Hourly Energy Settlement

Virginia Electric and Power Company (Dominion Energy), as the Electric Distribution Company (EDC) in the Dominion Zone, has the responsibility for collecting and reporting certain load data to PJM. This load data is used by PJM to settle charges for Load Serving Entities (LSEs) within Dominion's Zone that participate in PJM's Interchange Energy Market.

This document is intended to describe the procedures and methodologies that Dominion Energy uses to determine the hourly load for each LSE serving end use customers (Customer) within the Dominion Zone. The Hourly Energy Settlement is the energy (MWs) that the LSE is responsible for supplying each hour, of each day in the billing period (calendar month).

PJM operates a "two settlement" Interchange Energy Market, referred to as Settlement A and Settlement B.

Settlement A = Hourly estimated usage reported daily to PJM on a day-after-the fact "backcast" basis.

- Generated by combining available actual metered load, most recent customer information, transmission and distribution losses, DOM Zone system load, and estimated load using load profiles adjusted by actual weather system load data.

Dominion Energy submits estimated hourly load data on a day-after-the fact basis to PJM via InSchedule for Settlement A purposes in accordance with the following settlement deadlines:

Day eSchedule Submitted to PJM	Settlement Day(s)	Deadline*
Tuesday	Monday	2 PM Tuesday
Wednesday	Tuesday	2 PM Wednesday
Thursday	Wednesday	2 PM Thursday
Friday	Thursday	2 PM Friday
Monday	Friday	5 PM Monday
	Saturday	5 PM Monday
	Sunday	5 PM Monday

* EXCEPTION: 5 PM deadline for any eSchedule submitted on PJM business day following a mid-week holiday.

Settlement B = Hourly load data submitted to PJM 60-days following the end of the calendar month to allow for all customer meter readings to be reported and for any adjustments to billing data to be finalized. Dominion Energy reports the hourly differences between Settlement A loads and Settlement B loads (in kws) for each LSE to PJM for final billing.

Dominion Energy utilizes the same basic methodology for determining the LSE's Hourly Energy Settlement for both Settlement A and Settlement B. The basic steps are discussed in detail below.

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Individual LSE load is determined by the summation of the following:

1. The sum of **Non-Interval meter** customers **Class Profiles +**
2. The sum of **Interval meter** customers C**lass Profiles +**
3. **Line losses +**
4. **Unaccounted For Energy (UFE) ***

Description of the preceding terms:

1. **Non-Interval Meter** - simply records the Customer's total kWhs and, where applicable, the Customer's highest kW demand measured over a 30-minute period, for a billing cycle. There is no record of the amount of load on an interval basis.

1a. **Class Profiles** – a group of customers that have a similar kWh usage pattern. Since historical interval data is not available for Non-Interval Meter Customers, Class Profiles have been developed from a random sampling of load survey meters that have been installed at Customer locations for load research purposes. The sum of the hourly load values in a Class Profile is the representative total kWh for the average customer that fits that Class Profile. Each Non-Interval Meter Customer account is assigned to a Customer Class load profile (Class Profile). An overview of Dominion Energy's load profiling methodology can be found on the Dominion Energy Web Site.

2. **Interval Meter** - records the Customer's kWs on an interval basis. These interval kWs are used to determine hourly load values and the hourly loads are summed to determine the Customer's total kWhs for the billing cycle.

   There is a historical record of hourly load data for Interval Meter Customers; each Interval Meter Customer is assigned its own historical load data as its Class Profile. Each Interval Meter Customer account is treated as a unique Class Profile in the methodology for determining Hourly Energy Settlement. Interval Meter Customer load is retrieved from their assigned Class Profile, except in cases where the Customer's current load data is retrieved on a daily basis.

3. **Line Loss** - Each Customer is assigned a Line Loss Factor. Application of the Line Loss Factor is intended to gross-up the Customer loads to reflect transmission and distribution line energy losses attributable to the Customer's load. The Line Loss Factor assignment is determined by the Customer's delivery service voltage level. Dominion Energy's Loss Expansion Factors can be found on the Dominion Energy Web Site.

4. **UFE** – The difference, or residual, between the Dominion Zone hourly load and the sum of all customer loads within the Dom Zone. Can consist of energy diversion, meter error, rounding differences, line losses, or theft.

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* NOTE: UFE is allocated only to the Non-Interval Meter Customers since Class Profile loads are used to estimate the Customers' hourly loads. UFE is not allocated to Interval Meter Customers since the Customer's actual metered data is used to determine their hourly loads.

Calculate LSE Non-Interval Meter Customer Class Usage Factor

The LSE Non-Interval Meter Customer Class Usage Factor is based on the average billing cycle kWh per Customer in the Customer Class. The Non-Interval Meter Customer Class Average Usage Factor is calculated by dividing the Customer's historical average billing cycle kWh by the Class Profile kWh for the respective billing cycle.

Non-Interval Meter Customer Class Average Usage Factor = Average Non-Interval Meter Customer Billing Cycle kWh / Class Profile kWh

Where: Average Non-Interval Meter Customer Billing Cycle kWh = Total Non-Interval Meter Customer Class kWh for Customer Meters Read for the Applicable Billing Cycle / Total Number of Customer Meters Read in the Non-Interval Meter Customer Class for the Applicable Billing Cycle

Note: Resulting Usage Factors from the above billing cycle, Customer Class and LSE-specific calculations are averaged together to determine the overall average Usage Factor for the LSE and Customer Class.

LSE Non-Interval Meter Customer Class Usage Factor = Non-Interval Meter Customer Class Average Usage Factor

It should be noted that since the Interval Meter Customer is assigned its own historical interval data as its Class Profile, the Customer Usage Factor algorithm results in a Customer Usage Factor of 1.00. Therefore, Interval Meter Customers are assigned a default Customer Usage Factor of 1.00.

LSE Interval Meter Customer Class Usage Factor = 1.00

Calculate Unreconciled LSE Customer Class Hourly Loads

To calculate the Unreconciled LSE Non-Interval Meter Customer Class Hourly Loads, the weather-adjusted Class Profile Load is multiplied by:

a) the LSE Non-Interval Meter Customer Class Usage Factor and,

b) the applicable Loss Expansion Factor and,

c) the Number of LSE Enrollments in the Customer Class

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Unreconciled LSE Non-Interval Meter Customer Class Hourly Loads = (Class Profile Loads * LSE Non-Interval Meter Customer Class Usage Factor * Loss Expansion Factor) * Number of LSE Enrollments

To determine the LSE Interval Meter Customer Class Hourly Loads, the Class Profile load or the actual hourly load when available, is multiplied by the applicable Loss Expansion Factor.

LSE Interval Meter Customer Class Hourly Loads = Class Profile Loads (or available Actual Loads) * Loss Expansion Factor

Aggregate Unreconciled LSE Hourly Loads

To determine the Unreconciled LSE Hourly Loads, the sum of all Unreconciled Non-Interval Meter Customer Class Hourly Loads are added to the sum of all Interval Meter Customer Class Hourly Loads, by the hour, for each LSE in the Dominion Zone.

2. Reconciliation of LSE Hourly Loads

Determine Dominion Zone Hourly Loads

Dominion Zone Hourly Loads are reported electronically to PJM via eMTR. The Dominion Zone Hourly Load, as provided by PJM, is the total of all energy in the zone, both generated and net zone interchange, for each hour. Dominion Energy is responsible for determining the LSEs' portions of the Dominion Zone eMTR. PJM settles all energy transactions in the Interchange Energy Market to each load zone, thus the need to reconcile all LSE hourly loads to Dominion Zone Hourly Loads.

Dominion Zone Hourly Loads = Dominion Zone Generation MWH + Dominion Zone Net Metered Interconnection Ties MWH

- Determine Unreconciled Dominion Zone Hourly Loads

All Unreconciled LSE Hourly Loads for the Dominion Zone from Step 1 are summed for each hour to determine the Unreconciled Dominion Zone Hourly Loads.

Unreconciled Dominion Zone Hourly Loads = Sum of All Unreconciled LSE Hourly Loads

- Determination of the LSE Hourly Load Reconciliation Adjustment, or the Unaccounted-For-Energy

The LSE Hourly Load Reconciliation Adjustment, also known as Unaccounted-For-Energy (UFE), is the difference between the Dominion Zone Hourly Loads and the Unreconciled Dominion Zone Hourly Loads.

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Dominion Zone Hourly Load Reconciliation Adjustment = Dominion Zone Hourly Loads – Unreconciled Dominion Zone Hourly Loads

- Allocation of Unaccounted-For-Energy (UFE)

UFE is allocated on the basis of the LSE's Non-Interval Meter Customer load ratio share of the Dominion Zone total Non-Interval Meter Customer loads. Therefore, to calculate the allocation ratios, Interval Meter Customer load is removed from both the LSE Hourly Loads and the Dominion Zone Hourly Loads.

- Reconciliation of LSE Hourly Loads:

LSE Hourly UFE Allocation Ratio = LSE Non-Interval Meter Customer Class Hourly Loads / Dominion Zone Total Non-Interval Meter Customer Class Hourly Loads

LSE Hourly Load UFE Adjustment = Dominion Zone Hourly Load Reconciliation Adjustment * LSE Hourly UFE Allocation Ratio

Reconciled LSE Non-Interval Meter Hourly Loads = Unreconciled LSE Non-Interval Meter Hourly Loads + LSE Hourly Load UFE Adjustment

Reconciled Dominion Zone Hourly Loads = (Reconciled LSE Non-Interval Meter Hourly Loads + LSE Interval Meter Customer Hourly Loads)

- Calculate the LSE hourly energy usage

The LSE hourly energy usage is the sum of the LSE's Reconciled Non-Interval Meter Customer hourly loads and the Interval Meter Customer hourly loads.

LSE hourly energy usage = Reconciled Non-Interval Meter Customer hourly loads + Interval Meter Customer hourly loads

LOAD SERVING ENTITY HOURLY ENERGY USAGE– SETTLEMENT B

- For Settlement B, aggregate hourly load schedules are produced using the most current Interval Meter and Non-Interval Meter Customer load data and appropriate Class Profiles. Dominion Energy uses the basic methodology described above to determine LSE's hourly energy usage for Settlement B. The hourly load differences between Settlement A and Settlement B (in kws) are then reported to PJM via InSchedules.