



## Charging Network Provider Data Submittal Requirements Utilization and Reliability Data

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This document is intended to provide information on the data submittal requirements for charging network providers (“CNP”) that operate electric vehicle chargers funded, in part or in full, from the California Energy Commission (“CEC-Funded Chargers”).

The California Energy Commission (“CEC”) sets data reporting requirements for CEC-Funded Chargers in agreements funded by the CEC (“Program-Specific Requirements”). As the charging network provider for CEC-Funded Chargers under certain agreements funded by the CEC, the CNP is therefore subject to certain Program-Specific Requirements.

Program-Specific Requirements can vary from CEC-funded agreement to CEC-funded agreement. In an effort to simplify and streamline Program-Specific Requirements applicable to CNP, CNP and CEC agree that CNP will provide Reliability and Utilization data for CEC-Funded Chargers (“Program Data”), and submission of Data in accordance with this DSA satisfies the Program-Specific Requirements applicable to CNP.

This document contains direction on the submittal of Program Data to give clarity to CNPs about the type of data that must be submitted to CEC, per Program-Specific Requirements.

- Reliability Data: reflects the operational status and performance of CEC-Funded Chargers.
- Utilization Data: reflects the usage patterns and operational characteristics of CEC-Funded Chargers.

## Reliability Data

The sections below provide background on relevant requirements within CEC Program-Specific Requirements and describe the reliability data that must be transmitted to CEC.

The CEC will provide CNP separate files that represent a data dictionary for the reporting requirements described, which will specify the exact data fields and parameters for data transmittal.

### **Section 1: Relevant Terms and Conditions in CEC Funding Agreements with CEC Funding Agreement Recipients**

CEC sets requirements for chargers in the terms and conditions of the grant agreements it executes with grant funding recipients. Among other requirements, Program-Specific Requirements for CEC-Funded Chargers provision the following requirements, which the CEC identifies as relevant information for the purposes of this Agreement.

Uptime requirement for all chargers: The funding recipient shall ensure that the charging port uptime for each charging port installed in the project is at least 97 percent of each calendar year for six years after the beginning of operation.

- OCPP requirements for networked chargers: the CNP that operates the CEC-Funded Chargers shall meet the bulleted criteria below to record, retain, and transmit the relevant data for networked chargers specified.
  - The CNP must have an API of the CEC's choosing to permit the charging network provider to transfer the data required in this section directly to the CEC or the CEC's designee within 60 minutes of the record's generation.
  - The CNP must have Subset Certification of the Charging Station Management System in the Open Charge Alliance OCPP Certification Program for OCPP version 2.0.1, published May 24, 2023, or a subsequent version of OCPP for Core, Advanced Security, and ISO 15118 Support functionalities.
  - The charging network provider's central system must have connection to the chargers using OCPP version 2.0.1 or a subsequent version of OCPP. This does not preclude the additional use of other communication protocols.
  - The charging network provider and chargers must transmit the following protocol data units between the Central Management System and the charger(s) as specified in OCPP version 2.0.1 or a subsequent version of OCPP:
    - AuthorizeRequest shall be transmitted to the Central Management System by the charger.
    - AuthorizeResponse shall be transmitted by the Central Management System to the charger.
    - BootNotificationResponse shall be transmitted by the Central Management System to the charger in response to any received BootNotificationRequest.
    - HeartbeatRequest shall be transmitted to the Central Management System by the charger on a set interval.
    - HeartbeatResponse shall be transmitted to the charger by the Central Management System in response to any received HeartbeatRequest.
    - RequestStartTransactionRequest shall be transmitted by the Central Management System to the charger as specified in OCPP 2.0.1 or a subsequent version of OCPP.
    - StatusNotificationRequest shall be transmitted by the charger to the Central Management System any time the charger or an associated charging port's operative status changes.
    - BootNotificationRequest shall be transmitted by the Central Management System to the charger as specified in OCPP 2.0.1 or a subsequent version of OCPP.
    - NotifyEventRequest shall be transmitted by the Central Management System to the charger as specified in OCPP 2.0.1 or a subsequent version of OCPP.
    - TransactionEventRequest shall be transmitted to the Central Management System by the charger as specified in OCPP 2.0.1 or a subsequent version of OCPP.

- The optional field meterValue must be populated when the eventType field is set to either “Started” or “Ended.”
- When populated, the sub-subfield Value of the subfield SampledValue of the field meterValue shall be transmitted in Watt-hours (Wh).
- When populated, the sub-sub-subfield unit of the sub-subfield unitOfMeasure of the subfield SampledValue of the field meterValue shall be set to the default string, “Wh.”
- When populated, the sub-sub-subfield multiplier of the sub-subfield unitOfMeasure of the subfield SampledValue of the field meterValue shall be set to the default integer, 0 (zero).
- When the meterValue field is populated, the measurand sub-subfield of the SampledValueType subfield, of the field meterValue shall be populated as specified in OCPP 2.0.1 or a later version.

## Section 2 Recordkeeping

CNP shall retain the remote monitoring data below for 2 years from the date of each record’s generation. CNP shall provide remote monitoring data to the CEC within 10 business days of request. This will include:

- Digital records in a comma separated values file unless another file format is approved by the CEC for the request. Included in these submittals are all instances of the following Protocol Data Units, specified in OCPP 2.0.1, that are transmitted between the charger and the central system.
  1. AuthorizeRequest
  2. AuthorizeReponse
  3. BootNotificationRequest
  4. HeartbeatResponse
  5. RequestStartTransactionRequest
  6. StatusNotificationRequest
  7. TransactionEventRequest
  8. NotifyEventRequest
  9. BootNotificationResponse
- A clear and understandable *Data Dictionary* that describes each data element and any associated units with all digital records.

## Section 3 Data Transmittals

CNP shall prepare and submit to the CEC *Quarterly Reports on Charger and Charging Port Reliability and Maintenance*. This report must conform to a format approved by the CEC and is provided for six years after the charging ports are operational. Each report must include:

- A summary of charging port downtime, including total downtime and the number and frequency of downtime events, the minimum, median, mean, and maximum duration, and the causes of downtime events. Downtime shall be determined on a per charging port basis by summing the durations of all downtime events during the reporting period. The duration of a downtime event shall be the longest of the following periods:

- (A) The time between a BootNotificationResponse transmitted by the Central Management System and the last HeartbeatResponse transmitted by the Central Management System prior to the BootNotificationResponse. The timestamps in the relevant BootNotificationResponse and HeartbeatResponse shall be used to quantify downtime.
  - (B) The time between the earliest record that a charging port is not capable of successfully dispensing electricity or otherwise not functioning as designed and the time it is available to deliver a charge. The first record that a charger is not capable of successfully dispensing electricity or otherwise not functioning as designed includes, but is not limited to, consumer notification, internal diagnostics, or inspection, whichever is earliest.
- A summary of excluded downtime, including total excluded downtime and the number and frequency of excluded downtime events, the minimum, median, mean, and maximum duration, and the causes of excluded downtime events. 'Excluded Downtime' includes:
    - **Before Initial Installation:** Downtime before the charging port was initially installed.
    - **Grid Power Loss:** Downtime during which power supplied by a third-party provider is not supplied at levels required for minimum function of the charging port. This may include, but is not limited to, service outages due to utility equipment malfunction or public safety power shutoffs. This does not include power generation or storage equipment installed to serve the charger(s) exclusively. Documentation from power provider detailing outage is required to claim this as excluded downtime.
    - **Outage for Preventative Maintenance or Upgrade:** Downtime caused by any preventative maintenance or upgrade work that takes the charging port offline. This must be scheduled at least two weeks in advance of the charger being placed in an inoperative state. The maximum downtime that can be excluded for preventative maintenance or upgrade work is 24 hours for any 12-month period.
    - **Vandalism or Theft:** Downtime caused by any physical damage to the charger or station committed by a third party. This may include, but is not limited to, theft of charging cables, damage to connectors from mishandling, or damage to screens. A maximum of 10 days may be claimed as excluded downtime for each vandalism or theft event. A police report or similar third-party documentation is required to claim this as excluded time.
    - **Natural Disasters:** Downtime caused by any disruption of the charging port due to a natural event such as a flood, earthquake, or wildfire that causes great damage. Third party documentation such as news reporting must be provided along with a narrative of the direct impacts to the charger(s) to claim this as excluded downtime.
    - **Communication Network Outages:** Downtime caused by loss of communication due to cellular or internet service provider system outages. A Communication Network Outage can be claimed as excluded downtime provided the chargers default to a free charge state during communication losses. A free charge state is when the charger is operational and dispenses energy free of charge to any consumer.

- **Operating Hours:** Hours in which the charging port is in an operative state but that are outside of the identified hours of operation of the charging station.
  - A summary and calculation of uptime. Each report shall include the uptime percentage of each charging port (Uptime) installed and operated as part of this Agreement for the reporting period. Charging port uptime shall be calculated as:

$$UU = \frac{TT - DD + EE}{TT} * 100\%$$

U = Charging Port Uptime

T =

Q1 reporting period = 129,600 minutes, except for a leap year, which is 131,040 minutes.

Q2 reporting period = 131,040 minutes.

Q3 and Q4 reporting periods = 132,480 minutes.

D = Total charging port downtime for the reporting period, in minutes.

E = Total charging port excluded downtime in the reporting period, in minutes.

- A charge attempt summary for each charging port. The charge attempt summary shall include, as defined below, the total number of charge attempts, the total number of successful charge attempts, the total number of failed charge attempts, and the successful charge attempt rate for the reporting period.
- **Charge Attempt.** A charge attempt occurs upon transmission of one or more of the protocol data units identified in following subsections A. through G. below between the Central Management System and the charger as specified in OCPP Version 2.0.1 or a subsequent version of OCPP. Any number of the Protocol Data Units described in A. through G. of this subsection below timestamped within a three-minute interval shall be counted as one charge attempt. Any number of TransactionEventRequest described in D. through G. of this subsection below transmitted with identical identifier strings in the transactionId subfield of the transactionInfo field shall be counted as one charge attempt.

A. An AuthorizeRequest message transmitted by the charger to the Central Management System.

The AuthorizeRequest message shall not count as a charge attempt if the Central Management System responds with an AuthorizeResponse message with the status subfield of the idTokenInfo field set to any of the following responses:

- “Blocked”
- “ConcurrentTx”
- “Expired”
- “Invalid”
- “NoCredit”
- “NotAllowedTypeEVSE”

- “NotAtThisLocation”
  - “NotAtThisTime”
  - “Unknown”
- B. A RequestStartTransactionRequest message transmitted by the Central Management System to the charger.
  - C. A StatusNotificationRequest message transmitted by the charger to the Central Management System with the connectorStatus field set to “Occupied”.
  - D. A TransactionEventRequest message transmitted by the charger to the Central Management System with the eventType field set to “Started”.
  - E. A TransactionEventRequest message transmitted by the charger to the Central Management System with the triggerReason field set to “CablePluggedIn”.
  - F. A TransactionEventRequest message transmitted by the charger to the Central Management System with the chargingState subfield of the transactionInfo field set to “EVConnected”.
  - G. A TransactionEventRequest message transmitted by the charger to the Central Management System with the chargingState subfield of the transactionInfo field set to “Charging”.
- Charging Session. A charging session begins and ends as follows:
    - A. A charging session begins when the charger transmits TransactionEventRequest to the Central Management System with the chargingState subfield of the transactionInfo field set to “Charging.”
      - In the event that multiple TransactionEventRequest protocol data units are transmitted with the chargingState subfield of the transactionInfo field set to 'Charging' AND identical identifier strings in the transactionId subfield of the transactionInfo field, the charging session shall begin when the first of those protocol data units are sent. Which protocol data unit was sent first shall be determined based on the lowest value in the seqNo field.
    - B. A charging session ends when the charger transmits a subsequent TransactionEventRequest to the Central Management System with the chargingState subfield of the transactionInfo field set to any of the following values:
      - “EVConnected”
      - “SuspendedEV”
      - “SuspendedEVSE”
      - “Idle”
    - C. The identifier string contained in the transactionId subfield of the transactionInfo field must be identical in the messages described in A. and B. of this subsection above.
    - D. The date and time found in the timestamp field of the messages described in A. and B. of this subsection above shall be used to determine the start and stop time of a charging session.
  - Successful Charge Attempt. A successful charge attempt is a charge attempt that is followed by either A. or B. of this subsection below prior to another charge attempt.

- A. A charging session that lasts for 5 minutes or longer as determined by the timestamps described above
  - B. The stoppedReason subfield of the transactionInfo field of the TransactionEventRequest protocol data unit ending the charging session is set to one of the following:
    - “EnergyLimitReached”
    - “Local”
    - “Remote”
    - “SOCLimitReached”
- Failed Charge Attempt. A failed charge attempt is any charge attempt that is not followed by a successful charge attempt prior to a subsequent charge attempt.

# Utilization Data

The sections below provide background on relevant requirements within CEC Program-Specific Requirements and describe the utilization data that must be transmitted to CEC.

The CEC will provide CNP separate files that represent a data dictionary for the reporting requirements described, which will specify the exact data fields and parameters for data transmittal.

Required data fields include but are not limited to:

- Charging network provider name
- Charger site address, city, zip code
- Charger make, model, and manufacturer serial number
- EV service equipment charger and charging port ID
- Peak Power (kW)
- Charging session start/end date and times
- Charging session energy consumed (kW)
- Plug in/un-plugged timestamp Coordinated Universal Time (UTC)
- Charging interval peak demand
- Charging interval start/end times
- Charging interval energy consumed
- If a bidirectional charger, energy (kWh) discharged back to grid or facility
- Total transacted amount
- Payment method

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