GUIDELINES FOR PROVIDING SUMD DATASETS TO METRO NASHVILLE

A. SUMMARY / PURPOSE

Within ten (10) days from when an approved operator's first SUMD trip is completed in Metro Nashville, all permitted SUMD operators are required to demonstrate their ability to provide Metro ITS with three data sets as outlined in ORDINANCE NO. BL2018-1202 "*Section 12.62.060 – Data Sharing*". The data set details below are in the order in which they appear in the ordinance, referred to in this document as **Device Availability**, **Trip Summary** and **Parking Compliance**.

Therefore, the purpose of this document is to describe technical specifications and provide requirements for permitted SUMD operators on how to expose and share structured datasets as required in the ordinance. It shall be noted that *permitted operators shall provide all data so that individual users can not be identified.*

B. AUDIENCE

This document is intended for all permitted operators of SUMDs within the boundary of Metropolitan Nashville and Davidson County as well as technical customers and vendors supporting the operation of SUMD data sharing.

C. DEFINITIONS, ACRONYMS, and ABBREVIATIONS

"Shared Urban Mobility Device (SUMD) system" or "System" means a system which provides urban mobility devices for short-term rentals for point-to-point trips Such a System can be a Lock-to SUMD System or a Dockless SUMD system.

"Operator" means a corporation, firm, joint venture, limited liability company, partnership, person, or other organized entity that operates a SUMD system, whether for profit or not for profit.

"Permitted" means having received a permit to operate SUMDs within Metropolitan Government operational area.

"Parked" means any SUMD that is not currently in an active trip.

"Metropolitan Government operational area" is defined as the area within the following geo-fence:

> POLYGON((-86.909 36.401,-86.835 36.41,-86.771 36.408,-86.691 36.34,-86.586 36.252,-86.487 36.09,-86.611 35.958,-86.925 36.044,-87.038 35.966,-87.07 36.072,-86.909 36.401)).

D. DATASET DETAILS: Device Availability

Operators shall provide the Metropolitan Information Technology Services Department ("Metro ITS") with real-time information for every SUMD parked in the Metropolitan Government operational area through a documented application program interface (API).

The operator is directly responsible for providing API key, URL, and API documentation. Operators are required to comply to this data sharing requirement by providing the following fields in real time via their API utilizing a JSON call to a URL.

RECORD SPECIFICATIONS:

The following data fields are required for each record for every SUMD parked in the Metropolitan Government operational area:

Field Name	Description
pubTimestamp	Timestamp of SUMD pulled
Latitude	*Point location X*
Longitude	*Point location Y*
SUMD ID number	*SUMD Type + Unique identifier for every SUMD, determined by company*
Type of SUMD	*"Standard" or "Powered"*

Field Name	Description
Fuel/charge level	*Ratio of charge level to full charge (50.1234%)*
SUMD Group	*Name of the SUMD group ("bicycle", "tricycle", "scooter", "hover board", "skateboard", "pedal car" or "other")*
Current rental rate per minute	*-*

API FORMAT:

Metro ITS proposes the format below for the Data API. Should operator systems require a different format, operator is required to provide Metro ITS documentation on the URL and format requirements for the operator's systems. Upon review Metro ITS will advise if the proposed format is acceptable and or work with operator to identify approved solution.

https://device.api.company.com/nashville/1.0/devicequery.json
?searchtime={YYYY-MM-DD-hh24_mi_ss}

Important points

- It is expected that operators will provide an API that contains only the required fields identified in the record specifications, in the format provided in the response example.
- The query is a GET query and the response will be a JSON file with each entry being a dictionary object with their corresponding keys, and values pairs.
- The search time is an optional parameter provided by end user indicated to provide data about parked devices since that time. Queries with no search time will provide data about all currently parked devices available to be ridden. It is expected that the server will buffer the parked devices data for the last 48 hours and can provide that data upon request.

RESPONSE EXAMPLE:

Below is an example of the expected JSON data format.

```
[
"SUMD": {
        "pubTimestamp"      :       "2018-09-01T18:25:43.511Z",
        "latitude"          :       "36.153816671",
        "longitude"         :       "-86.76871038",
        "sumdID"            :       "PoweredEXC00001",
        "sumdType"          :       "Powered",
        "chargeLevel"       :       "78.4862",
        "sumdGroup"         :       "Scooter",
        "costPerMin"        :       "0.48"
        }
]
```

DATASET TESTING:

Prior to going live Metro ITS will configure its logic application with the API and URL provided by the operator in a test environment and attempt to retrieve the required data.

Following successful testing with the operator, Metro ITS will confirm with the operator that this required dataset has been made operational, and is thus compliant.

If the operator is not able to perform a successful test within ten (10) days from when an approved operator's first SUMD trip is completed in Metro Nashville, Metro ITS will notify the Transportation Licensing Commission (TLC) that the operator is not in compliance, and the TLC will proceed with their process to rectify this.

UPDATE FREQUENCY:
Metro expects that the real-time data will be APPENDED for each device at-least once every 30 seconds. Metro expects to access the API at a frequency of no more than every 5 minutes and anticipate pulling all records that have been published in the intervening time.

E. DATASET DETAILS: Trip Summary

All operators shall provide the following anonymized data for each trip record within the Metropolitan Government operational area to inform and support safe and effective management of the SUMD system, and for transportation planning efforts.

The operator is directly responsible for providing API key, URL, and API documentation. Operators are required to comply to this data sharing requirement by providing the following fields via their API utilizing a JSON call to a URL.

REQUIRED DATA CLEANSING:
All permitted operators will first clean data before providing or reporting data to Metro. Data processing and cleaning shall include:
1. *Removal of staff servicing and test trips*
2. *Removal of trips below one minute*
3. *Trip lengths are capped at 24 hours*

RECORD SPECIFICATIONS:
The following data fields are required for each record for each completed SUMD trip:

Field Name	Description
pubTimestamp	Timestamp of SUMD pulled
Company Name	*Company Name*
Type of SUMD	*"Standard or "Powered"*
SUMD Group	*Name of the SUMD group*
Trip record number	*3 letter company acronym + consecutive trip #, Xxx#, xxx#+1, xxx#+2, …*
SUMD ID number	*SUMD Type + Unique identifier for every SUMD, determined by company*
Trip duration	*Minutes*
Trip distance	*Feet*
Start date	*n/a*
Start time	*n/a*
End date	*n/a*
End time	*n/a*
Start latitude	*Point location X*
Start longitude	*Point location Y*
End latitude	*Point location X*
End longitude	*Point location Y*
Trip Route	*Sequential GPS coordinates for entire trip duration at a minimum collection frequency of one per 30 seconds.*

API FORMAT:

Metro ITS proposes the format below for the Data API. URL. Should operator systems require a different format, operator is required to provide Metro ITS documentation on the URL and format requirements for the operator's systems. Upon review Metro ITS will advise if the proposed format is acceptable and or work with operator to identify approved solution.

https://trips.api.company.com/nashville/1.0/tripquery.json
?searchtime={YYYY-MM-DD-hh24_mi_ss}

Important points

- It is expected that operators will provide an API that contains only the required fields identified in the record specifications, in the format provided in the response example.
- The query is a GET query and the response will be a JSON file, with each entry being a dictionary object with their corresponding keys and values pairs.
- The search time is an optional parameter provided by end user indicated to provide the trip data since that time. Queries with no search time will provide data about all completed trips in the last five minutes since the prior query. It is expected that the server will buffer the trip data for the last 24 hours and will be responsible for sanitizing the data to remove personally identifiable information and can provide that data upon request.
- Starting at midnight, the trip record number is reset and then incremented for every trip initiated, and represents total trips for that calendar day as of the time when the request is made.

RESPONSE EXAMPLE:

Below is an example of the expected JSON data format.

```
[
"SUMD": {
        "pubTimestamp"          :       "2018-09-01T18:25:43.511Z",
        "companyName"           :       "Example Co.",
        "sumdType"              :       "Powered",
        "sumdGroup"             :       "Scooter",
        "tripRecordNum"         :       "EXC01",
        "sumdID"                :       "PoweredEXC00001",
        "tripDuration"          :       "2.352",
        "tripDistance"          :       "1024.8934",
        "startDate"             :       "2018-09-01",
        "startTime"             :       "08:12:43",
        "endDate"               :       "2018-09-01",
        "endTime"               :       "08:15:01",
        "startLatitude"         :       "36.153816671",
        "startLongitude"        :       "-86.76871038",
        "endLatitude"           :       "36.159953125",
        "endLongitude"          :       "-86.77837077",
        "tripRoute"             :       [
                                                ["36.153816671", "-86.76871038"],
                                                ["36.157768018", "-86.77652629"],
                                                ["36.156312719", "-86.77563580"],
                                                ["36.154770766", "-86.77289994"],
                                                ["36.154562860", "-86.77009972"],
                                                ["36.159953125", "-86.77837077"]
                                        ]
                }
        ]
```

DATASET TESTING:

Prior to going live Metro ITS will configure its logic application with the API and URL provided by the operator in a test environment and attempt to retrieve the required data.

Following successful testing with the operator, Metro ITS will confirm with the operator that this required dataset has been made operational, and is thus compliant.

If the operator is not able to perform a successful test within ten (10) days from when an approved operator's first SUMD trip is completed in Metro Nashville, Metro ITS will notify the TLC that the operator is not in compliance, and the TLC will proceed with their process to rectify this.

UPDATE FREQUENCY:
Metro expects the operator to have cleansed trip summary data for each individual trip APPENDED to the data set within 5 minutes of the completion of that trip.

Metro expects to access the API within every 5 minutes and anticipate pulling all records that have been published in the intervening time.

F. DATASET DETAILS: Parking Compliance

For oversight of parking compliance and SUMD distribution by minute, all permitted operators will provide Metro ITS with real-time information on the availability and identity of all parked vehicles through a documented REST application program interface (API).

The operator is directly responsible for obtaining an API key from Metro ITS to which they will publish the data described below, updated at a frequency of every five minutes. Data shall be submitted to the Metro Open Data Portal, where it will be made available to the public.

OPEN DATA PROCESS:
The following process must take place for each operator once a SUMD permit application is approved:

Actor	Activity
Operator	Set up an open data account (or accounts) at https://opendata.socrata.com/login
Operator	Communicate the selected email address (or addresses) of their Socrata account to Metro ITS.
Metro ITS	Establish the operator-specific dataset on the open data platform.
Metro ITS	Grants the account (or accounts) contributor access to the operator-specific dataset on Nashville's Open Data Portal.
Operator	Will receive an automated email from the Socrata Open Data platform notifying them that access has been granted and giving them instructions on how to access the new requested dataset, which will be hidden and not public at this point.
Operator	Using open data portal credentials, develop a method to update the operator-specific dataset. These updates can be performed via any demonstrably sufficient method of the operator's choosing. **Socrata API documentation:** • Socrata's detailed API documentation • Socrata data publisher guide
Operator	Notify Metro ITS that the dataset is ready for testing.
Metro ITS	Metro ITS will check the test data for accuracy, completeness, consistency, and update frequency, among other benchmarks. After Metro ITS performs a successful check of the test data, the administrator will notify the operator that a successful test has occurred, and the operator is in compliance. If the provided test data is found to be insufficient in any way, Metro ITS will communicate to the operator the specific issues that should be remedied before performing another test. Testing and communication will continue until a successful test is confirmed. If the operator

Actor	Activity
	is not able to perform a successful test within ten (10) days from when an approved operator's first SUMD trip is completed in Metro Nashville, Metro ITS will notify the TLC that the operator is not in compliance.
Operator	Following notification of successful check of the test data, the test data should be expunged from the dataset.
Operator	Initiates recurring production dataset updates.
Operator	Notify Metro ITS that production dataset updates are live.
Metro ITS	A final check of the real data will be performed by Metro ITS, and the Open Data administrator will publish the dataset for public consumption.
Metro ITS	Confirms with the operator that initial dataset compliance has been met for this dataset.

For any issues during development of the update method, the operator should communicate with Socrata's support team by emailing support@socrata.com or visiting the Socrata Customer Center. Metro is unable to provide any support for the Socrata platform or their APIs.

RECORD SPECIFICATIONS:
The following data fields are required for each record for every SUMD parked in the Metropolitan Government operational area:

Field Name	Description
pubTimestamp	Timestamp of SUMD pulled
GPS Latitude	*Point location X*
GPS Longitude	*Point location Y*
Availability Duration	*Minutes*
Availability Start Date	*n/a*
Availability Start Time	*n/a*
Company website	*Link to website with customer service capability*
Company Phone	*Local customer service number*
Real Time Fare	*Real-time fare per unit distance*
Type of SUMD	*"Standard" or "Powered"*
SUMD Group	*Name of the SUMD group ("bicycle", "tricycle", "scooter", "hover board", "skateboard", "pedal car" or "other")*
SUMD ID	*SUMD Type + Unique identifier for every SUMD, determined by company*

UPDATE FREQUENCY AND METHODS:
Metro expects the operator to update this data at least every 5 minutes using one of the following methods:

- **REPLACE** This method would require that the data for the entire dataset be replaced with each update. This method is preferred as long as the size of the dataset does not impede the ability for it to be updated within the 5 minute timeframe.
- **UPSERT** This method requires that each row in the dataset have a unique identifier and allows the Operator to update specific data within targeted rows so that only the data that has changed is updated. This method often provides faster timing for updating the data but can be more difficult to implement.

G. MISCELLANEOUS

CHANGES TO OPERATOR APIs
Should an operator need to change an API, they are required to notify Metro ITS via e-mail to **ITS-SUMDPermit@nashville.gov** no less than thirty (30) days in advance of making any changes. The operator must identify the changes expected and work with Metro ITS to confirm and test the requested changes prior to making any changes to their API.

APPLICATION OF STANDARDS

Should the Metropolitan Government adopt a standard or standards for SUMD data collection, each permitted operator shall achieve compliance with such standard(s) within ninety (90) days of receipt of notification of updated interface availability from the Metropolitan Government, submitted to the operator address on record.

METRO ITS CONTACT

Please direct any questions and send required dataset information to: **ITS-SUMDPermit@nashville.gov**

This is a shared email distribution list. Someone will return your request with a personal contact within 1 business day.

REVISION HISTORY

REVISION	DATE	CHANGES
1.00	8/28/2018	1st Draft
1.10	9/5/2018	API specifications clarified
1.11	10/25/2018	API specifications clarified for incrementing trips and each entry as dictionary object
1.12	11/1/2018	API specifications clarified for search time as an additional parameters
1.13	11/14/2018	API specifications clarified for when no search time is provided
1.14	11/19/2018	API specifications for trip record number increments
1.15	12/10/2018	API format specification for 'searchtime' to include YYYY-MM-DD
1.2	12/20/2018	API modify the amount of data required for trip summary
1.21	1/4/2019	Clarification on the start of the 10 days for compliance
1.22	1/28/2019	Adding missing information and fixing typos