

# CURB DATA SPECIFICATION

## GETTING STARTED GUIDE



March 2024

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### OVERVIEW

The OMF's [Curb Data Specification](#) (CDS) provides a mechanism for sharing static and dynamic curb regulations, measuring activity at the curb, and providing access and utilization for curb managers and users.

This guide will help organizations structure a successful curb program by providing a list of key questions and recommendations that should be addressed during each phase of the program's development. To further ensure success, the OMF recommends introducing commercial curb zone programs mandating CDS usage, led by city agencies in partnership with commercial users and tech companies. To ensure compliance with the specification, CDS should be required through RFPs and permits.



### How to Use This Guide

This resource is specifically designed for cities to help them implement any curb related project or program, and understand where CDS can help improve the project outcomes.



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## PROVIDING FEEDBACK

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# PROJECT PHASES

## Phase #1 - Goal Setting and Planning

What is your city or agency trying to achieve and how do you plan to achieve it? For example, cities may choose to implement CDS to more easily communicate dynamic curb policies and regulations or provide an opportunity to manage zero emissions delivery zones. For specific examples of how to use CDS within your agency's curb program, please reference this [CDS Use Cases Page](#).

### 1. **Agency/City Requirements**

- a. Understand and outline your City's/Agency's internal process for a program including vendor selection and RFP process.
- b. Identify any seasonal, legal, regulatory, or other unique challenges that need to be considered.
  - i. Are there data privacy regulations that your municipality has in place? Cameras, sensors, and event data storage may have legal implications. It is highly encouraged to consult with your legal department before developing your project plan.

### 2. **Goal Definition**

- a. Describe the curb management problems that your agency is trying to solve and how to measure success:
  - i. Can reliable and accurate tracking of vehicle presence at load zones be achieved?
  - ii. Is data able to be disseminated to 3rd parties with limited processing?
  - iii. Can dashboards and reporting interfaces be provided to review real-time and historic occupancy data?
- b. Identify and define your agency's short and long-term goals and desired outcomes.

### 3. **Internal Pitch**

- a. Identify the needed resources for the program within your agency.
- b. Identify any challenges related to resources and technical support
  - i. A successful curb management project typically involves any combination of signage, paint, IT support, coordination with enforcement officers, and public outreach specialists. It can often be challenging to identify all of the required resources but it is a crucial step towards a successful pitch.

- c. Identify other teams/departments that this program may help. One of the goals of CDS is that it will benefit other divisions or programs within city governments such as enforcement, permitting, public transportation, etc.
- d. Highlight the benefits of the program. Explain how the program will align with broader organizational goals (transportation, economic, or environmental).

#### 4. **Funding**

- a. Identify internal funding sources.
- b. Identify any potential external funding sources, including possible grants.

##### *Potential funding sources:*

- 1. MPO funding with flexible state dollars.
- 2. Federal grants are hard for operational services/procurement rules, foundation grants are more flexible.
- 3. New/existing metering and pricing parking districts and using revenues.
- 4. Bundled with existing vendor agreements.
- 5. Enforcement revenue in some locations.
- 6. Revenue-positive programs with vendors (fee splits, per event).

#### 5. **Stakeholders**

- a. Identify any internal stakeholders with decision-making authority.
  - i. Department of Transportation or equivalent body.
  - ii. City Council or equivalent body of other agencies.
  - iii. Finance Department
  - iv. IT Department
  - v. Public Works
- b. Identify any internal stakeholders that are considered influencers on the decision.
- c. Identify any external stakeholders that have an advisory role or can influence the decision or have approval power. Examples are:
  - i. Business Improvement Districts / Associations
  - ii. Downtown partnerships / Chambers of Commerce
  - iii. Parking Board / Authority
  - iv. Arena owners
  - v. Convention center / cultural facilities
  - vi. Neighborhood associations (may be interested in facilitating deliveries to their residences)
- d. Identify opportunities for collaboration with other agencies, the private sector, and service providers.
  - i. Research service providers that provide technologies or services that



align with your project goals and desired outcomes.

- ii. Consult local curb users and businesses to see if there is an opportunity to collaborate. If your project is looking to improve curb access and reduce congestion, they may wish to participate and share data.

## **6. Develop a Project Plan**

- a. Secure commitment of resources.
- b. Understand what data you require to achieve your program goals.
  - i. There may be many different data sources required to answer your program's questions. A good resource for understanding what data you might need can be found at the University of Washington Urban Freight Lab's Urban Goods Delivery Toolkit [here](#).
  - ii. Is a digital curb inventory required? If your agency does not have a curb inventory, there are several ways to collect one. The Institute of Transportation Engineers (ITE) recently released a [free Curbside Management Tool](#) which gives professionals with GIS experience the tools to collect data, conduct analysis, and provide curb treatment recommendations.
- c. Define a clear timeline and ensure that it is sufficient to establish whether the program is successful or not.
- d. Establish evaluation measures that are transparent to your stakeholders.

## **7. Develop a Communication Plan**

- a. Establish target audiences (internal and external) and plan accordingly.
- b. Establish communication methods and plan accordingly.
  - i. If your agency is creating new curbside zones that will restrict access for certain curb users, it is highly encouraged to engage with public outreach specialists to reduce non-compliant parking throughout the program.

## **8. Develop a Preliminary Post program plan**

- a. Make a plan for what your agency will do when the program is over.

## **Phase #2 - Implementation**

After establishing your agency's project goals and planning out how to achieve those goals, it is now time to turn your agency's plans into action. The steps below outline how your agency can implement a curb zone program that utilizes CDS as the primary data format.

**1. Execute Vendor/Consultant Selection Process if Needed**

- a. Depending on your agency's program needs identified in the planning phase, procuring service providers or a consultant may be necessary.
- b. There may be several options available for a public agency such as RFP's, RFEI's, and direct selections.
- c. To streamline the procurement process, the OMF SMART Curb Collaborative developed a collaborative RFP using Sourcewell, which you can [read about here](#).
- d. Consult with your agency's contract office for the best available options.

**2. Establish CDS as your agency's data standard**

- a. Include CDS *by name* in your permit language, RFPs or existing contract renewals. See our [Policy Language Guidance](#) document for sample language.
- b. Score vendors who are responding to RFPs higher if they:
  - Currently use CDS
  - Currently use any open source data standards
  - Currently participate in open source communities like the OMF Curb Working Group
  - Currently are a member of the OMF
- c. Identify curb users who would consume curb regulation data.
- d. Map data to be collected from commercial curb users or sensors.
- e. Make a plan to provide curb regulation data in CDS -- working from existing datasets or creating new ones.
- f. If your curb asset data is stored in a GIS system or another format, have a plan to convert that to data to CDS.
- g. If entering into agreements with curb users, specify and link to CDS in your program rules as a requirement for participation.

**3. Evaluate what your sources of CDS data are**

- a. What are the motivations or benefits for companies to provide or use CDS data?
- b. What is the business case for providing data? And, what are the mechanisms to report back on those benefits?

**4. Monitor progress regularly**

**5. Be flexible and adjust the plan if needed to re-align with goals**

**6. Provide feedback to the [OMF Curb Working Group](#) about challenges or recommendations for improvements or ask questions**

**7. Keep a line of communication with all stakeholders and collect feedback**

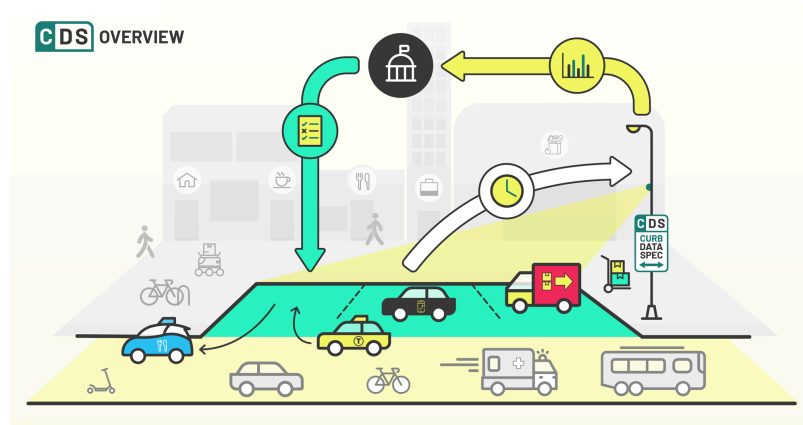
## 8. Maintain lessons learned list for post program evaluation

### Phase #3 - Evaluation and Outcomes

After the completion of your curb zone program, it is important to evaluate and summarize your findings. The steps below provide a basic outline for how you can evaluate your program.

1. **Evaluate any data that was collected during the program**
  - a. Use the events and metrics data you collected to evaluate your successes, failures, and learnings.
2. **Create reports and summaries highlighting the successes and challenges**
  - a. Did your curb project meet your project goals and expectations?
  - b. How could the project have been improved?
  - c. Was the CDS able to meet your project's requirements?
3. **Develop a storyline that reflects how the program benefited stakeholders including residents, curb users, city planners, or parking managers.**
4. **Develop a post-program proposal that capitalizes on the learned lessons and experiences of the program.**
  - a. How would you do the program again, and what would you change or do differently to improve the program?
  - b. Did your program give you the information you needed to roll it out to more locations or make it permanent?

## TECHNICAL IMPLEMENTATION



CDS currently defines three APIs: Curbs, Events and Metrics. APIs (Application Programming Interfaces) are digital interfaces that are used to exchange data between

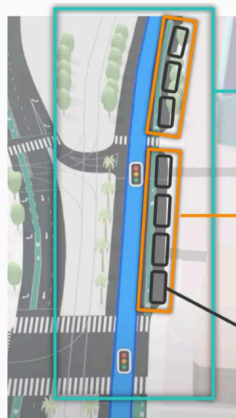
software applications. APIs allow software applications to communicate using pre-established rules and protocols. CDS is a data standard that provides a blueprint for building APIs to allow cities and curb users to exchange curb related data.

## Curbs API

1. Need to create a method of taking curb data from internal systems and getting it into a CDS-capable publishing format and API platform for public and commercial use. This could be hosted on your agency's open data website, public ArcGIS server, GeoServices, third party company service, etc.
2. Optional real-time status features can be added.
3. Could create a visualization tool or map based on Curbs data to help users understand the zones.
4. Could create a tool to create and edit curb zone, area, and space geometry and policy for CDS, if this data is not stored and pulled from an internal database.
5. See [code examples](#) in CDS.



Names for polygon geometry **places** used within the CDS Curbs API.



**Area - Optional.** Area of interest around a curb Zone used to share vehicle proximity, approach, conflicts, circling, exit, double parking, other activity.

**Zone - Required.** Curb zone defining the area that can be used by vehicles. Includes properties and references to outside regulations or LRS.

**Space - Optional.** A defined vehicle parking space within a curb Zone. Flexible zones may not have these.

Map Image Credit: Apple

## Events API

1. Need an external, authenticated API that can capture events coming from sensors and company data feeds after being translated into the CDS Events API format.
2. Store data collected in an internal database for real-time enforcement and historical analysis, and future use in CDS Metrics.
3. If event data is received later, it could be bulk-added directly to your agency's Events database without a need to use an API.
4. Could create a data visualization tool or map combining Events with Curbs locations.
5. See [code examples](#) in CDS.



## Metrics API

1. Need to write a data processor that converts individual Events data into Metrics Sessions to serve up to approved parties.
2. Can use session data to calculate Metrics Aggregates like turnover, occupancy, and dwell time, all using CDS methodology.
3. Could visualize data using standard analysis software, or visualize over time and space using locations from Curbs on standard mapping software.
4. See [code examples](#) in CDS.



# REQUIRED KEY PLAYERS

Program work is contingent on having the right mix of public and private partners willing to work collaboratively and participate in mutually beneficial curb use outcomes. Look for partners who can host curb data projects, contribute their knowledge and needs, and participate in OMF Member volunteer leadership roles.

- **Cities:** cities and their authorized partners providing curb management or data analysis services on behalf of cities need to have programs that meet our scope, work with us to help develop a way to publish info, and are interested in measuring how curbs are used.
- **Curb users:** commercial partners to use the curb area data from cities and potentially send usage event data back.
- **Technology companies:** partnering with cities and curb users to build tools to publish regulations, create/ingest event data, analyze utilization

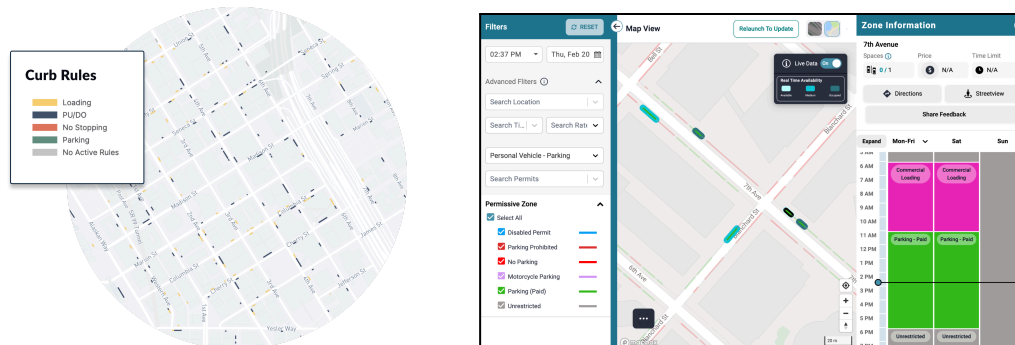


# PROJECT SHOWCASE

Showcase of curb projects in cities and other organizations that have been using CDS and how they did it. [CDS Users](#) web resource has a longer list of cities, vendors, and companies using CDS.

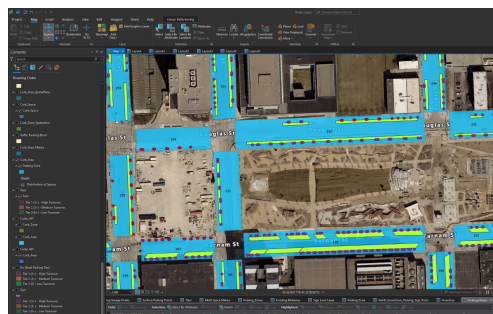
## Seattle

- [Curbs, Policies, Events public endpoints and real-time availability](#) w/ Curb IQ
- [Interactive visual web map](#) w/ Curb IQ
- [Seattle SMART Grant Digital Commercial Vehicle Permit Project](#)
- [Curb rules blog post](#)
- [CDS project](#) with Populus



## Omaha

- [Interactive GIS map](#) using CDS Curbs data
- Public Curbs API data feeds
  - <https://api.parkomaha.com/cds/v1/curbs/policies>
  - <https://api.parkomaha.com/cds/v1/curbs/zones>
  - <https://api.parkomaha.com/cds/v1/curbs/areas>
- Curb and parking digitization with [ESRI CDS plugin](#) and tools





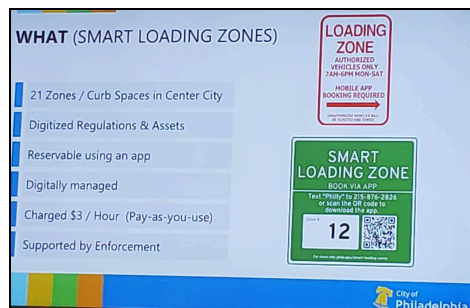
## Pittsburgh

- [Legislation](#) and authorization
- [Dynamic loading zones](#) with [Automotus](#)



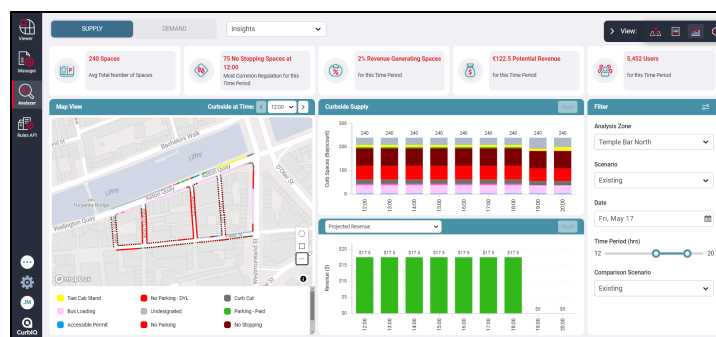
## Philadelphia

- [Smart loading zones](#) with CDS and sensors



## Dublin

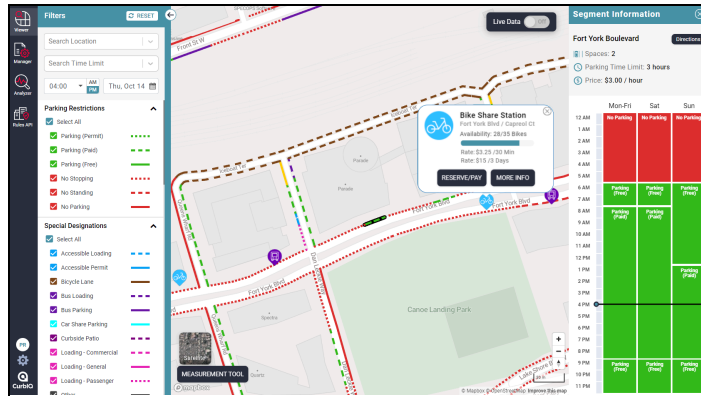
- [Digital mapping and curbside management](#) with CurbIQ





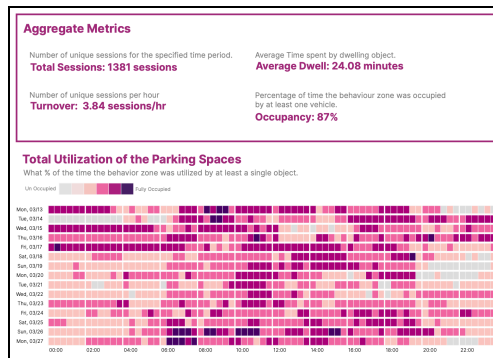
# Toronto

- Citywide [Curbside Inventory Digitization](#) with CurbiIQ for various use cases
  - [Curbside Patios](#)
  - [Bike lane Redesign](#)



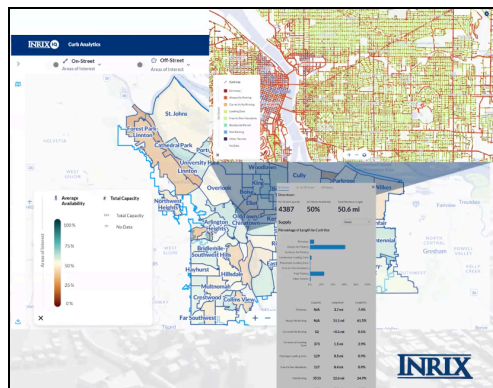
## New York City

- Curb management and CDS Metrics report



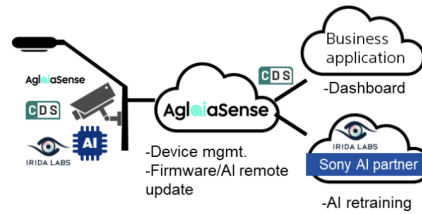
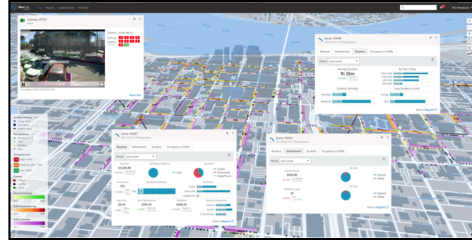
## Portland

- Curb digitization across 4,000 miles with Events and Metrics tracking with INRIX



## San Jose

- [Asset management translation](#) and public data feeds (coming soon) with Umojo
- AglaiaSense and Sony cameras and sensors, with CDS-on-a-chip Events API hardware technology



**SMART Curb Collaborative**

The Open Mobility Foundation’s SMART Curb Collaborative is a group of cities that are all recipients of the USDOT’s SMART Grant with a focus on curb management. Each of these cities are piloting projects that utilize CDS. The feedback and experience from these pilots will be key to the creation of the next release of CDS.

**The SMART Curb Collaborative members are leveraging CDS to:**

|                                                                                 |                                                       |
|---------------------------------------------------------------------------------|-------------------------------------------------------|
| Pilot zero-emission delivery zones and low-emission last-mile delivery services | Pilot bookable smart loading zones                    |
| Create new digital commercial vehicle permits                                   | Inventory objects at the curb                         |
| Understand and communicate curb use with real-time information                  | Create a digital catalog of existing curb regulations |

**Collaborative Procurement**

The Curb Collaborative members leveraged Sourcewell, a collaborative procurement purchasing program based in Minnesota. This provided early learnings on rapid and collaborative procurement models. Learn more on our [blog post](#) about the topic.

Want to learn more? Read an intro to the [Curb Collaborative](#) and visit the [OMF website](#).

# PROVIDING FEEDBACK

As the project progresses, there are immediate opportunities to provide the OMF feedback via our online working documents, specification, and discussion areas. Additionally, the OMF welcomes agencies to present their successes and challenges to the Curb Working Group via the Steering Committee, CDS mailing list, GitHub, or to OMF staff.



# HOW TO GET INVOLVED

If you are a city, company, or individual who is interested in this effort and would like to learn more about how to get involved, please [visit the OMF website](#). The Curb Management Working Group is public and open to both OMF members and individual contributors. To participate, you can:

- Read and understand our [Scope of Work](#) document
- Review the [Curb Management Working Group](#) wiki
- Follow the progress and chime in on our [Curb Data Specification](#) (CDS) repository
- Join [monthly meetings](#) to discuss issues and hear from other contributors
- Get announcements from the [Curb Management mailing list](#)
- Start a project and bring back your learnings

If you have any questions about how to get involved, [contact us](#) on the OMF website.

