Load Profiling and Distribution Loss Factors Protocols

<u>Applicability</u>

1. This protocol can be used by all ESPs to report hourly energy consumption for their end use customers in SCE's service area that do not have an hourly interval meter and are eligible for using load profiles to allocate cumulative meter usage into hourly intervals.

2. The purpose of this protocol is to convert non-hourly (monthly) usage recorded at the point of metering to hourly received energy at the UDC-ISO interconnection point for use in settlement with the ISO.

3. This protocol does not need to be used by ESPs for forecasting or customer billing. SCE's calculation of PX energy credits may differ from this protocol based on CPUC orders.

Conventions and Definitions

4. The time when a meter is read is defined as 11:59 p.m. of the day prior to when the meter is actually read.

5. The Billing Cycle is defined to start at 12:00 a.m. on the day of the prior meter read, and to end at 11:59 p.m. of the day before the most recent meter read. Example: the billing cycle for a meter read on April 20 and May 20 starts at 12:00 a.m. on April 20 and ends at 11:59 p.m. on May 19.

6. Monthly Usage is defined as the difference between the most recent meter read and the previous meter read adjusted for any necessary corrections.

7. At least five decimal points of accuracy should be maintained in hourly energy calculations. Final reported hourly kWh values should maintain at least two decimal points of accuracy.

<u>Data Sources</u>

8. SCE will provide the ESP with the customer's rate group (used to identify the appropriate load profile) and distribution loss factors category in the Customer Information Service Request, which is provided after a Direct Access Service Request is submitted.

Note: SCE will send a new CISR whenever there is a qualifying change in status such as when a customer changes rate schedule.

9. SCE has posted static load profiles for the following 14 rate groups: Domestic, Domestic Master-Metered, GS-1, GS-2, TOU-GS, PA-1, PA-2, AG-TOU, TOU-PA-5, TC-1, Street Lighting, TOU-8 Secondary, TOU-8 Primary, TOU-8 Subtransmission. These static load profiles are available for downloading at the Internet address: https://www.sce.com/wps/portal/home/regulatory/load-profiles (subject to change)

10. SCE implemented dynamic load profiles for Domestic, GS-1 and GS-2 rate schedules, beginning with data for May 18, 1998. Their use is mandatory and no party may use static load profiles for these rate schedules. Currently, SCE posts the dynamic load profiles within three working days after the transaction day. Dynamic load profiles are available at the Internet address: https://www.sce.com/wps/portal/home/regulatory/load-profiles/dynamic-load-profiles (subject to change)

11. Each rate group static load profile consists of 365 24-hour days. Static and dynamic load profile data for each hour represents the rate group's usage (average kW for the hour).

12. SCE's Distribution Loss Factors are available by hour and by customer voltage level. These loss factors are based on a system load forecast and will be available one day prior to each transaction day. Distribution Loss Factors will be available at the Internet address: https://www.sce.com/wps/portal/home/partners/partnerships/direct-access/operations (subject to change)

13. Where SCE is responsible for metering, SCE will maintain customer usage data, meter reads, and customer account number on a Meter Data Management Agent server for retrieval by ESPs.

Hourly Energy Calculation

14. Each ESP will need to maintain customer rate group and distribution loss factor category information for each of its customers.

15. Each customer's hourly usage (meter level) is computed using cumulative energy usage over the billing cycle from the MDMA server and hourly load profile information for the billing cycle, as extracted from the applicable sources identified in items 8, 9 and 12 above. The steps are as described in items 16 and 17 below.

16. ESPs will calculate the load profile as a fraction from the load profiling data posted on the Internet.

> • Sum the hourly load profile kW values for all days of the billing cycle, for the customer load profile rate group.

> • Divide each hour load profile kW value by the sum derived above, to compute the hourly fraction of usage.

> • Customer's hourly usage in each hour is the billing cycle usage times hourly fraction calculated above.

Example: Meter read on April 20 and May 20, usage 600 kWh. Customer's load profile rate group is residential. The sum of the hourly load profile kW for April 20 through May 19 is 417.331. The first 28 days are from the static load profile, the last two days are from the dynamic load profile. Hour 1 of April 20 load profile kW is 0.405 kW. The hourly fraction of usage for hour 1 of April 20 is 0.405/417.331=0.000970. Then the hourly usage for this customer in hour 1 of April 20, is equal to 600*0.000970= 0.582272 kWh.

17. For customers with Time-Of-Use meters, that is meters which record usage by on-peak, midpeak, off-peak periods, load profiling should be performed separately with the data for each TOU period.

> • Sum the hourly load profile kW values for all days in the billing cycle to create separate totals for each TOU period for the customer load profile rate group.

> • Divide each hour load profile kW value by the sum derived above, to compute the hourly fraction of usage for each TOU period.

> • Customer's hourly usage in each hour of the TOU period is the billing cycle usage for each TOU period times hourly fraction calculated above.

For example, meter read on April 20 and May 20, customer rate group TOU-GS, customer's mid-peak period usage is 10,000 kWh. The sum of the hourly kW for the mid-peak period of April 20 through May 19 is 18,412.090. The hourly fraction of mid-peak usage for hour 9 of April 20 is 48.946/18,412.090=0.002658. Then the hourly usage for this customer in hour 8 of April 20, is equal to 10,000 kWh *0.002658= 26.58 kWh.

18. The hourly usage (for ISO reporting) will be calculated by multiplying the hourly usage (meter level) by the appropriate distribution loss factor. Example: For the example in 16 above, customer's distribution loss factor category is secondary. For hour 1 of April 20 the distribution loss factor is 0.054533. The hourly usage reported to ISO is then equal to 0.582272 kWh *(1+0.054533)= 0.614025 kWh.