water distribution system. Instead, the departments reinforce the public perception that water meters cause billing spikes by scheduling unnecessary service appointments and replacing working meters based on customer complaints, which wastes resources and staff time.' See p. 42.

    "When customers dispute metered water charges, DOF and DWM schedule service appointments and replace working meters in order to prove to customers that the water meter at their property was working. Water meters cannot be tested while in place and must be removed in order to test them. In addition to showing the customers that their water usage was correctly measured and that their charges are valid and owed, a meter test is also typically used to prove contested charges are valid in court. Thus, these replacements are not unnecessary, nor a waste of resources and staff time.

"DOF and DWM agree that customer education is important and we can create and distribute materials about meter functionality to customers."

12. *"In the examples reviewed by the OIG, CSRs were attempting to explain to customers that there may be a delay before meters are moved onto their accounts. This was a known issue in 2022 due to severe understaffing on the Billing Team. However, we agree that, in the specific examples provided, this was not done in a clear way. Because OIG did not review a random and statistically significant sample of accounts, we do not believe they are able to reach a conclusion that many, most, or all CSRs were providing inaccurate information about how water meters work to customers during this or any other timeframe.*

    "However, DOF does provide information to NTT Data about water meter functionality and the water distribution system, which NTT Data uses to train its staff. DOF and NTT Data will continue to do so going forward."

V | Conclusion

DWM and DOF are jointly responsible for ensuring that Chicagoans are billed accurately for their water use. While the water meters installed in single-family, two-flat, and three-flat homes are unlikely to lead to billing spikes, DWM and DOF's service order, billing exceptions, and estimate and credit calculations processes may introduce errors that lead to or worsen such spikes for some customers. Further, poor communication can prolong these errors and compound the frustration customers face when attempting to resolve them.

Appendix A | Case Study Summaries

A | South Chicago (South) Case Study

The customer's water bill was higher than usual in May 2023. In July 2023, the customer received a water bill for $2,003, amounting to 3.4 times their previous bill. The customer reached out to customer service by email and DOF took six weeks to respond. This account had multiple *run continuous* trouble codes and the high bill may have been due to actual use or a leak.

B | Portage Park Case Study

This customer called customer service starting in October 2021 regarding higher than typical bills. This may have been due to an increase in actual water use and annual increases in the City's water rate. DOF sent the customer eight *run continuous* notices between October 2020 and December 2021.

In March 2023, the customer received a bill for $5,806, more than 20 times their previous bill. This increase was caused by a data entry error when the meter was replaced twice, two days in a row, due to duplicate service orders. DOF identified the issue after the customer called customer service to report the billing error and DOF credited the account.

C | Belmont Cragin Case Study

This account received estimated readings between April 2020 and August 2022 due to a *cut wire* trouble code, indicating that the transmitter was not receiving a signal from the meter. To resolve the trouble code, DWM replaced the meter in June 2022 and the technician collected an actual reading from the meter. The new meter immediately began to record the customer's water use. The completion of the service order and final reading of the old meter were not entered into Banner until September 2022 and incorrectly backdated to August 2022. This delay was caused by the service order remaining in pending status awaiting approval from DOF.

DOF charged this customer twice for the same water use. They were billed for estimated readings (for the old meter) through August 2022 even though the new meter was accurately recording their water use starting in June 2022. In October 2022, DOF billed the customer $1,824, which was 2.7 times their previous bill. The new bill included a charge for the difference between the estimated use and final reading of the old meter, as well as all the use recorded by the new meter between June and October 2022. DOF also erred by charging the customer the difference between the estimated use and the final reading of the old meter, because this account had been estimated for over 24 months.

This customer received inaccurate information from customer service when they called to inquire about the October 2022 bill. For example, a CSR incorrectly speculated that the reason for the high bill was that the newly installed meter needs time to "get on track" and another CSR incorrectly stated that water meters reset the logged use every month. Critically, customer service failed to identify the errors that caused the high bill and did not forward the issue to DOF's Escalations team for review. OIG determined this customer is owed a credit of $1,150.

D | Lincoln Park Case Study

In September 2022, the customer received a water bill for $7,047, approximately 30 times higher than their previous bill. This bill was based on a meter reading that appears to have a data entry error; DWM recorded a meter reading as "2755" when the customer's prior use patterns—and subsequent actual readings—make it very likely the reading should have been "2155". Five months later, in February 2023, the customer received a credit when the account was automatically corrected in Banner because an actual, lower meter read was entered after a technician's direct observation of the meter dial. The customer was unaware of this credit and the resolution of their complaint until they called customer service in August 2023.

This customer experienced delays in scheduling service orders due to DOF's scheduling process and because the customer's meter vault collapsed due to nearby work completed by People's Gas. It took a total of five service orders to resolve this issue.

E | Austin Case Study

This account's meter readings regularly showed *run continuous* codes between January 2016 and November 2020; however, DWM sent no *run continuous* notices during this time. Then, between November 2020 and April 2021, the meter showed a mix of *reverse flow* and *cut wire* trouble codes. DWM replaced the water meter in April 2021 and again in March 2022. The technician who installed the meter observed in their handwritten notes that even the new meter was running continuously and that a leak or continuous use was therefore downstream from the meter; however, this observation was not included in the digital notes in Banner.

The customer regularly paid less than the amount due on their water bills and therefore carried increasing past due balances. This balance was $2,985 at the time of OIG's inquiry. This customer has established a pattern of creating payment plans to avoid debt collection and then defaulting on the payment plans. The account had entered into 22 payment plans as of the time of OIG's engagement.

F | South Chicago (North) Case Study

The customer purchased this property in December 2020. After receiving *run continuous* notices, the customer engaged a licensed plumber who found that the meter had been disconnected from its transmitter. The customer reported this to the City and a DWM technician repaired the broken wire. In August 2021, DWM took the first accurate reading from the meter since it was installed in 2012 and the new homeowner was charged for almost ten years of water use, totaling $23,179.

The customer called customer service and was referred to NTT Data's CIT team. In October, the CIT team identified the issues and forwarded the complaint to DOF's Escalations team. Escalations collected the six months of accurate meter readings it needed to estimate how much the customer should have been charged for this period. Over the six months this customer waited for the estimate, DOF continued to send the customer delinquent notices that threatened penalties including water shut off. Even after the six months elapsed, DOF did not take action to correct the customer's account until the customer called again. DOF credited the customer's account, but made some errors in doing so. DOF has not billed the account's previous owner for more than $22,000 of water use for which the new owner was not liable.

Appendix B | DOF and DWM's Management Response

City of Chicago
Departments of Finance & Water Management
Audit Response

Utility Billing & Customer Service 2025 Summary

494,000	204,000	$1,268.63M	$61M
Customers Billed	Calls Handled	Collected for Water & Sewer	Collected for Garbage Fees

Utility Billing Relief Program 2020-2026

30,400	$90.2M
Households Assisted	Saved by Homeowners

The Department of Finance (DOF) and Department of Water Management (DWM) have responded to each of OIG's recommendations on the Management Response Form attached to this memo. While we value OIG's assessment, many of the recommended actions were taken by DOF and DWM prior to OIG's completion of the audit.

In addition to our commitment to water affordability, DOF prioritizes providing quality customer service to all Chicago property owners and strives for continuous improvement in our services. We take seriously the responsibility of providing accurate and timely billing of all accounts and acknowledge that there are improvements to be made in this process. However, the analysis conducted by OIG focused only on specific accounts with complaints and did not utilize a statistically relevant or random sample of all accounts. Therefore, many of their conclusions, including those about potential process or control gaps, cannot be applied to the global population of accounts.

Management Response Form

Project Title:	Audit of the City's Metered Water Billing	Project Number:	C2023-000000068
Department Name:	Department of Finance (DOF) Department of Water Management (DWM)	Date:	March 10, 2026 (as modified by OIG on 4/21/26)
Department Head:	Michael Belsky, Comptroller, DOF Randy Conner, Commissioner, DWM		

OIG Recommendation	Agree/ Disagree	Department's Proposed Action	Implementation Target Date	Party Responsible

1. DOF and DWM should ensure that Banner (or any subsequent meter reading and billing system) incorporates features to, a. establish service level agreements, such as the amount of time needed to address service orders once they are created; b. prevent duplicate service orders; c. ensure estimate and credit calculations are thoroughly documented and reviewed to minimize errors; d. ensure automatic estimate calculations are based only on competent readings per the MCC; and e. flag accounts that have been estimated for over 24 months, so that DOF does not violate the MCC by charging to reconcile estimated water use amounts of these accounts after they receive actual readings.	Agree in part; disagree in part	1.a.: DWM is committed to responding to water meter issues as quickly and as efficiently as possible. Not all issues are the same, making it difficult to standardized service level agreements. We evaluate and prioritize our work to ensure we are responding to the highest priority issues in a timely manner and will continue to do so. 1.b.: The Banner system already prevents a duplicate service order of a given type from being opened on the same account until after the initial service order is closed. 1.c.: DOF's Billing Team currently consists of one manager, one supervisor, and five front-line staffers, when fully staffed. DOF's Escalations Team currently consists of one manager, one supervisor, and nine front-line staffers, when fully staffed. DOF's staff are trained to accurately calculate estimated readings and adjustments. In order to add a process to review all manually calculated estimated readings and adjustments DOF would require at least four additional resources. DOF is exploring adding resources to perform additional review. We agree that all manual estimated meter readings and manual credit calculations should be thoroughly documented and it is our policy to do so. On page 22 of the OIG's report, the OIG writes that DOF failed to respond to a request for information from them. See page 22, second bullet. DOF made every effort to be responsive to OIG's requests for	For portions where we agree: already implemented	DOF & DWM

OIG Recommendation	Agree/ Disagree	Department's Proposed Action	Implementation Target Date	Party Responsible
		information, and OIG has verbally confirmed this with DOF. Additionally, OIG stated in writing with respect to alleged miscalculations that: "OIG, DOF, and DWM discussed each of the errors noted on these accounts at a December 9, 2024, virtual meeting. [OIG] followed up with written itemizations of each issue on December 31, 2024, to which DOF responded on February 14 and again on February 28." So, we are unsure what information they were seeking that was not provided. On page 22, in the first bullet, the OIG's draft report states: "DOF made minor errors in multiplying the average daily water use over the review period by the number of days in the estimated period. This resulted in estimates that were 2 to 3 TGALs higher than they should have been, adding $9 to $13 to the affected customer's bills. Factoring in sewer charges and water and sewer taxes, the total excess charges ranged from $22 to $34." OIG clarified to DOF that this account was the account they identify as the Lincoln Park account. The meter reading in question was calculated automatically by the Banner CIS. The difference between the Banner CIS's calculation and the OIG's calculation is that the OIG included a meter reading in their calculation that occurred in the same month as the estimated reading to be calculated. The billing system does not consider prior readings taken in the same month as the estimated reading to be billed. Additionally, estimated billing is generally		

OIG Recommendation	Agree/ Disagree	Department's Proposed Action	Implementation Target Date	Party Responsible
		trued-up when we receive an actual reading from DWM, which then will give the customer credit or bill the customer for any amounts not yet billed. In cases where the estimates cannot be trued up (e.g., the customer or someone other than DWM removed the meter without permission and a final out reading cannot be determined), DOF will review the estimates compared to later actual usage and adjust the estimates according to that actual usage. DOF provided the OIG with this information in an email to them dated 2/14/25. OIG further stated in bullet 2, which they have clarified to us pertains to this account, that: "When asked, DOF did not provide explanations for its calculations." However, DOF did provide the explanation above by email to OIG on 2/14/25. OIG clarified that the other two accounts referenced in bullet 2 on this page were the Austin and Portage Park accounts. With respect to the Austin account, DOF provided a file showing how the estimates for that account were calculated, as well as a written explanation, also on 2/14/25. While we acknowledge that the manually-calculated estimate should have been 5 TGAL higher than what was actually estimated, this account was then true-ed up shortly thereafter when we received an actual meter reading from DWM.		

OIG Recommendation	Agree/ Disagree	Department's Proposed Action	Implementation Target Date	Party Responsible
		With respect to the Portage Park account, there were no issues related to calculations of estimates raised to us by the OIG in the communications between December 2024, and February 2025. A review of the Portage Park account's service history does not reveal any bills generated based on estimated readings from 2020 through 2022. There was a brief period of estimation from February 2023 through July 2023; however, we do not show a record that OIG asked us about these estimated calculations. Further, DOF did respond to OIG's request for other information related to this account in an email dated 2/14/25. 1.d.: The OIG states in their report, on page 21, that "Banner does not exclude previous estimated readings from its estimate calculations, meaning that it may base new estimates on previous estimates made during its review period. The MCC, however, requires estimates to be based on *readings*." The departments note that estimated readings are, in fact, categorized as *readings* in the Banner billing system, as well as by the departments as a matter of practice. Further, an estimated reading is based on the average prior consumption at that property, which will typically cause the estimated reading to be in line with other prior actual meter readings. This is likely why the OIG found that differences between our calculations and theirs were typically de minimis. The OIG also states in their report, on page 22, that "The fact that the readings in question were		

OIG Recommendation	Agree/ Disagree	Department's Proposed Action	Implementation Target Date	Party Responsible
		"excessive or deficient" is known because each was many times higher than the account's previous readings, and DOF later discovered the errors and corrected them." However, billing is done within a few days of a meter reading being taken. We can, and do, check to ensure anything obviously wrong with an actual reading is not billed, and instead we issue a bill based on an estimated reading. However, a full investigation of the validity of a meter reading simply cannot be effectively undertaken within a couple of days. This is especially true since a site visit would usually be required. Information we find out later, after a site visit or other in depth investigation has been concluded, is simply not available prior to issuing a bill based on a meter reading that appears, on its face, to be valid, although high. Further, most meter readings that are many times higher than prior readings are due to actual water passing through a customer's meter. Pursuant to MCC 11-12-460, we are required to charge and collect for all water passing through a working meter. So, most of the time, even readings many times higher than prior consumption are for charges validly owed by a customer. **Delaying billing or issuing a bill based on an estimated reading would only serve to delay a customer in understanding that they have an issue at their property that they need to address and would prolong their resolution of that issue, thus resulting in further negative financial consequences for our customers.**		

OIG Recommendation	Agree/ Disagree	Department's Proposed Action	Implementation Target Date	Party Responsible
		With respect to the OIG's recommendation to exclude certain meter readings from the automatic calculation of estimated readings - is difficult to imagine how the system would be able to automatically know that these high readings were "excessive" without human intervention versus constituting a valid change in consumption at the property. If the system were to be reprogrammed to ignore readings much higher than prior readings, in situations where there is a continuing water leak followed by estimated billing we will likely see an increase in under-estimation as compared to actual usage, which later results in customers experiencing very large "true up" bills, creating more complaints and financial stress for customers. With human intervention we could mark "excessive or deficient" readings from known reading errors as such to prevent the system from using them to calculate estimated billing. However, the system currently does not have the ability to do this. Custom modifications of the system, at an additional cost to the City, would be required. On page 22 of the OIG's report it states "...DOF ultimately uses every other reading over the past 24 months to calculate the estimate. Although the department stated that unused readings are more likely to be erroneous, OIG did not find evidence of this in its analysis of the six case studies." DOF notes that the analysis conducted by OIG focused on specific		

OIG Recommendation	Agree/ Disagree	Department's Proposed Action	Implementation Target Date	Party Responsible
		accounts with complaints. It did not take a statistically relevant or random sample of accounts, which is likely why OIG did not find evidence of this in its analysis. Finally, it is important to note that typically, when a customer is billed based on estimated readings, the meter will eventually be read again, and an actual meter reading will true-up the difference between what was estimated and what was actually used. This can result in a high bill if we have under-estimated their actual water consumption, a credit if we have over-estimated their actual water consumption, or no significant difference if the customer uses the same about of water as they used historically, in alignment with the estimated bills. This makes the issue of de minimis differences between calculated estimated readings found by the OIG mostly irrelevant for customers, since those estimates will be trued up to actual readings. 1.e.: In March 2024, DOF worked with SDI Presence (the vendor engaged to provide maintenance and support for the Banner CIS) to develop a daily report to capture all potential accounts eligible for adjustments under this provision of the MCC after the true-up actual readings are billed out. After a period of review and testing, the report began to be distributed daily beginning in late September/early October 2024. Staff are assigned to work the report each day and are expected to review and adjust		

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		accounts as a high priority. Most accounts are adjusted within a few days. More complex accounts requiring a higher level of review, or high balance accounts requiring management- or deputy-level approval, may take slightly longer to adjust. We do not believe this process can be automated due to the need for human review. Human review is required to ensure delays in resolving the issues preventing actual readings from being obtained were through no fault of the customer/person who controls the property, pursuant to MCC 11-12-320. Additionally, DOF disagrees with both the amount of the OIG's calculated overcharge and that DOF did not correct the customer's billing account for the Belmont Cragin account. See p. 26. On 2/14/2025, DOF notified the OIG by email that the OIG had incorrectly interpreted the MCC. The MCC states that if a meter has not been read for over 2 years, then an estimate is charged rather than all usage. While the old meter at the property had not been read for over 2 years, the new meter at the property had been read in less than 2 years. So, DOF calculated that the bill should have been reduced by $555.69 (water, sewer, and tax charges of $468.46 plus penalties of $87.23). The account was then adjusted on 2/18/2025.		
2. DOF and DWM should work together to define roles and responsibilities from service order creation through to service order completion. Both departments should ensure that,	Agree in part; disagree in part	2.a.: The Banner system already prevents a duplicate service order of the same type from being opened on the same account until after the initial service order is	For portions where we agree:	DOF & DWM

OIG Recommendation	Agree/ Disagree	Department's Proposed Action	Implementation Target Date	Party Responsible
a. only one service order is open for a given account issue at a time, and the orders are addressed promptly according to defined service level agreements; b. DWM's paper service order notes, including meter change-out dates and technician notes, are accurately and completely entered into InforEAM; and c. service order results are promptly entered into Banner and finalized, a process that should include developing a timeline to efficiently resolve an order's pending status.		closed. However, an additional service order of a different type can be opened at the same time. Additionally, OIG writes in their report on page 25, in the second bullet: "Banner has no documentation of the specific reason for this order or who created it." That service order was generated by the system due to a cut wire trouble code, as noted in Banner CIS and on the work order. 2.b.: DWM will continue to train and review daily work with the crews and with the foremen to ensure accuracy. 2.c.: DOF has a process in place to review accounts where a service order is being closed including a meter changeout, and where the meter's final reading as compared to prior readings violates business process rules and is moved into Inbound Exceptions. The process has existed for some time and is handled by the Billing Team. However, during the period of time the OIG reviewed for this audit we were severely understaffed. All three manager positions were vacant from January 2022 through May 2023 and there were two vacancies on the billing team during 2022 (only one supervisor and three staff were reviewing bills). Since that time, we have been able to fill most vacancies in a more timely manner. However, we are now adequately staffed to work the Inbound Exceptions in advance of the daily billing. If	already implemented	

OIG Recommendation	Agree/ Disagree	Department's Proposed Action	Implementation Target Date	Party Responsible
		an account has a meter changeout in Inbound Exceptions and is scheduled to bill on a given day, that Inbound Exception is now processed prior to completing that day's billing, if at all possible. Occasionally there are accounts which require more in depth analysis and for us to estimate until it can be completed in order to ensure accuracy when processing the exception. However, this is not common.		
3. DOF should work with SDI Presence to, a. define agreed-upon tolerances for its high/low exceptions reports and ensure these reports capture accounts with uses beyond these tolerances. Additionally, DOF should thoroughly review bills flagged as exceptions on the high/low reports, even when coupled with *run continuous* codes; and b. ensure the meter change-out exceptions report captures all meter change-outs.	Disagree	3.a.: OIG has been provided with information about a third report that DOF uses to review metered account charges prior to issuance of the bills: the combination UBPCALC/UZRCONS report. This was discussed with them verbally and information was provided in writing as well during the course of their audit. However, OIG does not discuss how this report is used in detail, indicating they may not have considered it when coming to their conclusions about exceptions reporting. The combination UBPCALC/UZRCONS report is used after the accounts are charged to take a "last look" at the charges prior to bills being generated for the accounts. This report is used to catch any accounts that may not have met the very specific criteria of the High/Low report. This additional reporting was implemented around 2020 after DOF discovered that some accounts with high metered bills were not captured by the High/Low report. This report has been in use since that time and has very successfully	N/A	DOF

OIG Recommendation	Agree/ Disagree	Department's Proposed Action	Implementation Target Date	Party Responsible
		been used to trigger review of accounts which would not otherwise have been subject to review. Therefore, DOF disagrees with OIG's conclusion that DOF's exceptions reports are unreliable. On page 23 of the OIG's report it states "...[the High/Low Exceptions Report] did not consistently capture accounts with water use increases of 100% or more over previous use. The South Chicago (South) account did not appear despite recording 171 TGALs, 3.5 times more than the account's previous use of 49TGAL. The Portage Park account did not appear despite recording 474 TGALs, 19.8 times more than its previous use of 24 TGALs. The Lincoln Park account did not appear despite recording 625 TGALs, 48.1 times more than its previous use of 13 TGALs." The South Chicago (South) account appeared on the combination UBPCALC/UZRCONS report dated 07-25-23. Additionally, the resulting charges were for actual water passing through the customer's water meter. We are required to charge and collect for all water passing through a water meter pursuant to MCC 11-12-460. Therefore, there was nothing to correct based on this reporting. 3.b.: In their report, OIG states that two of the six accounts they reviewed did not appear on the Meter Changeout (Inbound Exceptions) Report: the Portage Park account and the Belmont Cragin account. See p. 24. While it is true that the Portage Park account did		

OIG Recommendation	Agree/ Disagree	Department's Proposed Action	Implementation Target Date	Party Responsible
		not appear on the Inbound Exceptions Report, the Belmont Cragin account did. The Portage Park account experienced a very niche issue which is uncommon and unlikely to reoccur. The Inbound Exceptions Report and the related exceptions table captures meter changeouts that meet certain business rules. By design, it does not capture all meter changeouts, but rather captures accounts based on pre-defined business rules that require deeper review. Based on 2023 data, reviewing all meter changeouts would increase the total annual number of meter changeouts from approximately 4,150 to approximately 8,800. We would require an additional resource in order to review twice as many meter changeouts. Based on the fact that OIG has identified one niche issue that could have been prevented by the account appearing on the Inbound Exceptions Report, it does not seem cost efficient to review all meter changeouts and increase the cost of that review process.		
4. DOF should work with DWM to establish protocols to reduce common errors in the meter change out process.	Agree in part; disagree in part	DOF and DWM note that the analysis conducted by OIG focused on specific accounts with complaints. It did not take a statistically relevant or random sample of accounts. OIG did analyze one account with a very niche, unusual issue that caused a billing error. The Portage Park account was billed out of cycle, and so it was not caught on the High/Low, UBPCALC/UZRCONS, or Inbound Exceptions reports.	For portions where we agree: already implemented	DOF & DWM

OIG Recommendation	Agree/ Disagree	Department's Proposed Action	Implementation Target Date	Party Responsible
		DOF and DWM will continue to work together to make appropriate process changes and training enhancements wherever appropriate and necessary to ensure proper entry of meter readings and correct billing.		
5. DOF and DWM should complete a comprehensive billing process review to identify other control gaps and potential customer billing issues not captured in OIG's six case studies.	Agree in part; disagree in part	DOF and DWM note that the analysis conducted by OIG focused on specific accounts with complaints. It did not take a statistically relevant or random sample of accounts. Therefore, their conclusions about potential process or control gaps cannot be applied to the system as a whole. DOF and DWM regularly review the billing process and make improvements to the process. In addition, DOF does continue to make process improvements as needed based on commonalities identified in customer complaints. Here are examples of recent improvements: • Additional reporting added related to billing exceptions circa 2020 • Implementation of reporting to identify accounts estimated for more than 2 years which may be eligible for an adjustment and adoption of a process to adjust them • Additional process for reviewing accounts quick-billed through OFPC process to catch very high and very low bills and review them • Re-program the process nonmetered accounts registered as vacant go through when applying for an FPC to reorder when in the process the vacancy	For portions where we agree: already implemented	DOF & DWM

OIG Recommendation	Agree/ Disagree	Department's Proposed Action	Implementation Target Date	Party Responsible
		status is removed so that when the applicant abandons the FPC process accounts are not improperly billing when they should still be registered as vacant.		
6. DOF should resolve the calculation errors identified in OIG's case studies and credit or charge the accounts as appropriate. OIG has provided DOF with evidence demonstrating the errors.	Agree in part; disagree in part	Several of the OIG's statements about miscalculations were not accurate; however, DOF acknowledges that the OIG did identify some occasions on which DOF did miscalculate a few adjustments. Any miscalculations which were still able to legally be corrected, which were not in the customer's favor, or which were in the customer's favor but were not de minimis, have since been corrected.	For portions where we agree: already implemented	DOF
7. DOF and DWM should ensure that Banner (or any subsequent meter reading and billing system) incorporates features to, a. quickly notify customers of excessive or continuously running water; b. allow customers to review their water use in real time and over specific time periods; c. allow customers to track the progress of their complaints and service requests, and notify them when their complaints are resolved; and d. allow DOF to pause the accrual of penalties, delinquent notices, and related consequences for non-payment when an account is	Agree in part; disagree in part	7.a.: Currently, we only receive meter readings once a month. A running continuously trouble code is used as a trigger to issue letters to customers to notify them of continuously running water at their properties. These letters are only issued to single family homes and 2-flats, since larger properties with greater occupancy levels are more likely to use water continuously without there being a leak or waste of water on site. A risk of sending running continuously letters to a wider range of properties is that customers may become unnecessarily alarmed by being notified of continuous water usage and spend time, effort, and money investigating water usage that is normal for them. When the City moves from using AMR to AMI technology, DWM and DOF plan to acquire a customer-facing portal that will allow customers to	Dependent on implementation of new technology not yet acquired	DOF & DWM

OIG Recommendation	Agree/ Disagree	Department's Proposed Action	Implementation Target Date	Party Responsible
under review or waiting for resolution.		access information about their water usage themselves and in more frequent increments (e.g., daily, hourly, or perhaps even more frequently). Many such customer-facing portals also allow for customers to set up their own email and/or text message alerts for water usage that they believe would be unusual for their own specific property. 7.b.: See response in 7.a. above. 7.c.: Currently, we do not have technology capable of allowing customers to track the process of their complaints and service requests and to notify them when their complaints are resolved in the Banner CIS. However, technology like this does exist. Moving to such a system would be a project of such a large scope that it is most cost efficient to implement it when the Banner CIS is replaced. DOF and DWM will look to include technology like this when a replacement billing system is acquired. 7.d.: DOF does adjust off penalties where a customer's account balance has been determined to be incorrect. Penalties are adjusted from the start date of the adjustment through present to ensure no penalties remain that were calculated based on the balance that was determined to be incorrect. DOF also adjusts off penalties from the beginning of a dispute until a final determination about the dispute has been made.		

OIG Recommendation	Agree/ Disagree	Department's Proposed Action	Implementation Target Date	Party Responsible
		If we were to modify our processes to stop penalties and stop bad debt referrals when an account is in dispute, we would also have to implement a process to ensure that accounts in these statuses are regularly reviewed to make sure that penalty accrual and bad debt referral activities have resumed when appropriate. We currently do not have sufficient resources available to do this. Given the volume of incoming disputes each month, at least one additional resource would be required. DOF's current practice is to continue to send notices when an account is past due, even if the amounts owed are in dispute by the customer. The continued mailing of notices ensures that the customer is aware that there is still an unresolved past due balance. We also encourage customers to enter into a payment plan until the review process has concluded. This is because, pursuant to MCC 11-12-460, we are required to charge for all water passing through a meter, regardless of whether it was lost through leakage or waste. Typically, we do find that customers are responsible for the balance owed. If they do not begin making payments right away they will fall further and further behind, which makes it increasingly difficult for them to catch up. Entering into a payment plan also prevents penalty accrual, since the customer is no longer considered delinquent because they are paying according to an agreed payment schedule.		

OIG Recommendation	Agree/ Disagree	Department's Proposed Action	Implementation Target Date	Party Responsible
		The OIG writes in its report: "Poor quality information in these communications may also leave billing errors undetected and unresolved, preventing the City from understanding and collecting on the amounts actually owed." See p. 33. We send reminder notices so customers are aware of their past due balances, which should trigger them to reach out to us if they disagree with or don't understand why they owe a balance. Running continuously letters are sent out to alert customers that they may need to fix a leak/waste of water occurring at their property.		
8. DOF should facilitate training to ensure that NTT Data customer service representatives follow the policies of reviewing account history thoroughly and taking detailed call notes.	Agree	Because OIG did not review a random and statistically significant sample of accounts, we do not agree that they are able to reach a conclusion that many, most, or all CSRs were failing to follow policies of reviewing account history thoroughly and taking detailed call notes. Regardless, DOF provides regular feedback to NTT Data on any customer service failures, including failure by customer service representatives to review account history and take detailed call notes. NTT Data has a training program for its new employees (who are City contractors) and also provides refresher trainings to all of its relevant staff as needed. Additionally, from 2022 to present, we have continued to evolve and mature our Quality Monitoring and Analytics (QMA) program, building on a foundation established in prior years. During this	Already implemented	DOF

OIG Recommendation	Agree/ Disagree	Department's Proposed Action	Implementation Target Date	Party Responsible
		period, our focus has been on strengthening scoring consistency, improving coaching effectiveness, and aligning quality measurement more directly to customer outcomes. As part of this evolution, we established the Essential Development Group for Excellence (EDGE), introducing a more dedicated quality structure that includes a QA Specialist and QA Leads focused on calibration, coaching, and performance development. This progression led to the development and implementation of our 2026 Service Reliability Evaluation (SRE) model, an 11-question, 3-section framework designed to evaluate interactions through a reliability and outcome-based lens, with emphasis on accuracy, ownership, and resolution. In parallel, we introduced a more structured quality operating rhythm, including weekly agent-level performance reporting, enhanced CALIBRATE coaching sessions, and targeted training aligned to specific performance gaps. Together, these enhancements have strengthened our ability to drive scoring consistency, identify performance trends, and focus coaching on the behaviors that most directly impact customer experience and operational reliability.		
9. DOF should ensure that its customer service apparatus keeps account holders up to date on the status of their service requests and complaints,	Agree	DOF is committed to responding to customer inquiries via its customer service team in a timely manner, including by email. DOF will continue to work with its	Already implemented in part;	DOF

OIG Recommendation	Agree/ Disagree	Department's Proposed Action	Implementation Target Date	Party Responsible
and responds in a timely manner to customer inquiries, including inquiries via email. This may require revising the department's Customer Service Operations Manual.		customer service vendor to improve response times, as it has done over the last several years. For example: Average call wait time: • 2022: 7 minutes 19 seconds • 2023: 1 minute 57 seconds • 2024: 1 minute 33 seconds • 2025: 0 minutes 55 seconds Average email response time: • 2022: 8.76 days • 2023: *Reporting unavailable due to change in technology* • 2024: 0.55 days • 2025: 1.73 days Meter appointment scheduling wait time: • 2023: 5.68 days • 2024: 4.40 days • 2025: 1.06 days Currently, we do not have technology capable of allowing customers to track the process of their complaints and service requests and to notify them when their complaints are resolved in the Banner CIS. However, technology like this does exist. Moving to such a system would be a project of such a large scope that it is most cost efficient to implement it when the Banner CIS is replaced. DOF and DWM will look to include technology like this when a replacement billing system is acquired.	remainder depends on implementation of technology not yet acquired	

OIG Recommendation	Agree/ Disagree	Department's Proposed Action	Implementation Target Date	Party Responsible
		OIG may have misunderstood some of DOF & NTT Data's processes, as they stated: "CSRs may not be able to provide updates to customers on the status of their service orders because Meter Shop coordinators do not consistently document critical elements of their work in Banner. These include the reason for a meter service request, who made the request, the basis for the decision when the Meter Shop denies the request, and any follow-up required once the service is complete." See p. 35. DOF would like to clarify that the process is as follows: • CSRs own the intake and documentation of the request, including the reason and all supporting details, which are required fields within the Microsoft Forms submission. • Meter appointment schedulers operate downstream, using that information to coordinate scheduling and managing requests. • Meter appointment schedulers do not typically deny requests. However, if a request does not meet the qualification criteria, a meter appointment scheduler notifies the CSR, who then follows up with the customer for clarification or resolution. • Both the front-line and meter appointment schedulers enter a Banner note anytime they service the account. • Meter appointment schedulers notate the account with confirmation of the appointment.		

OIG Recommendation	Agree/ Disagree	Department's Proposed Action	Implementation Target Date	Party Responsible
		If they cannot contact the customer for any reason, they also note this information. The Customer Service Operations Manual is already regularly reviewed and updated, and DOF and its customer service vendor will continue to review and update it regularly.		
10. DOF should establish and adhere to a timeline for its Escalations team to begin its review of customer complaints.	Agree	DOF is committed to reviewing and adjusting accounts via its Escalations Team as quickly as available resources allow. DOF is exploring technological and personnel changes to address this.	Q1 2027	DOF
11. To reduce unnecessary meter replacements, DOF and DWM should seek to correct customer misunderstandings by actively distributing clarifying information on water meter functionality and the water distribution system. For example, DOF may consider sending customers a primer on meter functionality with their water bills, as well as publishing this information on the City's website.	Agree in part; disagree in part	DOF's customer service team are trained to make sure customers are aware that: • We're required to charge for all water passing through a water meter. • Customers are responsible for water even if it was lost due to leakage or waste. • Customers should check their property for leaks. This is important because if no issue is found with the water meter and billing (as is typical) they will be responsible for all charges. • If the customer cannot locate the leak themselves, they should hire a licensed plumber to assist them. The OIG states in their report that: "DWM and DOF do not actively educate customers on water meter functionality and the water distribution system. Instead, the departments reinforce the public perception that water meters cause billing spikes by	Q4 2026	DOF & DWM

OIG Recommendation	Agree/ Disagree	Department's Proposed Action	Implementation Target Date	Party Responsible
		scheduling unnecessary service appointments and replacing working meters based on customer complaints, which wastes resources and staff time." See p. 42. When customers dispute metered water charges, DOF and DWM schedule service appointments and replace working meters in order to prove to customers that the water meter at their property was working. Water meters cannot be tested while in place and must be removed in order to test them. In addition to showing the customers that their water usage was correctly measured and that their charges are valid and owed, a meter test is also typically used to prove contested charges are valid in court. Thus, these replacements are not unnecessary, nor a waste of resources and staff time. DOF and DWM agree that customer education is important and we can create and distribute materials about meter functionality to customers.		
12. In its role as contract manager, DOF should ensure that NTT data staff are trained to explain water meter functionality and the water distribution system to customers.	Agree	In the examples reviewed by the OIG, CSRs were attempting to explain to customers that there may be a delay before meters are moved onto their accounts. This was a known issue in 2022 due to severe understaffing on the Billing Team. However, we agree that, in the specific examples provided, this was not done in a clear way. Because OIG did not review a random and statistically significant sample of accounts, we do not believe they are able to reach a	Already implemented	DOF

OIG Recommendation	Agree/ Disagree	Department's Proposed Action	Implementation Target Date	Party Responsible
		conclusion that many, most, or all CSRs were providing inaccurate information about how water meters work to customers during this or any other timeframe. However, DOF does provide information to NTT Data about water meter functionality and the water distribution system, which NTT Data uses to train its staff. DOF and NTT Data will continue to do so going forward.		

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