The Need for a National Address Database

A Report Submitted by the
National Geospatial Advisory Committee
December 2012

1. Introduction and FGDC Guidance

Among the key issues assigned for National Geospatial Advisory Committee (NGAC) review during 2012, the Federal Geographic Data Committee (FGDC) requested advice regarding a National Address Database:

> Numerous stakeholders have identified a critical need for a National Address Database. A complete, current, and accurate address list (such as street number, street name, city, state, zip), along with the associated geocodes and x, y coordinates (such as Latitude/Longitude, GML point geometry, spatial reference system) and associated metadata are essential for a variety of government and non-government functions, including emergency response, conducting the Census, income tax collection, delivering the mail, planning, routing, and many others. Currently, many agencies and organizations either collect, purchase, or lease address information in a non-coordinated fashion. The FGDC is requesting that NGAC develop a white paper addressing the following points:
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>   1. The need for a National Address Database and the benefits and potential savings and efficiencies that will be realized
>   2. Potential concerns about a National Address Database, including privacy issues
>   3. Possible approaches for development of a National Address Database, including the roles of Federal, State, local, and Tribal governments, commercial partners, as well as other stakeholders[1]

In response, the NGAC formed a National Address Database Subcommittee[2] to prepare recommendations for consideration to the NGAC as a whole and to the FGDC. This report, which is organized as a response to the three points raised by the FGDC, is a summary of the analysis performed by the National Address Database Subcommittee and of the subsequent review and comment by the NGAC as a whole.

2. Vision

Current and accurate nationwide address data, in an open standards-based digital geospatial format, is critical to the quality and cost-effective provision of innumerable services provided by multiple levels of government and supporting commerce. It is an essential requirement for a variety of functions, including emergency management, as well as administration, research, publications, mapping, routing, navigation, and many other purposes.

The NGAC believes there is a critical need for a National Address Database as a single repository for storing, aggregating, and sharing essential address information. To meet this need, agencies closest to the task and with the most at stake must be empowered and funded to develop, maintain, and share standardized digital geospatial address data.

The NGAC proposes the following *Vision Statement* for a National Address Database.

> *"The National Address Database is an authoritative and publicly available resource that provides accurate address location information to save lives, reduce costs, and improve service provision for public and private interests."*

To achieve this vision, the National Address Database is conceived as:

> *"A continuously updated, nationwide, publicly available address database, with associated geographic coordinates, that meets the needs of Federal, Tribal, State and local stakeholders. The database stores all residential and non-residential structures and interior units, mailing addresses, plus other locations of critical interest (e.g., highways, bridges, and landmarks). This database is an inventory and a standards-based, distributed network of sources rather than a single, centralized database. Most address data are developed locally, with local and state custodians acting as regional integrators who merge local data into region-wide databases. The data are updated in a timely and quality-controlled manner. Federal stakeholders consume and use locally developed and aggregated address data stored in a standardized National Address Database."*

The NGAC also recognizes the significance of OMB Circular A-130, "*Management of Federal Information Resources.*"[3] Section 7, subsection b notes, *"Government information is a valuable national resource. … It is a means to ensure the accountability of government, to manage the government's operations, to maintain the healthy performance of the economy, and is itself a commodity in the marketplace."* Section 7, subsection c adds, *"The free flow of information between the government and the public is essential to a democratic society."* The issue of public access to the National Address Database must be discussed and resolved.

3. Why a National Address Database Is Needed

Currently, there is no publicly available address database that can be used for public safety, and other governmental purposes, to accurately locate any given address on a map throughout the United States. There are a myriad of reasons as to why the Nation needs a National Address Database. The primary reasons include:

3.1 Emergency Response and Public Safety

Addresses are the most commonly used way to communicate the location of an emergency. Improving the ability to locate an incident quickly and accurately for emergency response and public safety is the most compelling reason to develop and maintain a shared National Address Database. There is an increasing need to share accurate address location resources between public safety and emergency response agencies for coordination and/or the ability to provide fail-over backups to each other. This need will increase with the advent of Next Generation 9-1-1

3.2 Improve Services

Critical and essential government services, as well as businesses and individuals, depend on access to digital addresses and their geographic locations to satisfy their mandates, meet business objectives and achieve efficiencies. The Federal government alone builds, maintains and pays for multiple address databases that are, to varying degrees, redundant in terms of basic data. Each

responsible agency has a stake in maintaining these databases to meet its specific agency requirements in achieving its mission. The result is inconsistent national addresses, redundant business processes, and extra costs as multiple agencies expend budget on developing the same data.

The table below provides examples of how address data are used. The listed government agencies require high quality, current address data to perform their functions.

USERS	PURPOSE
FEMA	Pinpoint disaster areas, provide relief
Emergency Response, E9-1-1	Emergency response by first responders (police, fire, ambulance, rescue)
Department of Homeland Security	Locate and protect critical infrastructure
Public Safety	Crime analysis and response, incident/citation tracking
Voter Registration	Precinct assignment
State Dept. of Revenue	Sales tax collection and distribution
USPS, UPS, FedEx	Mail and package delivery
Census Bureau	Mail census and survey forms, geocode responses; Census gathering and tracking; locate non-respondents
Health and Human Services Agency	Track medical benefits, disease, births/deaths, and vulnerable populations.
Call Before You Dig (8-1-1)	Infrastructure protections, development coordination
Department of Transportation	Locate traffic accidents, access to FHWA funds to improve dangerous non-state roads.
Utilities (public & private)	Hookup, service calls, billing, broadband buildout
Map and address companies (e.g. MapQuest, Navteq and TomTom)	Repackage/reformat accurate data for insurance companies, location based service companies and utilities
Retail/Services (e.g., Sears, local plumber)	Delivery of goods and services, new site locations
Assessor/Taxation	Property and owner location
Planning & Zoning Office	Building permit, planning studies

3.3 Current Address Systems Are Fragmented
Many local Address Authorities, usually a city, town, or county, create addresses. The new address information is provided to the property owner and is usually distributed to other organizations that need it. These organizations include various city and county offices, the U.S. Postal Service (USPS), the Census Bureau, telephone companies, utilities, school districts, and 9-1-1 authorities. From that point, each of these organizations is responsible for maintaining its own address file. Significant problems result from the current fragmented state of address systems, including:
- Conflicting and incompatible standards for address data
- Budget and effort spent on maintaining competing redundant, incomplete, and scattered databases
- Wasted taxpayer money as multiple agencies collect and maintain similar data.
- 9-1-1 (emergency response), 8-1-1 (call-before-you-dig) and 3-1-1 (outage/repair) services cannot wait until structures are built or homes are occupied for the creation of address locations
- Timing inconsistencies in the assignment of addresses as parcels are created or changed
- Agency databases diverging over time

- Inconsistent delivery of new addresses to stakeholders
- Inconsistent capture of geographic coordinates of addresses
- Inconsistent assignment of addresses by geographic coordinates (reverse geocoding) for burgeoning location-based services commerce
- Agencies such as the USPS cannot keep up with, nor verify, the 2 million new addresses added each year and must rely on input from cities and their own carriers. The Decennial Census suffers from the same business-process problem. However, these inputs are often inconsistent or not timely.[4]

3.4 Real and Potential Cost Savings

Integrating and standardizing disparate address data will eliminate redundant data and processes, thus saving taxpayer dollars, improving efficiencies, as well as providing higher quality service, and authoritative address data for improved delivery of services. More importantly, this approach will further reduce the likelihood of address discrepancies and conflicts related to emergency response and government and commercial service provision, saving resources and lives.

- Many jurisdictions and government agencies maintain multiple, redundant or inconsistent address data about the same territories, causing significant additional expenses in both collecting the data and reconciling differences among the various databases.
- States working to collect and distribute sales taxes are struggling to do their work economically and equitably. Because tax rates can vary across each state, knowing which addresses are in each tax jurisdiction will improve collecting taxes on goods purchased by mail order or through the Internet.[5]
- Increased transparency and opportunities to identify potential cost savings will result from using addresses to conduct geographic-based fraud analysis.

3.5 Unrealized Benefits

Aside from improving the ability for emergency response and public safety to save lives by locating people quickly and accurately, a national-scale, accessible address database will also deliver significant secondary benefits. As an example of potential benefits, the Danish Government opened its address register to the public in 2002. A recent study determined the direct economic benefit of sharing their national address data is $18 million annually. Seventy percent of the economic benefits went to the private sector, benefitting the economy directly, while thirty percent went to the public sector.

Similarly, the State of Oregon is advancing a centralized, web-based address point database that would be built and maintained by local address authorities. Justifications include decreasing overall effort and cost, increasing accuracy, access and improving emergency response and the provision of myriad other governmental services.

4. Potential Concerns with a National Address Database

4.1 Census and Title 13 Limits on Sharing Address Data

If not for the limitations on address data sharing under Title 13[6], U.S. Code, the Census Bureau's Master Address File/Topologically Integrated Geographic Encoding and Referencing System (MAF/TIGER) System would be a logical starting point for a National Address Database. In addition to site addresses, there are coordinates associated with each housing unit, thus making it useful for emergency response in the public safety arena, as well as the delivery goods and services to

citizens in both urban and rural areas. The Census Bureau has decades of experience updating, verifying, and maintaining addresses, and more importantly, has built partnerships with thousands of governments that participate in the Census Bureau's address data update efforts. However, Title 13 constrains the use of MAF/TIGER data.   Robert Groves, former director of the Census Bureau, stated in an interview with the Washington Post, "because of the Constitution, the country will always have a census. But how we do the census and surveys will have to change." For example, a unified National Address Database could include addresses, but not the occupant or owner of the structure at that address. The supplementary address could be maintained separately by the Census Bureau and a link established to the National Address Database.

Title 13, U.S. Code describes the overall duties and responsibilities of the U.S. Census Bureau. Given the complexities of modifying Title 13, the NGAC approach is to identify options for developing a National Address Database by focusing on changes to existing roles, responsibilities and workflows within the scope of existing statutes.

4.2 Addresses and Public Privacy

The NGAC recognizes that concerns with privacy issues are vitally important and need to be addressed in the development of a National Address Database. As a means to allay these concerns, we believe that a National Address Database should only contain addresses and not contain identities of individuals, owners, or occupants.

Addresses exist to better describe physical locations for human end-users. Address assignment is largely, if not entirely, a public act of government. Official recognition of an address is best when it comes from the appropriate address authority, but if a provider of public services (e.g., 9-1-1 authorities and public utilities) recognizes an address it is also inherently public information. It is strongly in the public interest to know if 9-1-1 and other services have the correct location for specific addresses. In addition, when address locations are publicly available, the public can act in its self-interest, sharing in the responsibility for the maintenance of accurate address data. There may be cases where addresses and their locations have a legitimate need for protection (e.g., military and other national security installations). In such cases, reasonable National Address Database policies should be developed to protect or exclude these addresses. The State of Florida's public records statutes, especially Chapter 92, provide examples of redaction related to public safety officials.

4.3 Census and USPS

A single Federal entity, such as the Census Bureau or U.S. Postal Service (USPS), or combination of the two, could be identified as the potential custodian of a National Address Database developed to be comprehensive in its structure. The Census Bureau currently maintains the Master Address File/Topologically Integrated Geographic Encoding and Referencing System (MAF/TIGER System), a nationwide address database, with cooperative input from the USPS and tribal, state and local governments. As discussed previously, the Census Bureau (Title 13), as well as the USPS (Title 39[7]), both cite federal law and court decisions for their inability to share their respective data inventories of street addresses and corresponding geographic coordinates. In addition, the irregular periodicity of the Census's data update cycle and the USPS's focus on only deliverable addresses are barriers that would need to be overcome if either organization were to steward a National Address Database. This could be accomplished by an approach such as the National Information Exchange Model (NIEM), which defines standard data structures and formats for data sharing.

4.4 Military Addresses

While there is a need for security of address information for military bases, this must be balanced with the public safety needs of the personnel living and working on these bases. Most military bases have agreements with local government agencies (city/county) for reciprocal services in the case of major emergencies or failures of key infrastructure. A number of bases have agreements with local counties for additional police support in the event of a major incident and for fire response in the case of a major fire. For these responding units to know where the emergency is, the base must share address and building number information with local governments. To balance the security needs, withholding the specific function of an address or building can protect information about "what the building is or how it is used." While this is critical information for the first responders (military assets), it is not critical for the local agency responders. Rather the critical information is "where" the building is in relation to the streets and cross streets contained on the base. Sharing minimal locational information will facilitate emergency response and still protect the security interests of the nation and the base, as well as the privacy of its residents and workers. There are many cases of injury or death of military family members and military/civilian DOD personnel on military installations/ bases that might have been avoided if accurate addresses were available. The fact that DOD made a policy decision that where street addresses are provided to the 2010 Decennial Census Collection effort, that Census listers would not collect housing unit locations for addresses (x, y coordinate locations for housing units), for security and privacy reasons. This may still leave military, civilians and family members at increased risk. We believe the DOD, as well as the nation, must come up with an optimal solution that provides for a balance among security, privacy and safety concerns.

4.5 Additional Considerations

As a nation, we face several additional problems due to the lack of a National Address Database. Lives and property may be lost because first responders cannot quickly obtain an address to accurately locate an emergency event. In the wake of Hurricane Katrina, the lack of address information, which accurately located where people lived, slowed and frustrated rescue and recovery operations. It is a problem today as properties go into foreclosure and inconsistent address information hampers communication among courts, law enforcement, banks, inspectors, home owners and residents. Construction sites create an ongoing dispatch problem because there is often no worksite address where 9-1-1 centers can send assistance to injured workers. To address these concerns, and related issues of liability, a National Address Database should be built to the highest standards of accuracy.

5. National Address Database Development Options

5.1 Current Practices

Many local governments have developed centralized databases that share information across departments and with the local 9-1-1 authority. Successful models assign addresses early in the development process, beginning with the acceptance of subdivision plats and authorization of building permits. Geographic coordinates are added from GPS field measurements, orthophotography or official maps and sketches of building location submitted with the permit application. New addresses are verified with quality control procedures before being accepted. Information is sent to all stakeholders - directly or via a regional custodian - as soon as the address is issued.

6

In a few places, the county or 9-1-1 authority has become the regional custodian assuming responsibility for maintaining a central authoritative database. The regional custodian is responsible for synchronizing new information streaming in from cities and towns (with various levels of computer sophistication and in different formats). Corrections identified by any of the participants are reported back to the local and regional custodians where they are verified, standardized, documented, and distributed. Address and their geographic coordinates are made available to the public via the Internet; while personal information, such as name and phone number, are kept private.

Several states have developed a statewide system, or support their counties in the development of a federated system that maintains and delivers address data across the state. Maine, Connecticut, and Vermont collect address data from their towns. Rhode Island is developing a similar system. Ohio, Indiana, and West Virginia are building systems that will collect address data from their counties. Arkansas has created a state-level database of address ranges. States are also finding a variety of ways to fund these efforts. Vermont uses 9-1-1 fees to cover the cost of their system. The Ohio program includes both roads and addresses, and matches local funding with state capital funding and funding from other sources. Utah, using NTIA SBI funding, is in the process of signing contracts with counties that require the compilation and maintenance of a master address list (including geographic coordinates) via a public-facing, web-based end point. County Commissions must also designate a single point of contact for the ongoing address point project.

The National Emergency Number Association (NENA) is working diligently to assist local 9-1-1 authorities as they move to the Next Generation 9-1-1 (NG911). NG911 is driving requirements for better, more accurate mapping so that emergency calls made with mobile devices that transmit their location coordinates (points) can be accurately matched to street addresses and other map data, using GIS, to assist 9-1-1 dispatchers.

5.2 Best Practices
The National Address Database should be built using consistent, Federal government standards. The FGDC has adopted the United States Thoroughfare, Landmark, and Postal Address Data Standard (FGDC-STD-016-2011). Once implemented, this standard will make it significantly easier to share data across jurisdictions and upward to state and national repositories. The standard may also be useful for address data integrators to use as a common format for disparate address data coming from various local entities. It may be more useful to all as data templates and conversion tools become available to assist in its implementation.

The National Address Database data aggregation and maintenance process must be effective and efficient while allowing for flexibility from data partners to account for their diverse technological capabilities and resource availability. Options for the use of web services, bulk loading operations and cloud-based heads up editing are all likely to become part of the ultimate solution. Local expertise is critical to the initial National Address Database creation and its ongoing maintenance and enhancement; web-based strategies that deploy this expertise using standards-based technology platforms and databases will enhance efficiency and effectiveness. This is especially true when the need for data currency and quality control feedback mechanisms are examined.

NGAC National Address Database Paper – December 2012

5.3 Workflows and the Role of Government and the Private Sector

Strategic and business plans specifically oriented toward address data creation, maintenance and access need to be developed. There is a role for each level of government as well as the private sector. In general terms, these roles may include:

- Local government continues to be the Address Authority, creating new addresses as needed, using national standards and associating these addresses with x-y-z coordinates. An elevation, 'z' value, is critical for flooding and hurricanes as well as public response to multistory buildings. The addition of 'z' may take years to complete, but to achieve the highest standard of data the National Address Database should include this essential element.
- Counties or 9-1-1 authorities serve as the regional custodians of the data; receiving local updates and distributing address and coordinate data free of charge to the participants.
- States provide statewide coordination and technical support to local government and 9-1-1 authorities. States integrate the address data using accepted standards and provide data aggregation services to state and national interests.
- Federal government supports the National Address Database portfolio management, following the tenets of the A-16 Supplemental Guidance, as a shared resource allowing updates from authorized federal agencies, as well as state and regional custodians.
- Private sector is available to support data and system development for any level of government. It is further anticipated that the private sector would assist in the development of the National Address Database. If access is provided, commercial software companies could provide workflows and templates based on accepted national standards to facilitate the creation of address databases.

5.4 Development Options

Several potential options are identified for the development and management of a National Address Database. Examples include the following:

5.4.1 Option 1: Single Steward

A single Federal government agency, such as the Census Bureau, could be designated to coordinate the creation and maintenance of the National Address Database. This approach, while efficient, would necessitate mitigating the constraints of Title 13 and Title 39 if Census or USPS were selected as steward.

5.4.2 Option 2: Multiple Stewards

Specific stakeholder agencies (e.g., DHS, Commerce, USPS and HUD) could come together to form a new organization to steward a shared process for building a National Address Database. The Census Bureau has expertise and existing data resources to contribute, but it may be undesirable for the Census Bureau to build the National Address Database unless it is clearly developed or housed outside Title 13 restrictions. DHS has the most natural tie to the 9-1-1 community (local governments that are best positioned to ensure the accurate mapping of every address). The Department of Commerce and DHS have ties to residential addresses, plus additional commercial and industrial addresses, that the Census Bureau may not collect. These agencies may have stronger (more frequent) business drivers to keep a National Address Database current for business intelligence and services. A workflow and conversion templates will be required for the integration of multiple addressing systems as tables in a master database that is part of the National Address Database.

5.4.3 Option 3: Modify Existing Processes

The function of address collection currently undertaken by the Census Bureau could be transferred or contracted to the Office of the CIO of the Department of Commerce. Moving the function of producing a Master Address File (MAF), but not necessarily the staff and budget, from under the constraints imposed Title 13 would enable data sharing with other agencies. As a case in point, in 2009, NTIA's State Broadband and Data Development (SBDD) Program implemented the Recovery Act and the Broadband Data Improvement Act. Currently, many states are funded to develop address data to meet the requirements of this program. While NTIA and Census are both located in the Department of Commerce, NTIA is funding the development of address data and Census has the data, but cannot share it because of Title 13 restrictions. Note that implementing Option 3 may require statutory changes and/or budget reprogramming, but in this case, reprogramming would be within a single department.

5.4.4 Option 4: Leverage Existing Programs

The Middle Class Tax Relief and Job Creation Act of 2012 directed the establishment of a new 4G-based National Public Safety Broadband Network (NPSBN) based on single national network architecture. NPSBN will provide communication services to first responders nationwide. The NPSBN is being developed by FirstNet, a new independent authority established within the National Telecommunications and Information Administration (NTIA).

The two most important locations where NPSBN will need to provide coverage are at structures and along transportation corridors. State planning efforts for NPSBN implementation, funded in part by NTIA, will need many geospatial data layers to prioritize and select service coverage options in building an optimal NPSBN footprint with available resources. For this reason, data carried on address points and road centerlines are arguably the two most important data layers for evaluating proposed NPSBN build out alternatives. In addition, accurate addressing data is critical to the operations of first responders. To develop the capabilities needed to successfully build and operate the NSPBN, FirstNet could fund the development of a National Address Database as a component of the NSPBN – potentially through the State grant program.

5.4.5 Option 5 – State Based Integration and Coordination

Over the past decade the National States Geographic Information Council (NSGIC) has taken a leadership role in the debate about the best way to collect and distribute address data. A 2009 NSGIC report[8] indicated that 23 states and the District of Columbia have coordinated address data at the state level, with 14 of them managing individual address points. A subsequent 2011 NSGIC report, *Address Points for the Nation; contrasting the functions of Address Points and Parcel Maps,*[9] lays out a series of steps needed to assemble address points. In addition, a recent report commissioned by the Census Bureau, *Researching Address and Spatial Data Digital Exchange and Data Integration,*[10] concluded that NSGIC was in a strong position to take a leadership role.

Based on this interest and success, one option is that a state-based association, such as NSGIC or the National Association of State Chief Information Officers (NASCIO), act as the coordinator of a national address point database.

9

5.4.6 Combine Options
While each option is presented separately, it may be that a combination of parts or all of several options may create a hybrid option to develop the National Address Database. Specifically, a combination of Option 2 and Option 3 may lead to a sustainable process that conforms to statutory, privacy and confidentiality concerns, as well as obtain much needed funding from an existing source, such as FirstNet, to facilitate the develop of a functional National Address Database.

6. Conclusion

A National Address Database will allow stakeholders to access local address resources developed and maintained by local data custodians. The creation, management, and support of this database should be a Federal priority. Efficiencies and service enhancements from the implementation of a National Address Database, as a consolidated national initiative, will undoubtedly be vast and attract widespread participation and use by multiple levels of government, the public, and private sector.

As part of the FGDC's current effort to revise and update the OMB Circular A-16 date themes and datasets, NGAC suggests that FGDC clearly identify the agency(s) with Federal responsibility for addressing issues.

Reconciling data and standardizing database structures within the various areas of government will require substantial effort. Furthermore, we recognize that private sector involvement will contribute to the complexity. Nevertheless, we believe that private sector engagement should be a part of the overall vision for a National Address Database and that the private sector will be a future partner of a successful, staged development. Furthermore, when data is put into the public domain, it leads to an informed public and creates new opportunities for the private sector. For example, vendors providing navigation services will be able to take advantage of the National Address Database to develop new products and services for their customers.

A National Address Database should be developed to aggregate and integrate local address data – to make it comprehensive and seamless at the national level on a regular frequency. This database should meet the needs of Federal, state, and local government, as well as provide opportunities for new products and services from the private sector. The NGAC believes that a National Address Database would provide significant benefits both to citizens and the economy.

7. Resources
- Census Address Data Guidelines:
  http://www.census.gov/geo/www/gss/gdlns/addgdln.html
- NSGIC Addressing Resources:
  http://www.nsgic.org/hottopics/addressing_coordination_issues.cfm
- Address Point Work Group:
  https://sites.google.com/site/addresspointworkgroup/home/best-practices-data-structure-models-standards
- Census Bureau Address Ontology, v.11 [Draft]

8. Definitions

Address – The street number and street or road name or other designation assigned to a housing unit, special place, business establishment, or other structure for purposes of mail delivery and/or to enable emergency services, delivery people, and visitors to find the structure.[11] For the purposes of this report, the term address refers to a point location and includes x, y, (and possibly z) coordinates of the address point; where appropriate a distinction is made between situs and other point addresses; linear referencing systems are excluded from the current discussion.

Confidentiality – protecting identifiable information from unauthorized disclosure; relates to how information is protected after it is collected. Confidentiality details with whom information may be shared.

Privacy – respecting individuals' freedom from unauthorized and unwarranted intrusion into their personal information. Privacy is whether or not something pertaining to an individual or group is known to others.

Right of Privacy[12] – the qualified legal right of a person to have reasonable privacy in not having his private affairs made known or his likeness exhibited to the public having regard to his habits, mode of living, and occupation.

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[1] Federal Geographic Data Committee, "*2012 Guidance to the National Geospatial Advisory Committee,*" April 2012. http://www.fgdc.gov/ngac/meetings/april-2012/2012-fgdc-guidance-to-ngac.pdf

[2] The National Address Database Subcommittee is comprised of the following NGAC members: Mr. Gene Trobia, Co-Chair, Dr. Robert Austin, Co-Chair, Mr. Bert Granberg, Ms. Laurie Kurilla, Dr. Xavier Lopez, Brig. Gen. Jack Pellicci, U.S. Army (Ret), Ms. Cynthia Salas, and Ms. Molly Vogt. Mr. John Mahoney (FGDC), Mr. Timothy Trainor (U.S. Census Bureau), and Ms. Tricia Gibbons supported the subcommittee in its work.

[3] OMB Circular A-130, "*Management of Federal Information Resources*" http://www.whitehouse.gov/omb/Circulars_a130_a130trans4

[4] Bonnell, Clayton, "Postal Service addressing problem," U.S. Postal Service, e-mail sent to representatives of GITA, NENA, NSGIC, and URISA on December 3, 2007

[5] The Streamlined Sales and Use Tax agreement involves a majority of the States; see http://www.streamlinedsalestax.org/

[6] Title 13, U.S. Code describes the roles and responsibilities of the U.S. Census Bureau. http://uscode.house.gov/download/title_13.shtml

[7] Title 39, U.S. Code describes the roles and responsibilities of the U.S. Postal Service. http://uscode.house.gov/download/title_39.shtml

[8] National States Geographic Information Council 2009 State Summary

[9] *http://nsgic.org/public_resources/Address_Points_FTN_Brochure_050311_Final.pdf*

[10] U.S. Census Bureau, "Researching Address and Spatial Data Digital Exchange and Data Integration" http://www2.census.gov/geo/research/GSS%20Initiative%20Digital%20Exchange%20ACCEPTED.pdf

[11] U.S Census Bureau Website, Decennial Management Division Glossary, address; see http://www.census.gov/dmd/www/glossary.html

[12] Merriam Webster On-line Dictionary http://www.merriam-webster.com/dictionary

NGAC National Address Database Paper – December 2012