Street addresses provide a visual, orderly way to navigate our complex environment. This FAQ is an update of previous FAQs providing some basic information about addressing practices in address assignment and in address data management.

**Why is addressing important to the GIS community?**

- Addresses are a systematic system of identifying the geographic locations of places, objects and events. Virtually all of the work that is done by local governments use addresses as a locational reference system and as an aid to navigation. Addresses are embedded in virtually every system (digital and paper) used by local governments. They are also used by citizens, private businesses, and state and federal agencies.

- Many addresses exist only in tabular form. They have not been geo-located or associated with a specific object, place or event. As GIS technology has evolved, the ability to precisely locate individual address points has matured. GIS professionals and users are increasingly using address points in sophisticated data analyses to support decision-making.

**What Address Data Standards Exist?**

- Within the United States, three organizations have published national address data standards: the FGDC (Federal Geographic Data Committee), NENA (National Emergency Number Association), and USPS (US Postal Service).

- The FGDC standard covers address data content, classification, quality, and exchange. It was developed by URISA’s Address Standard Working Group (ASWG) for the FGDC, which endorsed it as a federal standard in 2011. The United States Thoroughfare, Landmark, and Postal Address Data Standard is maintained jointly by the U.S. Census Bureau and Department of Transportation. The standard can be found at: [https://www.fgdc.gov/standards/projects/address-data/index.html](https://www.fgdc.gov/standards/projects/address-data/index.html).

- In 2014, NENA adopted an address data exchange standard, the NENA Next Generation 9-1-1 (NG9-1-1) Civic Location Data Exchange Format (CLDXF) Standard, to support the exchange of address information about 9-1-1 calls. By design, CLDXF is closely aligned with the FGDC standard. CLDXF has been incorporated into and augmented by the NENA Standard for NG9-1-1 GIS Data Model (adopted in 2018). This standard provides a set of data exchange standards for spatial data layers that are required and recommended for handling and responding to 9-1-1 calls. The CLDXF standard is posted here: [https://www.nena.org/page/NG911CLDXF](https://www.nena.org/page/NG911CLDXF). The GIS Data Model is available here: [https://www.nena.org/page/NG911GISDataModel](https://www.nena.org/page/NG911GISDataModel).

- Since at least the 1970s, USPS has maintained USPS Publication 28, Postal Addressing Standards (updated most recently in June 2020) that specifies how addresses should be standardized and formatted for placement on mail pieces. It describes the content and format for standardized addresses, and it is a foundational document for the FGDC and NENA standards. Strictly speaking, it is a data presentation standard. USPS Publication 28 is posted here: [https://pe.usps.com/text/pub28/welcome.htm](https://pe.usps.com/text/pub28/welcome.htm).
The NENA and USPS standards are intended for specific business purposes. The FGDC standard is intended to be used as the basis for a general-purpose address repository, which can provide address data in multiple formats as required by the many systems and workflows that use address data within an organization.

How are Addresses Assigned?

Address assignment in the United States is a function of the most local level of general purpose government—a city, town or township if present, or a county if not. Exceptions apply to Federal lands/facilities, state lands/facilities, and tribal lands and facilities. Each local jurisdiction or address authority may design and implement its own system of addressing and street naming. Coordination is desirable between local address authorities and the federal, state, and tribal administrators of lands that are fall within the local address authority’s jurisdiction.

Due to the local nature of address number and street name assignment, standards for the assignment of addresses to specific objects have not been set at the national level. Each local government (city/town or county) assigns according to its own business rules. There is considerable variability among the over 20,000 address-assigning jurisdictions in the United States. Many local governments have Address Manuals or ordinances that provide guidance to their staff in assignment and maintenance of addresses within their jurisdiction.

There are numerous types of addressing systems in use in the U.S. The most common urban type is a “grid” form, while areas with more challenging topography and rural land uses often use linear referencing (e.g., mileposts) as the basis for their systems. There is no “best practice” system for assignment, although there are certain rules that are commonly followed such as systematic sequential numbering with odd and even numbers assigned on opposite sides of the street and no duplication of street names or addresses.

People locate specific places based on their understanding of the addressing system using visual aids found in the physical environment: street name signs and address numbers posted on buildings, or listed in records of the local government.

While digital devices may be useful in locating an address, a well-designed address system should be navigable on the ground without benefit of any device that is dependent on an internet or cell phone connection to supply a map and routing information. Some systems intended for use with digital devices, such as US National Grid, Google Map Plus Codes, and what3words, are often described as providing addresses, but in fact they provide representations of geographic coordinates, which are a completely different type of spatial reference system from addressing systems. These systems are useful in areas without standard addressing systems, street signs, and posted addresses such as wilderness areas or open public spaces with unfamiliar like Balboa Park, amusement parks, or zoos. However, they do not provide any human discernable means of figuring out where a location is that can be navigated to from a current location without recourse to digital systems that contain these locations and the algorithms to create a route between any two or more points via the street network.
What current activities affect addressing in the GIS community?

- **Three major areas** of activity that involve address data are currently affecting or with soon affect local, state and federal address creators and users.

  - **Redistricting**: The 2020 Census has been completed. The next major step in use of Census data is redistricting of electoral districts. This effort, scheduled in 2021, will affect how voters elect congressional representatives as well as many state officials.

  - **Next Generation 911**, or NG9-1-1, is a standards-based initiative within public safety and 9-1-1 community to upgrade the entire call delivery, call handling, and dispatching systems to integrate with new forms of communications (including text, email, voice-over-internet phones, smartphones, and social media), and to identify incident and caller locations more precisely through the use of geospatial technology, GIS data and address points. Again, this is a critical function of local government, with significant requirements for address data provided by local address authorities. Many jurisdictions are already using dispatching software that uses address points and GIS technologies, while others are still working on this transition.

  - **Address Theme in NSDI and Public National Address Database (NAD)**: Addresses were added to the National Spatial Data Infrastructure in 2016 as a National Geospatial Data Asset. This was strongly recommended and supported by URISA. The Census Bureau and U.S. Department of Transportation are the Lead Agencies for the Address Theme, and are developing a publicly accessible National Address Database. Data are aggregated from the creators (local jurisdictions) to states, and thence to the federal level into the NAD. Information on the NAD can be found here: https://www.transportation.gov/gis/national-address-database/national-address-database-0#map

How is URISA involved?

- URISA has been a leader in promoting the development of national standards through the ASWG formed in 2004. Members of this group were the primary authors of the United States Thoroughfare, Landmark and Postal Address Data Standard, endorsed by the Federal Geographic Data Committee (FGDC) in 2011.

- URISA’s [NG9-1-1 (Next Generation 911) Task Force](#) is working with the ASWG and NENA on standards and procedures for provisioning NG9-1-1 public safety systems with GIS and address data.

- URISA regularly schedules conference sessions, workshops and webinars on Addressing, NG9-1-1, and other aspects of addresses in GIS applications. From 1998 through 2013, URISA also hosted an Addressing Conference, with sponsorships from the U.S. Postal Service and NENA. 2021’s GIS-Pro Conference includes an Addressing and Next Generation 911 track with presentations focusing on addressing in local, state and federal applications, and important updates on address standards and best practices.

- URISA Members participate on the committees developing the National Address Database, FGDC standard updates, and NENA standards.