

Vejledning til operatører af ladestandere

Denne vejledning indeholder en gennemgang af de bestemmelser for data, som ”EUROPA-PARLAMENTETS OG RÅDETS FORORDNING (EU) 2023/1804 af 13. september 2023 om etablering af infrastruktur for alternative drivmidler og om ophævelse af direktiv 2014/94/EU” (i det følgende omtalt som AFI-forordningen) fastlægger, og i hvilken grad de understøttes af den på markedet alment anvendte standard for udveksling af data for ladestandere, Open Charge Point Interface (i det følgende omtalt som OCPI).

AFI-forordningen omfatter alternative drivmidler bl.a. brint og biogas, mens OCPI alene anvendes til el. Derfor er vejledningen ikke fyldestgørende for alle typer af drivmidlers data, som AFI-forordningen med tilhørende bestemmelser fastlægger.

Vejledningen henvender sig primært til de relevante aktører på markedet, operatører og ejere af ladestandere, som jf. AFI-forordningen, er pålagt at stille data til rådighed. De nærmere bestemmelser herom fremgår af AFI-forordningen art. 20.

AFI-forordningen, delegerede retsakter og OCPI

AFI-forordningens artikel 20, stk. 2, bestemmer hvilke datatyper, der skal stilles til rådighed. Derudover har EU-kommissionen fremsat en gennemførelsesforordning og delegerede retsakter for at tilføje yderligere datatyper, supplere AFI-forordningen med fælles tekniske krav til en fælles API-grænseflade og fastsætte specifikationer for data. De delegerede retsakter specificerer således de statiske og dynamiske data, der skal stilles til rådighed mere detaljeret end selve AFI-forordningen. Der tages forbehold for, at disse retsakter endnu ikke er endeligt vedtaget, hvorfor der kan forekomme ændringer af indholdet.

I det følgende gennemgås først bestemmelser for data i artikel 20, stk. 2, og hvordan de understøttes af data til rådighed i OCPI og dernæst de yderligere bestemmelser fastlagt i delegerede retsakter og deres sammenhæng til OCPI. Det skal til de delegerede retsakter bemærkes, at vejledningen tager udgangspunkt i høringsversionen af de delegerede retsakter og dermed ikke i den endelige vedtagne version. Den forelå ikke på tidspunktet for udarbejdelsen af nærværende vejledning.

I denne vejledning betragtes OCPI v.2.2.1 (dokumentversion 2.2.1-d2) og v.2.3.0. Mht. fremtidige versioner af OCPI, arbejder EV Roaming Foundation på version 3.0. Review-version af 3.0 har dannet grundlag for en vurdering af data i fremtidige versioner. Der henvises til <https://evroaming.org/ocpi/> for en introduktion og mere information om OCPI.

De delegerede retsakter og OCPI v.2.2.1/v.2.3.0

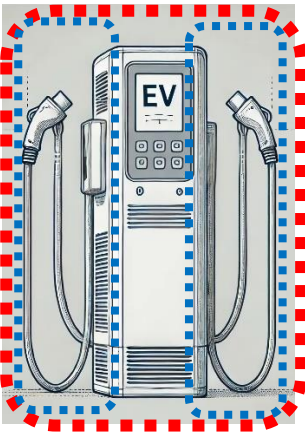
Der er ikke en fuldstændig overensstemmelse mellem OCPI-versionerne 2.2.1/2.3.0 og specifikationerne i de delegerede retsakter, men EU-kommissionen forventer, at OCPI og andre relevante standarder med tiden vil blive opdateret til at passe med dataspecifikationerne i de delegerede retsakter.

Operatører af offentligt tilgængelige ladepunkter kan således gøre data tilgængelige via OCPI og ved løbende opgradering til nye versioner af OCPI stille data til rådighed i overensstemmelse med data-specifikationerne i de delegerede retsakter.

Når man sammenligner dataspecifikationerne i de delegerede retsakter med objektbeskrivelser i OCPI, kan der være forskellige situationer:

- Data findes i datafelter i OCPI
 - Der kan være én-til-én overensstemmelse mellem dataspecifikationerne og OCPI
 - Det kan være nødvendigt at udfylde ikke-obligatoriske datafelter i OCPI
 - Der er en indholdsmæssig overensstemmelse (indholdet i data omhandler de samme aspekter, men fx kan landekoder være angivet i et andet format eller der kan være andre enumerationer)
- Data kan afledes af datafelter i OCPI (fx kan et antal afledes som antallet af elementer i en liste)
- Data findes ikke i OCPI
 - Fremtidige versioner af OCPI kan inkludere de påkrævede data.

De delegerede retsakter benytter to niveauer for data om ladestander (station og punkt) samt to typer af data (statiske og dynamiske data). I AFI-forordningen er en ladestation defineret som et fysisk anlæg der har mindst ét ladepunkt. Et ladepunkt kan kun betjene ét køretøj ad gangen. Antallet af ladepunkter på en ladestation er afgørende for hvor mange køretøjer der kan oplades på stationen. Nedenfor illustreres forståelse af hvad der udgør en station, vist med rødt, og hvad der udgør et punkt, vist med blå.



I OCPI v.2.2.1/v.2.3.0 henvises til data i Location-modulet, dvs. objektstrukturer med Location-, EVSE- og Connector-objekter, samt data om priser i Tariff-modulet. I OCPI v.2.2.1/v.2.3.0 er der ikke en skellen mellem statiske og dynamiske data, men det forventes at indføres i version 3.0 sammen med en række andre ændringer.

Når man benytter OCPI v.2.2.1/v.2.3.0 skal man være opmærksom på udfyldelser af ikke-obligatoriske datafelter for at levere informationer specificeret i de delegerede retsakter. Dvs. kravene til udfyldelse af datafelter er skærpet i forhold til beskrivelserne i OCPI-standardens.

For Location-objekter gælder følgende:

- Mindst ét af felterne `operator` og `owner` skal udfyldes, men det anbefales at udfylde begge.
- Feltet `state` skal udfyldes.
- Feltet `postal_code` skal udfyldes.
- Feltet `opening_times` skal udfyldes.
- Feltet `energy_mix` skal udfyldes.
- Feltet `parking_spaces` skal udfyldes med en ikke-tom liste (OCPI v.2.3.0).

For EVSE-objekter gælder følgende:

- Feltet `evse_id` skal udfyldes.
- Feltet `parking` skal udfyldes (OCPI v.2.3.0).

For Connector-objekter gælder følgende:

- Feltet `tariff_ids` skal udfyldes med en ikke-tom liste.

Dataspecifikationerne fra de delegerede retsakter er gengivet efterfølgende med en angivelse af sammenhæng til data i OCPI v.2.2.1/v.2.3.0. De delegerede retsakter omfatter delegerede forordninger og en gennemførelsesforordning. Tabellerne er fra gennemførelsesforordningen, der indeholder de mest detaljerede dataspecifikationer.

Tabellen indeholder en række kolonner, hvor de grå er kopieret fra de delegerede retsakter. De blå angiver hvorledes data kan stilles til rådighed i OCPI v.2.2.1/v.2.3.0. Henvisningen til OCPI er i kolonnen "OCPI-v.2.2.1-ds (OCPI v.2.3.0)" opbygget ved *[objektnavn].[feltnavn]*. Den sidste kolonne kan indeholde bemærkninger til sammenhængen.

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)	Bemærkning
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	Mindst ét af de to felter skal være udfyldt. NB: Forordningens artikel 20 stk. 2, litra. a, nr. 4, fastlægger at både kontaktoplysninger for ejeren og operatøren af ladestationen og tankstationen skal angives.
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	Mindst ét af de skal være udfyldt. NB: Forordningens artikel 20 stk. 2, litra. a, nr. 4, fastlægger at både kontaktoplysninger for ejeren og operatøren af ladestationen og tankstationen skal angives.
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	Informationen er i Location.evses som er en liste med EVSE-objekter - numerisk værdi skal afledes som antallet af objekter i listen.
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 including the regional	Location.help_phone (OCPI v.2.3.0)	

							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 Location.parking_places (OCPI v.2.3.0)	Der er ikke eksakt sammenfald mellem de to lister af faciliteter. I OCPI v.2.3.0 indeholder Parking-objekter oplysninger om overdækning (roofed) og lys (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	Alternativt kan EVSE.floor_level være 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	NB: OCPI leverer I 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	NUTS 1 koden for Danmark er 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	Static	Geographic location	Postal code	Station	Postal code where the recharging or refuelling station is located, including potential additional	Discrete/numeric value	Location.postal_code	

	infrastructure of alternative fuels					identification information attending to the concrete characteristics of the postal code in that location.	(combination of string/text and numeric)		
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	NB: OCPI benytter 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) • Buses and coaches (M2 or M3) • Vans (N1) 	Discrete/numeric value (combination of string/text and numeric) in list format	Parking.vehicle_types (OCPI v.2.3.0)	I OCPI v.2.3.0 indeholder Location.parking_places en liste med Parking-objekter, der hver indeholder en ikke-tom liste med køretøjstyper (VehicleType) for den pågældende parkeringsplads.

						<ul style="list-style-type: none"> • Trucks (N2 or N3) • Other (expressed as free text) 			
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)	I OCPI v.2.3.0 indeholder Location.parking_places en liste med Parking-objekter, der hver indeholder felter med evt. maksimale dimensioner på køretøjer for den pågældende parkeringsplads.
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	Antallet er ikke direkte til stede i OCPI, men antallet kan afledes via antallet af Parking-objekter i Location.parking_places i 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	Antallet er ikke direkte til stede i OCPI, men antallet kan afledes via antallet af EVSEs hvor EVSE.parkingRestriction er "DISABLED". I OCPI v.2.3.0 kan antallet afledes via antallet af Parking-objekter i Location.parking_places med køretøjstype (VehicleType) "DISABLED".
20	Recharging and refuelling	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	Discrete value (string/text)	EVSE.capabilities	EVSE.capabilities indeholder "CHIP_CARD_SUPPORT"

	infrastructure of alternative fuels					in the terminal for the Europay, Mastercard and Visa (EMV) chip to be read.			" samt "CREDIT_CARD_PAYABLE" og "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 indeholder "CONTACTLESS_CARD_SUPPORT" samt "CREDIT_CARD_PAYABLE" og "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)	Boolsk værdi kan afledes i OCPI v.2.3.0 ud fra lister med tjenesteudbydere med kontraktbaserede betalingsmuligheder på EVSE-objekter – listerne kan være tomme.

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	Informationen er i EVSE.connectors som er en liste med Connector-objekter - numerisk værdi skal afledes som antallet af objekter i listen.
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_volta ge, Connector.max_ampe rage og Connector.max_electr ic_power	Hvis alle ladepunkter på en lokation kan levere maksimal effekt på samme tid, kan den maksimale effekt beregnes fra maksimale effekter på EVSE-objekter givet ved maksimal effekt på Connector-objekt.

									I OCPI 3.0 forventes Location.max_power tilføjet.
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 indeholder "RFID_READER". Connector.capabilities kan angive understøttelse af ISO 15118-2 og ISO 15118-20 i 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 indeholder nogle efterspurgte 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 indeholder is_green_energy. Kan være tom i OCPI, men skal udfyldes.

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 på connector om tariffer (Connector.tariff_ids) som refererer til Tariff-objekter fra Tariff-modulet, som kan have tariffypen "AD_HOC_PAYMENT" i Tariff.type. Hvis Tariff.type ikke er udfyldt, gælder tariffen for alle sessioner. NB: I OCPI 3.0 forventes Tariff Associations indført som objekt.