

ATTACHMENT M-1 (FirstEnergy Zones)
FirstEnergy Procedure for Determining a
Load Serving Entity's Hourly Energy Obligations

Purpose

The purpose of this Attachment M-1 is to give PJM members serving load in a FirstEnergy Zone(s) the understanding of how each hour of an operating day's Total Hourly Energy Obligation ("THEO") is developed, in accordance with the PJM Open Access Transmission Tariff, the PJM Operating Agreement, Reliability Assurance Agreement or other relevant PJM documents (the "PJM Documents") and submitted to PJM. Attachment M-1 pertains to both wholesale and retail Load Serving Entities ("LSEs") serving load in the following FirstEnergy Electric Distribution Companies ("EDC") Zones (the "FirstEnergy Zones"): Ohio Edison Company, The Toledo Edison Company, The Cleveland Electric Illuminating Company (together "ATSI Ohio"), FirstEnergy Pennsylvania Electric Company ("FE PA") operating in the separate ATSI, Penelec, MetEd, and Allegheny Power PJM transmission zones, Jersey Central Power & Light Company ("JCP&L"), Monongahela Power Company ("Mon Power") and The Potomac Edison Company ("Potomac Edison MD" and "Potomac Edison WV"). Attachment M-1 is not intended to supersede or replace any contractual arrangement(s) between FirstEnergy (or its affiliated FirstEnergy EDC) and the applicable LSE that otherwise governs the calculations. Such contractual arrangement(s) shall prevail unless silent on a particular issue or calculation.

Attachment M-1 is divided into three main sections. The first section titled "Terms" defines terms specific to this Attachment M-1 that are not found in the PJM Documents. The second section titled "Wholesale" describes processes for determining the THEO for wholesale LSEs such as municipal electric utilities or electric cooperatives. The final section titled "Retail" describes processes for determining the THEO for retail LSEs such as retail generation service providers serving retail customers or retail suppliers providing provider of last resort services.

FirstEnergy performs the THEO calculation and subsequently uploads this data to PJM systems (such as PJM's InSchedule eSuite application or its successor) on behalf of retail LSEs and wholesale LSEs serving load in each FirstEnergy Zone, unless otherwise agreed.

Questions concerning the methodologies described in this Attachment M-1 may be submitted by visiting the Supplier Support section of the FirstEnergy corporate website located here: <https://www.firstenergycorp.com/supplierservices>.

Section I: Terms

Unaccounted for Energy – Energy that is remaining after comparing: (a) the FirstEnergy Zone load determined by summing physical generation delivered to a FirstEnergy Zone plus net imports/exports of energy into/out of a FirstEnergy Zone to: (b) the sum of all wholesale and retail customers' metered load, whether interval metered or estimated, including contractual or otherwise mutually agreed upon losses, as specified herein or as otherwise filed with FERC, in any given hour. Unaccounted for Energy is not allocated to wholesale LSEs unless otherwise

specified in their contracts/agreements with FirstEnergy. The methodology for determining Unaccounted for Energy for an LSE providing service to retail customers receiving distribution service from a FirstEnergy EDC shall be set forth in state-approved retail tariffs.

Losses – The following loss factors shall apply for each FirstEnergy Zone. Loss factors will be applied according to location (FirstEnergy Zone) and service voltage of each meter point. For wholesale LSEs, all of the loss factors specified herein shall apply, unless otherwise established by contract and filed with FERC. For retail LSEs, the Transmission Load loss factors specified herein shall apply, however for lower service voltages, the loss factors specified in state-approved retail tariffs shall apply.

Service Voltage	ATSI Ohio	FE PA (Penn Power, ATSI Zone)	FE PA (MetEd Zone)	FE PA (Penelec Zone)	JCP&L
Transmission Load	1.01486	1.01486	1.02100	1.04070	1.03900
Subtransmission Source	1.02786	1.02786			
Subtransmission Load	1.02886	1.02886			
Primary Load	1.05786	1.05786	1.03740	1.06060	1.06100
Secondary Load	1.09486	1.08960	1.07180	1.09450	1.11800

Service Voltage	FE PA (West Penn Power, Allegheny Power Zone)	Potomac Edison MD	Potomac Edison WV	Mon Power
Transmission Load	1.02184	1.02245	1.02245	1.02233
Subtransmission Source			1.02646	
Subtransmission w/Tran Charge	1.04282			
Subtransmission Load	1.03578	1.03742	1.03807	1.03390
Primary Source			1.03070	1.03378
Primary Load	1.06383	1.07542	1.07691	1.06071
Secondary Load	1.09434	1.09513	1.09705	1.09033

Transmission Load - For Mon Power, Potomac Edison MD, Potomac Edison WV and FE PA (West Penn Power, Allegheny Power Zone), 138 kV and above. For JCP&L and FE PA (Penelec and MetEd Zones), 34.5 kV and above. For ATSI Ohio and FE PA (Penn Power, ATSI Zone), 69 kV and above.

Subtransmission Source - For Potomac Edison WV, ATSI Ohio and FE PA (Penn Power, ATSI Zone), service at source of subtransmission bus.

Subtransmission w/Tran Charge - For FE PA (West Penn Power, Allegheny Power Zone), service on low side of subtransmission to primary transformer.

Subtransmission Load - For Mon Power, Potomac Edison MD, Potomac Edison WV, and FE PA (West Penn Power, Allegheny Power Zone), 23 kV to 69 kV. For ATSI Ohio and FE PA (Penn Power, ATSI Zone), 23 kV to 34.5 kV.

Primary Source - For Mon Power and Potomac Edison WV, service at source of primary bus.

Primary Load - For Mon Power, Potomac Edison MD, Potomac Edison WV, FE PA (West Penn Power, Allegheny Power Zone; and Penn Power, ATSI Zone), and ATSI Ohio, 1 kV to 15 kV. For FE PA (Penelec and MetEd Zones) and JCP&L, 1 kV to 34.5 KV.

Secondary Load - For all FirstEnergy EDC Zones, below 1 kV.

Section II: Wholesale

The FirstEnergy EDCs are required to determine the THEO for each wholesale LSE operating in their respective FirstEnergy Zones and submit this information to PJM per practices under the PJM Documents. The following procedures and methodologies describe how THEO is determined.

Note: A wholesale LSE's THEO is determined in accordance with current and approved contractual obligations between FirstEnergy EDCs and the respective wholesale LSE. Should the current and approved agreements be silent on procedural matters regarding the determination and submittal of a wholesale LSE's THEO, the PJM Documents shall be used to establish such procedures including those outlined below.

FirstEnergy uses the following equation to determine a wholesale LSE's THEO in a FirstEnergy Zone. If the wholesale LSE serves load in more than one FirstEnergy Zone, the THEO is determined separately for each FirstEnergy Zone.

$$\text{THEO} = \sum_{x=1}^n (\text{Wholesale LSE's Interconnection Hourly Meter Reading} * (1.0 + \text{Applicable Loss Factor}))$$

where:

THEO = The wholesale LSE's hourly energy consumption in any given hour of the previous operating day in a FirstEnergy Zone

x = A specific Meter* included in the determination of the wholesale LSE's hourly energy consumption in a FirstEnergy Zone

n = The total number of Meters aggregated to determine the wholesale LSE's THEO

* For purposes of this document, the term "Meter" refers to the billing quality metering devices and related equipment owned by FirstEnergy and/or the wholesale LSE, located at or near the interconnection point (the "Interconnection") between the FirstEnergy distribution or transmission system and the wholesale LSE system, and used to measure the wholesale LSE's THEO.

Wholesale LSE's Interconnection Hourly Meter Reading (WIMR) = The quantity of energy consumed by the wholesale LSE at an individual wholesale LSE's Interconnection as shown on the Meter in a given hour, with an adjustment for certain behind-the-meter generation if applicable. Specifically, WIMR shall equal the actual interconnection point meter readings of the wholesale LSE plus the metered output of any generation resources that met all of the following three criteria during the given hour: (1) the resource was operating behind the interconnection meter, (2) the resource was participating in PJM markets or other wholesale markets, and (3) the output of the resource was wheeled across the wholesale LSE's system to the FirstEnergy distribution or transmission system.

Applicable Loss Factor (ALF) = The contractually or otherwise mutually determined loss factor as specified herein or as otherwise filed with FERC in effect to account for losses across the applicable distribution and transmission system to the LSE's system.

In the case where the actual WIMR is not obtained by FirstEnergy from one or more of the Meters in time to use in the calculation of the wholesale LSE's THEO, FirstEnergy will use an estimated WIMR in place of an actual WIMR for any missing hour(s) of Meter data.

The derivation of an estimated WIMR will be determined on a case-by-case basis and be dependent on the reason for and the duration of the event triggering the need for an estimated WIMR. FirstEnergy's WIMR methodology will take into account appropriate variables such as the history of the Interconnection Meter readings; load growth; the season of the year; temperature and any other variable(s) that could significantly affect the accuracy of the WIMR.

The following chart illustrates possible cases and outcomes of using this methodology to estimate the WIMR to be provided to PJM. The methodology used to generate a WIMR in a particular case is dependent on the reason the actual WIMR was not received.

Case	Reason	Primary (Day After) Reconciliation Estimate	Secondary (60-Day) Reconciliation Estimate
1	Short-term communication outage (<59 days)	Profile generated in FE Settlement System*	Not applicable if actual Meter data received
2	Long-term communication error (>=59 days)	Profile generated in FE Settlement System*	Not applicable if actual Meter data received via handheld device or manual entry
3	Short-term Meter/metering equipment malfunction (< 59 days)	Profile generated in FE Settlement System*	Estimate in Meter Data Management System*
4	Long-term Meter/metering equipment malfunction (>= 59 days)	Estimate in Meter Data Management System*	Estimate in Meter Data Management System*

* If the FE Settlement or Data Management System(s) data are not available or may not be accurate, data obtained from the wholesale LSE's Meter, SCADA or other accurate source will be used. Regardless of estimating methodology or data source, FirstEnergy will coordinate the estimate(s) of the wholesale LSE's THEO with the affected wholesale LSE.

Section III: Retail

The THEO for an LSE providing service to retail customers receiving distribution service from a FirstEnergy EDC shall adhere to the following:

- A. Where retail customers are interval metered and interval meter data is used for retail billing, interval meter data will be utilized for the THEO calculations.
- B. Where interval meter readings are not received in time for PJM settlement deadlines, estimates will be developed using customer specific profiles.
- C. Where retail customers do not have installed interval metering or use interval metering for billing, profiles will be utilized to distribute load into hourly values spanning the retail customer's billing period.
- D. All retail customer load will be grossed up for applicable transmission and distribution losses.
- E. Unaccounted For Energy for each hour will be allocated to LSEs based on their load ratio share of metered load, unless such approach is prohibited by the applicable regulatory body. The FirstEnergy EDC will provide monthly, on an informational basis, the Unaccounted For Energy hourly percentages that were applied to LSEs' hourly loads.

FirstEnergy does not determine the THEO for retail consumers of wholesale LSEs like municipal electric utilities and electric cooperatives.

Additional implementation details related to the determination of the THEO for retail LSEs and the process for submitting data for sub-account customers will be provided in the manual titled "Supplier Energy Obligation" posted under the "Supplier Registration" tab of the Supplier Support section of the FirstEnergy corporate website located here: <https://www.firstenergycorp.com/supplierservices>. The Manual may reflect differences based on the state utility commission requirements applicable to each FirstEnergy EDC, to the extent such requirements are not inconsistent with the requirements stated in this Attachment M-1.