



***North Carolina  
Geographic Information Coordinating Council***

***The Power of Place***  
**2013 Annual Report to the Governor and  
North Carolina General Assembly**

**November 2013**

*Submitted to:*

*Governor Pat McCrory*

*and*

*The Joint Legislative Commission on Governmental  
Operations*

*Page left intentionally blank*

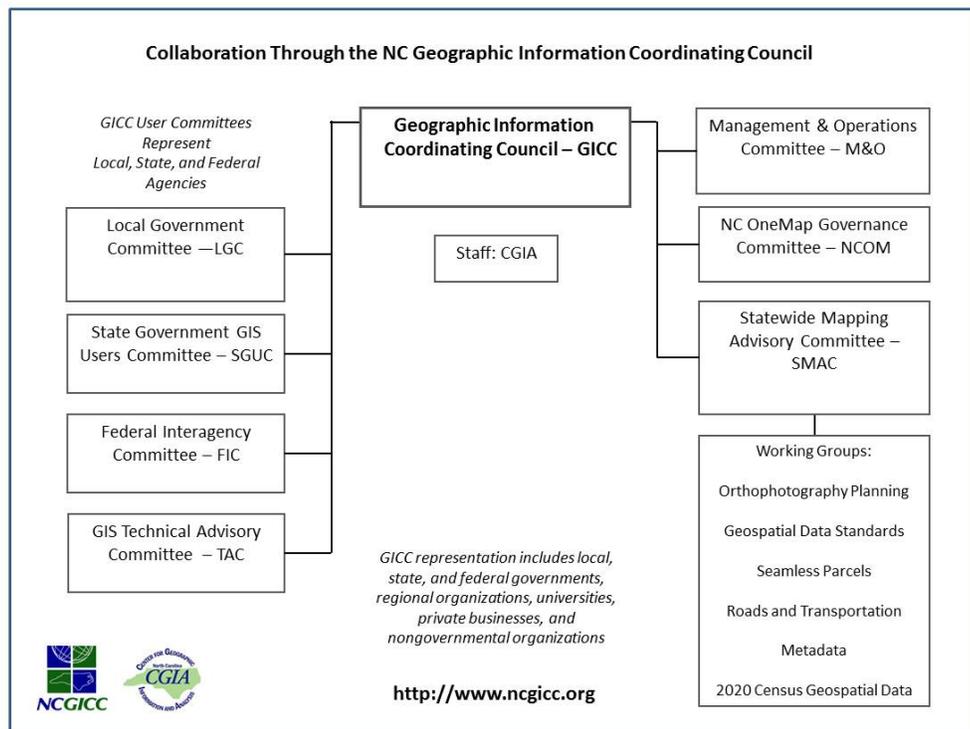
## Table of Contents

Executive Summary .....	3
Section I. Purpose of the Geographic Information Coordinating Council .....	5
Section II. Accomplishments .....	6
Imagery for the State.....	6
<i>A Four-Year Cycle to Update Statewide Imagery</i> .....	6
NC OneMap.....	8
<i>The Value of NC OneMap</i> .....	8
<i>NC OneMap Supports the Private Sector</i> .....	8
<i>NC OneMap Meeting User Requirements</i> .....	11
<i>Content of NC OneMap</i> .....	12
<i>A Map Viewer for the NC.GOV Website</i> .....	13
<i>NC OneMap Funding</i> .....	13
Council and Committees at Work.....	14
<i>Council Membership</i> .....	14
<i>Bylaws</i> .....	14
<i>Council Initiatives on Data Development/Management</i> .....	14
Standards and Issues .....	18
<i>Light Detection and Ranging (LiDAR) Specifications</i> .....	18
Communication and Outreach .....	19
<i>North Carolina Board on Geographic Names</i> .....	19
<i>2013 NC GIS Conference</i> .....	20
<i>Other Professional Meetings and Events</i> .....	20
<i>Orthoimagery Project Training and Outreach</i> .....	21
<i>GIS Day, November 16, 2012</i> .....	21
<i>Websites</i> .....	21
Section III. Action Plan for 2013-14.....	22
Meet NC OneMap Business Needs.....	22
Manage the Statewide Program for Orthoimagery .....	22
Review GIS Applications in State Government.....	23
Adopt and Promote Standards .....	23
Collaborate for Data Quality and Data Sharing.....	24
<i>Development of Statewide Datasets</i> .....	25
<i>Census</i> .....	26
<i>Clearinghouse</i> .....	26
<i>NC OneMap Accountability Measures</i> .....	27
<i>Outreach</i> .....	27
Appendices.....	27
Appendix A: 2012-13 Geographic Information Coordinating Council Members.....	28
Appendix B: NC Geographic Information Coordinating Council Establishing Authority and Precedent ...	33
Appendix C: Imagery for the State: Phases of a Four-Year Cycle.....	34
Appendix D: The Value of NC OneMap: Benefits to Business Processes.....	35
Appendix E: Performance of NC OneMap.....	37
Appendix F: NC OneMap Updates for 2013-2013 .....	38

*Page left intentionally blank*

## Executive Summary

The Geographic Information Coordinating Council (Council) is the hub where public and private sector stakeholders discuss geographic data, data sharing, standards, and view real-world examples of the value of this data in a changing and demanding world. The Council was established in August 2001 and is incorporated in General Statute §143-725 through 143-727. The Center for Geographic Information and Analysis (CGIA) staffs the Council. As set forth by statute, the Council is to advise the Governor and the General Assembly on strategic direction, responsibilities, and requirements as North Carolina pursues geographic technology in a coordinated fashion to meet the needs of decision makers at all levels. This report fulfills that statutory charge. The organizational structure (Figure 1) enables active participation by dozens of collaborators.



**Figure 1. Organizational Structure of the Council**

NC OneMap (located at [www.nconemap.com](http://www.nconemap.com)) has been a key initiative of the Council for a number of years, built from the start based on the Council’s vision of capitalizing on local and state investments in geographic data to effect decision making. In 2012-13FY, a survey was conducted of private sector users, many of whom have come to rely on data accessible through NC OneMap. The survey revealed that:

- *NC OneMap* is a resource for the private sector in a variety of business types and sizes. Engineering, surveying, and environmental consulting accounted for 74 percent of users, and businesses ranged from small (1 to 4 employees) to large (42.5% of the respondents reported 100 or more employees).
- Users save time, save money and accomplish more; 80% of the users indicated they saved time while 71% reported saving money. *NC OneMap* satisfied at least one business need for 84 percent of users.

Building out *NC OneMap* with foundational datasets including orthoimagery, street centerlines (NCDOT), and parcels (local government) is an ongoing priority. A four-year update of the 2010 statewide orthoimagery dataset began with completion of flights in the 25 coastal counties with delivery of the data in early 2013. This data directly supports the 127 local 911 communication centers and a host of other applications throughout the public and private sectors in North Carolina. The next phase covering 25 more counties in the eastern piedmont was flown in early 2013 with delivery anticipated in early 2014.

Progress was also made in street centerlines with over 80 counties contributing to a statewide effort. The eventual goal is to build an integrated dataset that can be maintained through close collaboration between local and state governments. Additional significant progress has been made in the areas of statewide parcels, federal lands, and metadata.

Looking ahead to the 2013-14 fiscal year, the orthoimagery program will complete the eastern piedmont phase and initiate the northern piedmont and mountains phase. The statewide parcels project will collaborate with the first 25 counties to be transformed to a standardized dataset. Statewide addresses will be the next area of emphasis, building upon the street centerlines and parcels efforts, respectively.

The work of the Council relies on the knowledge, vision and needs of its stakeholders to define important standards as the foundation for data collection and sharing. In the coming year, the Council will complete updates to the global positioning system (GPS) standard that it first adopted in 1994 and the soon-to-be adopted metadata standard. Metadata represents the *who, what, when, where, why* and *how* of the data resource. The standard will insure the authenticity and integrity of the information being relied upon by all users of the geographic data.

In so many ways, the past and ongoing achievements are forming a foundation with current efforts to better serve the State, local governments, and the public at large in a variety of pursuits for many years to come. In particular, the orthoimagery and street centerline projects are being integrated into improving the physical addressing of all improved properties that will benefit emergency response efforts, yield a more accurate count for the 2020 Census, and provide an accurate source for point-of-sale data in the collection and distribution of sales taxes.

## Section I. Purpose of the Geographic Information Coordinating Council

The North Carolina Geographic Information Coordinating Council (Council) was established in August 2001 and is incorporated in General Statute §143-725 through 143-727. The purpose of the Council is to develop policies regarding the utilization of geographic information, geographic information systems (GIS), and related technologies. The Center for Geographic Information and Analysis (CGIA) staffs the Council.

The value of the Council is realized through organized collaboration of geographic information producers and public access to geographic resources that support a wide range of business processes in public and private organizations. GIS is a planning and analysis tool that supports many public business processes on a daily basis. For example, the technology is widely used for optimal routing of emergency vehicles, garbage trucks, and school buses. GIS provides an efficient way to combine multiple perspectives in a map, including but not limited to natural resources, transportation, and economic development. As confirmed in a survey in 2012, private organizations apply GIS in forestry, agriculture, utilities, real estate, engineering, surveying, and business location, to name a few.

A key initiative of the Council is *NC OneMap*, the geographic data portal, clearinghouse and database supporting North Carolina geographic data users. *NC OneMap* provides data discovery and web-based viewing of North Carolina's geographic data and reflects the Council's vision of enabling access to complete, consistent, up-to-date geographic data that meet accepted standards and are documented. The Council and the North Carolina GIS community lead an organized effort of numerous partners throughout North Carolina, involving local, state, and federal government agencies, the private sector and academia to achieve this vision.

The Council met four times in this reporting period: August 8, 2012; November 15, 2012; February 13, 2013; and May 8, 2013.

The committee structure is vital to the Council. User committees bring a unique point of view to issues and tasks. User-oriented standing committees are the Local Government Committee (LGC), State Government GIS Users Committee (SGUC), and the Federal Interagency Committee (FIC). The GIS Technical Advisory Committee (TAC) and the Statewide Mapping Advisory Committee (SMAC) are the two standing committees that combine representation from each committee with subject experts to work on policy and technical issues from a collaborative perspective.

The Management and Operations Committee (M&O), comprised of standing committee chairs and other Council members, provides advice and support to the Council on organizational and programmatic matters concerning policy, management, and operations of geographic information, geographic information systems (GIS) and related technology.

The M&O Committee members also comprise the *NC OneMap* Governance Committee, whose purpose is to develop, direct, and exercise oversight of *NC OneMap* strategy, resources, and performance. Each committee has a work plan and regular meetings.

Council members for the Fiscal Year 2012-2013 are listed in Appendix A. The establishing authority and precedent for the Council is described in Appendix B.

The following sections provide detail on Accomplishments in 2012-2013 and an Action Plan for 2013-2014.

## Section II. Accomplishments

### **Imagery for the State**

#### *A Four-Year Cycle to Update Statewide Imagery*

In 2009, the NC 911 Board funded a project to acquire high-resolution imagery for all 100 counties in North Carolina. The exciting outcome of this project is that consistent high-resolution imagery was made available to emergency responders and the statewide GIS community for the entire state for the first time ever. The imagery is accessible for download and as an image service through *NC OneMap*. In addition to its value to emergency responders at all levels of government, the imagery serves as a fundamental data layer for numerous other applications and is heavily used by the private sector.

The NC 911 Board wisely recognized the need to update the orthoimagery on a periodic basis. The Statewide Mapping Advisory Committee (SMAC) and its Working Group for Orthophotography Planning developed a Business Plan for Orthoimagery in North Carolina that defined the business case and recommended a practical approach for future orthoimagery production for North Carolina. This plan was accepted by the Council.

The NC 911 Board endorsed the Business Plan and voted to continue the statewide orthoimagery program with acquisition of imagery for all 100 counties over a four-year cycle, with CGIA leading the collaboration of state agencies, engagement of private service providers, and coordination of state and local participants.

The NC 911 Board has approved funding for the first three phases of the four-year cycle. Phase 1, involving acquisition in 2012 of imagery for 25 counties in the Coastal Plain region, is now complete. The imagery was delivered to the Primary Public Safety Answering Points (PSAPs) and county governments in February 2013. See Figure 2:



**Figure 2. NC Orthoimagery, Phase 1 Example, Kitty Hawk, 2012**

Phase 2, covering 25 counties in the Eastern Piedmont, was initiated. Imagery was acquired during February-March 2013 and is currently undergoing quality review. Delivery of the imagery to the PSAPs and county governments will occur in early 2014.

Phases 3 and 4 are planned for imagery acquisition in 2014 and 2015, respectively. Planning for Phase 3, which will cover 26 counties in the Northern Piedmont and Mountain region in 2014, is underway.

The project contributes to the state's economic vigor by sustaining private sector jobs in photogrammetric services throughout the year. The data are available to state, federal and regional government agencies, the private sector, the academic community and private citizens as map services and downloadable files from *NC OneMap*.

The data are invaluable to a wide range of private sector and government users. Benefits include (a) saving time in locating and responding to emergencies; (b) saving time in informing business decisions; and (c) avoiding the cost of erroneous information from out-of-date imagery and map features.

The NC 911 Board is now spending less on orthoimagery per year with the statewide four-year approach than it spent previously to reimburse individual county imagery acquisition. Prior to the statewide effort, the Board had received \$24 million in requests annually for

orthoimagery projects. The four-year, statewide approach will result in a total cost of approximately \$17 million. The NC 911 Board is to be commended for recognizing the value of the imagery, not only for emergency response, but for countless other uses and applications by the private sector and government.

The ongoing collaboration with the NC 911 Board exemplifies the value and benefit of the Council model for fostering collaboration among government agencies and the private sector.

See Appendix C for details on the orthoimagery phases 2012-2015.

## **NC OneMap**

The Council's *NC OneMap* initiative is focused on the goal to assure public investment in geographic data and services will continue to generate benefits for a wide range of public and private purposes. The *NC OneMap* Geospatial Portal is the state's prime site for discovery of and access to geographic data as downloadable files and/or map services (instances of datasets served over the Internet as map images). See <http://data.nconemap.gov>. To achieve benefits, the Portal requires geographic content that is current, complete, consistent, reliable, well documented, and practical to apply to business needs. The best public access enables quick and easy discovery of geographic data and provides ways to derive value from the data for a variety of applications. Benefits are available to public and private entities in a broad range of activities that contribute to health, safety, knowledge, communities, natural resources, and economic vitality in North Carolina.

### ***The Value of NC OneMap***

The Council's vision is "*NC OneMap will include data that are current and accessible over the Internet to all statewide sectors including government agencies, utilities, private firms, schools, universities, and individual citizens. Data on the Internet will be free to search, discover, view, and acquire. It will be available 24 hours per day/seven days per week. Standards and procedures will ensure that the data are of the highest quality available, contain no unnecessary redundancies or inconsistencies, and are adequately and uniformly documented.*"

Geographic data, tools and techniques achieve that vision by supporting a diverse range of private and public business processes. Business processes rely to an ever increasing extent on maps, aerial imagery, and geographic datasets that enable analysis of locations, routes, distances, land, and structures. See Appendix D for details on the value of *NC OneMap*.

### ***NC OneMap Supports the Private Sector***

Anonymous users of *NC OneMap* take advantage of the self-service features of the website. The Council had anecdotal evidence that public sector agencies – in both state and local government – depended heavily on *NC OneMap*, and that private sector users were benefitting as well. In September 2012, at the request of the *NC OneMap* Governance Committee, CGIA distributed a survey on the use of *NC OneMap* and the Geospatial Portal—

a web location for discovering, accessing, and downloading data for mapping needs. The primary target of the survey was the private sector.

CGIA identified and contacted professional associations and requested and received assistance in distributing the survey to their members. The following organizations assisted in reaching out to *NC OneMap* users: American Council of Engineering Companies of NC, NC Society of Surveyors, NC Association of Realtors, NC Chapter of the American Planning Association, NC Bar Association Real Property Section, Professional Engineers of NC, and NC Society of Environmental Professionals.

A total of 306 private sector respondents answered three or more of 18 survey questions. Of those 306, a total of 213 indicated they used the *NC OneMap* Geospatial Portal for data discovery, data download, or web services. The survey found:

- *NC OneMap* is a resource for the private sector in a variety of business types and sizes. Engineering, surveying, and environmental consulting accounted for 74 percent of users, and businesses ranged from small (1 to 4 employees) to large (42.5% of the respondents reported 100 or more employees).
- Users save time, save money and do more; 80% of the users indicated they saved time while 71% reported saving money. *NC OneMap* satisfied at least one business need for 84 percent of users.
- Data discovery and download functions are used most. Web services are used, but not as much as the data download option.
- Visits tend to be monthly or weekly, not daily.
- Data deemed most valuable: imagery, parcels, streams, elevation, flood hazard areas, and streets.
- Free online data is preferred to fee based access.

Figure 3 demonstrates the value of *NC OneMap* to private sector users in North Carolina.

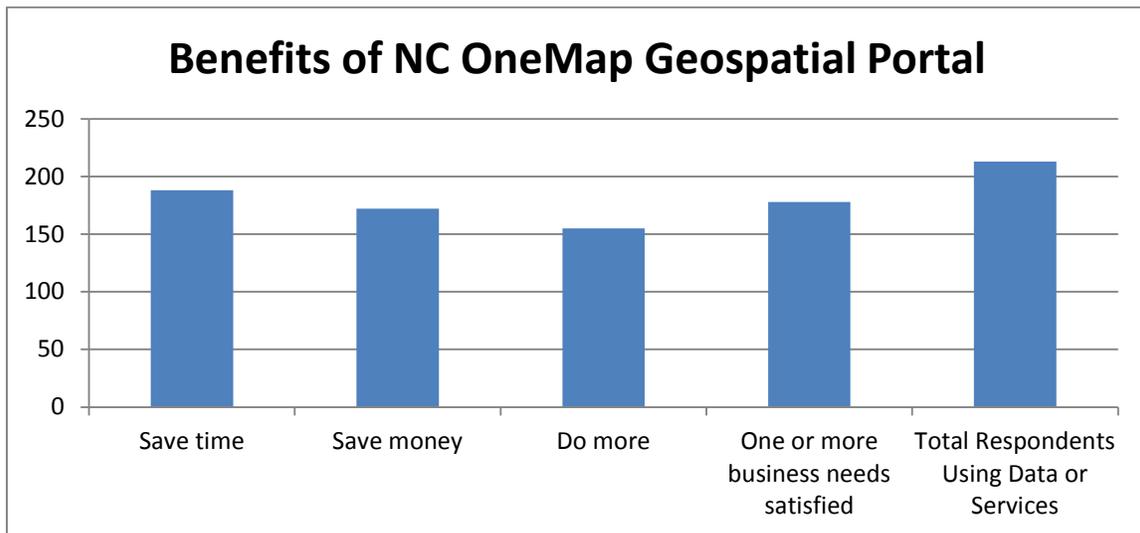


Figure 3: Number of survey respondents (of 213 total) indicating benefits from *NC OneMap*.

An employee of a North Carolina engineering/consulting firm included the following testimonial:

*NC OneMap is “an extremely valuable resource to our company. It is definitely our go-to site for state-wide geospatial data. We have been really impressed with the new orthoimagery service that allows staff to link to the high resolution aerial photos without the need to individually download the files. This has helped tremendously with the functionality of our maps and storage space on our server. We also appreciate the quality of the metadata that NC OneMap provides. It helps make our data analysis more robust.”*

Government agencies benefit in the same way private firms do. In a presentation to the Council, the Natural Resources Conservation Service (NRCS) noted the value of current orthoimagery, county tax parcels, NCDOT roads data, and soils data interpretations. *These datasets are discoverable and accessible from NC OneMap or are under development through Council initiatives.* NRCS explained that “Federal, state and local collaborative investments in accurate and complete GIS data enables NRCS to target financial resources where they have a higher likelihood of being effective... This is only possible by access to geographic information that is relevant and accurate at a local scale. The data can only be developed by collaboration with local and state government agencies that create the local resolution data.”

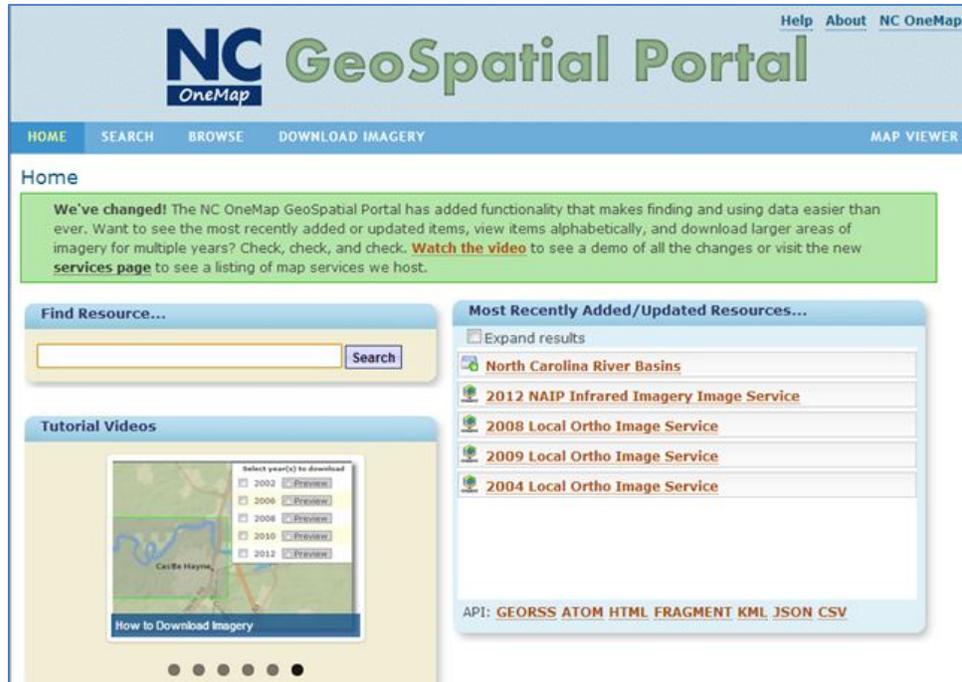
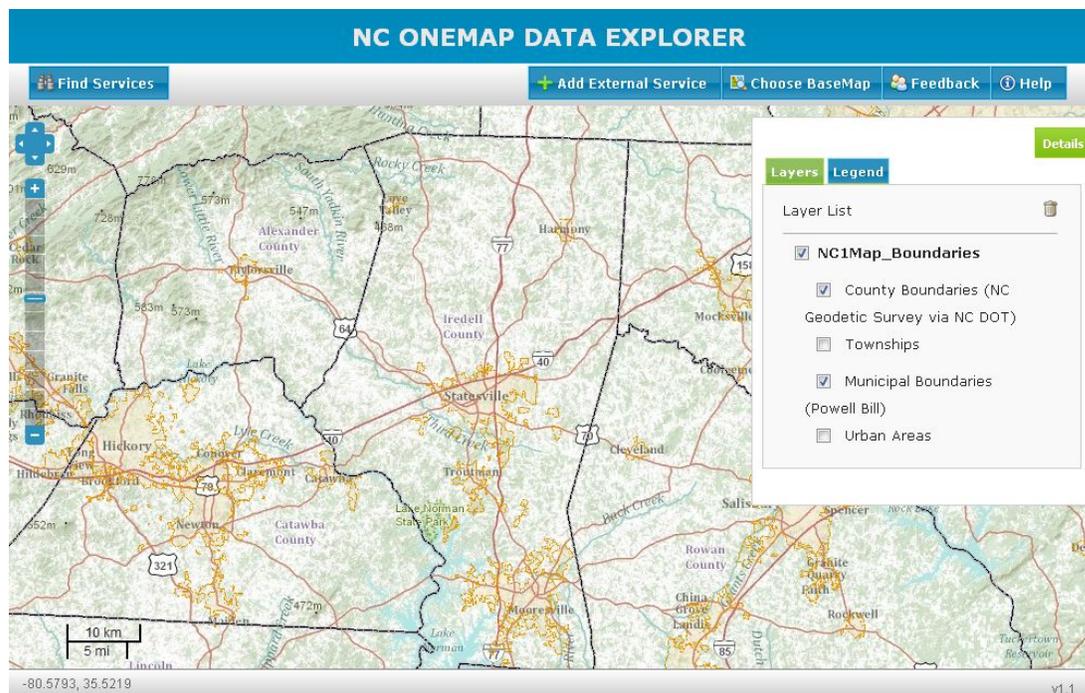


Figure 4. NC OneMap Geospatial Portal Home Page, June 2013, <http://data.nconemap.com>

## ***NC OneMap Meeting User Requirements***

The Geospatial Portal is the public face of *NC OneMap*, enabling discovery and access to North Carolina’s geographic data. Through the Geospatial Portal users discover relevant datasets, determine their suitability and either download data or stream data through a web service directly into a user’s desktop or web application. Keyword searches and searches by spatial extent make it easy to find content in a user’s area of interest. See Figure 4.

The launch of the Geospatial Portal represents a major technological advancement in supporting data sharing and access. Every month, thousands of users search for data on the Geospatial Portal. A companion resource – the *NC OneMap Data Explorer* – enables users to preview the data on an online map. See Figure 5.



**Figure 5. Preview of Map Service in *NC OneMap Data Explorer 2013***

### **Geospatial Portal Improvements**

Staff made significant improvements to the Geospatial Portal in 2013, responding to input and feedback from the user community and various surveys. The five major improvements are:

- **Imagery Preview and Discovery.** The primary enhancement is the multi-year imagery discovery and preview tool. Users can now define the geographic extent of the data for their area of interest and then preview the imagery for all years for which imagery is available. The enhancement enables users to more easily ascertain which imagery datasets are most valuable for their applications before they download or use the image service.

- Recent Updates. A list of the most recent data updates or additions are shown on the home page of the Geospatial Portal. These may include map services, downloadable datasets or PDF files. Also, users can sign up for an RSS feed to be notified about data updates and enhancements to *NC OneMap*.
- Autocomplete Keyword Suggestions. The Search tool now automatically displays suggestions for datasets as users type a keyword into the Search box.
- Service Status Indicator. A real time service status tool indicates whether map services are up/down and provides a measure of their reliability for applications and workflows.
- Alphabetical Data Search. User feedback indicated a demand for an alphabetical search function in addition to keyword searches.

### **NC OneMap Reliability**

A long time priority of the Council has been to ensure the *NC OneMap* Geospatial Portal is always available, especially in periods of emergency when users need access to data.

*NC OneMap* data are served from computers in the ITS Eastern Data Center (EDC) in Raleigh. During the past year, the *NC OneMap* team completed a complex effort to acquire, build and configure servers at the ITS Western Data Center (WDC) in Forest City (Rutherford County). In June 2013, *NC OneMap* traffic was switched from the EDC to the WDC. The team is currently working to complete software and server upgrades at the EDC. After completion, the traffic will be switched back to the EDC, providing redundancy for *NC OneMap*.

In the event of system failure at the EDC, all *NC OneMap* traffic will switch to the backup servers in the WDC, ensuring continuous access to critical data in periods of emergency.

### **Performance of NC OneMap**

The most important performance metric from a user perspective is server response time from receipt of a request. Imagery, unlike text, is memory intensive. The *NC OneMap* team faced a significant challenge to ensure a rapid refresh of imagery by viewers. The performance of the *NC OneMap* imagery service is measured in seconds to refresh an image view from a request. Response continues to consistently average less than 2.0 seconds, satisfying the system goal. This does not include the time taken for a response to get from the server to a user's device over a network.

*NC OneMap* staff continue to track server visits, hits, and performance. See Appendix E for *NC OneMap* performance statistics.

### ***Content of NC OneMap***

The strength of *NC OneMap* is the data and the collaboration achieved with other agencies to deliver data to the consumer. In 2012-2013, the Council's *NC OneMap* Governance Committee reviewed the status of priority datasets for *NC OneMap* and their respective action plans to support quantity and quality of *NC OneMap* content. *NC OneMap* includes

datasets stored and managed by CGIA in the *NC OneMap* Database, datasets stored by other public agencies linked to the *NC OneMap* Geospatial Portal, and map services hosted by CGIA and other public agencies, accessible through this one-stop portal for North Carolina information. Many North Carolina datasets, invaluable to private and public sector users, are not available on commercial map viewers.

In 2012-13, the *NC OneMap* team focused on implementing the Governance Committee's action plans for priority datasets. Numerous new datasets and web services were added to the portal, including the 2012 imagery for the 25 counties in the Coastal region project area, and existing content provided by other data producers was updated.

See Appendix F for a list of new and updated data on *NC OneMap*.

Other information sources are vital for discovering, interpreting, and using imagery and map data. On the *NC OneMap* website, CGIA maintains metadata (standard documentation of the datasets), an inventory of local government online data; contact information for geographic data coordinators in municipal, county, regional, state and federal agencies; and statewide imagery project information.

#### ***A Map Viewer for the NC.GOV Website***

In 2012 the Governor's Office released a new website – <http://www.nc.gov/>. CGIA collaborated with the Office of Information Technology Services to develop a map viewer for the home page. Citizens can use the map viewer to search by city or zip code and find colleges, public and private schools, libraries, hospitals and health departments, and fire stations and law enforcement locations. The data are served directly from the *NC OneMap* Geospatial Portal.

#### ***NC OneMap Funding***

The need for stable, long term funding to sustain benefits continues to be the primary challenge for *NC OneMap*. Through past presentations to the Joint Legislative Oversight Committee on Information Technology, the committee gained a greater understanding of the value of statewide geographic coordination and was receptive to the need for a steady stream of funding support for *NC OneMap*. Unfortunately, new funding sources were not identified in light of more pressing legislative issues.

The survey of private sector users clearly documented the widespread use of *NC OneMap* by a broad cross section of private sector users. One respondent included the following observation:

*"NC OneMap helps my company to provide timely services to our clients. Public and private costs are significantly reduced, since we can rapidly acquire specific GIS Data. CGIA and NC OneMap are two of the most important public resources in North Carolina."*

## **Council and Committees at Work**

The Council meets quarterly to consider policies, issues, and initiatives. Those meetings are essential but not sufficient for accomplishments. The actions of standing committees and working groups are vital for practical strategies and policies and effective communication of concepts, practices, techniques, and knowledge. The coordination structure provides consistent opportunities for program managers and subject matter experts to offer their perspectives and insights to solve problems and achieve mutual benefits.

### ***Council Membership***

In May 2013, Dr. Lee Mandell resigned as Council Chair after five years of service. Governor McCrory selected Stan Duncan, Henderson County Assessor and Tax Collector, to serve as Chair. Mr. Duncan had been appointed to the Council by the NC House of Representatives in 2012. Mr. Duncan is the Past President of the NC Association of Assessing Officers and currently serves as Secretary for the NC Tax Collectors Association. He previously served for more than 20 years as a Valuation Specialist for the NC Department of Revenue's Property Tax Division. Mr. Duncan is the first Council chair from local government.

A new state government administration brought additional changes to the membership of the Council. The Secretaries of the Departments of Administration, Commerce, Environment and Natural Resources, Health and Human Services, Public Safety, Revenue, Transportation, as well as the State Chief Information Officer and the State Budget Director serve on the Council.

The NC House of Representatives reappointed Jay Bissett, Mulkey Engineers and Consultants, and Ron York, Duke Energy, and appointed Stan Duncan, Henderson County. Mr. Duncan was later designated by Governor McCrory to serve as Chair. The NC Senate reappointed John Gillis, Gillis Group Partnership, and Richard Taylor, NC 911 Board and appointed Matthew Helms, Charlotte-Mecklenburg Utilities. The terms of the House and Senate appointments were increased from one to three years through legislative action in the 2012 session.

### ***Bylaws***

The Local Government Committee (LGC) bylaws were amended to add a representative from the North Carolina Chapter of the American Planning Association (APA). Planners are major users of GIS data and will make important contributions to the LGC. The APA-NC submitted a formal petition to the LGC to become a member and the request was unanimously approved by the LGC. The Council approved the revised LGC bylaws.

### ***Council Initiatives on Data Development/Management***

The Council and its committees continue to make progress in developing procedures to create seamless, statewide datasets for framework data. The goal is to build **seamless, statewide datasets** for critical framework data layers using the best, highest resolution data from

agencies with program responsibility for managing these data. An important step in the process is to implement procedures to upload and integrate the most recent data from the managing agencies. Depending on the dataset, updates may be quarterly or annually.

The source of the data varies, depending on the data theme. The best street centerline, parcel, and address data are managed by county governments. Federal land ownership data are managed by the various federal agencies.

By consolidating data from the source agencies, seamless statewide datasets in a common format representing the most up-to-date data can be distributed through *NC OneMap* to a wide range of users – local, state and federal governments, regional planning organizations, the private sector, academia and the public.

These datasets can more efficiently support important business activities by government and the private sector. For example, the Census Bureau needs local street centerline data to support the census. In the past, the Census Bureau had to acquire this data independently from 100 counties in North Carolina and then reformat and integrate the data into their mapping files. It will be more efficient for the Census Bureau to acquire a seamless, statewide dataset of street centerlines through *NC OneMap*.

The *NC OneMap* Business Plan identifies **street centerlines, parcels, and addresses** as the highest priority datasets. Progress on developing these statewide datasets and others is described in the following sections.

#### **Street Centerlines for the State**

An effort to create a statewide street centerline dataset built on county files is close to completion. The SMAC's Working Group for Roads and Transportation (WGRT) completed a translator tool and populated it with road data from 84 counties. NCDOT plans to integrate the county street centerlines from WGRT into its statewide roads dataset for a more complete, current, and consistent dataset to support NCDOT's business needs. Release of the statewide roads dataset is anticipated in the summer of 2014. Regional planning organizations, local governments, state agencies, private firms, and the public will be able to access the data through *NC OneMap*.

#### **A Statewide Parcels Dataset**

In North Carolina, county governments are responsible for creating and maintaining parcel boundary data for purposes of property tax assessment. All 100 counties in North Carolina now have digital datasets of parcel boundaries.

Digital parcel data are critical to a wide variety of business processes, in both the private and public sectors, including economic development, emergency response and mitigation, real estate development, residential and commercial construction, state, regional and local planning, and environmental and conservation management.

Most counties support websites for viewing parcel data and almost half of North Carolina's counties support free download of their parcel dataset. However, a seamless statewide dataset of parcel data for all 100 counties will be most valuable to users and this resource is not available.

In 2012, the SMAC's Working Group for Seamless Parcels (WGSP) began a project funded by an Exchange Network grant from the Environmental Protection Agency (EPA). The "NC Integrated Cadastral Data Exchange" will feature custom tools to transform as-is county parcel boundaries into standard, integrated datasets, and share data services in EPA's Environmental Information Exchange Network and with users of the *NC OneMap* Geospatial Portal. Through a competitive bid process, the State of North Carolina awarded a contract in May 2013 for application development services.

The Project Team includes the WGSP co-chairs (including a member of the NC Property Mappers Association), the Eastern Band of Cherokee Indians, the Secretary of State's Land Records Management Program, and the NC Department of Transportation GIS Unit. CGIA is managing the project. The Project Team benefits from guidance and oversight from the Council, the Statewide Mapping Advisory Committee, and the Enterprise Project Management Office, Office of Information Technology Services.

#### **Developing a Business Case for the Master Address Database Maintenance**

Address locations constitute another high priority statewide dataset. The Federal Communications Commission has recognized the importance of GIS technology and complete, accurate and accessible geographic datasets to support the nation's public safety system – Next Generation 911. Accurate and up-to-date addresses are essential for call routing, call handling, call delivery, location validation, and emergency response.

CGIA received a grant from the Federal Geographic Data Committee, Cooperative Agreements Program, in 2012 to develop a business case for maintaining the state's master address database (MADB). The business plan developed through this project will document roles for stewardship of the dataset and operational costs for ongoing maintenance for the MADB. It will also establish the benefits and metrics for demonstrating the return on investment for maintenance funding. The business plan will accelerate efforts to improve addressing in the state for collaboration with the US Census Bureau for the 2020 census, development of Next Generation 911, and in support of the National Broadband Map.

#### **A Focus on Metadata**

Metadata provide critical documentation of geographic data, enabling potential users to determine the data's currency, source and content and to assess the data's suitability for specific applications and analysis. Metadata also provides the reference content for searching for data on the *NC OneMap* Geospatial Portal.

Creation and maintenance of geographic metadata continues to be an area of concern at all levels of government. Among geographic framework and other Council priority datasets, only a portion are published with valid metadata records.

At the direction of the M&O Committee, the SMAC established the Metadata Committee to recommend ways to expand and improve geographic metadata in North Carolina that are both efficient for the data producer and beneficial for data users in discovery and application of geographic data.

The Metadata Committee, comprised of GIS professionals from local, state and federal government and academia, is addressing a wide range of issues, including:

- Incentives and return on investment for metadata creation and maintenance
- Best practices for integrating metadata creation into workflows
- New metadata creation tools
- Recommendations for revising the current metadata standard

A key focus of the Metadata Committee is to develop a Local Government Profile for metadata required elements at the local government level. A Local Government Profile can be integrated into GIS software, which will make it easier to create and maintain metadata and should provide an incentive for local and state government practitioners to improve metadata collection and maintenance.

The Metadata Committee expects to complete its work in 2014 and anticipates a recommendation that the Council adopt the new International Standards Organization (ISO) metadata standard and a Local Government Metadata Profile.

### **Federal Lands Ownership**

The Federal Interagency Committee (FIC), a standing committee of the Council, was tasked with developing a plan and set of recommendations for updating the federal lands ownership dataset for North Carolina.

In response to the FIC's recommendations, CGIA and the Natural Heritage Program (NHP) in the NC Department of Environment and Natural Resources developed a collaborative workflow to take advantage of NHP's role as state steward for the national Protected Areas Database (PAD). The PAD includes most of the federal lands in North Carolina, creating opportunities to streamline data maintenance for NHP, PAD, and the FIC's compilation of federal land. The resulting dataset, "Federal Lands in North Carolina" is now available in the *NC OneMap* Geospatial Portal for discovery, access, and download.

The sources of the data are publicly available digital databases from the various federal agencies, including the military installations from the Department of Defense and ownership boundaries for the US Fish & Wildlife Service, the US Forest Service, the National Park Service and the US Army Corps of Engineers. Federal lands ownership

amounts to approximately 2.6 million acres in North Carolina, or about 8.5% of the land area.

Federal lands in North Carolina contribute to the economic vitality of the state. The Department of Defense, with major installations at Ft. Bragg, Camp Lejeune, and Seymour Johnson, has a large presence in North Carolina. The Blue Ridge Parkway is a magnet for tourists and the Great Smoky Mountains National Park is the most heavily visited park in the nation. The Council's collaboration with federal agencies represents an important initiative.

#### **Imagery Acquisition after Emergency Events**

The Council's State Government GIS Users Group (SGUC) provides a regular forum for state agency GIS professionals to network, educate and identify opportunities for collaboration. In 2013, SGUC members identified the need to acquire recent imagery for specific localized areas in the aftermath of emergency events, such as hurricanes or fires. Post event imagery is important for damage assessment and mitigation. The NCDOT aircraft frequently acquires imagery on these occasions. Other state agencies often need additional coverage, extending beyond the areas originally targeted by NCDOT.

NCDOT has prepared a memorandum of understanding that agencies can sign in advance that will streamline the process of targeting the aircraft and leverage state resources to meet the needs of multiple state agencies. The agreement can include other technical services offered by NCDOT, including the production of digital terrain and digital elevation models.

This collaboration exemplifies the value and benefit of the Council model for fostering collaboration among government agencies to achieve cost savings and greater efficiencies.

### **Standards and Issues**

General Statute §143-725 through 143-727 charges the Council with developing policies regarding the utilization of geographic information. Developing and promoting standards is integral to this responsibility. The Council's process for creation, assessment, update and adoption of standards relates to (1) standards created and updated by the Council, and (2) other state or federal standards suitable for adoption by the Council. The Council addressed the following standards and technical issues in FY2012-13.

#### ***Light Detection and Ranging (LiDAR) Specifications***

The Secretary of State's Land Records Management Office drafted the North Carolina Technical Specifications for LiDAR Base Mapping for acquisition and development of elevation data from LiDAR. Following reviews by stakeholders and technical experts, the Council endorsed the standard in February 2012. The Department of the Secretary of State formally adopted the standard in January 2013.

## **Communication and Outreach**

A Communications Plan, adopted by the Council in 2011, guides the Council in promoting and communicating activities and accomplishments related to (1) initiatives of the Council and its committees and (2) mission/project activities of the Council members, especially in the area of geographic data development.

### ***North Carolina Board on Geographic Names***

The North Carolina Board on Geographic Names (NCBGN) is a committee of the SMAC. The NCBGN and the United States Board on Geographic Names (USBGN) work together to develop official names that are required-use on federal products and are adopted by other non-federal organizations for use in mapping projects and databases. The database that results through this process is known as the Geographic Names Information System (GNIS). GNIS is a searchable database and is acknowledged by the Council as the official North Carolina names repository.

Government agencies, other organizations and private citizens may submit a petition to the NCBGN to change the name of a geographic feature (other than roads) or to name an unnamed feature in North Carolina. The NCBGN reviews the name-change proposal and seeks input from appropriate local and state government agencies and citizens to establish accepted usage and support for the proposed feature name. The NCBGN submits a recommendation for the name change to the USBGN for final approval and inclusion in the GNIS.

In 2004, the Council adopted Procedures for Changing Offensive or Insulting Geographic Place-names to guide the work of the NCBGN. Unfortunately, approval of a name change by USBGN and inclusion in the GNIS does not ensure name changes will be incorporated in databases managed and used by GIS professionals, mapmakers and other stakeholders. In addition, hard copy maps with old feature names can exist for a long time. The result may be the dissemination of inaccurate data and old maps and the production of new maps that are inaccurate.

The potential for ongoing use of offensive or insulting place names on old maps and in legacy databases is especially unfortunate. In 2013, an example surfaced of an offensive stream name on an old map for Union County despite the fact that the offensive name was officially changed in 1985 by the USBGN.

To reduce the likelihood of such an event, the NCBGN adopted a communications plan to disseminate notice of geographic feature name changes as widely as possible. The NCBGN will distribute regular announcements of approved name changes to GIS professionals and database managers throughout North Carolina. In cases involving offensive or insulting names, the NCBGN will also notify county and city managers and ask that they direct their staff to update pertinent databases and not to distribute old maps with offensive names.

### ***2013 NC GIS Conference***

The biannual NC GIS Conference serves as a valuable forum for education and networking. Perhaps the most valuable outcome of the NC GIS Conference is it engenders a true sense of community and collaboration among GIS professionals across North Carolina.

The conference included presentations on many of the Council's initiatives including the latest on *NC OneMap*, the Statewide Orthoimagery program, efforts to construct statewide parcel, street centerline and address datasets, the activities of the Metadata Committee and support of Next Generation 911.

The 13th NC GIS Conference set a new attendance record, with more than 1,000 participants, including more than 170 speakers. The conference was held February 7-8 at the Raleigh Convention Center. With a focus on the use of GIS and related technologies in government, business and education, the conference appeals to a wide audience, including government officials at all levels, members of the business community, and academic and education professionals. This year's theme was "The Power of Place."

The Carolina Chapter of the Urban and Regional Information Systems Association (URISA) sponsored four pre-conference workshops on February 6, attracting more than 90 registrants.

The NC GIS Conference has grown through the years and is now the largest state or regional GIS conference in the country. The first conference, in 1987, had approximately 500 attendees; in 2011, there were 880 participants. Tim Muhs, President of the Carolina URISA Chapter, remarked that, "*to surpass 1,000 attendees for the first time demonstrates the growth of GIS and technology in the state.*"

Tim Johnson, Conference Chair and CGIA Director, observed that the conference allows the NC GIS community to "*expand our knowledge and understanding of how the data that we build for our own business purposes can generate value for others in public and private organizations, and act on that knowledge by applying data standards and making data widely available. The practical applications of geospatial technology are well established in our government business processes and continue to grow in economic development, real estate development, engineering, surveying, environmental consulting, and other business types. When we have high quality geospatial information, create opportunities to collaborate, and serve our customers well, we enjoy mutual benefits—saving time, saving money and doing more.*"

### ***Other Professional Meetings and Events***

Council initiatives were promoted in numerous venues around the state. Staff, along with Council and committee members, presented at meetings sponsored by the NC 911 Board, State Library of North Carolina, NC Property Mappers Association, Mountain Region GIS Alliance, Charlotte Metropolitan GIS Users Group and NC Arc Users Group. In its role as a Coordinating Agency in the State Data Center, CGIA presented a webinar on *NC OneMap*.

Nationally, the Council Chair and a CGIA project manager were among North Carolina participants in the Esri International Users Conference, and the CGIA Director participated in the National States Geographic Information Council.

### ***Orthoimagery Project Training and Outreach***

The Statewide Orthoimagery project team conducts extensive training and outreach to inform local 911 staff and GIS professionals about progress, quality assessment procedures and delivery schedules.

The project team provided online training for staff of 911 Center Public Safety Answering Points and for local government GIS staff on quality assurance tools. The team gave a presentation on the project at the State Government GIS User Committee general meeting and presented to the NC 911 Board on September 28, 2012, and April 26, 2013.

### ***GIS Day, November 16, 2012***

GIS Day is an international event sponsored by numerous agencies and professional associations. Numerous map displays, events and school presentations sponsored by local and state governments occurred across North Carolina on GIS Day. More than 250 people attended the Raleigh gathering, hosted by the City of Raleigh, Wake County and the State Government GIS Users Committee at the Raleigh City Museum.

### ***Websites***

The Council ([www.ncgicc.org](http://www.ncgicc.org)) and *NC OneMap* ([www.nconemap.com](http://www.nconemap.com)) web sites are widely used by committee members, the NC GIS community and the public to keep current on initiatives, meetings, opportunities and news about both the Council and *NC OneMap*.

*NC OneMap* supports two additional websites. The Geospatial Portal (<http://data.nconemap.com>) supports data discovery and access. The Web Services (<http://services.nconemap.com>) site provides direct links to all map and image services hosted by *NC OneMap*.

*"GIS in NC – Who? What? Where?"*, a feature accessible from both the Council and *NC OneMap* sites, provides information of interest to GIS users in North Carolina. This web page includes an inventory of counties that support download of geographic data; lists of county, city, regional, state and federal GIS contacts; a summary of higher education programs in Geographic Information Science; and a calendar of events.

In 2013, numerous enhancements were added to the Geospatial Portal of the *NC OneMap* site. These are described in Section B above (*NC OneMap* Meeting User Requirements, Geospatial Portal Improvements).

## Section III. Action Plan for 2013-14

The Council will pursue a combination of activities to achieve its mission in FY2013-14. The goals for the coming year continue to be driven by the recommendations called for in the GIS Study Report and further referenced in the State Geographic Information/Consolidation Implementation Plan. The Council is also driven by ongoing, high priority actions based on quarterly Council meetings and committee work.

The Council must be continually aware of the rapidly changing market and economic forces at play in the overall economy of the State and is committed to responding quickly to the needs of the State and its stakeholders.

### **Meet NC OneMap Business Needs**

The Council will continue to work to improve technology and data resources in ways that will achieve the *NC OneMap* vision and meet specific business needs that generate benefits for public and private users of NC OneMap resources. The *NC OneMap* project team, with support from the M&O Committee, GIS Technical Advisory Committee (TAC), and other Council user committees, completed the tasks set forth in the 2013 Action Plan. The *NC OneMap* Governance Committee will continue to refine the *NC OneMap* Business Plan to guide the work of staff in the coming year. The primary actions in 2013-2014:

1. Complete the infrastructure upgrade at the Eastern Data Center in Raleigh to ensure reliability of operations for *NC OneMap*.
2. Redesign and restructure the *NC OneMap* websites to improve the user experience. This effort will apply to all three website links – Geospatial Portal, Web Services, and the *NC OneMap* general program information site.
3. Continue to update and expand the content of NC OneMap Geospatial Portal, with emphasis on the Council's priority geographic data resources for public discovery and access.

The focus in 2013-14 will continue to be on business requirements that can be completed without additional resources.

### **Manage the Statewide Program for Orthoimagery**

Continue to implement the Business Plan for Orthoimagery in North Carolina, which calls for the acquisition of one-fourth of the state each year over a four-year cycle. The NC 911 Board approved the plan and approved funding for acquisition of imagery during 2013-14 (Phase 3 of 4) with the intent to support a full four-year cycle to complete a statewide update.

**Complete Eastern Piedmont 2013 Orthoimagery Project.** Imagery for Phase 2 of the project, covering 25 counties in the Coastal Plain, was acquired in the winter of 2013. CGIA and the project partners will complete the Eastern Piedmont Orthoimagery Project through the following actions:

1. Complete the processing and quality review.
2. Deliver the imagery to Public Safety Answering Points and to county GIS coordinators.
3. Make the data available free to government agencies, the private sector and the public as an “image service” and downloadable files from the *NC OneMap* Geospatial Portal.
4. Prepare a final report for the NC 911 Board.

**Begin Northern Piedmont and Mountains 2014 Orthoimagery Project.** The NC 911 Board approved funding for Phase 3, the Northern Piedmont and Mountains Orthoimagery Project. Tasks for 2013-2014 include:

1. Conduct a Qualifications-Based Selection (QBS) process to identify private contractors for imagery acquisition.
2. Acquire the imagery for 26 counties in the region.
3. Initiate processing and quality review.

### **Review GIS Applications in State Government**

Session Law 2013-360 (Appropriations Bill), Section 7.9.(c) directs CGIA to conduct a review of all GIS applications in State agencies, identify instances of duplication for existing applications, and develop a plan for consolidating duplicative projects. CGIA will provide a report on the review to the Joint Legislative Oversight Committee on Information Technology and the Fiscal Research Division by November 1. The Office of the State CIO and CGIA will collaborate with the General Assembly’s Fiscal Research Division to clarify the intent and range and scope of this legislation and complete the work by the deadline.

This section of the budget bill also directs State government agencies to coordinate any GIS initiatives through CGIA and the Office of the State CIO, to ensure existing capabilities are not being duplicated. The legislation also directs CGIA to monitor and approve all new GIS-related information technology projects and expansion budget requests. CGIA will collaborate with the Office of the State CIO and other State agencies to accomplish these tasks and will submit a written report on GIS duplication to the Joint Legislative Oversight Committee on Information Technology and the Fiscal Research Division.

### **Adopt and Promote Standards**

The Council has an established process for creation, assessment, update and adoption of standards. This includes (1) standards created and updated by the Council; and (2) other local, state or federal standards suitable for adoption by the Council.

In 2013-2014, the SMAC’s Working Group for Standards and other committees are working on several standards.

- **Metadata Standard.** In 1994, the Council endorsed the Federal Geographic Data Committee’s (FGDC) Content Standard for Digital Geospatial Metadata. A revised metadata standard, developed by the International Standards Organization (ISO), working in collaboration with FGDC, has been released for public review. The Council’s

Metadata Committee is reviewing the standard and anticipates a recommendation that the Council endorse the new ISO standard.

In addition, the Metadata Committee will develop a Local Government Profile that will define required elements for metadata at a local government level. Upon endorsement of the ISO Metadata Standard and approval of the Local Government Profile, the Metadata Committee will collaborate with other Council committees to educate and promote the ISO standard and best practices to local governments, state agencies, and educational institutions.

- The Working Group for Orthophotography Planning is revising the Statewide Global Positioning System Data Collection and Documentation Standard, adopted by the Council in 1994 and revised in 2000 and in 2006, respectively, to reflect changes in GPS technology. The Working Group expects to submit the revised standard to the Council in early 2014.
- The Land Records Management Program, Department of the Secretary of State, plans to update the Technical Specifications for Cadastral Base Digital Mapping. Upon adoption by the Secretary of State, the revised standard will be submitted to the Council for endorsement.

The Council and its collaborators will continue to actively engage stakeholders to identify needs for new or updated standards that will advance statewide geographic information efforts. Among standards under consideration for action are three previously adopted standards (Geographic Data Content Standard for Transportation, Standard Classification System for Mapping Land Use and Land Cover, and Content Elements for Statewide Publication of Core Geospatial Parcel Data) and what would be a new standard for the Council (Addressing).

The Council will continue to collaborate with state agencies and counties and municipalities to promote the adoption and implementation of Council approved standards. Outreach and technical assistance are needed at the state, regional, and local government levels, and with private organizations, to promote application of standards. The end result is more consistent, complete, well-documented geographic data for local, regional and statewide business needs, including data discoverable and accessible through *NC OneMap*.

### **Collaborate for Data Quality and Data Sharing**

The Council will continue to seek opportunities to participate in the nationwide Public Safety Broadband Network (PSBN). Deployment of a complex nationwide wireless network based on a single architecture will allow users of public safety, criminal justice, and other critical programs to communicate seamlessly. The Council anticipates geographic technology will play a key role in a unified statewide approach to benefit our state and its citizens.

The *NC OneMap* team will continue to support a simple mapping application in the State of North Carolina's portal (nc.gov) with selected datasets. The effort includes exploring ways to format mobile applications that leverage the *NC OneMap* data resource to better serve citizens.

Other opportunities for collaboration include the following actions that are planned and listed as high priorities of the Council and staff. These actions fall under one of several priority categories:

- Development of Statewide Datasets
- Clearinghouse
- NC OneMap* Accountability Measures
- Outreach

### ***Development of Statewide Datasets***

Statewide datasets have value for multi-county, cross-jurisdictional mapping and analysis related to emergency management, 911 communications, infrastructure planning, and many other public and private business needs. The Council is working through its committee structure in three areas: statewide roads, seamless parcel boundaries, and addresses.

#### **Statewide Roads**

The SMAC's Working Group for Roads and Transportation (WGRT) delivered a web-based translation tool that has enabled 84 counties to upload their local centerline file and translate the attributes to a common format. In 2014, NCDOT plans to integrate the county street centerlines from WGRT into its statewide roads dataset for a more complete, current, and consistent dataset to support NCDOT's business needs. The statewide roads dataset will be accessible to other users through the *NC OneMap*.

#### **Statewide Parcels**

The SMAC's Working Group for Seamless Parcels (WGSP), CGIA, and project partners will complete the project for integrated parcel data in 2014. CGIA is managing the project, working in collaboration with NCDOT, the Office of the Secretary of State, the Eastern Band of Cherokee Indians, Henderson County, NC Department of Revenue, NC Department of Environment and Natural Resources, NC Emergency Management, and the WGSP.

The project team anticipates releasing parcel data for the initial 25 counties participating in the project in early 2014. The data will be shared with EPA's Environmental Information Exchange Network and will be accessible through *NC OneMap* as web services and downloadable products. After meeting the EPA grant obligations, the WGSP will work with the remaining 75 counties to use the tested and proven translator tool to upload their parcel data and build a statewide dataset.

An integrated statewide parcel dataset will be of immeasurable value to the business sector and state, regional and federal agencies for economic development, emergency response, regional planning and numerous other applications. Benefits for data consumers include saving time and disk storage space for redundant collections of parcel data. Counties will benefit from easy access to parcel data – in a common format – in adjacent counties. In addition, local governments will save time and money by reducing the frequency of data requests from public and private organizations.

### **Statewide Addresses**

CGIA received a grant from the Federal Geographic Data Committee to develop a business case for addressing practices in North Carolina. A second project in collaboration with NC Broadband in the Department of Commerce, funded by the National Telecommunications and Information Administration, will support the application of the business practices to an update of the statewide address dataset in 2014.

### ***Census***

The decennial Census is one of many business processes that benefit from complete, consistent, current, reliable, discoverable, accessible geographic data. The Management and Operations Committee recently approved a charter for a Working Group for Census Geospatial Data.

The purpose of the working group is to ensure collaborative efforts to develop statewide datasets in North Carolina and accommodate timely data sharing with the Census Bureau. The goal is to provide consolidated statewide datasets, derived from the best available data that are complete, consistent, current, well documented, reliable, and trustworthy. These datasets, often built on local resolution data, will upgrade and improve the Census Bureau's geographic files.

A complete, accurate statewide address dataset will be especially valuable. North Carolina's congressional representation depends on an accurate count of the state's population in the decennial Census. For the largest federal programs with funding formulas based on population, each person added to the population count in North Carolina represents about \$15,000 in federal funding over the decade following the Census.

### ***Clearinghouse***

The Council intends *NC OneMap* to be a first-stop, high quality, trusted location on the Internet for geographic information about North Carolina. Since the Council's direction to create *NC OneMap* in 2003, the emphasis has been on informing public and private users about what datasets are available and how to obtain copies. The Clearinghouse role has become more important as both the content of *NC OneMap* and the number of users of geographic data have expanded.

The *NC OneMap* Geospatial Portal will continue to serve a clearinghouse role by enhancing and expanding public discovery of and access to North Carolina geographic data. The Council and staff will continue to add to the growing inventory of geographic datasets that are widely used by the private sector and government agencies.

#### ***NC OneMap Accountability Measures***

The Council tracks *NC OneMap* performance accountability measures. Sources include statistics from *NC OneMap* servers and a survey of *NC OneMap* users. From a baseline, periodic measurements will guide improvements in data and online services, as well as operation, management, and governance of *NC OneMap*.

#### ***Outreach***

Outreach efforts are critical for sharing the Council mission, goals, current activities, and plans. Guided by a communication plan, Council committees and staff will continue to share knowledge about standards, best practices, opportunities for cost-sharing, and participation in *NC OneMap*. The plan includes participation in local, regional, and statewide meetings, and enhancements to the Council and *NC OneMap* websites.

CGIA will sponsor the 2015 North Carolina GIS Conference. Preliminary planning and site selection will occur in late 2013. The 2013 conference attracted more than 1,000 participants from state, local, and federal government, the private sector and academia.

## **Appendices**

- A. Geographic Information Coordinating Council Members 2012-13
- B. NC Geographic Information Coordinating Council Establishing Authority and Precedent
- C. Orthoimagery Phases in North Carolina
- D. *NC OneMap* and Benefits to Business Processes
- E. *NC OneMap* Performance Statistics
- F. *NC OneMap* Data Updates for 2012-2013

## Appendix A: 2012-13 Geographic Information Coordinating Council Members

<b>Member</b>	<b>Title and Organization</b>	<b>Appointing Authority</b>
<b>Chair, Stan Duncan</b> 200 N. Grove Street, Ste. 102 Hendersonville, NC 28792	County Assessor & Tax Collector <i>Henderson County</i> 828/697-4576 / 828/606-4577 (cell)	NC House of Representatives <i>(Appointed as Chair by Governor McCrory)</i>
<b>Vice Chair, Bob Brinson</b> 2020 Yonkers Road Raleigh, NC 27604	Chief Information Officer <i>Department of Public Safety</i> 919/716-3501	Governor
<b>June S. Atkinson</b> 301 N. Wilmington Street Raleigh, NC 27601	State Superintendent <i>Department of Public Instruction</i> 919/807-3430	Executive Office <i>Designee—Derek Graham</i> 919/807-3571
<b>Jay Bissett</b> 6750 Tryon Road Cary, NC 27518	Principal & Raleigh Branch Manager <i>Mulkey Engineers &amp; Consultants</i> 919/858-1841	NC House of Representatives
<b>James Caldwell</b> PO Drawer 1510 Fayetteville, NC 28302	Executive Director <i>Mid-Carolina Council of Governments</i> 910/323-4191	Governor <i>(for Lead Regional Organizations)</i>
<b>Bill Daughtridge, Jr.</b> 1301 Mail Service Center Raleigh, NC 27699-1301	Secretary <i>Department of Administration</i> 919/807-2425	Executive Office <i>Designee—John Cox</i> 919/807-4674
<b>Sharon Allred Decker</b> 4301 Mail Service Center Raleigh, NC 27699-4301	Secretary <i>Department of Commerce</i> 919/733-3449	Executive Office <i>Designee—Allan Sandoval</i> 919/715-1803
<b>Chris Estes</b> PO Box 17209 Raleigh, NC 27609	State Chief Information Officer <i>Information Technology Services</i> 919/754-6575	Executive Office
<b>John Farley</b> 1587 Mail Service Center Raleigh, NC 27699-1587	Section Manager <i>Dept. of Transportation, GIS Section</i> 919/707-2151	Appointed by GICC Chair <i>Chair, State Government GIS Users Committee</i>

<b>Member</b>	<b>Title and Organization</b>	<b>Appointing Authority</b>
<b>Edward S. Finley, Jr.</b> 4325 Mail Service Center Raleigh, NC 27699-4325	Chair <i>NC Public Utilities Commission</i> 919/733-4249	Executive Office <i>Designee—Bliss Kite</i> 919/733-0854
<b>John M. Gillis, Jr.</b> 128 S. Churchill Dr. Fayetteville, NC 28303	Farming and Land Development <i>Gillis Group Partnership</i> 910/308-4255	NC Senate
<b>Lyons Gray</b> 4501 Mail Service Center Raleigh, NC 27699-4501	Secretary <i>Department of Revenue</i> 919/715-9851	Executive Office <i>Designee—David Baker</i> 919/733-7644
<b>Ellis Hankins</b> PO Box 3069 Raleigh, NC 27602	Executive Director <i>NC League of Municipalities</i> 919/715-4000	Executive Office <i>Designee—Ryan Draughn</i> 919/715-2915
<b>Elaine F. Marshall</b> PO Box 29622 Raleigh, NC 27626-0622	Secretary of State <i>Office of Secretary of State</i> 919/807-2008	Executive Office
<b>Anne Payne</b> PO Box 550 Raleigh, NC 27603	GIS Database Administrator <i>Wake County</i> 919/856-6383	Governor <i>(for General Member)</i>
<b>Art Pope</b> 20320 Mail Service Center Raleigh, NC 27699-0320	State Budget Director <i>Office of State Budget &amp; Management</i> 919/807-4700	Executive Office <i>Designee—Sarah Porper</i> 919/807-4775
<b>Dr. R. Scott Ralls</b> 5001 Mail Service Center. Raleigh, NC 27699-5001	President <i>Department of Community Colleges</i> 919/807-6950	Executive Office <i>Designee—Sharon Rosado</i> 919/807-7087
<b>Alex Rankin</b> Post Office Box 268 Concord, NC 28026	President <i>Concord Engineering &amp; Surveying, Inc.</i> <i>Representing NC Society of Surveyors</i> 704/786-5404 x1012	Governor
<b>Dr. Linda Rimer</b> 4930 Old Page Road Mail Code: C304-05 Durham, NC 27703	Region 4 Liaison to NC and SC <i>US Environmental Protection Agency</i> 919/541-0785	Federal Representative

<b>Member</b>	<b>Title and Organization</b>	<b>Appointing Authority</b>
<b>Hunter Robinson</b> 20601 Mail Service Center Raleigh, NC 27699-0601	Chief Information Officer <i>NC Office of the State Auditor</i> 919/807-7566	Governor <i>(for At-Large State Agency)</i>
<b>Thomas Ross</b> PO Box 2688 Chapel Hill, NC 27515-2688	President <i>UNC-Office of the President</i> 919/962-1000	Executive Office <i>Designee—Dr. Hugh Devine</i> NCSU 919/515-3682
<b>Kieran Shanahan</b> 4201 Mail Service Center Raleigh, NC 27699-4701	Secretary <i>Department of Public Safety</i> 919/733-2126	Executive Office <i>Designee—John Dorman</i> 919/715-5711 x102
<b>Colleen Sharpe</b> PO Box 590 Raleigh, NC 27602	GIS Manager <i>City of Raleigh</i> 919/516-2520	Governor <i>(for Municipal Government)</i>
<b>John E. Skvarla</b> 1601 Mail Service Center Raleigh, NC 27699-1601	Secretary <i>Dept. of Environment &amp; Natural Res.</i> 919/707-8625	Executive Office <i>Designee—Keith Werner</i> 919/707-8917
<b>Julie Stamper</b> 206 E. Main St. Elizabeth City, NC 27909	GIS Coordinator <i>Pasquotank County</i> 252/331-2336	Chair, Local Government Committee
<b>Tony Tata</b> 1501 Mail Service Center Raleigh, NC 27699-1501	Secretary <i>Department of Transportation</i> 919/707-2800	Executive Office <i>Designee—John Farley</i> 919/707-2151
<b>Richard Taylor</b> 3810 Mitchell Circle New Bern, NC 28562	Executive Director <i>NC 911 Board</i> 919/754-2942	NC Senate
<b>David Thompson</b> 215 N. Dawson St. Raleigh, NC 27603	Executive Director <i>NC Assoc. of County Commissioners</i> 919/715-2893	Executive Office <i>Designee—Rebecca Troutman</i> 919/715-2893
<b>Steve Troxler</b> 1001 Mail Service Center Raleigh, NC 27699-1001	Commissioner of Agriculture <i>Dept. of Agriculture &amp; Consumer Services</i> 919/733-7125	Executive Office <i>Designee—Daniel Madding</i> 919/807-4344

<b>Member</b>	<b>Title and Organization</b>	<b>Appointing Authority</b>
<b>Aldona Wos</b> 2001 Mail Service Center Raleigh, NC 27699-2001	Secretary <i>Dept. of Health and Human Services</i> 919/855-4800	Executive Office <i>Designee—Dianne Enright</i> 919/715-4473
<b>Ron York</b> PO Box 1006 Charlotte, NC 28201-1006	Principal Consultant – GIS Strategies <i>Duke Energy Power Delivery</i> 704/382-2158	NC House of Representatives

**Advisory Members**

<b>Marc Burris</b> 441 N. Harrington St. Raleigh, NC 27603	Chief Information Officer <i>NC Board of Elections</i> 919/715-1673	GICC Chair
<b>Sarah Koonts</b> 4614 Mail Service Center Raleigh, NC 27699-4514	Director <i>Division of Archives and Records, Dept. of Cultural Resources</i> 919/807-7308	GICC Chair

**Serving for a Portion of FY12-13**

<b>Member</b>	<b>Title and Organization</b>	<b>Appointing Authority</b>
<b>Chair, Dr. Lee Mandell</b> 5124 Melbourne Rd. Raleigh, NC 27606-1748	GICC Chair, <i>Private Citizen</i> 919/327-8112	Governor
<b>Moses Carey, Jr.</b> 1301 Mail Service Center Raleigh, NC 27699-1301	Secretary <i>Department of Administration</i> 919/807-2425	Executive Office <i>Designee—John Cox</i> 919/807-4674
<b>Gene Conti</b> 1501 Mail Service Center Raleigh, NC 27699-1501	Secretary <i>Department of Transportation</i> 919/733-2520	Executive Office <i>Designee—John Farley</i> 919/707-2151
<b>Keith Crisco</b> 4301 Mail Service Center Raleigh, NC 27699-4301	Secretary <i>Department of Commerce</i> 919/733-3449	Executive Office
<b>Albert Delia</b> 2001 Mail Service Center Raleigh, NC 27699-2001	Secretary <i>Dept. of Health and Human Services</i> 919/733-4534	Executive Office <i>Designee—Dianne Enright</i> 919/715-4473

<b>Member</b>	<b>Title and Organization</b>	<b>Appointing Authority</b>
<b>Dee Freeman</b> 1601 Mail Service Center Raleigh, NC 27699-1601	Secretary <i>Dept. of Environment &amp; Natural Res.</i> 919/715-4101	Executive Office <i>Designee—Mary Penny Thompson</i> 919/715-0691
<b>David Hoyle</b> 4501 Mail Service Center Raleigh, NC 27699-4501	Secretary <i>Department of Revenue</i> 919/733-0023	Executive Office
<b>Chris Koltyk</b> PO Box 905 Carthage, NC 28327	GIS Director <i>Moore County</i> 910/947-1078	Governor <i>(for County Government)</i>
<b>Andy Willis</b> 20320 Mail Service Center Raleigh, NC 27699-0320	State Budget Director <i>Office of State Budget &amp; Management</i> 919/807-4700	Executive Office <i>Designee—Sarah Porper</i> 919/807-4775
<b>Jonathan Womer</b> PO Box 17209 Raleigh, NC 27609	State Chief Information Officer <i>Information Technology Services</i> 919/754-6575	Executive Office <i>Designee—George Bakolia</i> 919/754-2980
<b>Reuben Young</b> 4701 Mail Service Center Raleigh, NC 27699-4701	Secretary <i>Department of Public Safety</i> 919/733-2126	Executive Office

## Appendix B: NC Geographic Information Coordinating Council Establishing Authority and Precedent

The North Carolina Geographic Information Coordinating Council was established by Senate Bill 895 in August 2001 and was incorporated in the General Statutes §143-725 through 143-727.

The purpose of the Council is to develop policies regarding the utilization of geographic information, geographic information systems (GIS), and other related technologies. The Council is responsible for the following:

- Strategic planning,
- Resolution of policy and technology issues,
- Coordination, direction, and oversight of State, local, and private GIS efforts, and
- Advising the Governor, the General Assembly, and the State's Chief Information Officer as to needed directions, responsibilities, and funding regarding geographic information.

The Council is charged with statewide geographic information coordination and fosters cooperation among State, federal, tribal, and local government agencies; academic institutions; and the private sector in order to improve the quality, access, cost-effectiveness and utility of North Carolina's geographic information and to promote geographic information as a statewide strategic resource.

**Precedent.** Prior to the enactment of legislation, the North Carolina Geographic Information Coordinating Council existed through Executive Orders issued by Governor James G. Martin and Governor James B. Hunt Jr. Executive Order No. 147 by Governor James G. Martin first established the Council in July 1991. Governor James B. Hunt, Jr. issued Executive Order No. 16 in May 1993 that remained in effect until 2001.

**Staff to the Council.** The Center for Geographic Information and Analysis (CGIA), located in the Office of Information Technology Services, staffs the Council. CGIA manages and distributes digital geographic information about North Carolina maintained by numerous State and local government agencies. It operates a service bureau, a statewide data clearinghouse, and manages the *NC OneMap* program, which provides Internet access to State and local government through the *NC OneMap* website and FTP geographic data distribution site.

## Appendix C: Imagery for the State: Phases of a Four-Year Cycle

The four-year cycle to update orthoimagery statewide consists of approximately one-fourth of the state per year, moving from east to west. As displayed in Figure C-1:

- Phase 1 consisted of imagery acquisition in 2012 for 25 counties in the Coastal Plain region.
- Phase 2 covers 25 counties in the Eastern Piedmont where imagery was acquired in early 2013.
- The configuration of the Northern Piedmont and Mountains region for Phase 3 of imagery acquisition in 2014 covers 26 counties that include some of the mountain areas where imagery acquisition and processing is most challenging.
- The remaining 24 counties in the Southern Piedmont and Mountains region will be captured in 2015 to complete the 4-year program.

At the end of the 4-year cycle, North Carolina will have statewide 2010 orthoimagery, and newer imagery across the state.

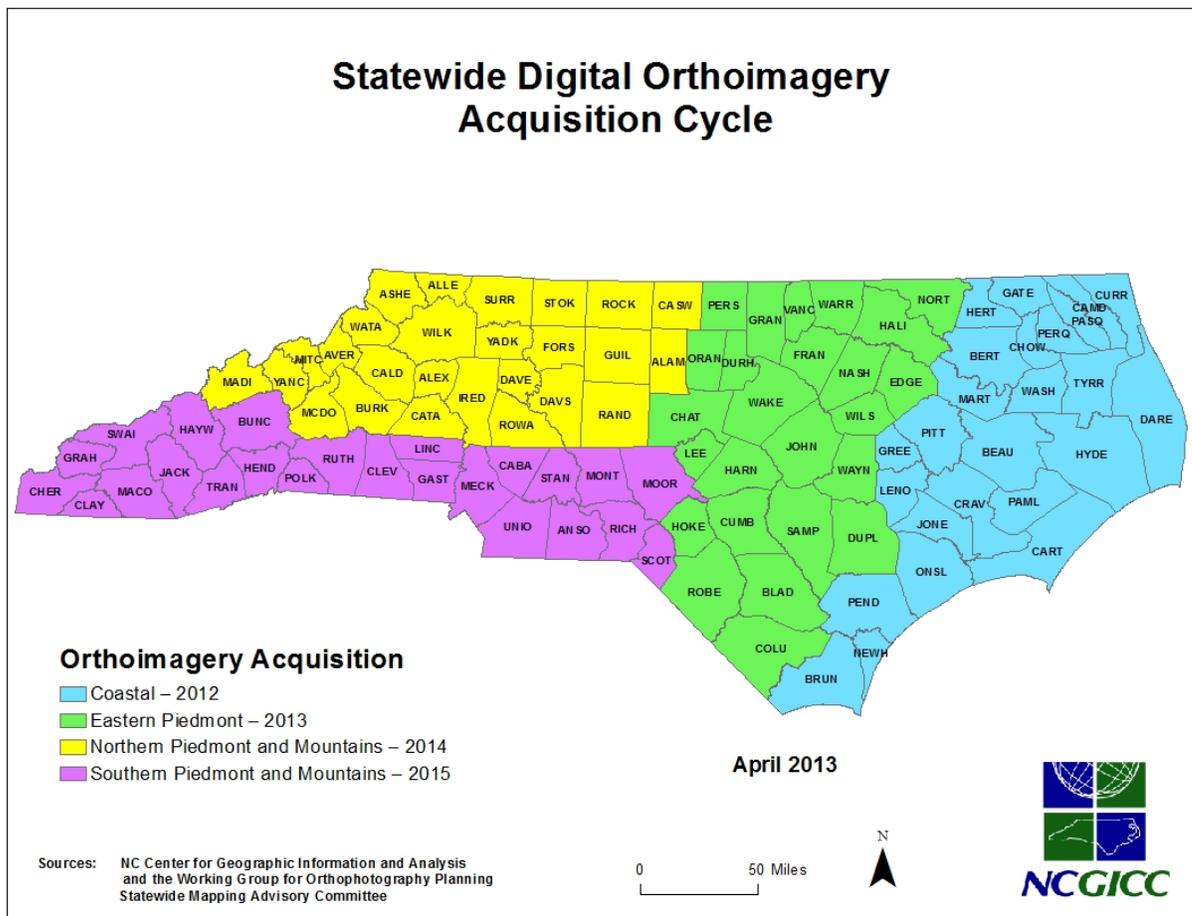


Figure C-1. Orthoimagery Acquisition Cycle for North Carolina, 2012-2015.

## Appendix D: The Value of NC OneMap: Benefits to Business Processes

The survey of private sector users of *NC OneMap*, along with collaboration with public sector users, confirms that business processes benefit from geographic data. For example:

- Real estate agents benefit from fast online access to up-to-date, complete, and accurate property boundaries and property tax information.
- Residential and commercial construction relies on market information that includes locations of businesses, homes, and schools as well as property boundaries, zoning boundaries, and transportation. The less time it takes a property developer to get to maps, map features, and related statistics, the more savings in development costs.
- Economic developers regularly seek geographic facts about locations of interest, including distance to Interstate Highways, distance to rail, locations of buyers and suppliers, and density of population and labor force.
- Emergency call answering and response operations need quick visual access to aerial imagery, streets, municipal boundaries, county boundaries, and public safety districts at the specific location of a 911 call from a phone line address point or a cell phone's point on the earth.
- Non-profit land conservation organizations regularly use datasets for streams, forests, fields, property boundaries, and environmental features along with aerial imagery to focus on locations that are most suitable for conservation.
- Planners on military installations monitor local property boundaries, structures, zoning changes, development plans, transportation and environmental features to sustain their ground and air training operations.

The benefits of online access to comprehensive, complete, reliable, current geographic datasets from state and local sources through the *NC OneMap* Geospatial Portal are:

- Efficiency in discovering geographic datasets that support business operations, and time savings in determining that accessible data are the best available.
- More efficient search, discovery, and access to data from multiple counties or areas that cross-jurisdictional boundaries; quicker access to web map services and data download via one Internet location.
- Less time required to integrate datasets from multiple counties or municipalities where standards and practices achieve data consistency.
- Time savings in responding to data requests from a public that discovers and learns to trust *NC OneMap* as the source of the best available data.
- Reduction in time spent by GIS specialists creating redundant datasets and more time for applying data to workflows and decision making.
- Less time spent re-doing or repairing maps and analyses and decisions that were based on incomplete, unreliable, or out-of-date geographic data.

More specific examples of benefits of an *NC OneMap* that achieves its vision include the following:

- North Carolina locations are easy to assess as candidates for private investment in sites, buildings and jobs.
- All locations have consistent geographic information to support fair and complete evaluation in competitive grant proposals for water quality projects, conservation, and other initiatives.
- Highway planning projects may rely on consistent, complete information for assessing transportation benefits and environmental impacts in all suitable locations, saving time in planning, review, changes, and decision making.
- Engineering firms access and analyze transportation, land cover, wetlands, and other geographic data to select the most suitable sites for detailed field inspection.
- Local public safety officials have ready access to maps with a superimposed US National Grid to support search and rescue operations or disaster response.
- A call from a cell phone in a rural location is quickly placed on a map display with clear information on jurisdiction, district, transportation access, structures, and vegetation for efficient and effective emergency vehicle routing.

## Appendix E: Performance of NC OneMap

*NC OneMap* operated with the same technical infrastructure as last year, including an imagery server, a map server, and a database server hosted by the Office of Information Technology Services. *NC OneMap* staff tracks server visits, hits, and performance.

A “visit” to a server is defined as an individual computer (IP address) making one or more requests for something available on the server (e.g., a picture, map, or document) within a period of time that would represent a user session (the same user could make a visit in the morning and another visit later that day). The *NC OneMap* staff is tracking statistics for each of two service types—imagery service and map service.

The *NC OneMap* imagery services (for display of statewide orthoimagery) received an average of 7,577 visits per month during FY2012-13. A “hit” is a user action such a request to a server to pan around a map, or a request to download data. The imagery service experienced an average of 3,986,509 hits per month, or about 526 hits per visit. A “visitor” is a unique computer (IP address) that may make any number of visits during a month.

The *NC OneMap* Geospatial Portal (for discovery and access to roads, county boundaries, public school locations, etc.) received an average of 11,468 visits per month during FY2012-13. The Portal experienced an average of 522,855 hits per month, or about 46 hits per visit.

The most important performance metric from a user perspective is server response time from receipt of a request. In this case, the performance of the *NC OneMap* imagery services is measured in seconds to refresh an image view from a request. Response consistently averaged 0.94 seconds, satisfying the system goal of under 2.00 seconds. This does not include the time taken for a response to get from the server to a user’s device over a network.

## Appendix F: NC OneMap Updates for 2012-2013

The *NC OneMap* team added numerous new datasets and web services and posted regular updates of existing data to the *NC OneMap* Geospatial Portal.

### New Datasets or Web Services

Dataset	Custodian
➤ Orthoimagery for 25 Coastal Counties	CGIA
➤ Infrared Imagery, NAIP 2012	Dept. AG&CS
➤ Federal Land Ownership	DENR Natural Heritage Program
➤ NC Flood Zones	Dept. Public Safety, GTM Office
➤ Boating Access Areas	Wildlife Resources Commission
➤ Active Permitted Landfills	DENR Division of Waste Management
➤ Brownfields Agreement Sites	DENR Division of Waste Management
➤ Inactive Hazardous Sites	DENR Division of Waste Management
➤ Manufactured Gas Plant Sites	DENR Division of Waste Management
➤ Dry-cleaning Solvent Clean-up Act Program Sites	DENR Division of Waste Management
➤ Pre-Regulatory Landfill Sites	DENR Division of Waste Management
➤ Hazardous Waste Sites	DENR Division of Waste Management
➤ NC House Districts	NC General Assembly
➤ NC Senate Districts	NC General Assembly
➤ US Congressional Districts	NC General Assembly
➤ Prime Farmland (SSURGO soils derivation)	USDA, Natural Resources Conservation Service
➤ Forest Health	Dept. AG&CS, Division of Forest Resources
➤ Rural Forest Landscape	Dept. AG&CS, Division of Forest Resources
➤ Urban Forest Priority	Dept. AG&CS, Division of Forest Resources
➤ Urban Forest Priority Landscape	Dept. AG&CS, Division of Forest Resources
➤ Wildfire Risk	Dept. AG&CS, Division of Forest Resources
➤ Working Forest Lands	Dept. AG&CS, Division of Forest Resources

### Regular Updates

Dataset	Custodian
➤ Public Mountain Trout Waters	Wildlife Resources Commission
➤ North Carolina Gamelands	Wildlife Resources Commission
➤ Natural Heritage Element Occurrences	DENR Natural Heritage Program
➤ Significant Natural Heritage Areas	DENR Natural Heritage Program
➤ Managed Areas	DENR Natural Heritage Program
➤ Biodiversity/Wildlife Habitat Assessment	DENR Natural Heritage Program
➤ Geodetic Control Points	NC Geodetic Survey
➤ Ridge Lines	NC Geodetic Survey
➤ County Boundaries	NC Geodetic Survey
➤ Municipal boundaries	NCDOT
➤ Urban Areas	NCDOT
➤ DOT Division Boundaries	NCDOT
➤ Primary and Secondary Road Routes	NCDOT
➤ Primary and Secondary Road Arcs	NCDOT
➤ Road Characteristics	NCDOT

- NC Multimodal Investment Network Tier Designations NCDOT
- Bridge Locations NCDOT
- Hazardous Waste Sites DENR Division of Waste Management
- Public Schools Department of Public Instruction
- Water Quality Assessments DENR Division of Waste Quality
- Water Quality Ratings DENR Division of Waste Quality
- Estuarine Benthic Habitat Mapping DENR Division of Marine Fisheries
- Shellfish Growing Areas DENR Division of Marine Fisheries
- Submerged Aquatic Vegetation DENR Division of Marine Fisheries
- Conservation Tax Credit Properties DENR Conservation Tax Credit Program