**ERCOT Nodal Protocols**

**Section 18: Load Profiling**

**November 1, 2016**

[18 Load Profiling 18-1](#_Toc463443990)

[18.1 Overview 18-1](#_Toc463443991)

[18.2 Methodology 18-1](#_Toc463443992)

[18.2.1 Guidelines for Development of Load Profiles 18-1](#_Toc463443993)

[18.2.2 Load Profiles for Non-Interval Metered Loads 18-2](#_Toc463443994)

[18.2.2.1 Load Profiles for Non-Interval Metered Loads Without Distributed Generation 18-2](#_Toc463443995)

[18.2.2.2 Load Profiles for Non-Interval Metered Loads With Distributed Generation 18-2](#_Toc463443996)

[18.2.3 Load Profiles for Non-Metered Loads 18-3](#_Toc463443997)

[18.2.4 Default Load Profiles for Interval Data Recorders 18-3](#_Toc463443998)

[18.2.5 Identification of Weather Zones and Load Profile Types 18-3](#_Toc463443999)

[18.2.6 Daily Profile Creation Process 18-3](#_Toc463444000)

[18.2.7 Maintenance of the Load Profile Models 18-3](#_Toc463444001)

[18.2.8 Adjustments and Changes to Load Profile Development 18-3](#_Toc463444002)

[18.2.9 ERCOT Responsibilities in Support of Load Profiling 18-4](#_Toc463444003)

[18.3 Posting 18-4](#_Toc463444004)

[18.3.1 Methodology Information 18-4](#_Toc463444005)

[18.3.2 Load Profiling Models 18-5](#_Toc463444006)

[18.3.3 Load Profiles 18-5](#_Toc463444007)

[18.4 Assignment of Load Profile ID 18-5](#_Toc463444008)

[18.4.1 Development of Load Profile ID Assignment Table 18-5](#_Toc463444009)

[18.4.2 Load Profile ID Assignment 18-6](#_Toc463444010)

[18.4.3 Validation of Load Profile Type and Weather Zone Assignments 18-6](#_Toc463444011)

[18.4.3.1 Validation Tests 18-6](#_Toc463444012)

[18.4.3.2 Correction Procedure 18-7](#_Toc463444013)

[18.4.4 Assignment of Weather Zones to Electric Service Identifiers 18-7](#_Toc463444014)

[18.5 Additional Responsibilities 18-7](#_Toc463444015)

[18.5.1 ERCOT Responsibilities 18-7](#_Toc463444016)

[18.5.2 Market Participant Responsibilities 18-7](#_Toc463444017)

[18.6 Installation and Use of Interval Data Recorder Meters 18-7](#_Toc463444018)

[18.6.1 Interval Data Recorder Meter Mandatory Installation Requirements 18-7](#_Toc463444019)

[18.6.2 Interval Data Recorder Meter Optional Removal 18-9](#_Toc463444020)

[18.6.3 Interval Data Recorder Administration Issues 18-9](#_Toc463444021)

[18.6.4 MOU/EC Adherence to Interval Data Recorder Requirements 18-10](#_Toc463444022)

[18.6.5 Technical Requirements 18-10](#_Toc463444023)

[18.6.6 Peak Demand Determination for Non-Interval Data Recorder Premises 18-10](#_Toc463444024)

# Load Profiling

18.1 Overview

(1) The ERCOT retail market requires a 15-minute Settlement Interval. Load Profiling provides a cost-effective way of estimating and allocating 15-minute Load for Electric Service Identifiers (ESI IDs). This Section details how Load Profiling will be implemented in ERCOT when ERCOT does not receive 15-minute Settlement Interval consumption data and enables the accounting of energy usage in the market Settlement process.

18.2 Methodology

(1) A Load Profiling Methodology is the fundamental basis on which Load Profiles are created. The implementation of a Load Profiling Methodology may require statistical Sampling, engineering methods, econometric modeling, or other approaches. All Load Profiles shall conform to the ERCOT-defined Settlement Interval length.

(2) ERCOT has developed Load Profiles for:

(a) Non-interval metered Loads;

(b) Non-Metered Loads; and

(c) Interval Data Recorders (IDRs) including:

(i) Advanced Meters; and

(ii) IDR Meters.

(3) The following Load Profiling Methodologies are used:

|  |  |
| --- | --- |
| **Type of Load** | **Load Profiling Methodology** |
| Non-interval metered | Adjusted Static Models |
| Non-interval metered with Distributed Generation (DG)  | Adjusted Static Models and engineering estimates |
| Non-metered | Engineering estimates |

18.2.1 Guidelines for Development of Load Profiles

(1) In developing Load Profiles, ERCOT shall strive to achieve an optimal combination of the following:

(a) Give no unfair advantage to any Entity;

(b) Maximize usability by minimizing the total number of Load Profiles without compromising accuracy and cost effectiveness;

(c) Minimize the Load Profiles’ contribution to Unaccounted For Energy (UFE) over all Settlement Intervals, paying particular attention to higher cost periods;

(d) Reflect reasonably homogenous groups, with respect to Load shape and likely supply costs;

(e) Develop Load Profiles that are distinctly different;

(f) Develop Load Profiles for areas with incomplete Load data utilizing data from other sources, taking into account similarities and differences in Load;

(g) Accommodate development of unique rate classes;

(h) Use the most accurate Load research data available; and

(i) Develop Load Profiles based on readily identifiable parameters that are not subject to frequent change.

18.2.2 Load Profiles for Non-Interval Metered Loads

**18.2.2.1 Load Profiles for Non-Interval Metered Loads Without Distributed Generation**

(1) Load Profiles for non-interval metered Loads are created using statistical models developed from appropriate Load research sample data. These models are referred to as adjusted static. These model equations relate daily Settlement Interval Load patterns to relevant weather descriptors such as maximum and minimum dry-bulb temperature and humidity. Other daily characteristics such as day-of-the-week and sunrise/sunset times are also employed.

**18.2.2.2 Load Profiles for Non-Interval Metered Loads With Distributed Generation**

(1) Load Profiles for non-interval metered Loads that utilize DG (e.g., PhotoVoltaic (PV) or wind) will be created using a hybrid approach. At least a portion of the Load Profile will be based on Adjusted Static Models, while engineering estimates and/or generation models may be integrated as well or otherwise utilized.

18.2.3 Load Profiles for Non-Metered Loads

(1) Load Profiles for Non-Metered Loads, e.g. streetlights, traffic signals, security lighting, billboards, and parking lots are created using engineering estimates based on known criteria, such as hours of operation, with appropriate variation in sunrise/sunset times. Transmission Service Providers (TSPs) and/or Distribution Service Providers (DSPs) are responsible for providing monthly consumption (kWh) for non-metered Electric Service Identifiers (ESI IDs).

18.2.4 Default Load Profiles for Interval Data Recorders

(1) Default Load Profiles for IDRs will only be used when no historic Customer-specific interval data is available for Settlements. The Adjusted Static Model methodology will be used to create these Load Profiles.

(2) For details on the method to estimate IDR data for Settlement purposes, refer to Section 11, Data Acquisition and Aggregation.

18.2.5 Identification of Weather Zones and Load Profile Types

(1) ERCOT, in coordination with the appropriate Technical Advisory Committee (TAC) subcommittee, will identify Weather Zones and Load Profile Types based on an analysis of Load data, weather data, and sunrise/sunset data.

18.2.6 Daily Profile Creation Process

(1) ERCOT will maintain Load Profile Models to create profiles for the target Settlement day (backcast) and three days following the current day (forecast). ERCOT will automatically collect actual weather conditions and weather forecasts to enable the creation of the Load Profiles. ERCOT will maintain sunrise/sunset information for creating Load Profiles that require these parameters.

18.2.7 Maintenance of the Load Profile Models

(1) Upon request from the appropriate TAC subcommittee, ERCOT shall review the validity and accuracy of the Load Profile Models. ERCOT shall make the necessary recommendation to alleviate any situations whereby Load Profiles are no longer representative.

18.2.8 Adjustments and Changes to Load Profile Development

(1) Any changes to the Load Profiling Methodology, existing Load Profiles, and/or creation of new Load Profiles shall be in accordance with Load Profiling Guide Section 2.4, Load Profiling Guide Revision Procedure

(2) Section 9.18, Profile Development Cost Recovery Fee for a Non-ERCOT Sponsored Load Profile Segment, describes the process for compensating the originator of a Load Profile Segment change request by Retail Electric Providers (REPs) wishing to subscribe to the Load Profile Segment.

(3) ERCOT shall give at least 150 days Notice to all Market Participants prior to market implementation of any change to the Load Profiling Methodology, existing Load Profiles, or when any additional Load Profiles are developed. This Notice shall include a Load Profile change implementation timeline, which specifies dates on which key events during the Load Profile change process will take place. Upon any change in Load Profile Types, TSPs and/or DSPs shall send any revised Load Profile ID assignments required by the change to the registration system within the implementation timeline. After the new Load Profile(s) becomes available, changes to Load Profile Types will be effective on the next meter read date for each ESI ID.

(4) If one or more Load Profiles require changes to reduce excessive UFE, as determined by the appropriate TAC subcommittee, TAC may provide a shorter Notice period and implementation date, than otherwise provided herein, for such required changes to Load Profiles. If the Load Profiling Methodology requires changes to reduce excessive UFE, as determined by the appropriate TAC subcommittee, TAC may provide an expedited Notice period and implementation date.

18.2.9 ERCOT Responsibilities in Support of Load Profiling

(1) ERCOT is responsible for the development and maintenance of Load Profiles used in the ERCOT market. ERCOT shall follow the Load Profiling and Load research rules and procedures as specified in the Public Utility Commission of Texas (PUCT) rules.

18.3 Posting

(1) ERCOT will make available to Market Participants the following information in a timely manner, subject to confidentiality agreements, proprietary arrangements, and Public Utility Commission of Texas (PUCT) rules.

18.3.1 Methodology Information

(1) Upon request, ERCOT will provide a complete description of all supporting Load Profile Models, documentation and data used in preparation of Load Profiles, including:

(a) The historic Load data used to create the Load Profiles;

(b) Average interval accuracy of each Load Profile Model;

(c) Weather information;

(d) Sunrise/sunset information; and

(e) Any other data used for Load Profile development.

18.3.2 Load Profiling Models

(1) ERCOT will make available the Load Profile Models used to produce the forecast and backcast profiles for the Settlement process. The Load Profile Models shall be accessible via the Market Information System (MIS) Public Area in a downloadable format.

18.3.3 Load Profiles

(1) ERCOT will publish Load Profile data from the Load Profile creation process, in accordance with Section 18.2.6, Daily Profile Creation Process, to the MIS Public Area and through the common application program interface (API). Load Profile data will be made available to Market Participants for a period of two years.

(2) ERCOT will post to the MIS Public Area by 1000 Central Prevailing Time (CPT) each Business Day, forecasted Load Profiles for the three following days for each Load Profile Type and Weather Zone. Backcast Load Profiles for each Load Profile Type and Weather Zone will be available by 1000 CPT of the second Business Day following the backcast day. No data will be provided that will allow identification of individual Customers.

18.4 Assignment of Load Profile ID

(1) Each Electric Service Identifier (ESI ID) is required to be associated with an appropriate Load Profile ID. Upon request, ERCOT and the appropriate Technical Advisory Committee (TAC) subcommittee shall review the Load Profile ID assignment process, make recommendations for enhancements, and evaluate the integration of the validation and assignment processes. This Section details the process of assigning a Load Profile ID to each ESI ID.

18.4.1 Development of Load Profile ID Assignment Table

(1) ERCOT shall develop a cross-reference table of all Load Profile IDs used in the ERCOT market. The table shall clearly state class relationship to Load Profile Type. This information shall be made accessible on the Market Information System (MIS) Public Area. The cross-reference information shall be compiled and expressed in clear, unambiguous language, and in a manner that will minimize Load Profile ID assignment disputes.

18.4.2 Load Profile ID Assignment

(1) All Load Profile ID assignments shall conform with the valid combinations within the Load Profiling Guide Appendix D, Profile Decision Tree.

(2) Should there be any change in Load Profile ID assignment to any ESI ID, it will be the responsibility of the Transmission Service Provider (TSP) and/or Distribution Service Provider (DSP) to submit those changes to ERCOT.

(3) Competitive Retailers (CRs) may dispute a Load Profile ID assignment through the process described in Load Profiling Guide Section 14, Load Profile ID Dispute Procedure.

(4) TSPs and/or DSPs shall change the assignment of a Load Profile ID based on a dispute outcome finding in favor of a CR. If required to change an assignment, TSPs and/or DSPs must correct the assignment in their system and the ERCOT Customer registration system within three Business Days.

18.4.3 Validation of Load Profile Type and Weather Zone Assignments

(1) In this Section validation shall mean performing checks to ensure correct assignment of Load Profile Types and Weather Zones to ESI IDs.

**18.4.3.1 Validation Tests**

 (1) Validation tests of Load Profile Type and Weather Zone assignments, at a minimum, will be performed as follows:

(a) Initial Load Profile ID assignment for opt-in Entities;

(b) When a change is made in the Load Profile Type or Weather Zone assignment; and

(c) At least one time per year during the Business Annual Validation process; or

(d) At least one time per three years during the Residential Annual Validation process.

(2) Details of all validation tests will be specified in the Load Profiling Guide Section 11, Validation of Load Profile ID.

(3) Any Market Participant may request temporary changes to the yearly process for validating Load Profile IDs to address unusual circumstances. Such change requests shall be recommended by the appropriate TAC subcommittee and approved by TAC. Change requests as a result of an extreme event such as a hurricane or ice storm may be approved directly by TAC. Such requests, if approved by the TAC, shall be in effect only for the requested year.

**18.4.3.2 Correction Procedure**

(1) TSPs and/or DSPs are responsible for investigating each ESI ID identified by ERCOT or a Market Participant as having a potentially incorrect Load Profile ID assignment. Market Participants may dispute an assignment of a Load Profile ID as described in Load Profiling Guide Section 14, Load Profile ID Dispute Procedure.

18.4.4 Assignment of Weather Zones to Electric Service Identifiers

(1) TSPs and /or DSPs will assign each ESI ID to a Weather Zone, based on service address ZIP code.

(2) ERCOT will post to the MIS Public Area a mapping of a Weather Zone to appropriate Customer registration element used in assigning Weather Zones.

18.5 Additional Responsibilities

(1) This Section addresses responsibilities for Load Profiling not specified in other sections of the Protocols.

18.5.1 ERCOT Responsibilities

(1) ERCOT will develop, administer, and maintain Load Profiles in accordance with these Protocols. Disputes related to the accuracy or appropriateness of Load Profiles shall be handled in accordance with Section 9.14, Settlement and Billing Dispute Process.

18.5.2 Market Participant Responsibilities

(1) Market Participants shall use the appropriate Technical Advisory Committee (TAC) subcommittee as a forum for their input in the development and refinement of Load Profiles.

(2) Competitive Retailers (CRs) shall be responsible for reviewing any assignment of Load Profiles to Electric Service Identifiers (ESI IDs) they represent.

18.6 Installation and Use of Interval Data Recorder Meters

18.6.1 Interval Data Recorder Meter Mandatory Installation Requirements

(1) Interval Data Recorder (IDR) Meters are required and shall be installed and utilized for Settlement of Premises having either:

(a) A peak Demand greater than 700 kW (or 700 kVA in CenterPoint Energy’s service territory); or

(b) Service provided at transmission voltage (above 60 kV).

(2) For the IDR Meter installation process, refer to the Retail Market Guide Section 7.13.2.2, Mandatory Interval Data Recorder Installation Process.

(3) A Competitive Retailer (CR), upon a Customer’s request or with a Customer’s authorization, may have an IDR Meter installed and used for Settlement purposes at any associated Premise, in accordance with a Transmission and/or Distribution Service Provider’s (TDSP’s) tariff. Except as stated in paragraph (5) below, IDR Meters in place or installed after September 1, 1999 shall be used for Settlement. Once an IDR Meter is installed at a Premise and used for Settlement purposes, the given Premise shall continue to be settled with its interval data, except as stated in Section 18.6.2, Interval Data Recorder Meter Optional Removal. If a Customer or CR requests installation of an IDR Meter, the same Customer may not request removal of the IDR Meter for a period of 12 consecutive months following such installation.

(4) All non-metered Loads such as street lighting, regardless of the aggregation level, shall not be required to install IDR Meters under the IDR Meter Mandatory Installation Requirements. These Loads shall be settled using Load Profiles.

(5) IDR Meters previously used specifically for separating Non-Opt-In Entity (NOIE) Load from competitive Load shall be exempt from the requirement to use an IDR Meter for Settlement purposes, provided that the IDR Meter has been removed within 120 consecutive days after the NOIE has fully implemented Customer Choice. IDR Meters used for NOIE separation that do not meet the IDR Meter Mandatory Installation Requirements shall not be used for Settlement purposes.

(6) Transmission Service Providers (TSPs) and/or Distribution Service Providers (DSPs) responsible for any Load transfer schemes between the ERCOT Region and non-ERCOT Regions shall install an IDR Meter capable of measuring the Load served during the period the Load transfer is implemented.

18.6.2 Interval Data Recorder Meter Optional Removal

(1) The CR, upon a Customer’s request or with a Customer’s authorization, may request, in accordance with Public Utility Commission of Texas (PUCT) rules and regulations, removal of an IDR Meter at the Customer’s Premise unless an IDR Meter is required by Section 18.6.1, Interval Data Recorder Meter Mandatory Installation Requirements.

(2) An IDR Meter may not be removed if the existing Customer requested or authorized installation of an IDR Meter pursuant to paragraph (2) of Section 18.6.1, in which case the existing Customer may not request removal of the IDR Meter for a period of 12 consecutive months following such installation.

(3) The optional removal of an IDR Meter for a Premise is established as follows:

(a) Removal of an IDR Meter shall be allowed under the following conditions:

(i) Where the Demand at the Premise has never exceeded the IDR Meter Optional Removal Threshold of 150 kW (kVA) during the most recent 12 consecutive months; or

(ii) At the discretion of the TDSP, where an Advanced Meter can be provisioned or for a new Customer move-in by the TDSP, an IDR Meter may be replaced with an Advanced Meter at the discretion of the TDSP. Additionally, the Load Profile may be changed.

(b) For a new Customer move-in, at the discretion of the TDSP, where the request is communicated to the CR within 120 consecutive days of the move-in provided the new Customer’s Demand at the Premise has remained below the IDR Meter Mandatory Installation Requirements between the move-in date and the date the request is received, and that meter readings covering at least 45 consecutive days of usage at the Premise have been registered for the new Customer.

(4) Once an IDR Meter has been removed from a Premise by request, an IDR Meter may not be reinstalled at that Premise for a period of 12 consecutive months following such removal, unless a change in Customer(s) has taken place at that Premise during that 12 month period or unless the IDR Meter Mandatory Installation Requirements pursuant to paragraph (1) of Section 18.6.1 has been met. Removal or re-installation of an IDR Meter is subject to applicable tariff charges.

18.6.3 Interval Data Recorder Administration Issues

(1) ERCOT shall produce a report, in accordance with Retail Market Guide Section 7.13.2.1, Interval Data Recorder Meter Requirement Report, informing the appropriate Market Participants of Premises that have become subject to the provisions of paragraph (1) of Section 18.6.1, Interval Data Recorder Meter Mandatory Installation Requirements. This report shall track Market Participants’ timely adherence to this requirement and will be posted to the Market Information System (MIS) Certified Area.

18.6.4 MOU/EC Adherence to Interval Data Recorder Requirements

(1) Municipally Owned Utilities (MOUs) and Electric Cooperatives (ECs) that opt-in to Customer Choice must install IDR Meters at all Premises subject to the IDR Meter Mandatory Installation Requirements for metering prior to the effective date of their participation in the testing and integration requirements of ERCOT systems for Customer Choice.

18.6.5 Technical Requirements

(1) Regardless of data retrieval method, interval data shall be provided on a schedule that supports the requirements of final Settlement (typical monthly billing cycle).

(2) Interval data that is provided for Settlement shall be consistent with the ERCOT defined Settlement Interval.

18.6.6 Peak Demand Determination for Non-Interval Data Recorder Premises

(1) For the purpose of determining the peak Demand level for the IDR Meter Mandatory Installation Requirements in Section 18.6.1, Interval Data Recorder Meter Mandatory Installation Requirements, the Demand will be determined in accordance with PUCT rulemaking or through a consensus process with ERCOT and Market Participants. In the absence of a clear definition of peak Demand in the PUCT rulemaking, the following application shall be used in determining the peak Demand level for IDR Meter Mandatory Installation Requirements in Section 18.6.1. A Premise (Electric Service Identifier (ESI ID)) has a peak Demand greater than the applicable level in Section 18.6.1 when measured in any two billing months of the most recent 12 month period.

(2) CRs may dispute an IDR Meter assignment through the ERCOT Settlement dispute process, described in Section 9.14, Settlement and Billing Dispute Process.

(3) ERCOT shall be responsible for receiving and storing Demand information necessary for determining mandatory IDR Meter installations.