

***Meeting Metro Area
Government Address
Information Needs***



A Regional Occupiable Units Address Dataset

A Vision...



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This document contains the vision of the MetroGIS Address Workgroup, as accepted by the MetroGIS Coordinating Committee (March 30, 2005) and Policy Board (April 20, 2005).

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More information about MetroGIS can be found at www.metrogis.org.

More information about the Address Workgroup can be found on the MetroGIS website at http://www.metrogis.org/data/info_needs/street_addresses/add_wkgrp.shtml.

This document can be found on the MetroGIS website at http://www.metrogis.org/data/info_needs/street_addresses/Occupiable_Units_Dataset_Vision.pdf.

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Introduction

Imagine If...

Imagine having a database with the address of every house, apartment unit, store and business in your community. Imagine that it had an accurate and complete “official” address for every such “occupiable unit”, and an exact point on a GIS map to locate that unit. Imagine that all of your neighboring communities had such databases as well, and that they shared them with you for government purposes. Imagine that these databases were updated weekly or even daily. Emergency responders could be routed more efficiently. Mailing labels could be created to notify all occupants of a certain area or within a certain distance of a zoning change, across city and county boundaries. County and city address databases could be synchronized. A single “official address” database could exist, providing a way to validate addresses and alleviate costly inconsistencies and duplication of effort throughout many government levels.

This is the vision of the MetroGIS Address Workgroup, a group comprised of city, county and regional government staff from throughout the metro area. In April 2005, the MetroGIS Policy Board endorsed achieving this vision¹ as a priority for the MetroGIS community. This vision is also supported by many county and municipal government officials.

“This is a vital dataset, that is long overdue.” Randy Johnson, Hennepin County Commissioner

“I am in full support of the vision of one shared, multi-agency, metro-wide addressing convention to enable more consistent and efficient delivery of services to our constituents....” Clint Pires, Director of Technology and Support Services, City of St. Louis Park

“Having a physical point representing each and every occupiable address located within our jurisdictional boundaries is important for all levels of our office....” Michael Eberle, GIS Administrator, City of Maple Grove

“The proposal of an address points database is a great idea. It would provide the county with one database or source for official addresses.” Bradley Rupert, GIS Specialist, Carver County

In addition to counties, cities and townships, the establishment of a Regional Occupiable Units Address Dataset could increase the efficiency of other local government entities. Public Safety Answering Points (PSAPs) that route 911 calls for multiple cities would have a consistent, complete and up-to-date database with which to match 911 calls to the appropriate responders. School districts and watershed districts would have complete and accurate lists of occupiable units within their boundaries. Because the addresses would be derived directly from the official addressing authority, all could be assured of consistent address data across government levels and geographic jurisdictions.

“A Regional Occupiable Address Dataset would be a tremendous asset to any emergency response activity. It would greatly enhance our existing capabilities.” Deb Paige, Emergency Manager, Washington County

“Having a “single official” source of addresses is an integral part of having an accurate across jurisdictional boundary dataset that can be utilized by public safety officials for the allocation of emergency services or resources.” Diane Lind, Burnsville PSAP Manager & Technical Operations Committee Chair, Metropolitan Emergency Services Board

“Comprehensive and accurate addressing is the key to the kingdom. This effort will bring great riches of data and information.” Dick Carlstrom, GIS Consultant, TIES (Technology Information and Education Services)

¹ See http://www.metrogis.org/data/info_needs/street_addresses/05_0427_pbreport.pdf to review the actual vision statement.

Purpose of this Document

The purpose of this document is to explain the vision for a “Regional Occupiable Units Address Points Dataset” for the Twin Cities metropolitan area. The primary intended audience for this document is local government officials and staff at many levels. The document is also intended for a variety of other stakeholders, including emergency responders, school districts, metro regional government, utilities and many other government and private sector organizations.

This vision cannot be achieved without buy-in and direct participation from local governments, particularly city and county addressing authorities. For that reason, this document has been created, in part, as an outreach vehicle to explain the concepts and objectives of the vision, the implementation components, and the perceived benefits. This document also discusses the resources necessary to achieve this vision and the challenges it presents.

The conclusions and recommendations set forth in this document are considered to be **preliminary**. This document is intended to elicit review and feedback of the MetroGIS vision - - to get a reality check from local government and others. The recommendations in this document will then be modified to reflect the concerns and needs identified by affected local governments. Additional adjustment to the vision and implementation strategy will likely be needed after pilot projects are conducted and reviewed, to once again make sure that the vision is realistic and achievable in the real world of day-to-day government business.

Work on this proposed regional address database has been informed by a parallel effort to create a national address data standard. That work, being facilitated by the Urban and Regional Information Systems Association (URISA, www.urisa.org), included MetroGIS workgroup members as participants. This is discussed further in database design portion of this document.

What is MetroGIS?

MetroGIS is an award-winning, regional geographic information systems initiative serving the seven-county Minneapolis-St. Paul metropolitan area. It provides a regional forum to promote and facilitate widespread sharing of geospatial data. It is a voluntary collaboration of over 300 local and regional government interests, with partners in state and federal government, academic institutions, nonprofit organizations and businesses.

The overarching goal of MetroGIS is to make possible collaboration that addresses common geospatial information needs for government interests in the metro area. This includes defining and institutionalizing organizational roles and responsibilities through a participatory and representative process. In this process, subject matter experts formulate recommended courses of action to meet particular information needs (e.g. roads locations and types, land ownership characteristics, addresses). This work includes identifying organization(s) with a recognized internal business need and sufficient resources to support the desired technical solution. Ultimately, MetroGIS’s Policy Board provides a political reality check for solutions through its review and approval. Once a strategy is adopted for a regional solution or best practice, policy makers and managers involved in the MetroGIS process serve as champions within their respective organizations to achieve implementation of the regionally endorsed solution or best practice.

For more information, see the MetroGIS web site at www.metrogis.org.

The Address Workgroup

The MetroGIS Address Workgroup was created by the MetroGIS Coordinating Committee in March of 2004 to look at needs for address information that are common to metro area governmental organizations at all levels and across jurisdictional boundaries. Specifically, the workgroup’s purpose is to:

Respond to unmet address information needs by recommending strategies to meet those needs. This includes identifying options for meeting the need where appropriate, as well as identifying the stakeholders (producers, users, partners) related to the address information needs.

The workgroup adopted the guiding principles of *minimizing duplication of effort* and *maximizing consistency of data* among the variety of producers and users. In short, the Workgroup’s challenge was to look at unmet needs for

address information by local and regional government, and to recommend efficient and effective ways to meet those needs.

The workgroup began meeting in the spring of 2004 and has met approximately a dozen times since. The Workgroup is composed of members from the following organizations.

- Anoka County
- Carver County
- Dakota County
- City of Falcon Heights
- Hennepin County
- Metropolitan Emergency Services Board
- Metropolitan Mosquito Control District
- Metropolitan Council
- City of Minneapolis
- City of Ramsey
- Ramsey County
- St. Paul Regional Water Services
- Scott County
- Washington County
- City of Woodbury

Mailing vs. “Situs” Address

Because the official US Postal Service mailing address for a building is not always the same as its actual location or “situs”, the Workgroup identified its scope as focusing primarily on the actual “situs” addresses of occupiable units. (For example, the official USPS mailing city often does not correspond with the city in which the address actually resides, and USPS does not use township names.) Both situs and mailing addresses are considered important, however, and the group recognized the need to know both for any particular occupiable unit.

The following types of situs addresses are within the scope of the workgroup’s activities:

1. Addresses for all occupiable units, including residential and non-residential units. This includes, but is not limited to, individual apartment units, stores in a strip mall, and business suites in an office complex.
2. All other “official” addresses (addresses assigned by the official addressing authority for a particular jurisdiction). This might include things like parks, cell towers and loading docks, depending on the jurisdiction.
3. Information about sublocations within the addresses defined in 1 and 2 above. The purpose of this would be to define a more specific sublocation at an address, for features that do not have their own official address (i.e. a loading dock at a commercial address, a free standing garage, a pavilion at a park). However, workgroup decided to postpone work on sublocation information needs and focus on 1 and 2 above.

Address Information Needs

With this purpose and scope in place, the Workgroup began clarifying the unmet address information needs of local and regional government in the metro area.

In 1996 MetroGIS conducted a broader information needs forum. This forum involved over 125 individuals representing all levels of government and specified academic, non-profit and for profit interests. Forum participants also represented six major categories of government business: community development, public works, public safety, natural resources, human services, and transportation/communication. The forum resulted in the identification of 87 mutually exclusive information needs. All participants were then asked to rate each of the 87 needs based on two factors. 1. How important is this information need to my organization? and 2. How dependent am I on other organizations for this information? The result was the setting of 13 priority common information needs for the MetroGIS community. Among these 13 needs was “Where do people live and how can I contact them?” This need has a very specific address component. See <http://www.metrogis.org/data/about/index.shtml> for more information of MetroGIS’s Common Business Information Needs Project.

Based on the previous MetroGIS needs work and the expertise and experience of its members, the Workgroup identified six categories of address-related information needs for metro area government that have **not** been adequately met by existing data. Those categories and examples of specific needs are shown below.

Unmet Address Information Needs

1. **Address Standards**
 - a. I need a standard definition of address
 - b. I need a standard data structure for address data
 - c. I need to know who the official addressing authority is
2. **Mailing vs. Situs Address**
 - a. I need to mail something
 - b. I need to locate something
3. **Time: Currentness and Historical**
 - a. I need to know addresses of new properties and structures as soon as possible
 - b. I need to know historical addresses for a location (e.g. hazardous waste mitigation)
4. **Accuracy, Consistency and Completeness**
 - a. I need an accurate address (correct street name, spelling, etc)
 - b. I need the address for a place to be identical for everyone I work with, even external organizations
 - c. I need to know the address of all occupiable units
5. **Land/Structure/Occupancy** (the geographic relationship between parcels, buildings and occupiable units)
 - a. I need the address of a location more precisely than a parcel’s address (e.g. need structure or unit within the parcel)
 - b. I need the location of an address more specifically than a parcel polygon or interpolated point from street centerlines
6. **Across Boundaries/Jurisdictions**
 - a. I need to know addresses in neighboring cities
 - b. I need to know addresses that other organizations assign

Needs met by Existing Street Centerline and Parcel Data

While the unmet regional needs were significant, it is also noteworthy that some important address related information needs are already being met region wide by two specific MetroGIS endorsed datasets. Those datasets are the Regional Street Centerline Dataset, which is licensed from The Lawrence Group (TLG), and the Regional Parcel Dataset, which is provided in a standardized format by each of the seven metro counties. As a starting point, it is important to understand what address needs are and are not met by these two prominent regional datasets. Knowing the addressing related limitations to these datasets is key to understanding the need for the proposed Regional Occupiable Units Dataset.

Street Centerlines

The street centerline dataset provided just that – a centerline for each street segment for all public and some private roads in the metro area. While being an excellent source of information about roads, it is also useful for some address related purposes.

Tied to each centerline is a street name and an address range for each side of the centerline (Figure 1). Additional pieces of information or “attributes” that come with each centerline include the ZIP code, the city on each side of the street, and the names of the cross streets on each end of the given street segment.

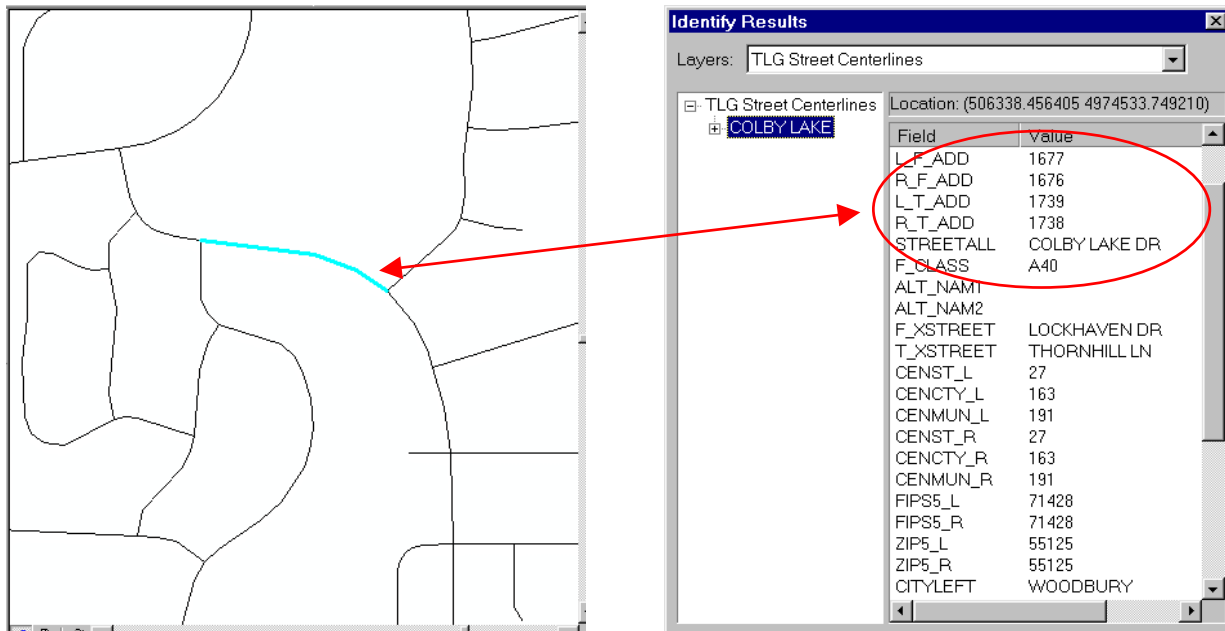


Figure 1. Street Centerline Dataset

Street centerlines can be very useful for “geocoding” address data. In other words, given an electronic list of addresses in a specified format, it is possible to run a geocoding routine with GIS software to find the approximate location of that address. This is a common use of GIS technology. For example, school districts use geocoding to create bus routes and attendance areas; police and fire departments use it to map incident; snow emergency staff use it to depict tag and tow locations, etc. However, because the street centerline dataset uses an address range, it is not possible to determine from this dataset whether a given address actually exists or exactly where that address resides along a street segment. Geocoding routines simply assume the address exists if it is within the given range, and position the address point along the centerline proportionally between the low and high end of the address range.

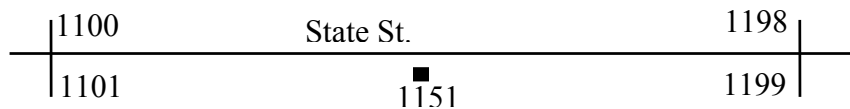


Figure 2. In this example 1151 State St. is an interpolated point based on the address range.

While the street centerline dataset is very useful, it does have some inherent limitations related to address data needs. For example, this dataset cannot tell you what addresses actually exist. It cannot be used to generate mailing lists or otherwise determine how to contact people. The dataset offers only an approximation of the address location

and has no notion of how far the addressed structure is from the road itself. It could be right along the road or set back from the road a great distance. This dataset also does not include all private roads and is updated only on a quarterly basis. It includes streets once they are completely finished and the next quarterly update is published. So while the street centerline dataset serves some important purposes, it meets only a fraction of the local government addressing related business needs.

Parcel Data

Parcel data is typically one of the most used and most valued GIS datasets for local governments. The parcel dataset provided by each of the seven metro counties includes the boundaries for each piece of real estate and more than 50 attribute fields for each parcel. Among these attributes are fields related to the address of the parcel. In areas where individual buildings occupy a single parcels (e.g. a single family home on a typical city lot), parcel data is an excellent source of address data. Such parcels include the addresses of all occupiable units and the location of the units can generally be inferred to be close to the center of the parcel. However, where parcels are larger or include multiple occupiable units, parcel data becomes more problematic in terms of its usefulness for address related business functions.

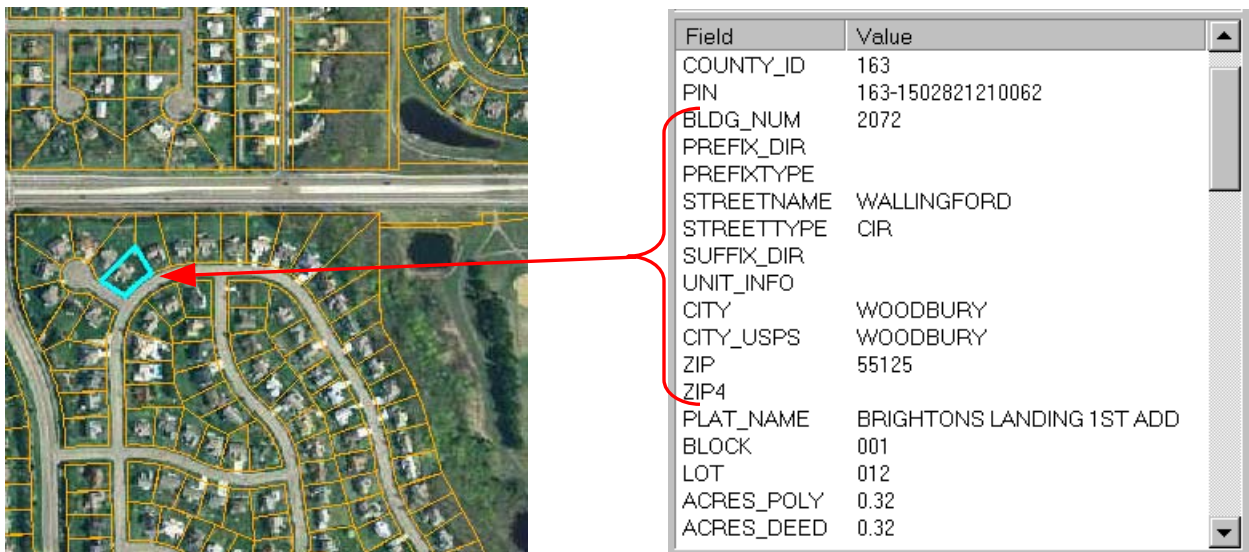


Figure 3. Parcels with single family homes on typical suburban lots.

In Figure 4 below, we see parcels in all shapes and sizes. Some are very small and others are relatively large. The parcel data will provide a single address for each parcel. But is this useful? Taking a closer look at some of the parcels in this area highlights the inherent limitations of using parcel data for addressing purposes.

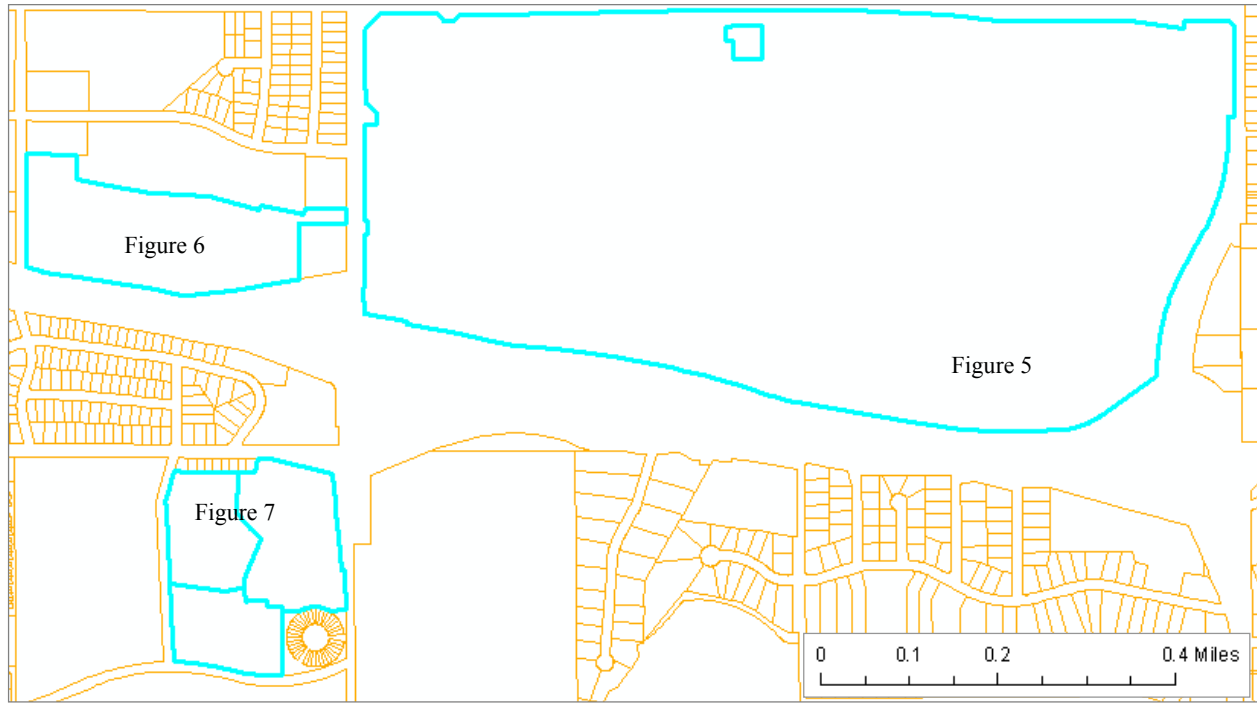


Figure 4. A variety of parcels. Highlighted parcels are looked at more closely below.

In Figure 5 we see a large corporate campus with many buildings, facilities, storage areas and parking lots all within a single parcel. Clearly many, many occupiable units exist on this parcel, but one cannot get their addresses from the parcel data. Figure 6 shows a strip mall on a single parcel. From the photo the outline of many of the stores can be seen. Again, the parcel dataset provides one address for the entire parcel and not the separate addresses for each store in the mall. Figure 7 shows an area that includes apartments and condominiums. Because parcel data tracks individual real estate transactions, condominium units, which are each separately owned, show up as individual parcels. This is the case in the circular set of very small parcels in the lower right corner of the figure. Thus, parcel data does provide an address for each condominium. Adjacent to the condominiums is a large apartment complex. Because apartment units are not individually owned, but instead are rented, the parcel data does not provide an address for each apartment, even though each is an occupiable unit. In fact, it is common for multiple apartment buildings to exist on a single parcel, as is true in each of the three large parcels in Figure 7. The parcel data would not have an address for each apartment building, but instead a single address for the parcel itself. This limitation exists for most rented property. So while the Regional Parcel Dataset can be very useful for address related business purposes, for some types of parcels it is of very limited use. Parcel data was created to track real estate transactions and not individual occupiable units.



Figure 5. Large corporate campus on one parcel.



Figure 6. Strip mall on single parcel



Figure 7. Apartments and condominiums.

In addition to the limitations referenced above, parcel data does not include newly created buildings and houses until the final plats are recorded and the data is entered into the county parcel database. This can result in a one to six month time lag in getting the new parcel into the quarterly MetroGIS Regional parcel dataset (depending on the county and particular parcel situation). Local governments have cited a need for address data that are more current than this.

So while the county's parcel data is an extremely valuable and highly sought after regional dataset, it also does not satisfy some significant governmental needs related to address data.

Workgroup Investigations and Conclusions

This analysis of the limitations of the existing address related data gave the Workgroup an excellent starting point, but the Workgroup felt it needed a clearer picture of local addressing situations. In particular, the Workgroup felt it needed to talk to a number of stakeholders, mainly addressing authorities, to better understand how address data are created and shared within and between the various local government stakeholders in the metro area. The Workgroup decided to interview a number of addressing authorities, both small and large, and to attempt to make standardized diagrams of the flow of address data within each county.

Stakeholder Interviews

The following list of stakeholders was defined for the interview process. At least one member of each of the stakeholder groups was interviewed.

- Platting authority
- City and county address assignment authorities (*elections officer, city/county planner, building official, city clerk, environmental health officer, etc.*)
- Emergency Services/E911 (metro board and local PSAPs)
- Municipal utilities
- Property taxation (assessor)
- Environmental inspections (wells, septic systems, restaurants, etc.)
- School districts

Interview Questions

The interviews themselves were conducted in a somewhat informal process by a number of workgroup members. The following questions were asked. The questions varied depending on the stakeholder, per the table below.

Interview Question	Which Stakeholders to Ask?
Authority	
Who is the addressing authority for your jurisdiction?	All stakeholders
Address Creation/Assignment	
How do addresses get created? In other words, what events trigger new or modified addresses? What are the specific assigning processes, including – official, administrative, informal and temporary processes? How are addresses assigned for things like private communities, mobile home parks and multi-structure campuses (e.g. college, corporate campus, etc.) What decision rules are used to create/assign addresses? Are the rules locally developed or based upon published guidelines or standards? How does address data management pertaining to new development and redevelopment differ?	Addressing authorities
Databases	
Where are address data stored and who manages them?	All stakeholders
What data are recorded? In what structure (format) are the data recorded/stored? How frequently are the data updated?	Database managers and custodians

Who reports errors in the database?	
What business functions are supported by each of the existing address databases? What are the mandated services for which address data are being produced and maintained? (optional: ask this of other stakeholders too)	
Data Flow	
How does address data flow – from and to whom? Does this diagram accurately reflect what you know?	All Stakeholders
What do you do if you find an error in address data? How are conflicts between the city/county authority and other entities (e.g., the U.S. Postal Service, E911 MSAG, utilities) resolved? Is there a formal feedback method?	
What would you change?	
What problems exist in current processes? What would you change if you could?	All Stakeholders

Interviewees

The addressing authorities and other stakeholders in the following organizations were interviewed by members of the Workgroup:

Counties	Anoka, Carver, Dakota, Hennepin, Ramsey, Scott & Washington (multiple departments were interviewed in each county)
Cities	Arden Hills, Carver, Chanhassen, Chaska, Cogn, Hamburg, Little Canada, Maplewood, Mayer, Minneapolis, New Germany, New Prague, Norwood Young America, Prior Lake, Ramsey, Roseville, St. Paul, Shoreview, Victoria, Waconia, Watertown, White Bear Lake
Other Organizations	St. Paul Regional Water Services Metropolitan 911 Board (now called Metropolitan Emergency Services Board) Elk River School District A school district bus provider An energy company A medical transportation provider A solid waste company

Complete interview results are available from MetroGIS in a separate 20 page document. A summary of the findings is provided further below.

Address Flow Diagrams

In addition to the interviews, workgroup members from each of the seven counties provided diagrams representing the flow of address data within their county. These diagrams were standardized to have a consistent look and feel. (See Appendix A for flow diagrams for all seven counties.)

All counties had multiple departments involved with the address flow. These departments among counties, although all included the assessor/taxation department and most included the surveyor and sheriff/911 departments. Many counties also had multiple database into which the same address was entered. Each county had it's own unique address data flow structure.

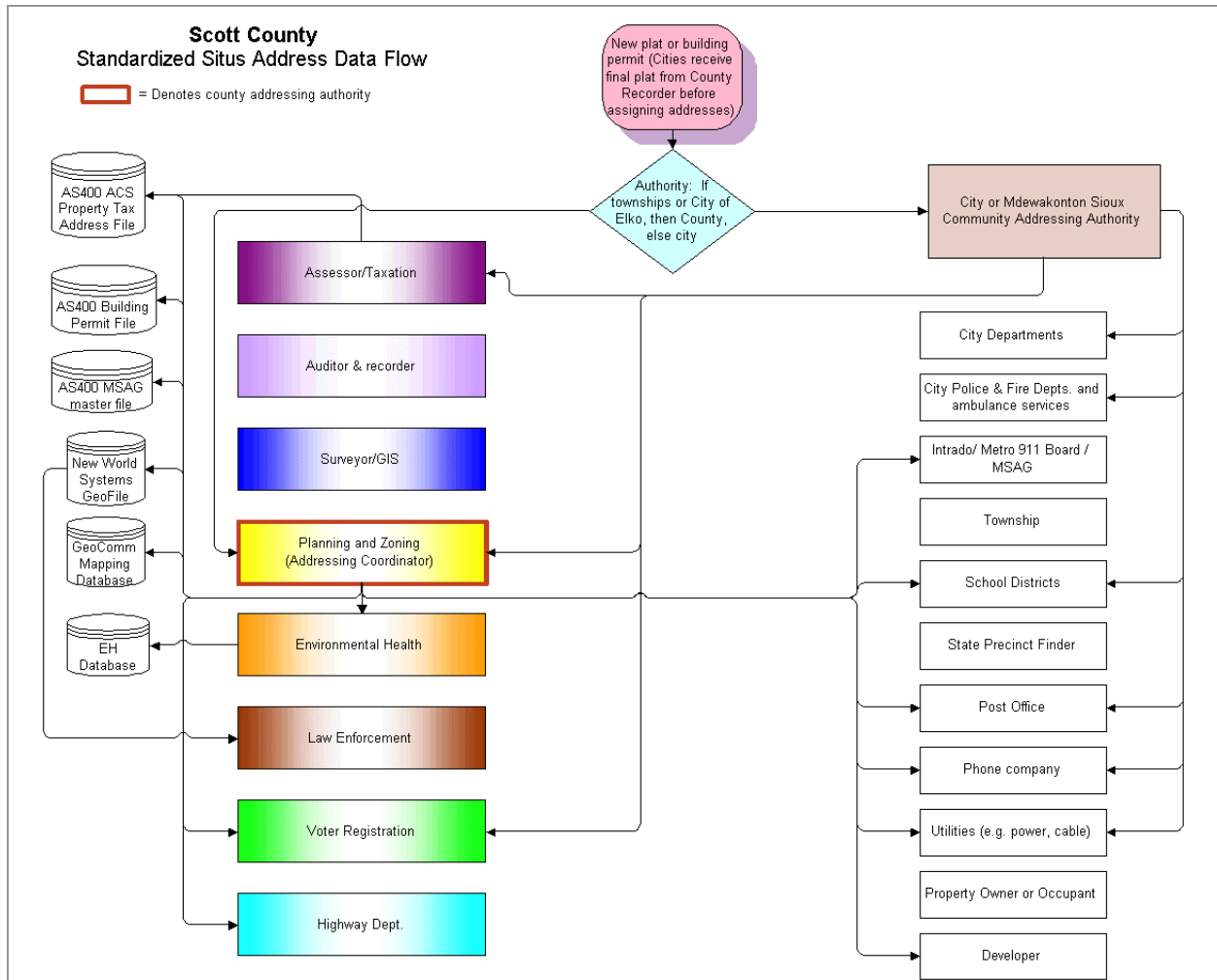


Figure 8. Example Address Flow Diagram (Scott County). See Appendix A for all counties.

Conclusions

After analyzing the interview results and address data flow diagrams, the Workgroup reached the following conclusions.

- **Most addresses are created at the city level.**
- **This results in many, many address authorities with many different processes.**
- **Addressing authorities seem to update their address records right away (daily or weekly).**
- **Address “records” vary tremendously from one city to the next (e.g. database, spreadsheet, paper files, map on the wall).**
- **Address data flow is fairly complicated and is different in every location.**
- **Address data do not flow out consistently from different sources (e.g. cities to a school district)**
- **There is a desire at the county level (and beyond) for a single source for address data.**
- **Many addressing authorities mentioned wanting a standard process.**
- **A single best source for address data would benefit many.**

The Vision

At this point the Workgroup felt it had gained sufficient knowledge of address data processes and procedures in city and county governments to be able to proceed. Combining this with an understanding of the limitations of existing metro address related datasets, the Workgroup believed it could create a realistic vision for meeting the unmet address information needs. Specifically this was a vision for the addresses and locations of all occupiable units in the metro area. This vision is justified by the following conclusions of the Workgroup.

Vision Justification

- **Nearly all government organizations have a business need for addresses of occupiable units.**
- **Multiple, uncoordinated procedures are resulting in costly duplication of effort and perpetuation of data inconsistencies.**
- **Having a clearly defined “single official” source for address data for any given jurisdiction is desirable to all government entities. Its existence would reduce the creation of inaccurate or inconsistent addresses.**
- **A collaborative effort is warranted to achieve desired efficiency and consistency improvements.**

Overview of the Solution

The Vision proposes:

- **The creation of a regional point dataset of addresses for all occupiable units and other official addresses in the seven county metro area.**
- **This database would be created by the official addressing authorities for each of the civil jurisdictions in the metro area.**
- **Each of the local databases would then be compiled by a regional data custodian into a region wide dataset for distribution to other government organizations.**
- **This dataset would be available free-of-charge to metro area governments. Policies for any non-government access to the regional dataset would be decided by the local governments involved.**

Components of the Proposed Vision

The Workgroup has concluded that the following concepts are key aspects of the vision (not listed in any priority order). In April 2005, the MetroGIS Policy Board endorsed these concepts as the foundation for further efforts to implement a regional occupiable unit data solution for seven county area.

1. Local procedures and rules pertaining to the naming of streets and assignment of address numbers must be recognized as they exist and are not within the scope of this effort.
2. The preliminary conceptual regional database design would include (but is not limited to) the following elements for each occupiable unit within the seven county area:
 - The unit address components
 - The point geography
 - Some mechanism to relate the point to parcel data
 - Some categorization of the point type to indicate how it relates to the parcel (e.g. single structure on one parcel, one of many buildings on a parcel, an apartment unit or office suite, etc.)
3. “Occupiable unit” has been preliminarily defined by the Workgroup as any residential or non-residential occupiable space that requires a government permit to create and which has a unique address. Office spaces that have movable walls and which do not require a permit to reconfigure will not be considered as separate occupiable units within the scope of this recommendation.
4. The vision assumes multiple avenues for creating, maintaining and storing address point data, and providing it to a regional dataset. For example, some individual cities would maintain the data locally in their custom database and provide updates to the regional dataset periodically. Other larger government units (PSAPs, or Counties) might also maintain data for multiple cities and townships and provide periodic updates to the regional dataset.

5. The vision includes the potential for an Internet-based application that would allow cities, which do not have their own GIS capability, to maintain such a dataset over the Internet. The data itself could reside with one or more aggregators of data, but would be available for use by the cities through the Internet application.
6. A standardized address data transfer format will be needed to implement this solution. Such a standard may have implications for local address database formats. The proposed national address data standard will be considered for this role.
7. In order to meet the currentness needs of the 911 community and others, it is proposed that new points be added to the dataset as soon as they are official (e.g. at the time the building permit is issued). The Workgroup is evaluating the feasibility of making digital pre-final plats available to the data maintainers to assist in the placement of the new address points. Such points would be given a “preliminary location” status until such time as the occupiable unit is actually constructed and the point can be moved to a more precise location if appropriate.
8. A pilot study is recommended to frame any compatibility issues locally and identify viable solutions. Related work currently in progress by the Ramsey County GIS User Group should be supported and closely tracked.
9. The final proposal needs to recommend accuracy guidelines and procedures as regional best practices. A variety of positional accuracies may be acceptable if they are clearly documented.
10. The solution must include a process, acceptable to affected parties, to make sure that the address ranges of the Master Street Addressing Guide (MSAG) database used by the 911 community remain consistent with the individual addresses of the proposed address point dataset.
11. Data privacy and access issues must be appropriately resolved.
12. The proposed solution needs to have an outreach component to inform all affected interests about the benefits of the solution and explain how to participate.

This vision is expected to take many years to reach fruition. It will require considerable review and comment by the various stakeholders, and may involve a significant educational effort to explain the long term benefits of investing in the vision. To succeed it will likely involve changes in the way some local governments conduct their business. It may indeed be a paradigm shift for some organizations. Ultimately, it will require the approval and support of local government in the metro area.

Local Government is the Key

Up until now, all of the regional datasets endorsed by MetroGIS have been created by county, regional or even national government entities (see Appendix B for a list). This is the first time that MetroGIS will be endorsing a regional dataset that so clearly relies on the knowledge and resources of municipal governments. It is instructive to explain the reasons for this.

1. Cities are the official addressing authority for most occupiable units in the metro area. Counties are the addressing authorities for townships and some cities.
2. The official addressing authority is the most knowledgeable and qualified entity to identify the true and accurate address of a given occupiable unit.
3. Local governments know their jurisdictions and the intricacies and anomalies of the addressing situations within them.
4. Local governments tend to update their addressing records soon after addresses are created or changed. This provides an opportunity to provide very current data as is sought by the 911 dispatching community and others.
5. Local governments tend to have a direct connection with the emergency responders that serve their area, providing an excellent communication flow with a key potential benefactor of this proposed occupiable units dataset.

Clearly this dataset cannot exist without significant involvement by the local governments that create and maintain the official addresses. But why would a local government entity want to participate? What benefits would they receive? *What's in it for them?* This is probably the most significant factor related to the vision's success. There must be a clear benefit to local government in this vision or it simply will not succeed. Here is what the workgroup sees as the benefits to local government participation.

- Staff can enter the “official” data once and it can be automatically distributed to many others internally and externally. Through the existing MetroGIS data distribution process, a mechanism is in place to easily and efficiently distribute the dataset to other government entities that need it (e.g. county, school district, watershed district, public safety answering point (PSAP), state elections precinct finder, etc.).
- Provides a single source for the official address, providing other entities a means of cleaning up and correcting inaccurate addresses that they have been perpetuating.
- Allows the creation of regional applications that may save local governments time and money.
 - A regional mailing label application that can create mailing labels across city and county boundaries.
 - Address finding or matching applications that can use multiple datasets to look for matches. For example, the application would first check the occupiable unit addresses. If no match is found, it could then check parcels and then street centerlines.
- Provides a significantly more complete and precise address dataset to the local emergency responders, potentially improving response times and perhaps even saving lives.
- Provides a consistent and standardized way to track occupiable units within the given jurisdiction.
- Gives the local government an opportunity to take advantage of some regional resources with respect to database startup and guidance.
- Provides the ability to check the addressing scheme in adjoining communities when assigning street names and numbers.
- A standardized, metro wide dataset will create opportunities for shared 911 dispatching systems and other computer applications. This could result in significant cost savings metro wide.
- Designating a single official source for an address will streamline conflict resolution between parallel address datasets.

Here is what some local government officials are saying about the idea of an occupiable units point dataset for their communities.

This is a vital dataset, that is long overdue.

Commissioner Randy Johnson,
Hennepin County

A Regional Occupiable Address Dataset would be a tremendous asset to any emergency response activity. It would greatly enhance our existing capabilities.

Deb Paige, Emergency Manager
Washington County

I am in full support of the vision of one shared, multi-agency, metro-wide addressing convention to enable more consistent and efficient delivery of services to our constituents throughout the metropolitan area and less duplication of efforts within and among metro agencies.

Clint Pires, Director of Technology and Support Services
City of St. Louis Park

Being able to locate a caller in a new development, before the paperwork has finished processing through the county or city, is highly desirable. Having a "single official" source of addresses is an integral part of having an accurate across jurisdictional boundary dataset that can be utilized by public safety officials for the allocation of emergency services or resources.

Diane Lind, Burnsville PSAP Manager &
Technical Operations Committee Chair, Metropolitan Emergency Services Board

Comprehensive and accurate addressing is the key to the kingdom. This effort will bring great riches of data and information.

Dick Carlstrom, GIS Consultant
TIES (Technology Information and Education Services)

Having a physical point representing each and every occupiable address located within our jurisdictional boundaries is important for all levels of our office.... It is especially important for first responders. Currently the City is working on creating an address point on each parcel and including a point for each occupiable unit.

Michael Eberle, GIS Administrator
City of Maple Grove

While geocoding using a street centerline file has the potential to produce very high match rates, emergency response requires a 100% match rate. If the CAD system or in-vehicle mapping tool cannot find a match, incident response times are compromised. The City of Minneapolis has several sites that are addressed to streets that don't physically exist due to street vacations, as well as parks, lakes, and other geographical features. The use of Address Points in addition to centerlines greatly increases the chance of an accurate match. This ensures that the right units and proper agency will be dispatched to an incident at the correct location. In an emergency seconds count.

Todd Steinhilber, Deputy Chief
City of Minneapolis

Addressing information can help in planning, response and recovery operations. This can allow emergency personnel the ability to effectively manage an evacuation or shelter in place operation by having accurate mapping data.

Scott M. Gerber, Director of Risk/Emergency Management
Carver County

We are excited about using a Regional Address Database. Chanhassen property falls into Carver County and Hennepin County. Having the same field names for both counties will simplify our updating process. Many of our city departments will access this database for their own purposes. This database will provide a means of updating only one file instead of individual departmental address files insuring accurate and current data.

Joleen Devens, GIS Specialist
City of Chanhassen

The proposal of an address points database is a great idea. It would provide the county with one database or source for official addresses. It would also eliminate the work of compiling and comparing several different address databases and do away with field verification. Besides providing one official address database, the point file could be used by several GIS applications in various departments such as providing exact address locations for police and emergency vehicles, locations of homes and businesses destroyed by natural disasters and give correct addresses for property notifications. An address point file would also provide the means to link other county databases and provide an unlimited amount of information about one address location.

Bradley Rupert, GIS Specialist
Carver County

Implementation Concepts

As has been stressed in this document, the Regional Occupiable Units dataset will only become reality if it is embraced by local government. While some cities and counties have already considered or even begun creating such datasets on their own, other cities and counties have yet to see a business need to pursue such a dataset. All seven counties have GIS software and staff in-house, but many city addressing authorities have little or no internal GIS expertise or resources to create such a dataset even if it was considered important. Is it realistic to think this dataset could be created metro wide? If so, how would it happen and within what timeframe?

The Workgroup is recommending a facilitated approach to creating an occupiable units dataset for each addressing authority. This work begins with key organizational roles for municipal, county and regional government. It includes the creation of a preliminary dataset that would be a useful starting point for most cities. It also includes a recommendation for an online application that would allow cities to maintain the occupiable units point dataset without having in-house GIS software or expertise. Finally, it would be built upon a national standard database design to ensure the integrity of the structure of the data and its transferability between different systems and applications in the future.

Organizational Roles

A data “custodian” is a person or organization that accepts responsibility for the quality, usefulness and availability of a dataset. For MetroGIS endorsed regional datasets in general, both primary and regional custodian organizations are needed. In the case of the Regional Occupiable Units Dataset, additional organizational roles may be needed. Following are the roles and their responsibilities recommended by the MetroGIS Address Workgroup.

Primary Custodian/Primary Producer

This is the role of the official addressing authority which includes most cities and all counties (for the townships) in the metro area.

- Responsible for direct creation and maintenance of the data within their jurisdiction
- Responsible for overall quality control of the data, including accuracy, completeness and currentness (No changes to the data would be made by the regional custodian.)
- Responsible for documenting the quality of the data
- Responsible for correcting errors in the data if they are identified
- Responsible for seeing that data meets internal business needs
- May choose to partner with an intermediate aggregator to assist with these responsibilities
- Works in partnership with regional custodian (and intermediate aggregator if applicable) to make sure that data can comply with regional data standards

Regional Custodian

This will likely be a regional governmental entity.

- Works in partnership with primary custodian to make sure data can comply with regional data standards
- Responsible for compiling local datasets into a regional dataset within the agreed upon update cycle (to be determined)
- Responsible for complete documentation (metadata) of regional dataset, based on local documentation
- Responsible for seeing that the dataset meets regional needs

Intermediate Aggregator

This could be a county, public safety answering point (PSAP) or other organization that chooses to partner with cities to assist in the maintenance and coordination of this dataset.

- Assists multiple primary custodians with their responsibilities to varying degrees
- May compile data from multiple primary custodians for submission to regional custodian
- Acts as a technical resource to primary custodians

Online Editing Application Manager

This is the organization that agrees to develop and/or manage the proposed online editing application.

- Responsible for development and implementation of the application based on MetroGIS design criteria (to be determined)
- Responsible for making application available to primary custodians that request it, including secure access, training and some degree of technical support (to be determined).

Data Distributor

It is expected, but not required, that the MetroGIS DataFinder web site, administered by the Metropolitan Council, will be used to distribute this dataset.

- Responsible for making data readily available to those with defined access writes
- Responsible for securing the data distribution to prevent access by unauthorized users

Once desired custodial roles and responsibilities are defined, organizational candidates with matching internal business needs and abilities will be contacted to determine their interest in participating in the management of the proposed occupiable units point dataset. An agreement-in-principle on broad custodial responsibilities must be reached by key entities before a final recommendation can be considered by the MetroGIS Policy Board.

Implementation Scenarios

The Workgroup discussed a number of scenarios for the implementation of the Regional Occupiable Units Dataset. These ranged from basically a do nothing approach to hiring a vendor to create and maintain the entire dataset. Both of these extremes were dismissed by the workgroup, which settled on recommending a facilitated approach to the implementation. That scenario and other dismissed scenarios are described below.

Recommended Facilitated Implementation

The Workgroup felt that the only practical way for a regional dataset to become reality was to breakdown some of the key roadblocks to local implementation. This would be done by providing technical assistance and support to those addressing authorities that want or need it. This Facilitated approach envisions three key components.

1. Regional Data Standard

In order for the many local occupiable unit address datasets to be compiled into a regional dataset, they will need to comply with a regional data standard (discussed in more detail in a section below). Local databases and systems would not have to be designed on the standard per se, but would have to have the ability to be imported in into the regional standard format for the regional database. This would make the regional standard basically a data transfer standard and not a data development standard. That being said, this requirement would clearly place some constraints on the local occupiable units databases.

The regional address data standard will be build upon an emerging national address data standard. The effort to create this national standard is being conducted by the Urban and Regional Information Systems Association (URISA, www.urisa.org) in conjunction with the Federal Geographic Data Committee (FGDC, www.fgdc.gov) and the National Emergency Number Association (NENA, www.nena.org). MetroGIS staff are actively participating in this process. Because of this, the subsequent regional data standard will provide local governments with a well designed and nationally sanctioned address database standard to use, alleviating them from the need to create their own standard and increasing the usability of their data.

2. Preliminary Dataset of Parcel Points

As a means of jumpstarting the development of the local occupiable units datasets, the workgroup recommends that a preliminary dataset be created for each jurisdiction from existing county parcel data. A

point would be generated for the center of each parcel and matched with the address for the parcel. This would provide a majority of the points needed for the final dataset, including single family homes, condominiums and commercial and industrial occupiable units that have a one-to-one relationship with a tax parcel. From this preliminary dataset, a data editor could then begin to add things like apartment units, office suites, stores in malls, etc. Local address authorities might also want to move the locations of points on large parcels to more closely match the location of the actual units being referenced. While the initial parcel points would not provide a complete dataset for any community, they would create a substantial amount of useful data with which to begin. In many communities with a small percentage of apartment buildings, office suites and other more complicated addressing situations, the parcel points dataset could provide the vast majority of the final points needed in the finished dataset.

The preliminary parcel points dataset could be created by the regional custodian, intermediate aggregators, the counties, or a combination of these organizations.

3. Online Editing Application

Perhaps the largest roadblock to the creation of local occupiable units point datasets is the fact that many cities simply do not have in-house resources, specifically staff time, GIS software and expertise, to be able to maintain their own dataset. This fact is clearly understood by the Workgroup and was the topic of much thought and discussion. Because of this, the Workgroup sought to find a way to make occupiable unit point data maintenance relatively easy for cities, without requiring them to invest in new software and training, and perhaps more importantly, without significantly changing the existing workflow of addressing procedures within the city. This is no small order, and the Workgroup understands that to some degree this cannot be done. But we believe we have come up with a potential solution that at least comes close to achieving these goals.

The Workgroup is recommending the creation of a secure online application that addressing authorities could use to create and maintain their own occupiable units point dataset. The data itself would then be stored in a centralized location (e.g. with the regional custodian), but would of course be available to the addressing authority. The application, as proposed, could be accessed by the city through a standard Internet browser and would allow authorized users (as defined by each addressing authority) to add, delete and modify addresses and point locations for their own jurisdiction. They would be able to see but not modify addresses and points for other jurisdictions. The application is expected to be sufficiently uncomplicated as to require only minimal training.

The Workgroup understands that the use of this application might significantly change the address creation and tracking workflow and procedures for a city. And it would only perpetuate redundancy to have a city enter new addresses in this application as well as in their own address records, which interviews showed varied from complex databases, to spreadsheets, to paper records, to a map on the wall. With this in mind, the workgroup is further recommending that additional features be included with the application that would be designed to meet some of the other business needs of the local addressing authorities. Because addressing procedures are different for each community, it is impossible to design a single system to accommodate them all. But some value can be added. Some ideas discussed by the Workgroup include:

- the ability to create and print local address maps
- the ability to view plats for assigning address points
- an online mailing label creation application that would allow selecting all occupiable units or parcels within a specified distance of a user defined location, and then creating mailing labels with the addresses of occupants, or property owners
- the ability to create maps showing occupiable units and parcel boundaries on top of aerial photography.

As yet the Workgroup does not have a clear picture of what additional application features would provide adequate incentives for local addressing authorities to want to use the online editing application. The Workgroup recommends interviewing local government addressing staff about this after a suitable outreach effort can be established to inform such staff about the occupiable units points dataset initiative.

Candidate Implementation Scenarios that were Rejected

The following implementation scenarios were considered but rejected by the Workgroup.

Implementation Scenario	Description of Scenario and Reason for not Recommending
Do Nothing	This scenario would involve only a recognition by MetroGIS of the importance of occupiable units as a regional dataset, and a message to addressing authority organizations to consider creating such data. The Workgroup felt that mere lip service would result in little if any significant local data development and would not help create a standardized regional dataset.
Create Standards and See What Happens	An improvement on the Do Nothing approach, this scenario involves creating a regional database standard and perhaps guidelines for local data development. This would increase the likelihood that local dataset would be standardized, and thus, able to be compiled in a regional dataset. However, it would provide little or no assistance to local governments to begin the development and maintenance of their own data. The workgroup felt that the facilitated approach would be much more effective.
Have Regional Entity or Vendor Create and Maintain Dataset	The Workgroup felt strongly that only the local addressing authorities could provide the accuracy, completeness and currentness necessary to create an address database that would meet the identified needs. A regional organization or private vendor would simply not have sufficient knowledge of local areas and addressing situations to be able to create the desired dataset. The workgroup did not rule out the possibility of partnerships between local addressing authorities and other organizations, including vendors.
Mandate Address Authorities to Create the Data	It has been a standing principle of MetroGIS that no organization should be expected to create or maintain any data if they do not have an internal business reason to do so. The idea of somehow requiring address authorities to create this data was deemed inappropriate by the Workgroup and was not considered further.

Resources and Challenges

A dataset that includes all occupiable units and is current enough to meet public safety dispatching requirements will clearly require continuous maintenance. The amount of maintenance necessary will vary greatly by city, depending upon the amount of new development and redevelopment within each city. Thus, the amount of staff time and expertise necessary to maintain the occupiable units dataset may vary from a small portion of a clerk’s time in a city with limited development to a significant portion of a GIS technicians time in a large, developing city. Interviews with city addressing authorities indicated that city staff are already tracking new addresses. So the maintenance of an occupiable units dataset is hoped to be an enhancement of the current workflow and not a completely new task. The degree to which this would actually impact city staff time is yet to be determined. It is believed that the pilot project(s) will provide a better understanding of the resources needed.

An additional challenge will be the impact that this dataset has on existing addressing work processes and procedures within cities. Because the flow and tracking of address data varies greatly among cities, it is difficult to describe a typical scenario for how a city might adapt to including the occupiable units dataset in their workflow. Some city work processes seem ready to make use of the occupiable units dataset right away without significant impact, while others would need to make sizable changes to their procedures to incorporate this dataset within their workflow. Still others might decide to completely revamp their entire addressing system in conjunction with all other city databases and applications. For example, the City of St. Paul spent over two years working on **STAMP**

(**St. Paul Address Management Project**). This ambitious project included developing functional requirements, creating conceptual, technical and database designs, preparing and converting data, and constructing new web-based property inquiries and GIS mapping applications.

Clearly, fitting this type of database development and maintenance into city and county workflows will be a major challenge of this initiative, one that will take time and experience to overcome. The proposed pilot project(s) should provide more insight into this challenge.

Database Issues

The Workgroup will define a preliminary design for the database. This design will likely undergo some modification as it is tested in the user community.

As has been previously mentioned, the regional address data standard will be build upon an emerging national address data standard. The effort to create this national standard is being conducted by the Urban and Regional Information Systems Association (URISA) in conjunction with the Federal Geographic Data Committee (FGDC) and the National Emergency Number Association (NENA). MetroGIS staff are actively participating in this process. More information about the national standard can be found at http://www.urisa.org/address_data_standard.htm.

The national standard will define a majority of the database elements used by MetroGIS. Because the national standard is in its development stage, those elements are not provided in this document. They will be made available in a separate database design document once the national standard is in a final or near final status. Additional database concepts proposed for the MetroGIS dataset are listed below.

Requirements and Best Practices

This database design will include components or quality characteristics that are required for the MetroGIS regional dataset as well as others that are recommended best practices, but which are not required. These will be clearly articulated in the database design documentation to aid in decision making at the local level.

Points for Every Unit vs. Related Table for Multi-Units per Point

A fundamental decision to be made about this database design involves whether to require all occupiable unit records to have their own associated point, or to allow multiple units in a related table to be assigned to a single point. The Workgroup agreed that the database should have a point for each unit and not a related table for multiple units in a building. The principal reasoning for this decision is that in order to easily create related tables that describe additional attributes for individual units (socioeconomic characteristics, presence of hazardous materials, presence of life saving equipment, landmark names, etc.) it is necessary to have a unique ID for each unit itself. Having an ID for just a building would not permit this functionality in some cases. Additional reasons for and against were documented, but are not provided here.

Positional Accuracy

The Workgroup agreed that a variety of positional accuracies would be acceptable with this dataset, ranging from parcel centroids to points aligned to doorstops on high resolution imagery. The Workgroup set a minimum requirement that each unit point is to be located with the correct parcel polygon. This requirement would not apply to new “preliminary” point locations created when photo and final plat information was not yet available to the data editor. Such locations would eventually need to be adjusted to comply with this minimum positional accuracy requirement once sufficient spatial reference information becomes available (e.g. new parcel boundaries).

The key to making such a flexible positional accuracy policy useful will be a required attribute field in which a code references a description of the positional accuracy of each point.

Actual vs. USPS Municipality

The primary desire of the workgroup is to indicate the “situs” (actual location) city or township of the occupiable unit. It is important to note that the USPS mailing city is often different than the city or township in which the unit is located. For example, addresses in townships typically use a nearby city for a mailing address. Also, addresses in one city might have a different city name for purposes of meeting USPS bulk rate standards. Because of this, the occupiable units database will include both the situs city or township and the USPS mailing city.

Parcel ID

The database will include a parcel identifier for each unit using the same format as is used in the regional parcel dataset. A variety of methods could be used to populate this field, ranging from manual entry to a fully automated process using a spatial relate with the regional parcel dataset. Because some occupiable units cover multiple parcels and some units more specifically relate to parcel records that are not individual polygons (condominiums), the implementation details of this data element will likely need to be worked out over time through a pilot project.

Pilot Project

The ambitious vision of a point dataset for all occupiable units in the metro area has raised many questions. An attempt has been made to answer many of these questions prior to any implementation. However, a test of the envisioned implementation is necessary to give the vision and recommendations a reality check and to see what problems and challenges arise in a real-world situation. The Workgroup is recommending one or preferably multiple pilot projects involving the creation of local occupiable units point datasets that can meet the regional standard. Several ideas for pilot projects have been raised, but more work is needed. Involvement with the Ramsey County GIS Users Group is very likely.

Summary of the Vision

This is the vision of the MetroGIS Address Workgroup, a group comprised of city, county and regional government staff from throughout the metro area. The vision calls for the creation of a database containing the addresses and locations (points) of all occupiable units in the metro area. The data itself would be maintained by the official addressing authority for each jurisdiction and compiled into a regional database by a regional custodian. It would be made available, free of charge, to metro area governments. Policies for non-government access would be determined by the local governments.

Components of the Proposed Vision

The following concepts are some of the key aspects of the vision. In April 2005, the MetroGIS Policy Board endorsed these concepts as the foundation for further efforts to implement a regional occupiable unit data solution.

- Local procedures and rules pertaining to the naming of streets and assignment of address numbers must be recognized as they exist and are not within the scope of this effort.
- The occupiable units database would include (but is not limited to):
 - The unit address components
 - The point geography
 - Some mechanism to relate the point to parcel data
- “Occupiable unit” has been preliminarily defined by the Workgroup as any residential or non-residential occupiable space that requires a government permit to create and which has a unique address.
- The vision assumes multiple avenues for creating, maintaining and storing address point data, and providing it to a regional dataset.
- The vision includes the potential for an Internet-based application that would allow cities, which do not have their own GIS capability, to maintain such a dataset over the Internet.
- A standardized address data transfer format will be needed to implement this solution.
- In order to meet the currentness needs of the 911 community and others, it is proposed that new points be added to the dataset as soon as they are official (e.g. at the time the building permit is issued).
- A pilot study is recommended to frame any compatibility issues locally and identify viable solutions.

Vision Justification

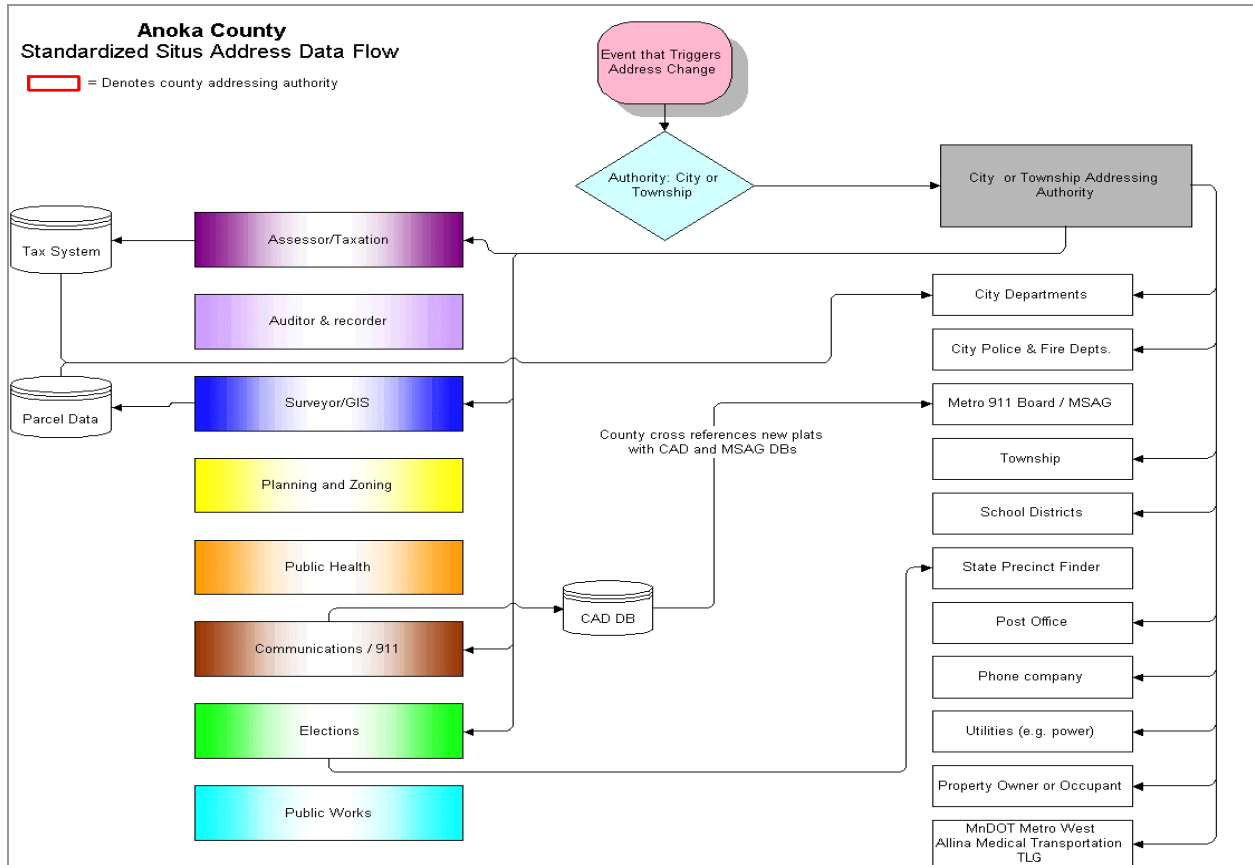
The Workgroup believes this effort will be a long term benefit to nearly all metro governmental organizations for the following reasons:

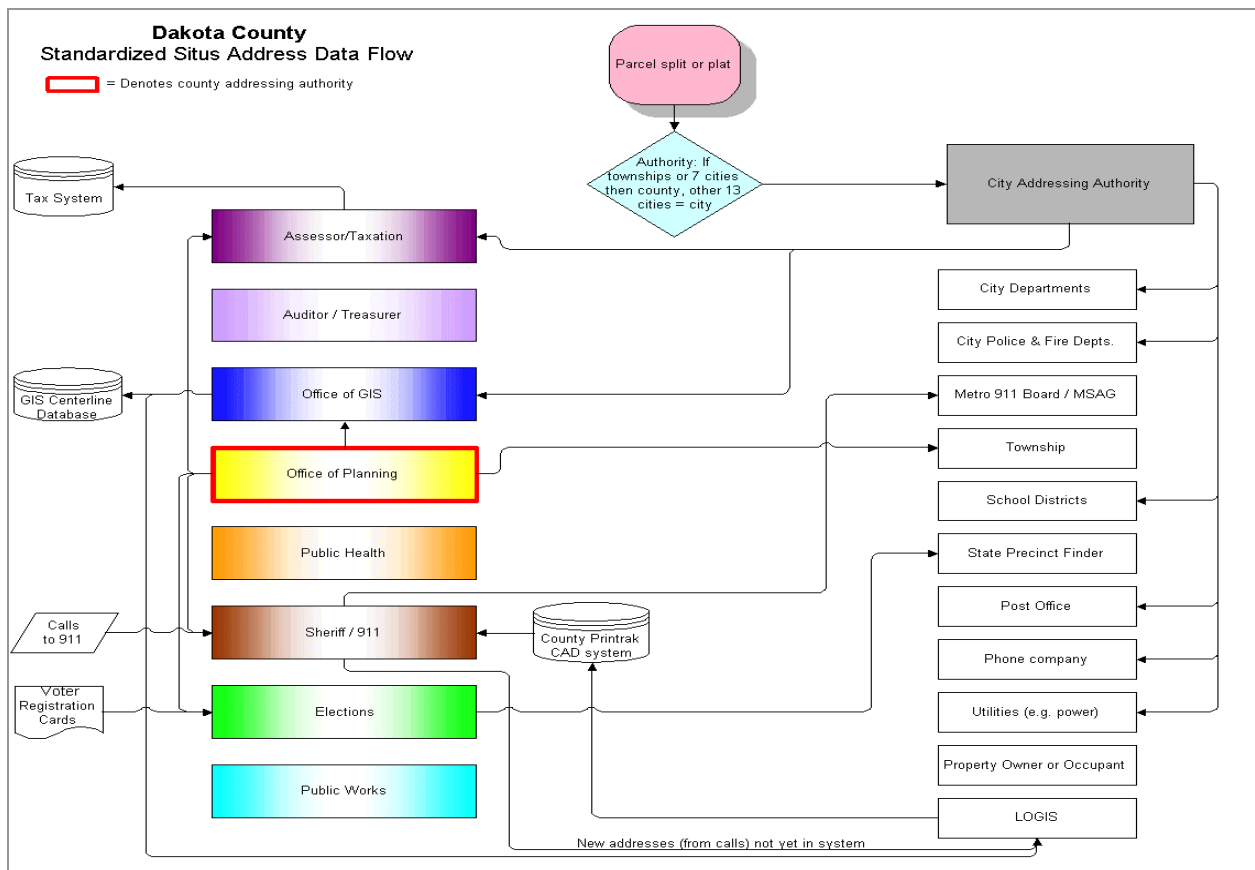
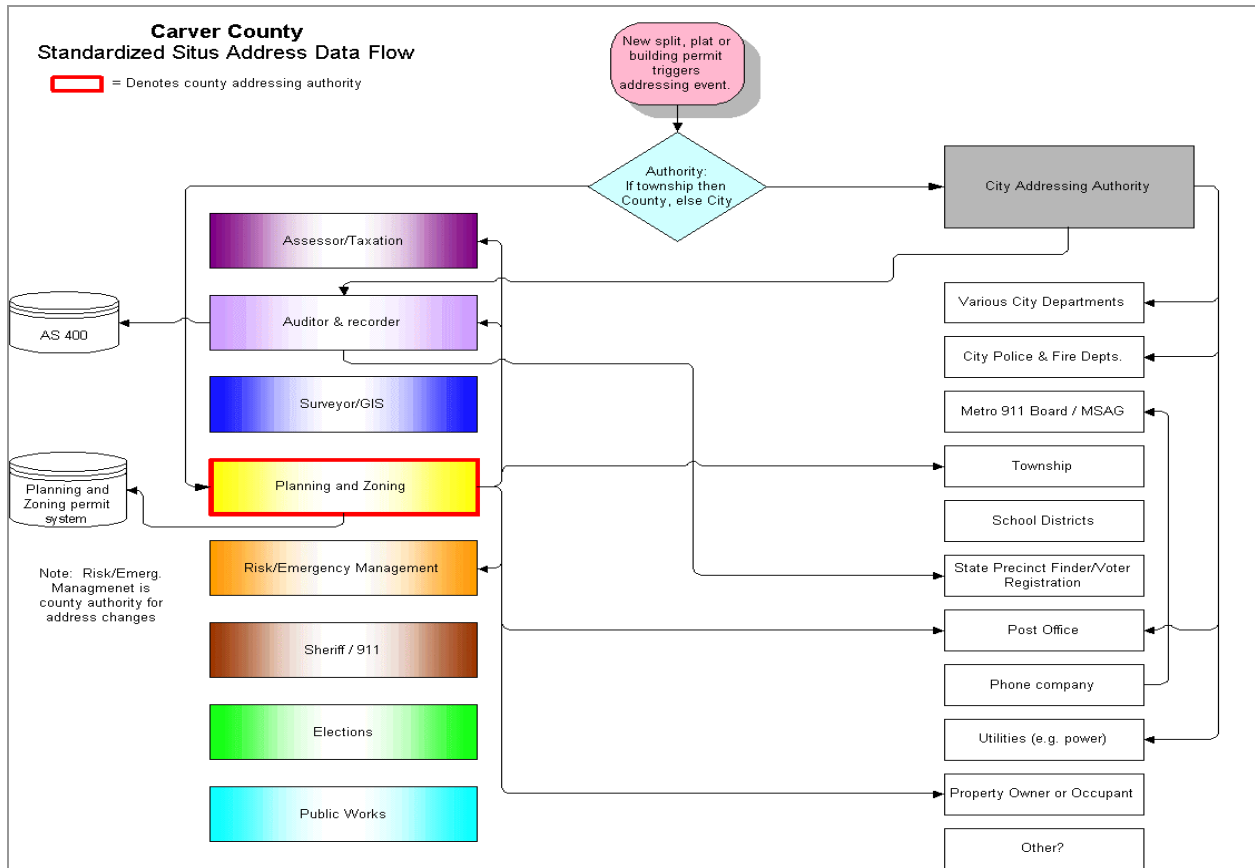
- Nearly all government organizations have a business need for addresses of occupiable units.
- Multiple, uncoordinated procedures are resulting in costly duplication of effort and perpetuation of data inconsistencies.
- Having a clearly defined “single official” source for address data for any given jurisdiction is desirable to all government entities. Its existence would reduce the creation of inaccurate or inconsistent addresses.
- A collaborative effort is warranted to achieve desired efficiency and consistency improvements.

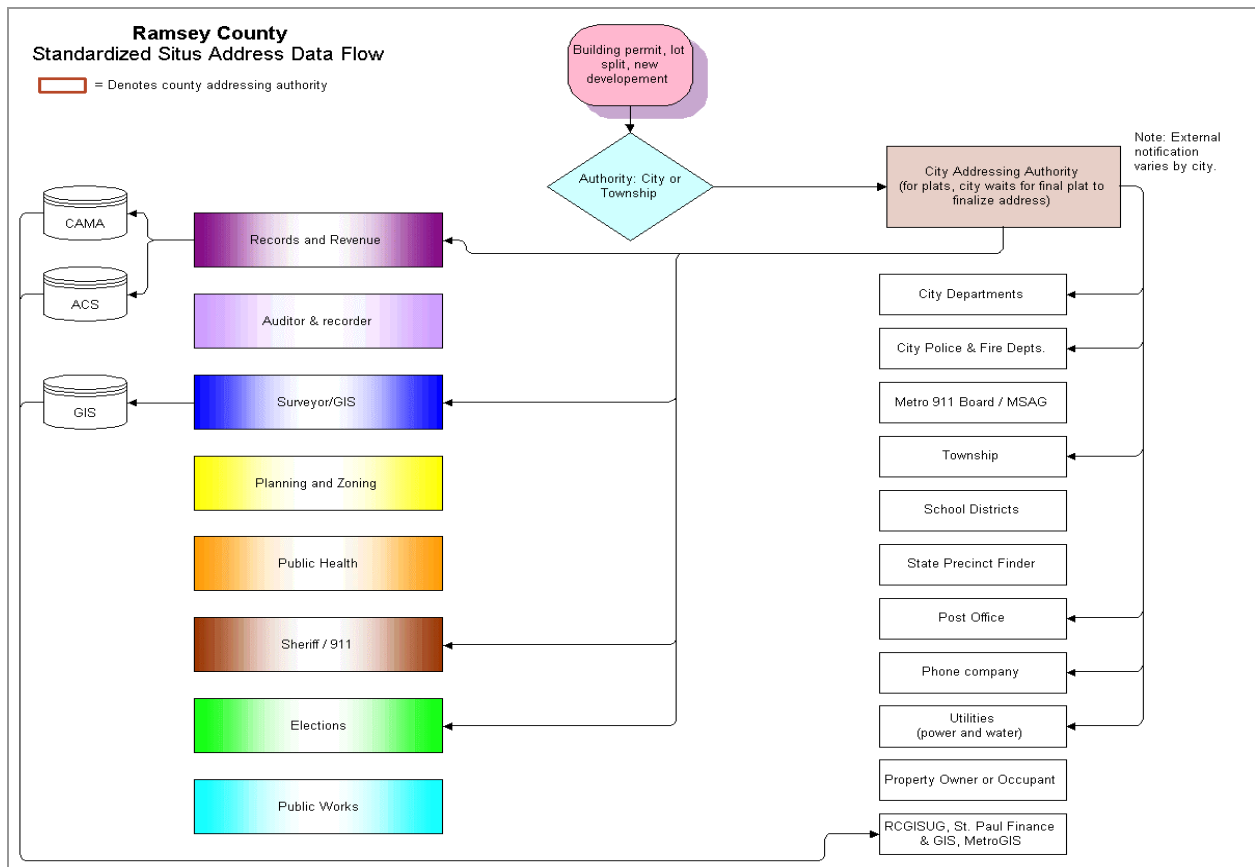
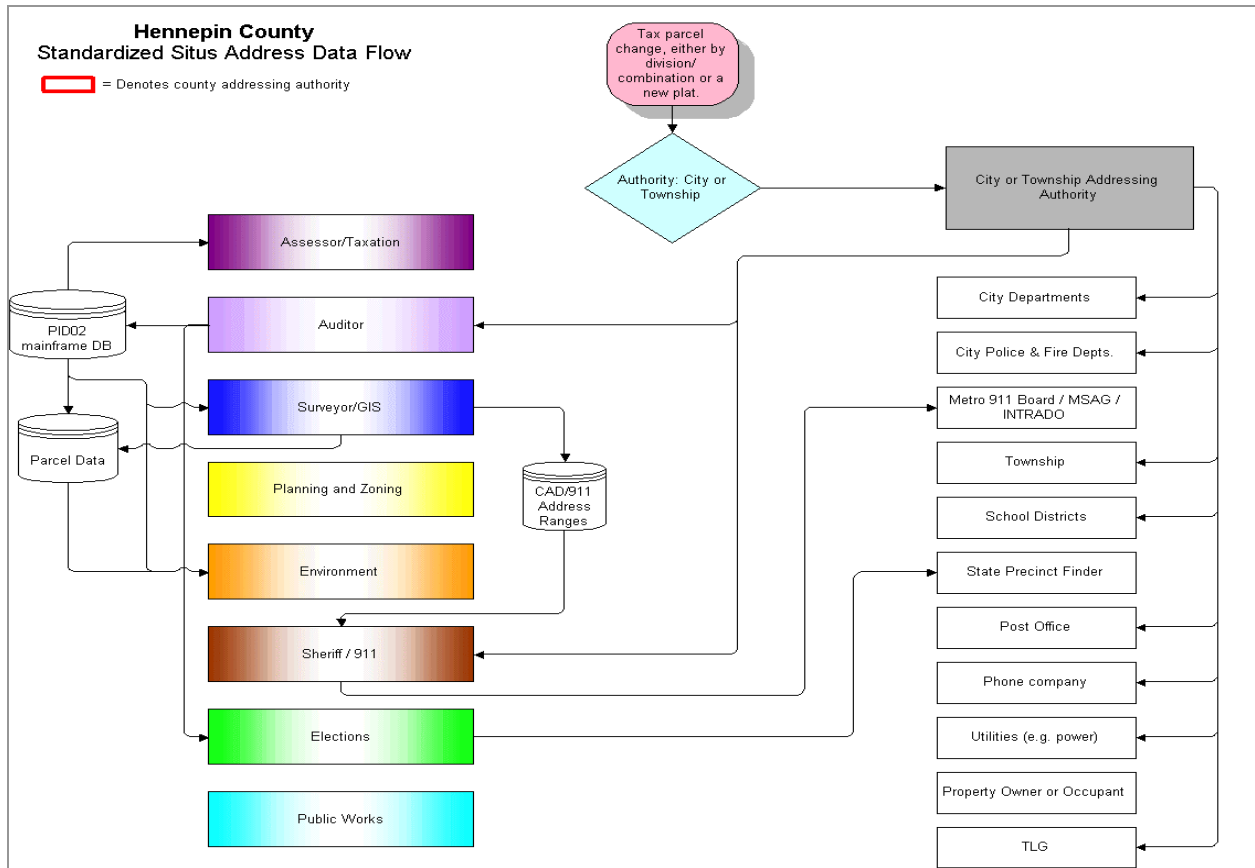
In Conclusion

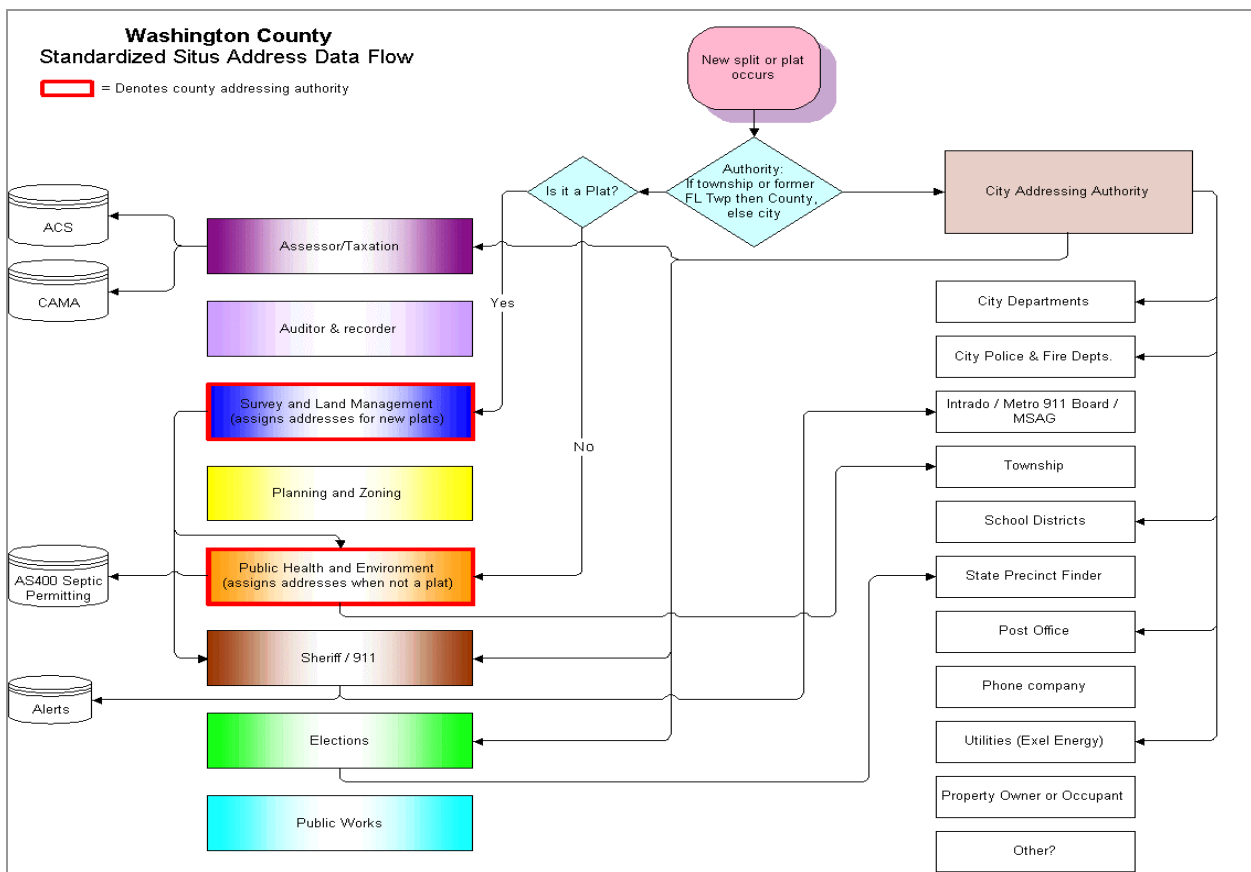
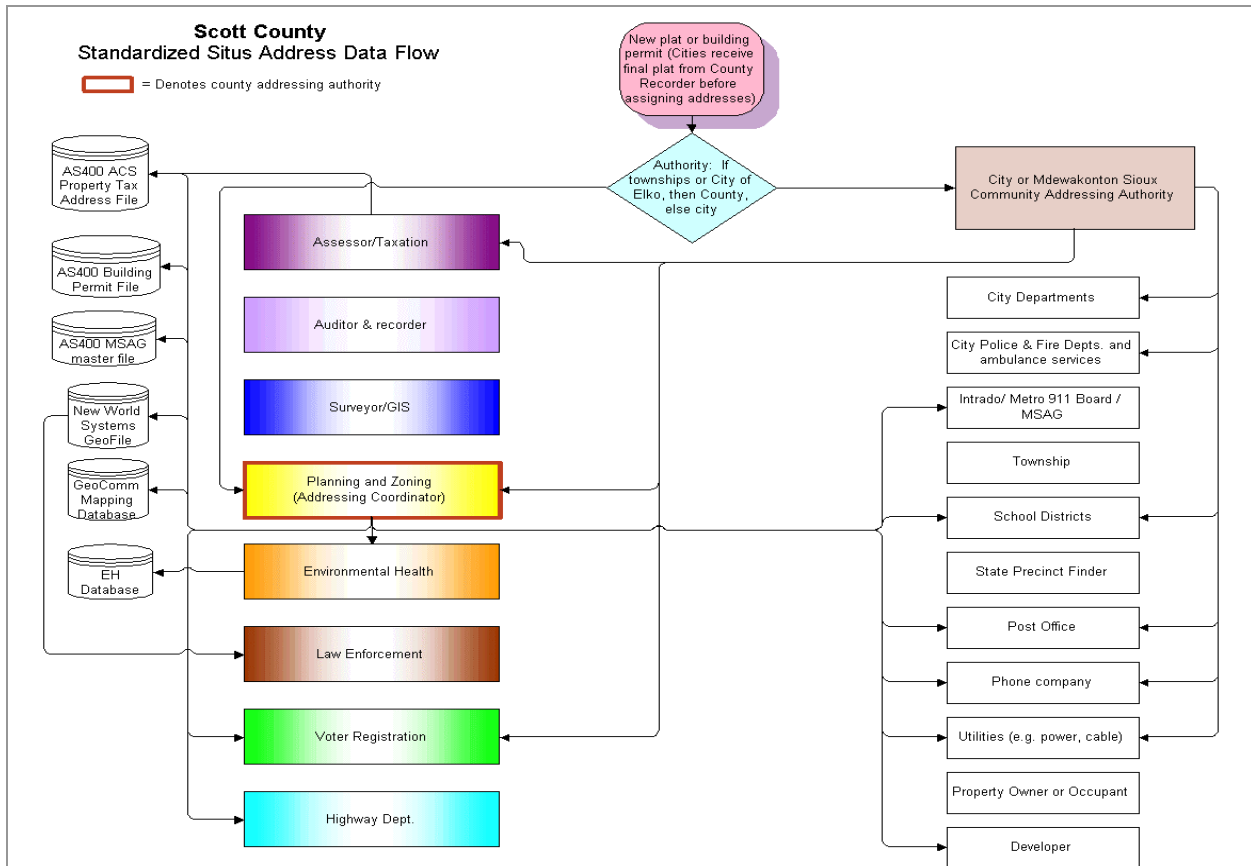
This vision is expected to take many years to reach fruition. It will require considerable review and comment by the various stakeholders, and may involve a significant educational effort to explain the long term benefits of investing in the vision. To succeed it will likely involve changes in the way some local governments conduct their business. It may indeed be a paradigm shift for some organizations. Ultimately, it will require the approval and support of local government in the metro area if it is to be successful.

Appendix A: Standardized County Address Data Flow Diagrams









Appendix B: MetroGIS Regionally Endorsed Datasets and Custodians

Dataset	Primary Custodian
County and Municipal Boundaries	Counties
Parcel Dataset	Counties
Census Geography 1990	Metropolitan Council
Census Geography 2000	Metropolitan Council
TLG Roads	The Lawrence Group
Planned Land Use	Metropolitan Council
Land Cover Classification System	Department of Natural Resources
Census Demographic Profiles	Census Bureau

See <http://www.metrogis.org/data/index.shtml> for more information.