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Honorable Kathleen H. Burgess
Secretary
State of New York Public
Service Commission
Three Empire State Plaza
Albany, NY 12223-1350

Re: Amendment to Bill Estimation Procedures

Dear Secretary Burgess:

Consolidated Edison Company of New York, Inc. (“Con Edison” or the “Company”) hereby submits for approval the Con Edison Billing Estimation Methodologies with Advanced Metering Infrastructure for residential customers (included in Appendix A), which contains amendments to the Company’s current bill estimation methodologies for electric and gas services for both residential and non-residential customers.¹ The amendments modify existing billing estimation methodologies to account for the Company’s deployment of automated meter infrastructure (“AMI”) meters throughout its service territory. While AMI will greatly reduce the number of estimated bills, there will continue to be circumstances where estimates are required. Additionally, AMI will allow the Company to use more granular data in its estimation process.

¹ Consistent with the Company’s current bill estimation procedures, most recently submitted to the Commission on August 15, 2012 in Case 12-M-0369, such procedures are not incorporated in the Company’s electric and gas tariffs. While the tariffs provide in detail the circumstances in which the Company may estimate bills, the tariffs do not recite the estimation procedures and calculations themselves. Indeed, the inclusion of the detailed procedures submitted herein as part of the tariffs is not required.

The residential customer regulations of the New York State Public Service Commission (“Commission”) implementing the Home Energy Fair Practices Act (“HEFPA”), 16 NYCRR Part 11 and specifically §§11.13(a)(1) and (h), require utilities to “establish procedures for carrying out the requirements of [meter readings and estimated bills] and ... submit such procedures and any subsequent amendments to the commission for approval.” The proposed amendments are filed in compliance with these regulations.²

As described more fully in Appendix A, the amendments change the estimating methodologies for customers with AMI meters, while leaving in place the Company’s existing estimating methodologies for customers without AMI meters, or in certain limited circumstances where the new AMI methodologies fail to generate an estimate. These modifications to the Company’s existing bill estimation methodologies will benefit customers by making the estimated bills rendered to customers with AMI meters more accurate, as well as reducing the extent of subsequent billing adjustments.

For the foregoing reasons, the Company respectfully requests that the Commission approve the Con Edison Billing Estimation Methodology with Advanced Metering Infrastructure for use in estimating residential customer bills.

Sincerely
/s/
Kerri Kirschbaum

² Con Edison included the new non-residential methodologies in Appendix A for informational purposes only. Unlike the HEFPA regulations, the Commission’s non-residential customer regulations do not require submission of amendments to estimating procedures. They require only that the Company calculate estimated bills “in accordance with an established formula or methodology which shall take into account the best available relevant factors for determining the customer’s energy usage and, if applicable, demand usage.” (16 NYCRR 13.8(2)). The new non-residential estimation methodologies take into account the best available relevant factors. The Company is not requesting Commission approval of these methodologies.

Appendix A

CONSOLIDATED EDISON COMPANY OF NEW YORK

Con Edison Billing Estimation Methodology with Advanced Metering Infrastructure

June 26, 2017



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1 Introduction

Con Edison on occasion must bill its customers based on estimated readings of gas and electrical meters. Currently, readings are obtained manually or semi-manually and estimations occur when meters cannot be read because of several possible reasons, including:

- No access to the meter;
- Broken meter; and
- Adverse weather (e.g., snow, ice)

When readings cannot be obtained, in order to bill customers, the Con Edison Customer Service System (CSS), estimates the customer utilization/readings in a manner described in Section 3 of this Billing Estimation Methodology Procedure Associated with Advanced Metering Infrastructure document.

With Con Edison's implementation of Advanced Metering Infrastructure (AMI), smart meters are deployed which can be read remotely through a communications network. The meter readings are aggregated and evaluated by the Meter Data Management System (MDMS). For AMI meters, CSS obtains readings by request from MDMS, in most cases with no manual intervention. As a consequence, Con Edison expects that the number of times that it will be unable to read meters to diminish, as will the need to estimate. Nevertheless, meters will occasionally fail or readings will be unavailable, in which case Con Edison will need to estimate usage.

This Procedure identifies the methodology Con Edison will employ to estimate usage with MDMS in place.

With MDMS, estimation of usage can occur in one of the following two ways:

- MDMS provides the estimates, described in Section 2, under the following conditions
 - MDMS provides estimates for AMI meters with missing or invalid data
- CSS provides the estimates, described in Section 3, under the following conditions
 - CSS provides estimates for non-AMI meters
 - CSS provides estimates for AMI meters where MDMS was unable to provide a read or an estimate
 - CSS provides estimates for AMI meters that fail validation on MDMS provided meter readings
 - Estimates in CSS are performed manually when automated estimation is not available in MDMS and CSS

In all cases, when an estimate is made, whether MDMS provided or CSS provided, CSS will flag the bill as estimated.

2 MDMS Estimation

In order to bill customers, CSS requests billing determinants from MDMS for a required date. MDMS provides the midnight read on the requested date if an actual read is available. If MDMS cannot provide an actual read for that date, MDMS sends the midnight read from the previous day, if it is an actual

read. If MDMS cannot provide an actual read from either date, MDMS provides an estimated read from midnight of the requested date.

MDMS estimation is based on the type of data gathered from the smart meters. MDMS obtains two types of readings, register reads and interval reads. Register reads provide cumulative consumption at the end of a defined time period, generally 24 hours, and are typically used to bill for total monthly consumption. Interval reads are meter reads derived from MDMS interval usage data in 15-minute increments for residential customers and 5-minute increments for commercial customers, and are used to bill for services such as consumption Time of Use, Demand, Demand Time of Use and other services.

All reads (register reads or interval reads) are processed through a validation, editing and estimation process, which validates data against validation rules and estimates reads or intervals when data is missing or fails validation. When processing register reads, MDMS stores or estimates current reads or updates previous actual or estimated reads when new actuals are available. Replaced data is versioned for historical archiving and retrieval.

2.1 Register Read Estimation

MDMS estimates register reads at the time a read is missed and updates the estimate when subsequent actual register reads are available.

At the time an actual register read is missing or invalid, MDMS estimates the current read as follows:

- MDMS averages the daily consumption from the most recent three, two or one previous same day of the week consumption, up to within the last 45 days, as available, to calculate the estimated read. If no previous same day of the week actual consumption is available, MDMS averages three, two or one previous like day actual consumption (most similar weekday day for a particular weekday or any weekend day for a particular weekend day) to estimate the read. If the read day is a holiday, MDMS uses the consumption from the last available holiday or Sunday within the last 45 days to estimate the read. If no estimate is available, MDMS marks the read as invalid.

When a subsequent actual register read is received, MDMS updates previous estimated or invalid reads as follows:

- Using linear interpolation between the last actual register read and the new actual register read, MDMS calculates a correction factor to apply to the previous estimate or to provide an estimate for a previous invalid register read. MDMS scales the original estimated read by the correction factor to improve the estimate.

If no estimation is available by using the above described methods, MDMS returns no valid read and CSS performs the estimation as described in section 3.

2.2 Interval Read Estimation

Con Edison uses interval data to calculate services other than daily consumption, such as in Time-of-Use, Demand and Net Metering. For consumption Time-of-Use service, the intervals within specified time periods in the day are used to calculate consumption within the periods; for Demand service, the billing determinant is calculated based on the highest 30-minute interval window in the billing period, comprised of six, 5-minute interval reads. For Net Metering, the intervals are cumulated, as required.

Within MDMS, interval data is validated and flagged as actual or estimated. MDMS estimates an interval if the interval is not available from the smart meter or the interval fails validation. Whether a service billing determinant, such as for Time-of-Use, which depends on a number of intervals, is considered an actual or an estimate depends on the fraction of intervals within the billing period that are estimated, as follows:

- If within the billing period $\leq 20\%$ of interval are estimated -> Flag billing determinant as **Actual**
- If within the billing period $> 20\%$ of intervals are estimated -> Flag billing determinant as **Estimate**

To estimate intervals, MDMS uses several methods, depending on the state of knowledge of the meter and the rule by which the interval was declared missing or invalid.

- When meters are exchanged, the last interval read of the removed meter and the first interval read of the installed meter occur within the same time interval. MDMS will calculate a single interval read value based on the overlap interval reads.
- When a meter is known to be unpowered, inactive or experiencing an outage, MDMS will estimate 0 kWh utilization.
- When a meter is operational, and an interval read is missed, MDMS will estimate the interval read by utilizing the most recent previous same day, like day or holiday interval within the past 45 days. When a subsequent actual interval becomes available, MDMS will update the previous estimate of an interval by scaling the value by a factor derived from interpolation between actual reads.

If no actual or estimated billing determinants are available from MDMS, CSS will estimate consumption Time of Use and Demand service as described in section 3.

3 CSS Estimation

Con Edison produces estimated bills on the same time line as actual bills, the business day following the day on which the meter is scheduled to be read. Current CSS estimation is based primarily on an annual estimate system where prior year(s) data is used for an estimate. The estimation methodology depends on the service of a customer:

- Service Category 1 Customers
 - Electric
 - Residential
 - Commercial Non-Demand Billed
 - Gas Customers
- Service Category 2 Customers

- Electric
 - Commercial Demand Billed

Estimations can also be performed manually, used for other services and when automated estimation is not applicable.

3.1 Electric Residential and Commercial Non-Demand and All Gas Customers

For electric residential and commercial non-demand customers and gas customers, the following estimation methodology is utilized:

3.1.1 Non-Heating Usage (non-heating period bills)

In annual periods where heating is not utilized, estimation is performed as follows:

- Usage is estimated based on actual use in previous year if available. If prior year was estimated, use in the same period two years prior to billing will be the basis
- When billing history does not include actual readings for same periods in prior years, usage is estimated based on usage from most recent bill using actual readings prorated for the current bill period. Weather-based adjustments are made to estimate electric and gas usage for air conditioning in the summer months to account for variations in Cooling Degree Days in the period compared to same period in the prior year
- When there are no past bills based on actual readings, all estimated usage on the account is added and then divided by the number of days in the billing period to calculate a daily usage factor. This daily usage factor is then multiplied by the number of days in the current billing period to develop estimated usage.
- For new residential customers, who have no billing history, factors are used that are derived from the usage of customers in the service class to estimate the new customers' usage until actual readings are obtained. Separate factors are determined for apartment-based customers and other customers. Within these categories are different factors based on the time of year to reflect seasonality of use.

3.1.2 Heating Usage (heating period bills)

In annual periods where heating is utilized, estimation is done in these steps:

- First, a non-heating usage factor is calculated by summing all usage, provided there are at least two billing periods with usage based on actual meter readings, in the non-heating billing period (May to September) and dividing the total by the number days in the non-heating billing period. For the current bill period, estimated non-heating usage is calculated by multiplying the non-heating per-day usage factor by the number of days in the current bill period. A second estimate of non-heating usage is calculated for the number of days in the most recent heating bill periods; this estimate will be used in the second step in the procedure.

- Second, a per-degree-day heating factor is established. To do this, the estimated non-heating usage during the most recent heating bill periods (as determined in the preceding step) is subtracted from total usage during those periods and the resulting heating-related usage divided by the number of degree days in those periods. This per-degree-day heating factor is then multiplied by the number of degree days in the current bill period to determine the estimated heating-related usage for the current bill period.
- Third, for the current bill period, the estimated non-heating usage from the first step and the estimated heating-related usage from the second step are added to calculate the total estimated usage.

3.2 Commercial Electric Demand Billed Customers

For commercial electric demand customers, estimation is based on the following:

When customer billing history for the prior year is available, usage (in kWh) is estimated based on actual use for the same period in the prior year and prorated for the current bill period.

Demand (in kW) is estimated based on the demand recorded for the same period in a prior year. For new customers without billing history and existing customers whose billing history does not include an actual reading for the same period in the prior year, usage and demand are estimated on the basis of the most recent billed usage and demand based on actual readings; usage is prorated for the current bill period.

3.3 Manual Estimates

Manual estimates are performed in the following limited circumstances and using the best historical information available:

- CSS cannot automatically estimate a bill;
- Con Edison's subsequent attempts to secure a meter reading have been unsuccessful;
- The account representative has no specific account information available to, or at variance with, the automatic estimating algorithms in CSS