

Guidelines for Operators of Charging Stations

This guideline provides an overview of the data provisions set out in "EUROPEAN PARLIAMENT AND COUNCIL REGULATION (EU) 2023/1804 of 13 September 2023 on the establishment of infrastructure for alternative fuels and repealing Directive 2014/94/EU" (hereinafter referred to as the AFI-Regulation), and to what extent these provisions are supported by the commonly used market standard for data exchange for charging stations, Open Charge Point Interface (hereinafter referred to as OCPI).

The AFI Regulation covers alternative fuels such as hydrogen and biogas, whereas OCPI is only used for electric vehicles. Therefore, this guideline is not comprehensive for all types of fuel data as defined by the AFI Regulation and its associated provisions.

The guideline is primarily aimed at the relevant market players, operators, and owners of charging stations, who, according to the AFI Regulation, are required to make data available. The specific provisions regarding this can be found in Article 20 of the AFI Regulation.

AFI-Regulation, delegated acts og OCPI

Article 20, paragraph 2 of the AFI Regulation specifies which data types must be made available. In addition, the European Commission has issued an implementing regulation and delegated acts to add further data types, supplement the AFI Regulation with common technical requirements for a common API interface, and establish data specifications. The delegated acts thus provide more detailed specifications of the static and dynamic data that must be made available than the AFI Regulation itself. It should be noted that these acts have not yet been finally adopted, meaning that changes to their content may occur.

The following first reviews the data provisions in Article 20, paragraph 2, and how they are supported by data available in OCPI, followed by the additional provisions set out in the delegated acts and their relation to OCPI. Regarding the delegated acts, it should be noted that this guideline is based on the draft version of the delegated acts and not on the final adopted version, as it was not available at the time this guideline was drafted.

This guideline considers OCPI v.2.2.1 (document version 2.2.1-d2) and v.2.3.0. With regard to future versions of OCPI, the EV Roaming Foundation is working on version 3.0. The review version of 3.0 has formed the basis for an assessment of data in future versions. For an introduction and more information on OCPI, please refer to <https://evroaming.org/ocpi/>.

The delegated acts and OCPI v.2.2.1/v.2.3.0

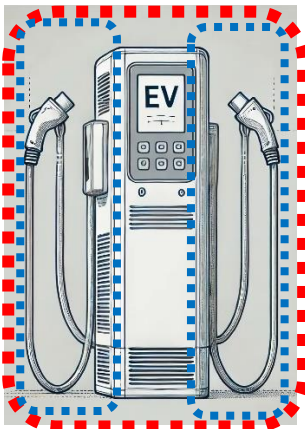
There is not a complete alignment between OCPI versions 2.2.1/2.3.0 and the specifications in the delegated acts, but the European Commission expects that OCPI and other relevant standards will be updated over time to align with the data specifications in the delegated acts.

Operators of publicly accessible charging points can thus make data available via OCPI and, by continuously upgrading to new versions of OCPI, provide data in accordance with the data specifications in the delegated acts.

When comparing the data specifications in the delegated acts with the object descriptions in OCPI, there may be different situations:

- Data is found in data fields in OCPI
 - There may be a one-to-one correspondence between the data specifications and OCPI.
 - It may be necessary to fill in non-mandatory data fields in OCPI.
 - There is a content-related alignment (the content of the data covers the same aspects, but for example, country codes may be provided in a different format or there may be other enumerations).
- Data can be derived from data fields in OCPI (e.g., a quantity can be derived as the number of items in a list).
- Data is not available in OCPI.
 - Future versions of OCPI may include the required data.

The delegated acts use two levels for data about charging stations (station and point) as well as two types of data (static and dynamic data). In the AFI-Regulation, a charging station is defined as a physical facility that has at least one charging point. A charging point can only serve one vehicle at a time. The number of charging points at a charging station is crucial for how many vehicles can be charged at the station. Below is an illustration of the understanding of what constitutes a station, shown in red, and what constitutes a point, shown in blue.



In OCPI v.2.2.1/v.2.3.0, reference is made to data in the Location module, i.e., object structures with Location, EVSE, and Connector objects, as well as data on prices in the Tariff module. In OCPI v.2.2.1/v.2.3.0, there is no distinction between static and dynamic data, but it is expected to be introduced in version 3.0 along with a number of other changes.

When using OCPI v.2.2.1/v.2.3.0, one must be aware of filling in non-mandatory data fields in order to provide information specified in the delegated acts. That is, the requirements for filling in data fields are more stringent compared to the descriptions in the OCPI standard.

For the Location objects following applies:

- At least one of the fields `operator` and `owner` must be filled in, but it is recommended to fill in both.
- The Field `state` must be filled in.
- The Field `postal_code` must be filled in.

- The Field `opening_times` must be filled in.
- The Field `energy_mix` must be filled in.
- The Field `parking_spaces` must be filled in with a non-empty list (OCPI v.2.3.0).

For the EVSE-objekter following applies:

- The Field `evse_id` must be filled in.
- The Field `parking` must be filled in (OCPI v.2.3.0).

For the Connector-objekter following applies:

- Feltet `tariff_ids` must be filled in with a non-empty list.

The data specifications from the delegated acts are presented below, with an indication of their relation to the data in OCPI v.2.2.1/v.2.3.0. The delegated acts include delegated regulations and an implementing regulation. The tables are from the implementing regulation, which contains the most detailed data specifications.

The table contains a series of columns, where the gray ones are copied from the delegated acts. The blue columns indicate how data can be made available in OCPI v.2.2.1/v.2.3.0. The reference to OCPI in the column “OCPI-v.2.2.1-ds (OCPI v.2.3.0)” is structured as *[objektnavn].[feltnavn]*. The last column may contain comments on the relationship.

Table A - Static data for publicly accessible recharging and refuelling infrastructure for alternative fuels								OCPI	
Number	Type of alternative fuels infrastructure	Type of data	Data category	Data type	Data level	Description	Data format	OCPI v.2.2.1-d2 (OCPI v.2.3.0)	Remark
1	Recharging and refuelling infrastructure of alternative fuels	Static	General information	Legal name of the recharging or refuelling point operator or owner	Station	Legal name of the operator responsible for the management and operation of the publicly accessible recharging and refuelling points for alternative fuels, or, in accordance with the arrangements between them, the owner of those points, which provides a recharging or refuelling service to end users, including in the name and on behalf of a mobility service provider.	Discrete value (string/text)	Location.operator Location.owner	At least one of the two fields must be filled in. Note: Article 20, paragraph 2, letter a, point 4 of the Regulation specifies that both the contact details for the owner and the operator of the charging station and the fuel station must be provided.
2	Recharging and refuelling infrastructure of alternative fuels	Static	General information	Commercial name of the recharging or refuelling point operator or owner	Station	Commercial name of the recharging or refuelling point operator or, in accordance with the arrangements between them, the owner of those points as it is presented to the public when offering recharging or refuelling services.	Discrete value (string/text)	Location.operator Location.owner	At least one of them must be filled in. Note: Article 20, paragraph 2, letter a, point 4 of the Regulation specifies that both the contact details for the owner and the operator of the charging station and the fuel station must be provided.
3	Recharging and refuelling infrastructure of alternative fuels	Static	General information	Number of recharging or refuelling points	Station	Number of recharging points or refuelling points that can be used at the same time in a recharging or refuelling station. An electric recharging point may have one or more connectors, however only one can be used at the same time.	Numeric value (number)	Location.evses	The information is in Location.evses, which is a list of EVSE objects – the numeric value should be derived as the number of objects in the list.
4	Recharging and refuelling infrastructure of alternative fuels	Static	General information	Service support	Station	Information regarding the presence of physical persons attending the recharging or refuelling station.	Discrete value (string/text)	N/A	
5	Recharging and refuelling infrastructure of alternative fuels	Static	General information	Helpdesk telephone	Station	Telephone number of the helpdesk, managed by the recharging or refuelling point operator or owner, that is readable in the recharging station.	Country code <space> complete number	Location.help_phone (OCPI v.2.3.0)	

							including the regional code (if there is one) ...		
6	Recharging and refuelling infrastructure of alternative fuels	Static	General information	Facilities offering associated services to the user	Station	The recharging or refuelling station has in its immediate surrounding area facilities offering associated services to customers. The following facilities and services shall be reported (yes/no): <ul style="list-style-type: none"> • Roofed recharging or refuelling parking location. • Illuminated recharging or refuelling parking location. • Catering service (e.g., food, beverage) • Bathrooms. • Resting facilities. • Other (expressed as free text). 	Discrete value (string/text) in list format	Location.facilities og Locaiton.parking_places (OCPI v.2.3.0)	There is no exact match between the two lists of facilities. In OCPI v.2.3.0, Parking objects contain information about roofing (roofed) and lighting (lighting)
7	Recharging and refuelling infrastructure of alternative fuels	Static	Geographic location	Global Navigation Satellite System (GNSS) geographic location information	Station	Latitude and longitude coordinates of the recharging or refuelling station.	Latitude and Longitude coordinated in WGS84 decimal standard.	Location.coordinates	
8	Recharging and refuelling infrastructure of alternative fuels	Static	Geographic location	Additional geographic location information	Station	Additional concrete information that may be relevant to reach the recharging or refuelling station in certain situations, such as parking level, parking lot, etc.	Discrete/numeric value (combination of string/text and numeric)	Location.directions	Alternatively, EVSE.floor_level may be relevant information.
9	Recharging and refuelling infrastructure of alternative fuels	Static	Geographic location	Country	Station	Name of the Member States where the recharging or refuelling station is located.	Format according to standard ISO 3166-1 alpha-2 codes	Location.country	Note: OCPI provides the ISO 3166-1 alpha-3 code.
10	Recharging and refuelling infrastructure of alternative fuels	Static	Geographic location	Region	Station	Name of the Member States region where the recharging or refuelling station is located, expressed in the nomenclature of territorial units for statistics (NUTS) 1 level.	Format according to NUTS-1 geocode standard	Location.state	The NUTS 1 code for Denmark is DK0
11	Recharging and refuelling infrastructure of alternative fuels	Static	Geographic location	City or town	Station	Name of the Member States city or town where the recharging station is located. It shall include information on the municipality or stop name (e.g., highway, area) if not directly associated with the city or town.	Discrete value (string/text)	Location.city	

12	Recharging and refuelling infrastructure of alternative fuels	Static	Geographic location	Postal code	Station	Postal code where the recharging or refuelling station is located, including potential additional identification information attending to the concrete characteristics of the postal code in that location.	Discrete/numeric value (combination of string/text and numeric)	Location.postal_code	
13	Recharging and refuelling infrastructure of alternative fuels	Static	Geographic location	Address name	Station	Where relevant, name of the street where the recharging or refuelling station is located, including the number.	Discrete/numeric value (combination of string/text and numeric) indicating the street name followed by the street number	Location.address	
14	Recharging and refuelling infrastructure of alternative fuels	Static	Accessibility	Opening time	Station	Information regarding the time periods when a recharging or refuelling station is open and accessible to the public for recharging or refuelling, where applicable taking into account the time schedules of the building/facility that gives physical access to that recharging or refuelling station.	Discrete/numeric value (combination of string/text and numeric) indicating the week days followed by the time ranges when a recharging or refuelling station is open and accessible to the public	Location.opening_times	
15	Recharging and refuelling infrastructure of alternative fuels	Static	Accessibility	Time zone	Station	Time zone where the recharging or refuelling station is located. This data type shall be used in combination with other data types to ensure that the availability of a recharging or refuelling point is shown correctly and to make reservation possible and accurate.	Format according to standard ISO 8601	Location.time_zone	Note: OCPI uses IANA TZ-values.
16	Recharging and refuelling infrastructure of alternative fuels	Static	Accessibility	Vehicle-type compatibility	Station	Type of vehicle that may use a recharging or refuelling station. The type of vehicle shall be specified in accordance with UNECE vehicle categorisation ¹ . The following vehicle categories shall be reported (yes/no): <ul style="list-style-type: none"> • Two and three wheel vehicles and quadricycles (L) • Passenger cars (M1) 	Discrete/numeric value (combination of string/text and numeric) in list format	Parking.vehicle_types (OCPI v.2.3.0)	In OCPI v.2.3.0, Location.parking_places contains a list of Parking-objects, each of which includes a non-empty list of vehicle types (VehicleType) for

						<ul style="list-style-type: none"> • Buses and coaches (M2 or M3) • Vans (N1) • Trucks (N2 or N3) • Other (expressed as free text) 			the respective parking space.
17	Recharging and refuelling infrastructure of alternative fuels	Static	Accessibility	Vehicle specifications permitted	Station	<p>Where relevant, specific limitations to the weight and dimensions of vehicles (including trailers, semi-trailers, etc.)², allowed to access the recharging or refuelling station. The following vehicle specifications, including trailers, shall be reported (yes/no):</p> <ul style="list-style-type: none"> • Maximum vehicle weight/mass. • Maximum vehicle height. • Maximum vehicle length. • Maximum vehicle width. 	Discrete/numeric value (combination of string/text and numeric) indicating maximum vehicle weight/mass in tonnes and maximum vehicle height, length and width in metres, including trailer.	Parking.max_vehicle_weight, Parking.max_vehicle_height, Parking.max_vehicle_length og Parking.max_vehicle_width (OCPI v.2.3.0)	In OCPI v.2.3.0, Location.parking_places contains a list of Parking-objects, each of which includes fields with any maximum vehicle dimensions for the respective parking space.
18	Recharging and refuelling infrastructure of alternative fuels	Static	Accessibility	Number of parking spaces	Station	Number of parking spaces that may be used at a recharging or refuelling station to conduct a recharging or refuelling session. It may be different to the number of recharging or refuelling points of that station.	Numeric value (integer number)	N/A	The number is not directly present in OCPI, but the number can be derived from the number of Parking-objects in Location.parking_places in OCPI v.2.3.0.
19	Recharging and refuelling infrastructure of alternative fuels	Static	Accessibility	Number of parking spaces for people with disabilities	Station	Number of parking spaces with accessible recharging or refuelling points for people with disabilities in compliance with relevant accessibility requirements defined in existing standards, guidelines or national legislation.	Numeric value (integer number)	N/A	<p>The number is not directly present in OCPI, but the number can be derived from the number of EVSEs where EVSE.parkingRestriction is "DISABLED".</p> <p>In OCPI v.2.3.0, the number can be derived from the number of Parking-objects in Location.parking_places with the vehicle type</p>

									(VehicleType) "DISABLED".
20	Recharging and refuelling infrastructure of alternative fuels	Static	Payment options	Payment device with bank card reader	Station	Indication on the existence (yes/no) of a payment terminal with the ability to enable the bank card (debit/credit) to be physically inserted in the terminal for the Europay, Mastercard and Visa (EMV) chip to be read.	Discrete value (string/text)	EVSE.capabilities	EVSE.capabilities includes "CHIP_CARD_SUPPORT" as well as "CREDIT_CARD_PAYABLE" and "DEBIT_CARD_PAYABLE".
21	Recharging and refuelling infrastructure of alternative fuels	Static	Payment options	Payment device with a contactless functionality that is at least able to read payment cards	Station	Indication on the existence (yes/no) of a payment terminal that is at least able to read bank cards (debit/credit) with a contactless functionality (e.g., Near Field Communication - NFC).	Discrete value (string/text)	EVSE.capabilities	EVSE.capabilities includes "CONTACTLESS_CARD_SUPPORT" as well as "CREDIT_CARD_PAYABLE" and "DEBIT_CARD_PAYABLE".
22	Recharging and refuelling infrastructure of alternative fuels	Static	Payment options	Other ad-hoc payment option	Station	Indication on the existence (yes/no) of the following ad-hoc payment options: <ul style="list-style-type: none"> • Specific (i.e., dynamically generated) QR code • Payment through a website (e.g., static QR code) • Cash • Other (expressed as free text) 	Discrete value (string/text)	N/A	
23	Recharging and refuelling infrastructure of alternative fuels	Static	Payment options	Additional information about payment providers accepted	Station	Additional information indicating the payment service providers that accept electronic payments in the ad hoc payment option.	Discrete value (string/text) in list format	N/A	
24	Recharging and refuelling infrastructure of alternative fuels	Static	Payment options	Contract-based (subscription) payment option	Station	Possibility to pay for a recharging or refuelling service on the basis of a contract-based payment (yes/no) between the end user and the mobility service provider.	Discrete value (string/text)	EVSE.accepted_service_providers (OCPI v.2.3.0)	A boolean value can be derived in OCPI v.2.3.0 based on lists of service providers offering contract-based payment options on EVSE objects – the lists may be empty.

Table B - Further static data for publicly accessible recharging infrastructure								OCPI	
Number	Type of alternative fuels infrastructure	Type of data	Data category	Data type	Data level	Description	Data format	OCPI-2.2.1-d2 (OCPI v.2.3.0)	Bemærkning
1	Electric recharging infrastructure	Static	General information	Recharging Point ID code (Connector)	Point	Unique ID of the recharging point, which includes the unique ID code of the recharging point operator issued by the IDRO (ID Registration Organisation). It supports the identification, including for billing and booking purposes, of the recharging point within a recharging station.	Discrete/numeric value (combination of string/text and numeric)	EVSE.evse_id	
2	Electric recharging infrastructure	Static	General information	Number of connectors	Point	Number of connectors in a recharging point. An electric recharging point may have one or more connectors, however only one can be used at the same time.	Numeric value (integer number)	EVSE.connectors	The information is in EVSE.connectors, which is a list of Connector-objects – the numeric value should be derived as the number of objects in the list.
3	Electric recharging infrastructure	Static	General information	Type of connector (plug)	Point	Identification of connectors available in each recharging point within a recharging station: <ul style="list-style-type: none"> • Type 2 (AC) • Combo2/CCS (DC) • Megawatt Charging System (MCS) • CHAdeMO (DC) • Other (expressed as free text) 	Discrete value (string/text) in list format	Connector.standard	
4	Electric recharging infrastructure	Static	Type of current	Type of current	Point	Type of electric current flow delivered at the recharging point, differentiating between alternating current (AC) or direct current (DC)	Discrete value (string/text) differentiating between AC and DC	Connector.powertype	
5	Electric recharging infrastructure	Static	Power output	Recharging station maximum power	Station	Total maximum power that the recharging points of the station can provide at the same time.	Numeric value (number) expressed in kW	Location.evses og EVSE.connectors samt Connector.max_voltage, Connector.max_amps og Connector.max_electrical_power	If all charging points at a location can deliver maximum power at the same time, the total maximum power can be calculated from the maximum power values of the EVSE objects, as provided by the maximum power on the Connector-object.

									In OCPI 3.0, Location.max_power is expected to be added.
6	Electric recharging infrastructure	Static	Power output	Recharging point maximum power	Point	Maximum power that can be provided by the recharging point to the electric vehicle at a given time.	Numeric value (number) expressed in kW	Connector.max_electr ic_power	
7	Electric recharging infrastructure	Static	Payment options	Mobility service providers offering contract-based recharging	Station	Information indicating the name of those mobility service providers that are offering contract-based payment options and are accepted in a recharging station.	Discrete value (string/text) in list format	EVSE.accepted_servic e_providers (OCPI v.2.3.0)	
8	Electric recharging infrastructure	Static	Automatic authentication	Plug-and-charge	Point	Possibility of conducting automatic authentication and authorisation of the recharging session on the basis of a contract-based payment concluded between the end user and the mobility service provider (yes/no) in a recharging point.	Discrete value (string/text)	EVSE.capabilities Connector.capabilitie s (OCPI v.2.3.0)	EVSE.capabilities includes "RFID_READER". Connector.capabilities can indicate support for ISO 15118-2 and ISO 15118-20 in OCPI v.2.3.0.
9	Electric recharging infrastructure	Static	Smart recharging functionalities	Smart recharging services	Point	Possibility of using smart recharging services in a recharging point. The possibility of using the following smart recharging services must be indicated (yes/no): <ul style="list-style-type: none"> • Remote monitoring and control recharging. • User preference configuration for recharging power optimization. • Bidirectional recharging. • Other (expressed as free text) 	Discrete value (string/text)	EVSE.capabilities	EVSE.capabilities includes some of the requested services.
10	Electric recharging infrastructure	Static	Renewable electricity	Electricity supplied is 100 % renewable	Station	The recharging station exclusively supplies 100% renewable electricity (yes/no) (EU Guarantee of Origin (GO) scheme).	Discrete value (string/text)	Location.energy_mix	Location.energy_mix includes is_green_energy. It may be empty in OCPI, but it must be filled in.

Table F - Dynamic data for publicly accessible recharging and refuelling infrastructure								OCPI	
Number	Type of alternative fuels infrastructure	Type of data	Data category	Data type	Data level	Description	Data format	OCPI-v.2.2.1-d2 (OCPI v.2.3.0)	Bemærkning
1	Recharging and refuelling infrastructure of alternative fuels	Dynamic	Functionality	Operational status	Point	Capability of the recharging or refuelling point to perform its function. The operational status of a recharging or refuelling point expressed as operational or non-operational: <ul style="list-style-type: none"> Operational: it can be used in normal conditions during the opening time that is accessible to the public. Non-operational: it cannot be used due to a technical problem or maintenance works. 	Discrete value (string/text) expressed as operational or non-operational	EVSE.status	
2	Recharging and refuelling infrastructure of alternative fuels	Dynamic	Functionality	Availability	Point	Possibility to use a recharging or refuelling point at present time and, when technically possible, at a specific future time. The availability of a recharging or refuelling point expressed as in use, reserved or not in use: <ul style="list-style-type: none"> In use: it is occupied Reserved: it is booked by an end user Not in use: it is non-occupied, thus available for use 	Discrete value (string/text) expressed as in use, reserved or not in use	EVSE.status	
3	Recharging and refuelling infrastructure of alternative fuels	Dynamic	Price	Ad hoc price	Station	For recharging infrastructure, indication of the end user price for recharging on an ad hoc basis, including all applicable price components. These must be indicated and expressed in national currency per kWh, national currency/min, or national currency/session. Any other price component that may apply in addition must be equally indicated. For refuelling infrastructure, indication of the end user price for refuelling on an ad hoc basis, expressed in national currency per kg of fuel.	Discrete/numeric value (combination of string/text and numeric) in list format expressed for recharging infrastructure in national currency...	Connector.tariff_ids og Tariff	Information on connectors about tariffs (Connector.tariff_ids) refers to Tariff-objects from the Tariff module, which may have the tariff type "AD_HOC_PAYMENT" in Tariff.type. If Tariff.type is not filled in, the tariff applies to all sessions. Note: In OCPI 3.0, Tariff Associations are expected to be introduced as an object.