Plan Overview

A Data Management Plan created using DMPTool

Title: SMART Curbs: City of San Jose's Curb Digitization and Management Pilot

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Template: SMART Grants Stage 1 Data Management Plan (DMP)

Project abstract:

San José has ambitious transportation and climate goals and has pledged to achieve net zero carbon emissions by 2030 with at least half of trips made by transit, biking, micro-mobility, or on foot by 2040. San José's Downtown Transportation Plan (2022) identifies curb management and demand-based parking pricing as strategies needed to reach these climate goals. Today, parking-dominated curbs in Downtown San José face growing demand for reliable bus service, safe bikeways, efficient on-demand passenger loading and goods deliveries, and enjoyable public places like parklets, outdoor dining, and green infrastructure. Without adequate spaces for all these uses, delivery workers often double park and obstruct traffic, transit riders are delayed, pedestrians and bicyclists are put in danger by blocked bike lanes, people with disabilities are dropped off far away from their destinations, and business activities are stymied. The result: inefficiency across all modes of transportation.

At full-scale implementation, San Jose's limited curb space will be more flexible, more efficient, and more responsive to its diverse users. Proactively managing the curb is essential to meeting our climate goals as well as creating safer, more reliable, more resilient, more equitable, more vital, and more integrated public spaces for all San José residents, particularly those in Areas of Persistent Poverty and/or Historically Disadvantaged

Communities.

The Stage 1 pilot project will use technology to develop a strategic and equitable approach to managing Downtown's limited curb spaces to meet the competing and growing demands for various curb uses. The project will include two components. First, the pilot project will collect curb inventory data for all streets in Downtown San Jose using a combination of professional services and a software platform. Second, the pilot project will collect curb utilization data from approximately 20 street blocks in Downtown San Jose's Areas of Persistent Poverty and/or Historically Disadvantaged Communities using a combination of sensor- and camera-based infrastructure. These two components will help San Jose DOT implement curb management strategies, monitor curb uses, and provide real-time broadcasting of curb use information to the public.

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Copyright information:

SMART Curbs: City of San Jose's Curb Digitization and Management Pilot

1. City of San Jose's Curb Digitization and Management Pilot
2. SMARTFY22N1P1G07
3. Wilson Tam
4. N/A
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6. City of San Jose Department of Transportation
7. [News on the Award](); project website in progress
8. December 15, 2023

1. The Stage 1 pilot project will use technology to develop a strategic and equitable approach to managing Downtown San Jose's limited curb spaces to meet the competing and growing demands for various curb uses. The project will include two components. First, the pilot project will collect curb inventory data for all streets in Downtown San Jose using a combination of professional services and a software platform. Second, the pilot project will collect curb utilization data in parts of Downtown's Areas of Persistent Poverty and/or Historically Disadvantaged Communities using a combination of sensor- and camera-based infrastructure alternatives. The curb inventory and utilization data will be standardized and incorporated in a curb data management platform.

2. Curb Inventory Data: The Stage 1 pilot project will collect curb inventory for all streets in Downtown San Jose. It will then digitally represent the curb space through a set of 3 application programming interfaces (APIs) -- Curbs API, Events API, and Metrics API -- that can be made available to San Jose DOT, vendors, and service providers. The pilot project will use the APIs to develop a central management platform. The platform will digitally publish curb locations and regulations and transmit real-time and historic events happening at the curb. The platform will allow users to visualize and/or modify curb inventory data in a GIS environment.

   Curb Utilization Data: The Stage 1 pilot project will procure a combination of intelligent sensor- and camera-based infrastructure to monitor and measure utilization of roughly 400 curb spots on approximately 20 street blocks in Downtown San Jose's Areas of Persistent Poverty and/or Historically Disadvantaged Communities. Vehicle-to-infrastructure communication (V2I) is the two-way exchange of information between cars, trucks and buses and road infrastructure via a wireless connection technology. Specific V2I technology for the curb used in the Stage 1 pilot project will be determined based on a competitive procurement. The pilot project will test and learn from multiple intelligent sensor- and camera-based infrastructure alternatives. Potential types of V2I technology under consideration include pole mount sensors, parking meter sensors, in-ground sensors, block sensors, and camera detection.

3. The data to be collected are limited to inventory and utilization of curb spaces and will not contain any private or sensitive information. The inventory data is strictly to map the curb spaces and provide information about their functions, regulations, and restrictions. The utilization data include event type, start time, end time, and detection of conflicts and violations.

4. The data will allow San Jose DOT to prototype various curb management policy initiatives to advance project goals of reducing greenhouse gas (GHG) emissions and improve transportation safety and equity. For example, sensors will be installed to monitor curb space utilization in real time, allowing the data to be shared across multiple platforms and accessible to the public via an existing app. The real-time availability of the

data will help bicyclists and automobile, motorcycle, truck, and transit drivers efficiently navigate the streets to find curb access, reducing idling, circling, conflicts, double parking, and, in turn, vehicle miles traveled and GHG emissions. The data will also help streamline parking payment and citation system. In addition, curb utilization data will be used to determine appropriate reallocation of different types of curb spaces on each street and pursue demand-based parking pricing.

1. The file formats will be identified in consultation with the Data Technology Consultant and V2I Technology Vendor(s). It is assumed that a variety of file formats will be used. Potential formats include but are not limited to geographical information system (GIS) files (.shp, .dbf, .shx, .json, .geojson), Microsoft Office files (.xlsm, .xlsx, .docx, .docm, .pptx), video files (.mpg, .mov), data standard files (.cds, .cvs, .txt), and picture files (.jpeg, .png, .heif, .heic).
2. Datasets will be available in open, non-proprietary formats such as .cvs and .txt to the fullest extent possible. In addition, the collected curb inventory and utilization data will be represented in the Curb Data Specification (CDS) Version 1.0 standards issued by the Open Mobility Foundation (OMF). Since 2020, the City of San José has been an active member of the OMF's CDS steering committee and has been working collaboratively with other cities and organizations to create a standard as an open-source platform. CDS is available to public agencies, vendors, and service providers to use to ensure standardization. CDS is widely used by major cities throughout the United States including several cities awarded the SMART grant in a collaborative.

3. Besides the CDS 1.0 data standards, the project will adhere to metadata standards set by the City of San Jose's Open Data Portal requirements and the Federal Government DCAT-US Metadata Schema (v1.1). The CDS data structure is documented on the OMF GitHub public website.

1. We do not anticipate collecting or using sensitive data. Most of the project data collected will be public data as it will be derived from curb inventory, utilization, and turnover in the public rights-of-way. Depending on the project's community engagement plan to be developed, data collected from surveys or interviews may contain sensitive information related to the socio-demographic profile of participants.

2. The project will adhere to the City of San Jose's [Digital Privacy Policy](#) (adopted by City Council in December 2020) and the [Digital Privacy and Artificial Intelligence Manual](#) (last updated July 2023). Our privacy principles include:
   - Notice: Providing notice about the collection, use, and sharing of personal information at the time such information is collected. San Jose DOT will make every reasonable effort to provide a privacy notice when basic municipal services are requested or delivered.
   - Retention: Developing, maintaining, and following the City of San Jose data retention schedule. San Jose DOT will ensure that identifying information is deleted or deidentified after the retention period expires.
   - Minimization: Minimizing the collection and processing of identifying information and limiting collection to only what is necessary to provide services and to conduct business. When personally identifiable data is required to deliver or improve a service, San Jose DOT will anonymize, deidentify, pseudonymize, or otherwise mask this information.
   - Accountability: Maintaining documentation, available for public review and third-party monitoring, to evidence compliance with our privacy principles and Policy. If any information under our control is compromised or if residents are impacted due to a breach of security or negligent maintenance of information systems, San Jose DOT will take reasonable steps to investigate the situation and notify those individuals whose information may have been impacted.
   - Accuracy: Making every reasonable effort to provide the public with information on how predictive or

automated systems are used and will institute processes to correct inaccurate information or methodologies in those systems. San Jose DOT may use predictive or automated systems and technologies to support decision making, but some degree of human input and oversight into decision making is also required.

- Sharing: Following clear data governance procedures and instituting information sharing agreements when sharing information with outside entities, which shall strive to enable effective information sharing while following the City of San Jose's Digital Privacy Policy.
- Equity: Being mindful of the populations it serves and how data about members of the public, including vulnerable populations, can and should be used. San Jose DOT will strive to advance equity in a data-driven way while ensuring that PII is used only in accordance with this policy. San Jose will work to mitigate the impact of algorithmic and data bias.

3. Before data collection begins, the project team will determine if the data planned to be collected is public, confidential, or personally identifiable (PII). Before deploying any V2I technology alternatives in this project, the technology alternative will need to be reviewed and approved by the City of San Jose's Digital Privacy Office.

1. The City of San Jose will hold the intellectual property rights for the data collected or used during the project, as well as the curb management platform developed by the project.

2. San Jose DOT will store data files on the City of San Jose's Microsoft SharePoint system, the established cloud-based data file storage system. The SharePoint system is managed by San Jose DOT and the City's Information Technology Department in compliance with the City's cybersecurity and data access protocols. Furthermore, data sharing will be conducted via a curb data management platform developed as part of the project and will be connected with the City of San Jose's Open Data Portal. In compliance with the City's Open Data Policy (April 2016), San Jose DOT will provide free access to data in a machine-readable format, under an open license that allows the public to re-distribute and re-use the data.

3. The USDOT will reserve a royalty-free, nonexclusive, and irrevocable license to reproduce, public, or otherwise use and authorize others to use the work for government purposes.

4. There are no additional restrictions outside the City of San Jose's Digital Privacy

1. San Jose DOT intend to archive the data collected in the project because the data will be incorporated in a curb data management platform used for monitoring curb use, analyzing trends, supporting implementation of curb management strategies, and evaluating project performance over time. In compliance with the City of San Jose's data retention schedule, San Jose DOT will keep most data files for 5 years after project completion and will then delete or anonymize the data.

2. It is anticipated that the datasets will be archived in the following locations:
- City of San Jose's Open Data Portal
- Open Mobility Foundation Github
- City of San Jose's SharePoint system
- Curb Data Management Platform (to be developed as part of the project)

3. The datasets and megadata that will be archived have not been defined yet until the Data Technology Consultant and the V2I Technology Vendors are procured. Based on the types of datasets to be developed, the

project team will create metadata in compliance with the Federal Government DCAT-US Metadata Schema (v1.1) to ensure discoverability.