THE EASTERN TRANSPORTATION COALITION

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Using the EV Charging Use Data Specification for NEVI Programs

Guidance and Sample Contract Language

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Disclaimer

The content of this technical guidance does not necessarily reflect the views of the Eastern Transportation Coalition or its members. The author appreciates the contributions of acknowledged parties to this guide. However, their review does not imply endorsement of the content of this guidance. Moreover, the model and example contract language contained in this report is meant for illustrative purposes only and should not be construed as legal advice. Every effort has been made to ensure that the content of this report is complete and accurate. Any remaining errors are the sole responsibility of the author.

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Introduction

Federal regulations governing the National Electric Vehicle Infrastructure (NEVI) program require states and direct funding recipients to collect and report data on the reliability, cost, and use of federally funded charging equipment. These reporting requirements, while simple in concept, can cause substantial complications and confusion in practice, particularly if the parameters of participant data sharing are not well defined up front in contracts or other agreements with charging providers funded by the programs. Moreover, if reporting is not standardized across programs, both participants and program managers will spend substantial time and resources reinventing the wheel.

The EV Charging Use Data Specification (https://evchargingspec.org) provides a readily available solution, with an open source and standardized resource for State DOTs that can reduce risk of complications with NEVI reporting. This technical brief provides guidance and model language to assist with adoption of the specification within NEVI program contracts and other materials.

Background

NEVI program regulations defined in CFR Title 23 Part 680 prescribe quarterly reporting of session level information on charging equipment use, including time, energy delivered, peak power, error codes, and payment method. Additionally, states must report outages and uptime for each funded station. States are also required to submit annual data on maintenance costs and one-time data on funding recipients and charger deployment costs. Finally, while not a direct requirement for federal reporting, NEVI requires the public sharing of charging station attributes, pricing, and availability.[1]

State and local governments along with electric utilities have long required that charging program participants share usage and other data. However, in many prior programs, these requirements have been underspecified in advance which can lead to practical challenges collecting and analyzing these data as problems invariably arise as program participants begin to submit data.

Common problems include:

1. Data format inconsistencies (such as differing date/time conventions, representation of duration) which require costly, time-consuming, and error-prone data-integration and normalization procedures.
2. Inconsistent field names which both require normalization in order to integrate data into a single reporting system and can lead to ambiguity in the meaning of reported data.
3. Inaccurate data identifiers for individual charging equipment, which can make it impossible to attribute usage data to a specific charger.
4. Complications sharing data with third party managers of program data.

When these problems arise midstream in a program, they increase cost, slow down data collection, and reduce the effectiveness of reporting requirements and the value of reported data. The EV Charging Use Data Specification is meant specifically to mitigate these problems by providing detailed upfront guidance on how data should be reported by program participants.

[1] National Electric Vehicle Infrastructure Standards and Requirements, Title 23 Code of Federal Regulations Part 680

EV Charging Use Data Specification

The EV Charging Use Data Specification (specification) is designed to facilitate efficient and effective communication of reporting and compliance data. It is entirely open source, free to be used and adapted by anyone. The most recent version of the specification is hosted on GitHub[2] and is open for comment, and suggested revisions.

The specification was developed to be useful for a broad spectrum of programs housed at the federal, state, and local level, or funded by utilities. This means that the specification organization is genericized and includes data fields and structures not strictly required by the NEVI program, such as program registration. However, the specification supports all data reporting requirements included in the NEVI Standards and Requirements. Moreover, states that choose to use the EV Charging Use Data Specification for NEVI program reporting may easily integrate NEVI data with data from other funding programs that have been collected in accordance with the specification.

Like other specifications meant to facilitate the transmission of data, the specification defines the type, structure, and format of data communicated by EV charging providers to charging funding program administrators. The specification covers both the one-time data collection required to maintain registry of funded chargers and collect cost data and ongoing data collection requirements such as session data. Additions to the core specification include suggested data validations and reporting metrics. The specification can be implemented using any file type capable of storing structured data (including formats such as CSV, XML and JSON), and can be implemented across a broad array of technologies and software.

While the specification is individually useful to programs and can be put in effect immediately, its value grows substantially as more jurisdictions adopt the specification within their own programs. This creates efficiencies of scale where data providers can engineer their reporting systems and software to report to a single format, and where jurisdictions and third-party data aggregators or managers can use standardized methods and software to manage reported data.

EV-ChART Compatibility

The Joint Office of Energy and Transportation is developing a tool for use in NEVI reporting called Electric Vehicle Charging Analytics and Reporting Tool (EV-ChART). As of the publication of this guidance, information on EV-ChART and how it will be put into use is limited. However, the EV Charging Use Data Specification is compatible with all required data and most other reporting fields outlined in the data reporting guidelines in *Electric Vehicle Charging Analytics and Reporting Tool (EV-ChART) Data Format and Preparation Guidance Version 1.0.*[3] This means that State DOTs that adopt the specification will be able to easily convert compliance data reported in specification format to that required by EV-ChART.

Implementing the Specification

The specification is designed so that it can be directly included in program contracts, RFPs, and/or other materials. However, it may also be incorporated by reference by specification version. Box 1 contains example language to directly incorporate the specification into contract language.

[2] https://github.com/AtlasPublicPolicy/charging-use-spec/
[3] https://driveelectric.gov/files/ev-chart-data-guidance.pdf

Box 1. Example data requirement language

[Contracted Party] agrees to provide to [Department] all data described in [Section] in this contract in the format required by the department in [Section(s)]. Data must be provided in a file format and transfer method to be determined by [Department]. [Department] may approve the use of [Contracted Party]-supplied data portal at the discretion of [Department] and if compliant with data format guidelines and other [Department] criteria.

The remainder of this section describes the core specification, its applicability to NEVI programs and includes (in boxes) specification text formatted to be useful in contracts, RFPs and other program documentation. Specification text included in the body of this report contains only the components that are strictly necessary to comply with the data reporting and *non-real-time* third-party data sharing requirements included in the NEVI Standards and Requirements. Additional formatted specification text covering all fields included in the core EV Charging Use Data Specification may be found in Appendix A.

Definitions of specific terms used in this guidance (such as charging *station, charging port, and connector)* are consistent with the definitions provided in CFR Title 23 Part 680.104.[4]

Data Types and Valid Entries

Data types define how information is represented in a computer system. Consistent data types allow for seamless integration of data from different networks and sources into a single reporting dataset or database. Ensuring that reported data conforms to the correct data type reduces need to transform or normalize data into a single format and reduces errors and ambiguities. Box 2 contains a reference for the data types used by fields in the EV Charging Use Spec.[5]

Box 2. Data Type Reference

1. Data Types.
    a. boolean – Binary value of TRUE or FALSE.
    b. datetime – Timestamp (following RFC 3339) in the format YYYY-MM-DDTHH:mm:ssZ and in coordinated universal time (UTC). For dates without time information, HH:mm:ss may be omitted. Example 2022-01-01T01:01:00Z represents January 1, 2022 at 12:01 UTC.
    c. float/(n) – Number field that may contain up to seven significant digits. Float fields that include a number in parentheses must contain that exact number of significant digits. Example: float 2.3552, float(2) 2.36.
    d. integer – Number field that may not contain decimal digits. Example 2 or 5 but not 2.1.
    e. string/(n) – Text field of UTF-8 characters (letters, numbers, punctuation, and symbols). String fields that include a number in parentheses must contain that exact number of characters.

The EV Charging Use Data Specification includes string fields with a limited number of valid entries. Valid entries may be in reference to common indicators, such as state or ZIP codes, or sets of categorical indicators such as connector type. In each case, ensuring consistency for these fields improves accuracy and limits need to translate inputs from one format to another. Box 3 contains a reference for the categorical indicators that are distinct within the EV Charging Use Data Specification.

[4] https://www.ecfr.gov/current/title-23/section-680.104
[5] This reference may be found in its most recent version here: https://github.com/AtlasPublicPolicy/charging-use-spec/blob/main/field-type-and-format-reference.md

Box 3. Valid Entry Reference

2. Allowable Valid Entries.
    a. ZIP Code – Standard 5-digit U.S. Postal Code.
    b. State Code – Standard 2-character code for states and territories.
    a. Connector Type
        i. CCS
        ii. CHAdeMO
        iii. J1772
        iv. NACS
    b. Charger Type
        i. level_1
        ii. level_2
        iii. DCFC
    c. Access Type
        i. public
        ii. commercial_only
    d. Operating Status
        i. operational
        ii. under_construction
        iii. planned
        iv. decommissioned
    e. Distributed Energy Resource Type
        i. solar
        ii. stationary_battery
        iii. wind
        iv. fuel_cell
        v. other
    f. Payment Method
        i. cash
        ii. credit_card_terminal
        iii. membership
        iv. application
        v. phone
        vi. plug-charge
        vii. roaming
        viii. other

Charger Registration Data Fields and Format

NEVI standards and requirements specify one-time reporting of the name and address of responsible parties, cost, and capacity of onsite distributed energy resources and the costs of purchasing, installing, and connecting the chargers to the electrical grid (energization). They also require public sharing of location- and port-specific characteristics. In the specification, these data are contained in the project, station, and port registration tables.

Collecting registration data as chargers are being deployed allows State DOTs to have an accurate inventory of what has been deployed and, crucially, the identification information necessary to track usage and other metrics for specific chargers over time.

Project Registration

Project registration is tied to a single funded charger deployment and records project-level information such as funding source and amounts. While the concept of a *project* is not distinct from *station* in NEVI Standards and Requirements the EV Charging Use Specification tracks funding at the project (or funding application) level. This structure allows the specification to support multiple projects (distinct funding allocations) at the same station location. Due to NEVI reporting rules and program structure, each NEVI-funded station will register as an individual project in the specification.

Box 4 contains the list of EV Charging Use Data Specification fields from the Project Registration tables necessary to comply with NEVI one-time reporting requirements. Text in brackets should be replaced with references to section containing data types.

Box 4. Project Registration Reference

1. Project Registration. [Contracted Party] agrees to provide [Department] project registration data in accordance with the formats, field names and data types in [section 1(a-n)]. Individual records will reflect a single funded project and all fields will be included.
    a. Project ID
        i. Field name: project_id
        ii. Description: Unique identification code specific to individual funding application or contract. Project ID is supplied by [Department] upon approval of funding.
        iii. Data type: string [section 1(e)]
    b. Station ID
        i. Field name: station_id
        ii. Description: Unique identity specific to the physical location of the station (site) funded by the project. Station ID must be same as the permanent station identifier provided to third parties pursuant to CFR 23 § 680.116(c)(1).
        iii. Data type: string [section 1(e)]
    c. Real Property Cost
        i. Field name: property_cost
        ii. Description: Cost (in USD) to acquire real property on which to install funded chargers.
        iii. Data type: float(2) [section 1(c)]
    d. Charging Equipment Cost
        i. Field name: equipment_cost
        ii. Description: Cost (in USD) to acquire funded charging equipment.
        iii. Data type: float(2) [section 1(c)]
    e. Charging Install Cost
        i. Field name: install_cost
        ii. Description: Cost (in USD) for all labor and materials costs (including electrical equipment) necessary to necessary to install charging equipment.
        iii. Data type: float(2) [section 1(c)]
    f. Distributed Energy Resource Equipment Costs
        i. Field name: der_equipment_cost
        ii. Description: Cost (in USD) to acquire distributed energy resource equipment.
        iii. Data type: float(2) [section 1(c)]

g. Distributed Energy Resource Install Costs
    i. Field name: der_install_cost
    ii. Description: Cost (in USD) for all labor and materials costs (including electrical equipment) necessary to install distributed energy resources equipment.
    iii. Data type: float(2) [section 1(c)]
h. Utility Distribution Costs
    i. Field name: distribution_costs
    ii. Description: Cost (in USD) of contributions in aid of construction for line extensions and upgrades necessary to install chargers.
    iii. Data type: float(2) [section 1(c)]
i. Utility Service Costs
    i. Field name: service_costs
    ii. Description: Cost (in USD) of contributions in aid of construction for service upgrade costs for customer transformers, poles, meters, and other utility service equipment necessary to install chargers.
    iii. Data type: float(2) [section 1(c)]

Station Registration

Station registration fields include site-level information about collocated groups of individual charging ports. These data record the physical characteristics of the site. With the exception of distributed energy resource information, the fields described in this table are not part of federal reporting requirements. They are instead found in § 680.116 requirements for publicly available information. Note that this section is not meant to specify how funding recipients should make these data available to the public. It is only meant for consumption by State DOTs in order to develop a robust and detailed internal inventory of deployed chargers. Maintenance and repair costs are recorded at the station level for the NEVI program.

Box 5 contains the list of EV Charging Use Data Specification fields from the Station Registration[6] table necessary to comply with NEVI one-time reporting requirements. Text in brackets should be replaced with references to the section containing data types.

Box 5. Station Registration Reference

1. Station Registration. [Contracted Party] agrees to provide [Department] station registration data in accordance with the formats, field names and data types in [section 1(a-r)]. Individual records will reflect a single station and all fields will be included.
    a. Station ID
        i. Field name: station_id
        ii. Description: Unique identity specific to the physical location of the station funded by the project. Station ID (station_id) must be same as the permanent station identifier provided to third parties pursuant to CFR 23 § 680.116(c)(1).
        iii. Data type: string [section 1(e)]
    b. Station Address
        i. Field name: station_address
        ii. Description: Street address of charging station

[6] Note that in prior versions of the specification, the Station Registration Table was the Site Registration Table. This has been updated to align the Specification with federally preferred nomenclature.

iii. Data type: string [section 1(e)]

c. Station City
   i. Field name: station_city
   ii. Description: City where station is located.
   iii. Data type: string [section 1(e)]
d. Station State
   i. Field name: station_state
   ii. Description: Valid State Code for state or territory where the station is located
   iii. Data type: string [section 1(e)]
e. Station ZIP Code:
   i. Field name: station_zip
   ii. Description: Valid ZIP Code where station is located.
   iii. Data type: string(5) [section 1(e)]
f. Station Longitude
   i. Field name: station_lon
   ii. Description: Station center WSG84 encoded longitude in decimal degrees to at least 4 decimal places. Valid longitudes are between -180 and 180.
   iii. Data type: float(>3) [section 1(c)]
g. Station Latitude
   i. Field name: station_lat
   ii. Description: Station center WSG84 encoded latitude in decimal degrees to at least 4 decimal places. Valid latitudes are between -90 and 90.
   iii. Data type: float(>3) [section 1(c)]
h. Operator Name
   i. Field name: operator_name
   ii. Description: Name of entity responsible for operation and maintenance of the funded charging station.
   iii. Data type: string [section 1(e)]
i. Operator Address
   i. Field name: operator_address
   ii. Description: Street address of entity responsible for operation and maintenance of the funded charging station.
   iii. Data type: string [section 1(e)]
j. Operator City
   i. Field name: operator_city
   ii. Description: City of entity responsible for operation and maintenance of the of the funded charging station.
   iii. Data type: string [section 1(e)]
k. Operator State
   i. Field name: operator_state
   ii. Description: Valid state code of entity responsible for operation and maintenance of the of the funded charging station.
   iii. Data type: string [section 1(e)]
l. Operator ZIP Code:
   i. Field name: operator_zip
   ii. Description: Valid ZIP Code of entity responsible for operation and maintenance of the of the funded charging station.

iii. Data type: string(5) [section 1(e)]

m. Access Type
   i. Field Name: access_type
   ii. Description: Valid Access Type [section 2(c)]
   iii. Data type: string [section 1(e)]

n. Operating Status
   i. Field Name: operating_status
   ii. Description: Valid Operating Status [section 2(d)]. Must be updated if status changes.
   iii. Data type: string [section 1(e)]

o. Distributed Energy Resource
   i. Field name: onsite_der
   ii. Description: Station has distributed energy resource.
   iii. Data type: boolean [section 1(a)]

p. Distributed Energy Resource Type
   i. Field name: der_type
   ii. Description: Valid Distributed Energy Resource Type [section 1(e)]. Multiple types should be separated by commas.
   iii. Data Type: string [section 1(e)]

q. Distributed Energy Resource Power
   i. Field name: der_power
   ii. Description: Combined nameplate capacity of onsite energy generation and/or maximum battery discharge capacity in kilowatts (kW).
   iii. Data Type: float(2) [section 1(c)]

r. Distributed Energy Resource Energy
   i. Field name: der_energy
   ii. Description: Combined energy capacity of onsite energy storage system in kilowatt-hours (kWh).
   iii. Data Type: float(2) [section 1(c)]

Port Registration

Port Registration Table[7] fields include information on individual charging ports. A charging port is the basic data-generating unit of the EV Charging Use Data Specification. It is the component or system on a charger capable of charging a single EV. Session and outage data are generated at the port-level. Like Station Registration fields, the fields in this table are taken from § 680.116 public data requirements but should not be taken as the format that public data should be reported. Real time fields are excluded from static inventory information.

Box 6 contains the list of EV Charging Use Data Specification fields from the Port Registration table included in publicly shared data requirements. Text in brackets should be replaced with references to the section containing data types.

Box 6. Port Registration Reference

1. Port Registration. [Contracted Party] agrees to provide [Department] port registration data in accordance with the formats, field names and data types in [section 1(a-h)]. Individual records will reflect a single port and all fields will be included.
   a. Port ID

[7] Note that in prior versions of the specification, the Port Registration Table was the Station Registration Table. This has been updated to align the specification with federally preferred nomenclature.

i. Field name: port_id
ii. Description: Unique identifier for specified port. Port ID (port_id) must be same as the permanent station identifier provided to third parties pursuant to CFR 23 § 680.116(c)(8)(iii).
iii. Data type: string [section 1(e)]

b. Station ID
i. Field name: station_id
ii. Description: Unique identifier for the station where specific port is located. Station ID (station_id) must be same as the permanent station identifier provided to third parties pursuant to CFR 23 § 680.116(c)(1).
iii. Data type: string [section 1(e)]

c. Connector Type
i. Field name: connector_type
ii. Description: Valid Connector Type [section 2(e)]. Multiple connector types should be separated by commas.
iii. Data type: string [section 1(e)]

d. Charger Type (level)
i. Field name: charger_type
ii. Description: Valid Charger Type [section 2(b)].
iii. Data type: string [section 1(e)]

e. Charger Power Level
i. Field name: power_level_kw
ii. Description: Maximum charging power level in kilowatts.
i. Data type: float(2) [section 1(c)]

f. Trailer Accessibility
i. Field name: trailer_accessible
ii. Description: Port located on pull through stall that can accommodate a vehicle and trailer.
iii. Data type: boolean [section 1(a)]

g. Payments Accepted
i. Field name: payments_accepted
ii. Description: Valid Payment Type [section 2(f)].
iii. Data type: string [section 1(e)]

h. Network Name
i. Field name: network
ii. Description: Name of network service provider, if any.
iii. Data type: string [section 1(e)]

Session Data Reporting Fields and Format

NEVI Standards and Requirements require quarterly data submissions of session-level data including start and end date and time, energy delivered, peak power, error messages, and payment type information. These data are captured in the Session Data table of the EV Charging Use Data Specification. Session data may be tied to either a unique port id or combination of port and unique station identifier in the registration data. Both Port ID and Station ID must be reported for all reported session data.

Box 7 contains the list of EV Charging Use Data Specification session data fields necessary NEVI quarterly reporting requirements. Text in brackets should be replaced with references to the section containing data types.

Box 7. Session Data Reference

1. Session Data Reporting. [Contracted party] agrees to provide [Department] session reporting data in accordance with the formats, field names and data types in [section 1(a-i)]. Individual records will reflect a single session. All sessions recorded on each funded port and all fields will be included. [Contracted party] will deliver session data on a quarterly basis and will transmit [Department] no later than 30 days after the final day of the quarter for which reporting is required.
    a. Session ID
        i. Field name: session_id
        ii. Description: Unique identifier for individual session records.
        iii. Data type: string [section 1(e)]
    b. Port ID
        i. Field name: port_id
        ii. Description: Unique identifier for specified port. Port ID (port_id) must be same as the permanent station identifier provided to third parties pursuant to CFR 23 § 680.116(c)(8)(iii).
        iii. Data type: string [section 1(e)]
    c. Station ID
        i. Field name: station_id
        ii. Description: Unique identifier for the station where specific port is located. Station ID (station_id) must be same as the permanent station identifier provided to third parties pursuant to CFR 23 § 680.116(c)(1).
        iii. Data type: string [section 1(e)]
    d. Session Start
        i. Field name: plug_start_datetime
        ii. Description: Date and time of session initialization.
        iii. Data type: datetime
    e. Session End
        i. Field name: plug_start_datetime
        ii. Description: Date and time of session termination.
        iii. Data type: datetime
    f. Session Energy Dispensed
        i. Field name: energy_kwh
        ii. Description: Electricity dispensed (in kilowatt-hours) during charging session.
        iii. Data type: float [section 1(c)]
    g. Session Peak Power
        i. Field name: power_kw
        ii. Description: Session maximum power delivery (in kilowatts).
        iii. Data type: float [section 1(c)]
    h. Payment Type
        i. Field name: payment_type
        ii. Description: Valid Payment Type [section 2(f)].
        iii. Data type: float [section 1(c)]
    i. Error Codes
        i. Field name: error_code
        ii. Description: Session error code(s) if any. Separated by comma if multiple.
        iii. Data type: string [section 1(e)]

Uptime and Outage Reporting

NEVI Standards and Requirements require quarterly data submissions of port-specific data on both uptime and outages. These data are captured in the Uptime and Outage tables of the EV Charging Use Data Specification. Uptime is summarized on a monthly basis and the outage table is a record of all individual outages that occurred during the reporting period. Both are tied to a unique port identifier (or combination of port identifier and unique station identifier) in the registration data.

Box 8 and Box 9 contains a list of EV Charging Use Data Specification fields necessary to satisfy NEVI quarterly requirements for uptime and outages respectively. Text in brackets should be replaced with references to the section containing data types.

Box 8. Uptime Reporting Reference

1. Port Uptime Reporting [Contracted party] agrees to provide [Department] uptime records in accordance with the formats, field names and data types in [section 1(a-f)]. Individual records will reflect a single monthly uptime summary for a single port. Uptime summaries for all three preceding months will be provided for each funded port and all fields will be included. [Contracted party] will deliver uptime data on a quarterly basis and will transmit to [Department] no later than 10 business days after the final day of the quarter for which reporting is required.
    a. Port ID
        i. Field name: port_id
        ii. Description: Unique identifier for specified port. Port ID (port_id) must be same as the permanent station identifier provided to third parties pursuant to CFR 23 § 680.116(c)(8)(iii).
        iii. Data type: string [section 1(e)]
    b. Station ID
        i. Field name: station_id
        ii. Description: Unique identifier for the station where specific port is located. Station ID (station_id) must be same as the permanent station identifier provided to third parties pursuant to CFR 23 § 680.116(c)(1).
        iii. Data type: string [section 1(e)]
    c. Report Year and Month
        i. Field name: uptime_yr_mo
        ii. Description: Year and month of uptime summary in YYYYMM format.
        iii. Data type: string(6) [section 1(e)]
    d. Port Uptime Percentage
        i. Field name: uptime_pct
        ii. Description: Uptime percentage (between 0-100) for Port ID in Report Year and Month, calculated in accordance with CFR 23 § 680.116(b).
        iii. Data type: float(2) [section 1(c)]
    e. Port Outage Total
        i. Field name: outage_total
        ii. Description: Total number of outage minutes (including partial minutes) for Port ID in Report Year and Month calculated in accordance with CFR 23 § 680.116(b).
        iii. Data type: float [section 1(c)]
    f. Port Outage Excluded
        i. Field name: outage_excluded

ii. Description: Total number of excluded outage minutes (including partial minutes) for Port ID in Report Year and Month calculated in accordance with CFR 23 § 680.116(b).
iii. Data type: float [section 1(c)]

Box 9. Outage Reporting Reference

1. Port Outage Reporting. [Contracted party] agrees to provide [Department] outage data in accordance with the formats, field names and data types in [section 1(a-d)]. Individual records will reflect a single outage summary for a single port. Outage summaries for all recorded outages within the reporting period will be provided for each funded port and all fields will be included. [Contracted party] will deliver uptime data on a quarterly basis and will transmit data to [Department] no later than 10 business days after the final day of the quarter for which reporting is required.
    a. Outage ID
        i. Field name: outage_id
        ii. Description: Unique identifier for an individual outage on an individual port.
        iii. Data type: string [section 1(e)]
    b. Port ID
        i. Field name: port_id
        ii. Description: Unique identifier for specified port. Port ID (port_id) must be same as the permanent station identifier provided to third parties pursuant to CFR 23 § 680.116(c)(8)(iii).
        iii. Data type: string [section 1(e)]
    c. Station ID
        i. Field name: station_id
        ii. Description: Unique identifier for the station where specific port is located. Station ID (station_id) must be same as the permanent station identifier provided to third parties pursuant to CFR 23 § 680.116(c)(1).
        iii. Data type: string [section 1(e)]
    d. Outage Duration Minutes
        i. Field name: outage_duration
        ii. Description: Length of outage (downtime) in minutes (including partial minutes).
        iii. Data type: float [section 1(c)]

Operating Costs Reporting

NEVI Standards and Requirements require annual data submissions on maintenance and repair costs for each station. These data are captured by the Operating Costs table of the EV Charging Use Data Specification.

Box 10 contains a list of EV Charging Use Data Specification fields necessary to satisfy NEVI annual requirements for uptime and outages respectively. Text in brackets should be replaced with references to the section containing data types.

Box 10. Operating Costs Reporting

1. Operating Costs. [Contracted party] agrees to provide [Department] operating cost data in accordance with the formats, field names and data types in [section 1(a-c)].

Individual records will reflect the operating cost summary for a single station in the given year and all fields will be included. [Contracted party] will deliver uptime data on an annual basis and will transmit to [Department] no later than 45 calendar days after the final day of the year for which reporting is required.

a. Station ID
    i. Field name: station_id
    ii. Description: Unique identifier for the station where specific port is located. Station ID (station_id) must be same as the permanent station identifier provided to third parties pursuant to CFR 23 § 680.116(c)(1).
    iii. Data type: string [section 1(e)]
b. Year
    i. Field name: oc_year
    ii. Description: Year of operating cost reporting in YYYY format.
    iii. Data type: string(4) [section 1(e)]
c. Maintenance and Repair Cost Summary
    i. Field name: station_mr
    ii. Description: Total maintenance and repair costs incurred at Station ID in Year.
    iii. Data type: string [section 1(e)]

Data Access in Contracts

Charging use data is sensitive business information that is closely guarded by charging networks and others that collect the data. Including clear language defining the parameters of data sharing protects State DOTs from risks in collecting these data This is particularly important when State DOTs wish to contract to a third party the work collect and manage reporting data. State DOTs should consider including contract provisions that any contractor they select may access and collect use data directly from program participants or other data providers to avoid the need for those contractors to enter into individual data sharing agreements.

Box 11 includes example contract language adapted from a New York State Energy Research and Development Agency program contract that governs the sharing of sensitive data between contracted parties, departments, and their contractors.

Box 11. Data Sharing Model Language

Definitions:

Contract Information: Recorded information regardless of form or characteristic first produced in the performance of this Agreement, that is specified to be compiled under this Agreement, specified to be delivered under this Agreement, or that is actually delivered in connection with this Agreement, and including the [deliverable] delivered by [contracted party].

Proprietary Information: Recorded information regardless of form or characteristic, produced or developed outside the scope of this Agreement and without [department] financial support, provided that such information is not generally known or available from other sources without obligation concerning their confidentiality; has not been made available by the owner to others without obligation concerning its confidentiality; and is not already available to [department] without obligation concerning its confidentiality. Under no circumstances shall any information included in the [deliverable] delivered by [Contracted party] be considered Proprietary Information.

Rights in Information; Confidentiality

[Department] shall have the right to use, duplicate, or disclose Contract Information, in whole or in part, in any manner and for any purpose whatsoever, and to permit others to do so.

The [Contracted party] shall have the right to use Contract Information for its private purposes, subject to the provisions of this Agreement.

[Department] shall have no rights to any Proprietary Information.

No information shall be treated by [department] as confidential unless such information is clearly so marked by [contracted party] at the time it is disclosed to [department]. Under no circumstances shall any information included in the [deliverable] delivered by [contracted party] be considered confidential or Proprietary Information.

The [Contracted party] agrees that to the extent it receives or is given any information from [Department] or a [department] contractor or subcontractor, the [contracted party] shall treat such data in accordance with any restrictive legend contained thereon or instructions given by [Department], unless another use is specifically authorized by prior written approval of the [Department] Project Manager. [contracted party] acknowledges that under this Agreement, [contracted party] may come into possession of personal information. [Contracted party] agrees not to disclose any such information without the consent of [Department].

In conjunction with [Contracted party]'s performance of the Agreement [Department] or other entities may furnish [Contracted party] with information that is collected and stored by, or on behalf of, [Department] (the "Information").

Any non-public, confidential, or proprietary Information will be kept confidential and will not, without [Department]'s prior written consent, be disclosed by [contracted party], [Contracted party] agents, employees, contractors or professional advisors, in any manner whatsoever, in whole or in part, and will not be used by [Contracted party], [Contracted party]’s agents, employees, contractors or professional advisors other than in connection with the Agreement. [contracted party] agrees to transmit the Information only to [contracted party] agents, employees, contractors and professional advisors who need to know the Information for that purpose and who are informed by [contracted party] of the confidential nature of the Information and who will agree in writing to be bound by the terms and conditions of this Agreement.

[Contracted party] will keep a record of the location of the Information. At the conclusion of the Project Period, [Contracted party] will return to [department] all the Information and/or provide proof to [Department] that the Information was destroyed. [Contracted party] also agrees to submit to an audit of its data security/destruction practices by [Department] or its representative during the contract term and for up to two (2) years following the expiration of the Agreement.

If, in the course of performance of the Agreement, [Contracted party] encounter any information in [department] database platforms that a reasonable person would identify as unrelated to the Agreement or otherwise inadvertently produced to [Contracted party], [Contracted party] shall notify [department] immediately and [contracted party] shall use such inadvertently produced information for its own use. Any [contracted party] access to [department] information shall be used solely for [department]-related matters.

Appendix A:

The following list includes all fields supported by the Charging Use Data Specification in a format usable for contracts, requests for proposals or other program materials. Underlined field names indicate fields included in the EV-ChART guidance document.

1. Project Registration. [Contracted Party] agrees to provide [Department] project registration data in accordance with the formats, field names and data types in [section]. Individual records will reflect a single funded project and all fields will be included.
    a. Project ID
        i. Field name: project_id
        ii. Description: Unique identification code specific to individual funding application or contract. Project ID is supplied by [Department] upon approval of funding.
        iii. Data type: string
    b. Station ID
        i. Field name: station_id
        ii. Description: Unique identity specific to the physical location of the station (site) funded by the project. Station ID must be same as the permanent station identifier provided to third parties pursuant to CFR 23 § 680.116(c)(1).
        iii. Data type: string
    c. Organization Name
        i. Field name: org_name
        ii. Description: Organization name of the obligated party.
        iii. Data type: string
    d. Organization Address
        i. Field name: org_address
        ii. Description: Street address of obligated party.
        iii. Data type: string
    e. Organization Address
        i. Field name: org_city
        ii. Description: City of obligated party.
        iii. Data type: string
    f. Organization State
        i. Field name: org_state
        ii. Description: Valid state code of obligated party.
        iii. Data type: string
    g. Organization Zip Code
        i. Field name: org_zip
        ii. Description: Valid ZIP Code of obligated party.
        iii. Data type: string
    h. Point of Contact Email
        i. Field name: poc_email
        ii. Description: Obligated party point of contact valid email address.
        iii. Data type: string
    i. Point of Contact First Name
        i. Field name: poc_first_name
        ii. Description: Obligated party point of contact first name.
        iii. Data type: string

j. Point of Contact Last Name
    i. Field name: poc_last_name
    ii. Description: Obligated party point of contact last name.
    iii. Data type: string
k. Project Award Date
    i. Field name: project_award_date
    ii. Description: Date when project funding was awarded.
    iii. Data type: date
l. Primary Funding Source
    i. Field name: primary_funding_source
    ii. Description: Primary public funding source for the project/application.
    iii. Data type: string
m. Primary Funding Amount
    i. Field name: primary_funding
    ii. Description: Total funding (in USD) station received from the primary funding source dedicated to station deployment. (should not include any funding for station operation costs).
    iii. Data type: float(2)
n. Utility Make-ready Funding Amount
    i. Field name: utility_makeready
    ii. Description: Total funding (in USD) the project received from electric utilities dedicated to infrastructure make-ready.
    iii. Data type: float(2)
o. Other Utility Funding Amount
    i. Field name: utility_funding_other
    ii. Description: Total funding (in USD) the project received from utility for equipment or other non-make-ready costs (should not include any funding for operational costs).
    iii. Data type: float(2)
p. Other Make-ready Funding Amount
    i. Field name: other_makeready
    ii. Description: Total funding (in USD) other public funding received dedicated to infrastructure make-ready.
    iii. Data type: float(2)
q. Other Funding Amount
    i. Field name: other_funding_other
    ii. Description: Amount of other public funding project received for equipment or other non-make-ready costs (should not include any funding for operational costs).
    iii. Data type: float(2)
r. Cost Share
    i. Field name: cost_share
    ii. Description: Funding amount project has received from other (private, non-utility) sources when combined with primary_funding and utility_funding and other_public_funding equals the total cost of the charging installation.
    iii. Data type: float(2)
s. Equipment Cost
    i. Field name: equipment_cost
    ii. Description: Cost (in USD) to acquire funded charging equipment.
    iii. Data type: float(2)
t. Equipment Install Cost

i. Field name: install_cost
ii. Description: Cost (in USD) for all labor and materials costs (including electrical equipment) necessary to necessary to install charging equipment.
iii. Data type: float(2)

u. Real Property Cost
i. Field name: property_cost
ii. Description: Cost (in USD) to acquire real property on which to install funded chargers.
iii. Data type: float(2)

v. Distributed Energy Resources Equipment Cost
i. Field name: der_equipment_cost
ii. Description: Cost (in USD) to acquire distributed energy resource equipment.
iii. Data type: float(2)

w. Distributed Energy Resources Install Cost
i. Field name: der_install_cost
ii. Description: Cost (in USD) for all labor and materials costs (including electrical equipment) necessary to install distributed energy resources equipment.
iii. Data type: float(2)

x. Distribution Upgrade Cost
i. Field name: distribution_costs
ii. Description: Cost (in USD) of contributions in aid of construction for line extensions and upgrades necessary to install chargers.
iii. Data type: float(2)

y. Utility Service Cost
i. Field name: service_costs
ii. Description: Cost (in USD) of contributions in aid of construction for service upgrade costs for customer transformers, poles, meters, and other utility service equipment necessary to install chargers.
iii. Data type: float(2)

z. Disadvantaged Community Type
i. Field name: dac_type
ii. Description: Method, model or program definition of disadvantaged community. For example: CEJST 1.0.
iii. Data type: string

aa. In Disadvantaged Community
i. Field name: in_dac
ii. Description: Project is located inside of disadvantaged community as specified by dac_type.
iii. Data type: boolean

bb. Proximate to Disadvantaged Community
i. Field name: dac_proximate
ii. Description: Project is located within a program specified distance from disadvantaged community as as specified by dac_type.
iii. Data type: boolean

cc. Total Power
i. Field name: total_power

ii. Description: The total charger power capacity (in kW) deployed by the project - if charging equipment share power supplies, only the maximum simulataneous power output should be reported.
iii. Data type: float

2. Station Registration. [Contracted Party] agrees to provide [Department] station registration data in accordance with the formats, field names and data types in [section]. Individual records will reflect a single station and all fields will be included.
    a. Station ID
        i. Field name: station_id
        ii. Description: Unique identity specific to the physical location of the station funded by the project. Station ID (station_id) must be same as the permanent station identifier provided to third parties pursuant to CFR 23 § 680.116(c)(1).
        iii. Data type: string
    b. Station Name
        i. Field name: station_name
        ii. Description: Descriptive name of charging site (e.g., Mercy Hospital).
        iii. Data type: string
    c. Station Address
        i. Field name: station_address
        ii. Description: Station street address.
        iii. Data type: string
    d. Station City
        i. Field name: station_city
        ii. Description: City where station is located.
        iii. Data type: string
    e. Station State
        i. Field name: station_state
        ii. Description: Valid State Code for state or territory where station is located.
        iii. Data type: string
    f. Station ZIP Code:
        i. Field name: station_zip
        ii. Description: Valid ZIP Code where station is located.
        iii. Data type: string(5)
    g. Station County
        i. Field name: station_county
        ii. Description: Station county (or county analogue).
        iii. Data type: string
    h. Station Longitude
        i. Field name: station_lon
        ii. Description: Station center WSG84 encoded longitude in decimal degrees to at least 4 decimal places. Valid longitudes are between -180 and 180.
        iii. Data type: float(>3)
    i. Station Latitude
        i. Field name: station_lat
        ii. Description: Station center WSG84 encoded latitude in decimal degrees to at least 4 decimal places. Valid latitudes are between -90 and 90.
        iii. Data type: float(>3)
    j. Operator Name

i. Field name: operator_name
ii. Description: Name of entity responsible for operation and maintenance of the funded charging station.
iii. Data type: string

k. Operator Address
i. Field name: operator_address
ii. Description: Street address of entity responsible for operation and maintenance of the funded charging station.
iii. Data type: string

l. Operator City
i. Field name: operator_city
ii. Description: City of entity responsible for operation and maintenance of the of the funded charging station.
iii. Data type: string

m. Operator State
i. Field name: operator_state
ii. Description: Valid state code of entity responsible for operation and maintenance of the of the funded charging station.
iii. Data type: string

n. Operator ZIP Code:
i. Field name: operator_zip
ii. Description: Valid ZIP Code of entity responsible for operation and maintenance of the of the funded charging station.
iii. Data type: string(5)

o. Access Type
i. Field Name: access_type
ii. Description: Valid Access Type.
iii. Data type: string

p. Operating Status
i. Field Name: operating_status
ii. Description: Valid Operating Status.
iii. Data type: string

q. Distributed Energy Resource
i. Field name: onsite_der
ii. Description: Station has distributed energy resource.
iii. Data type: boolean

r. Distributed Energy Resource Type
i. Field name: der_type
ii. Description: Valid Distributed Energy Resource Type [section 1(e)]. Multiple types should be separated by commas.
iii. Data Type: string

s. Distributed Energy Resource Power
i. Field name: der_power
ii. Description: Combined nameplate capacity of onsite energy generation and/or maximum battery discharge capacity in kilowatts (kW).
iii. Data Type: float(2)

t. Distributed Energy Resource Energy
i. Field name: der_energy
ii. Description: Combined energy capacity of onsite energy storage system in kilowatt-hours (kWh).
iii. Data Type: float(2)

3. Port Registration. [Contracted Party] agrees to provide [Department] port registration data in accordance with the formats, field names and data types in [section]. Individual records will reflect a single port and all fields will be included.
    i. Port ID
        i. Field name: port_id
        ii. Description: Unique identifier for specified port. Port ID (port_id) must be same as the permanent station identifier provided to third parties pursuant to CFR 23 § 680.116(c)(8)(iii).
        iii. Data type: string
    j. Project ID
        i. Field name: project_id
        ii. Description: Unique identification code specific to individual funding application or contract. Project ID is supplied by [Department] upon approval of funding.
        iii. Data type: string
    k. Station ID
        i. Field name: station_id
        ii. Description: Unique identifier for the station where specific port is located. Station ID (station_id) must be same as the permanent station identifier provided to third parties pursuant to CFR 23 § 680.116(c)(1).
        iii. Data type: string
    l. Data Provider
        i. Field name: data_provider
        ii. Description: Port data provider organization name.
        iii. Data type: string
    m. Data Provider Point of Contact
        i. Field name: data_provider_poc_email
        ii. Description: Email address for data provider point of contact.
        iii. Data type: string
    n. Port Active Status
        i. Field name: port_is_active
        ii. Description: Port operational status.
        iii. Data type: Boolean
    o. Port Latitude
        i. Field name: port_lat
        ii. Description: Port WSG84-encoded longitude in decimal degrees to at least 4 decimal places. Valid longitudes are between -180 and 180.
        iii. Data type: float(>3)
    p. Port Longitude
        i. Field name: port_lon
        ii. Description: Port WSG84 encoded latitude in decimal degrees to at least 4 decimal places. Valid latitudes are between -90 and 90.
        iii. Data type: float(>3)
    q. Port Activation Date
        i. Field name: port_activation_date
        ii. Description: The first day where the station is fully operable and accessible for its intended purpose.
        iii. Data type: date
        iv.
    r. Connector Type

i. Field name: connector_type
ii. Description: Valid Connector Type. Multiple connector types should be separated by commas.
iii. Data type: string

s. Charger Type (level)
i. Field name: charger_type
ii. Description: Valid Charger Type.
iii. Data type: string

t. Charger Power
i. Field name: port_power_kw
ii. Description: Maximum port charging power (in kW).
ii. Data type: float(2)

b. Energy Fee
i. Field name: energy_fee
ii. Description: Fee charged to user per kWh (in USD).
iii. Data type: float(2)

c. Session Fee
i. Field name: session_fee
ii. Description: Fee charged to user per session (in USD).
iii. Data type: float(2)

d. Time Fee
i. Field name: time_fee
ii. Description: Fee charged to users per minute (in USD).
iii. Data type: float(2)

e. Parking Fee
i. Field name: parking_fee
ii. Description: Fee charged for parking if separate from time_fee (in USD).
iii. Data type: float(2)

f. Idle Fee
i. Field name: idle_fee
ii. Description: Fee charged for minutes not charging if separate from time fee (in USD).
iii. Data type: float(2)

g. Operating Hours
i. Field name: operating_hours
ii. Description: Number of hours station is open per day—e.g., a station that is always open has a value of 24 whereas a station that is open from 6 am to 6 pm has a value of 12.
iii. Data type: float

h. Equipment Manufacturer
i. Field name: equipment_manufacturer
ii. Description: Charging equipment or system manufacturer name.
iii. Data type: string

i. Equipment Model Number
i. Field name: model_number
ii. Description: Charging equipment or system model number.
iii. Data type: string

j. Equipment Serial
i. Field name: equipment_serial
ii. Description: serial number of charging equipment or system.
iii. Data type: string

u. Trailer Accessibility
    i. Field name: trailer_accessible
    ii. Description: Port located on pull through stall that can accommodate a vehicle and trailer.
    iii. Data type: boolean
v. Payments Accepted
    i. Field name: payments_accepted
    ii. Description: Valid Payment Type [section 2(f)].
    iii. Data type: string
w. Network Name
    i. Field name: network
    ii. Description: Name of network service provider, if any.
    iii. Data type: string
x. Network Point of Contact
    i. Field name: network_contact
    ii. Description: Email address for network service provider.
    iii. Data type: string

4. Session Data Reporting. [Contracted party] agrees to provide [Department] session reporting data in accordance with the formats, field names and data types in [section]. Individual records will reflect a single session. All sessions recorded on each funded port and all fields will be included. [Contracted party] will deliver session data on a quarterly basis and will transmit [Department] no later than 30 days after the final day of the quarter for which reporting is required.
    a. Session ID
        i. Field name: session_id
        ii. Description: Unique identifier for individual session records.
        iii. Data type: string
    b. Port ID
        i. Field name: port_id
        ii. Description: Unique identifier for specified port. Port ID (port_id) must be same as the permanent station identifier provided to third parties pursuant to CFR 23 § 680.116(c)(8)(iii).
        iii. Data type: string
    c. Station ID
        i. Field name: station_id
        ii. Description: Unique identifier for the station where specific port is located. Station ID (station_id) must be same as the permanent station identifier provided to third parties pursuant to CFR 23 § 680.116(c)(1).
        iii. Data type: string [section 1(e)]
    d. Session Start
        i. Field name: plug_start_datetime
        ii. Description: Date and time of session initialization.
        iii. Data type: datetime
    e. Session End
        i. Field name: plug_end_datetime
        ii. Description: Date and time of session termination.
        iii. Data type: datetime
    f. Charge Start
        i. Field name: charge_start_datetime
        ii. Description: Date and time when charging began.

iii. Data type: date/time

g. Charge End
   i. Field name: charge_end_datetime
   ii. Description: Charging end date time.
   iii. Data type: date/time
h. Session Duration
   i. Field name: session_duration
   ii. Description: Total duration of session (plug in to plug out).
   iii. Data type: duration
i. Charging Duration
   i. Field name: charging_duration
   ii. Description: Total duration of time when electricity was actively dispensed. May not always be equal to the difference between charge_start_datetime and charge_end_datetime due to charge interruptions or managed charging.
   iii. Data type: duration
j. Session Energy Dispensed
   i. Field name: energy_kwh
   ii. Description: Electricity dispensed (in kWh) during charging session.
   iii. Data type: float
k. Session Peak Power
   i. Field name: power_kw
   ii. Description: Session maximum power delivery (in kW).
   iii. Data type: float
l. Payment Type
   i. Field name: payment_type
   ii. Description: Valid Payment Type.
   iii. Data type: string
m. Error Codes
   i. Field name: error_code
   ii. Description: Session error code(s) if any. Separated by comma if multiple.
   iii. Data type: string
n. Total Fee Charged
   i. Field name: total_fee_charged
   ii. Description: The amount charged to the EV driver (in USD) where applicable - zero if driver was not charged for an otherwise paid charger, NULL if charger is not paid.
   iii. Data type: float(2)
o. Energy Fee Charged
   i. Field name: energy_fee
   ii. Description: Energy (kWh) fee (in USD) charged to user for.
   iii. Data type: float(2)
p. Session Fee Charged
   i. Field name: session_fee
   ii. Description: Session fee (in USD) charged to user.
   iii. Data type: float(2)
q. Time Fee Charged
   i. Field name: time_fee
   ii. Description: Time fee (in USD) charged to users.
   iii. Data type: float(2)
r. User Identifier

i. Field name: user_id
ii. Description: Anonymized network-specific unique user ID.
iii. Data type: string

s. Successful Session Completion
i. Field name: successful_completion
ii. Description: Whether or not the session ended as expected.
iii. Data type: boolean

t. Session Termination Cause
i. Field name: ended_by
ii. Description: Cause of the session to end (e.g., unplugged while charging).
iii. Data type: string

u. Starting State of Charge
i. Field name: start_soc
ii. Description: Vehicle battery state of charge at session start represented as a decimal between 0 and 1.
iii. Data type: float(2)

v. End State of Charge
i. Field name: end_soc
ii. Description: Vehicle battery state of charge at session end represented as a decimal between 0 and 1.
iii. Data type: float(2)

6. Port Uptime Reporting [Contracted party] agrees to provide [Department] uptime records in accordance with the formats, field names and data types in [section]. Individual records will reflect a single monthly uptime summary for a single port. Uptime summaries for all three preceding months will be provided for each funded port and all fields will be included. [Contracted party] will deliver uptime data on a quarterly basis and will transmit to [Department] no later than 10 business days after the final day of the quarter for which reporting is required.
   a. Port ID
      i. Field name: port_id
      ii. Description: Unique identifier for specified port. Port ID (port_id) must be same as the permanent station identifier provided to third parties pursuant to CFR 23 § 680.116(c)(8)(iii).
      iii. Data type: string [section 1(e)]
   b. Station ID
      i. Field name: station_id
      ii. Description: Unique identifier for the station where specific port is located. Station ID (station_id) must be same as the permanent station identifier provided to third parties pursuant to CFR 23 § 680.116(c)(1).
      iii. Data type: string
   c. Report Year and Month
      i. Field name: uptime_yr_mo
      ii. Description: Year and month of uptime summary in YYYYMM format.
      iii. Data type: string(6)
   d. Port Uptime Percentage
      i. Field name: uptime_pct
      ii. Description: Uptime percentage (between 0-100) for Port ID in Report Year and Month, calculated in accordance with CFR 23 § 680.116(b).
      iii. Data type: float(2)
   e. Port Outage Total

i. Field name: outage_total
ii. Description: Total number of outage minutes (including partial minutes) for Port ID in Report Year and Month calculated in accordance with CFR 23 § 680.116(b).
iii. Data type: float

f. Port Outage Excluded
i. Field name: outage_excluded
ii. Description: Total number of excluded outage minutes (including partial minutes) for Port ID in Report Year and Month calculated in accordance with CFR 23 § 680.116(b).
iii. Data type: float

7. Port Outage Reporting. [Contracted party] agrees to provide [Department] outage data in accordance with the formats, field names and data types in [section 1(a-d)]. Individual records will reflect a single outage summary for a single port. Outage summaries for all recorded outages within the reporting period will be provided for each funded port and all fields will be included. [Contracted party] will deliver uptime data on a quarterly basis and will transmit data to [Department] no later than 10 business days after the final day of the quarter for which reporting is required.
   a. Outage ID
      i. Field name: outage_id
      ii. Description: Unique identifier for an individual outage on an individual port.
      iii. Data type: string
   b. Port ID
      i. Field name: port_id
      ii. Description: Unique identifier for specified port. Port ID (port_id) must be same as the permanent station identifier provided to third parties pursuant to CFR 23 § 680.116(c)(8)(iii).
      iii. Data type: string
   c. Station ID
      i. Field name: station_id
      ii. Description: Unique identifier for the station where specific port is located. Station ID (station_id) must be same as the permanent station identifier provided to third parties pursuant to CFR 23 § 680.116(c)(1).
      iii. Data type: string
   d. Outage Start
      i. Field name: outage_start
      ii. Description: Date and time when outage started or was first detected.
      iii. Data type: datetime
   e. Outage End
      i. Field name: outage_end
      ii. Description: Date and time when outage was resolved.
      iii. Data type: datetime
   f. Outage Duration Minutes
      i. Field name: outage_duration
      ii. Description: Length of outage (downtime) in minutes (including partial minutes).
      iii. Data type: float(2)
   g. Outage Cause
      i. Field name: outage_cause

ii. Description: Cause of outage (e.g. equipment failure, power failure, vandalism).
iii. Data type: string

h. Outage Exempted
   i. Field name: exempted_outage
   ii. Description: Is outage exempted under program rules?
   iii. Data type: Boolean
   iv. Operating Costs. [Contracted party] agrees to provide [Department] operating cost data in accordance with the formats, field names and data types in [section]. Individual records will reflect the operating cost summary for a single station in the given year and all fields will be included. [Contracted party] will deliver uptime data on an annual basis and will transmit to [Department] no later than 45 calendar days after the final day of the year for which reporting is required.

i. Station ID
   i. Field name: station_id
   ii. Description: Unique identifier for the station where specific port is located. Station ID (station_id) must be same as the permanent station identifier provided to third parties pursuant to CFR 23 § 680.116(c)(1).
   iii. Data type: string

j. Year
   i. Field name: oc_year
   ii. Description: Year of operating cost reporting in YYYY format.
   iii. Data type: string(4)

k. Maintenance and Repair Cost Summary
   i. Field name: station_mr
   ii. Description: Total maintenance and repair costs incurred at Station ID in Year.
   iii. Data type: string

l. Maintenance Cost
   i. Field name: maintenance_cost
   ii. Description: Total amount paid (in USD) for maintenance costs during year.
   iii. Data type: float(2)

m. Repair Cost
   i. Field name: repair_cost
   ii. Description: Total amount paid (in USD) for repair costs during year.
   iii. Data type: float(2)

n. Electricity Cost
   i. Field name: electricity_cost
   ii. Description: Total amount paid (in USD) for station electricity use during reporting period (estimated if station is not individually metered).
   iii. Data type: float(2)

o. Network Costs
   i. Field name: network_costs
   ii. Description: Total amount paid (in USD) associated with network access, including network service fees, communications costs, transaction fees, etc.
   iii. Data type: float(2)