NCGICC

Collaboration in Action
2015 Annual Report to the Governor and North Carolina General Assembly

North Carolina
Geographic Information Coordinating Council

NC OneMap, NC Center for Geographic Information and Analysis, NC 911 Board

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Submitted to:

Governor Pat McCrory

and

The Joint Legislative Commission on Governmental Operations

NC
Nothing Compares

Contents

Introduction

The Geographic Information Coordinating Council was established in August 2001 and incorporated in General Statute §143-725 through 143-727, recodified through Session Law 2015-241 as Part 11 of Article 14 of Chapter 143B of the General Statutes, G.S. 143B-1375 through 143B-1378.

As created by the General Assembly, the Council is the focal point for collaboration in geographic information and statewide mapping. Governance of geographic information and technology relies on public and private sector stakeholders to discuss geographic data, standards, and data sharing and demonstrate practical examples of the value of geographic information systems in public and private business processes.

The Council is charged with advising the Governor and the General Assembly on strategic direction, responsibilities and requirements as North Carolina applies geographic information system technology in collaborative ways to meet the needs of decision-makers at all levels, and reporting annually. The Center for Geographic Information and Analysis (CGIA), within the Department of Information Technology, staffs the Council. The State Chief Information Officer is responsible for supervision and support of the Council.

The Council meets quarterly to consider policies, issues and initiatives. Council meetings took place on August 13, 2014, November 20, 2014, February 11, 2015 and May 13, 2015.

Council members represent state agencies, local government, private business and federal agencies to achieve a broad set of stakeholders. Stan C. Duncan, retired from local and state government, serves as Chair of the Council. He has served as president of the NC Association of Assessing Officers and the NC Tax Collectors Association. His experience includes more than 20 years with NC Department of Revenue, more than 12 years with Henderson County, and seven years with a private appraisal and mapping firm. Duncan is the first Council chair with extensive local government experience.

Committees and their diverse members are vital to the Council. Committees bring a unique perspective to issues and tasks. The Local Government Committee (LGC), State Government GIS Users Committee (SGUC) and the Federal Interagency Committee (FIC) are user-oriented standing committees within the Council. 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. In addition to Council members, more than 50 individuals are involved in various committees and working groups, including 23 representatives from state agencies, 12 from local governments, five from federal agencies, six from universities and five from private organizations.

This annual report highlights collaboration in action during Fiscal Year 2014-2015, with descriptions of accomplishments and plans for Fiscal Year 2015-2016. More information about the Council is available at http://ncgicc.org.

Collaboration in Action

What is unique about geographic information in North Carolina?
The short answer: we have the data people need!

The state's wealth of statewide geographic data is consumed by state, local, regional and federal governments; private businesses; educational institutions; and the public to answer questions and make informed decisions efficiently and effectively.
North Carolina has a collection of statewide data for aerial imagery, land records, elevation, addresses, geodetic control and transportation that rivals any state.

How did North Carolina become unique and how will it continue to be a leading state in the nation for geographic information? How does a state with so many counties and municipalities and agencies achieve statewide products, discoverable and accessible by the public?
The answer: collaboration in action.

Collaboration in Action for Land Information
Accomplishment: Produced the first complete statewide parcel dataset.
Plan: Continue updating parcels semiannually for currency.

North Carolina now has border-to-border land information online as standardized parcels. In a collaborative project involving all 100 counties and the Eastern Band of Cherokee Indians, the Council realized a longtime goal to compile and publish statewide standardized parcels: boundaries and property information. Combined with statewide aerial imagery, address points and other foundational geographic data, informative views of the landscape are readily accessible to the public.

What is the value of standardized, statewide parcel data?
According to Nancy von Meyer, national expert on parcel data:
> **"A statewide standardized parcel dataset is an incredibly valuable resource for a wide range of applications. North Carolina was an early national leader in land records automation, and completion of this parcel project puts the state back among the top five states for standardized, accessible parcel data."**

NC OneMap and Parcels

"Having standardized parcels available from NC OneMap as a web service is priceless."

"I wish that the other five states in Duke Energy's service territory could develop something close to what NC has accomplished with parcels and NC OneMap."

Ron York, Council member and Principal Consultant - GIS Strategies for Duke Energy

Multi-County Parcels Example: Properties Color Coded by Building Value, 2015, from lowest (dark green) to highest (orange), near the border of Bladen and Pender Counties

The new statewide parcel data informs decisions in economic development, emergency management, transportation planning, land development, utility management, public health and forestry to name a few applications. For example:

- ➢ Next Generation 911 requires accurate location data, including parcels and site addresses, integrated across jurisdictional boundaries, to match with emergency service areas.
- ➢ Businesses are benefitting from the collection of parcels across county boundaries. For example, Duke Energy uses parcels to determine land ownership when creating and maintaining utility rights-of-way and when engineering new power lines.
- ➢ Current parcel data for all counties are now available from NC OneMap in the event of a natural disaster that interrupts county data operations.
- ➢ The US Census Bureau is applying NC parcel boundaries to improve Census geography and using parcel site addresses to support a complete count of NC residents.
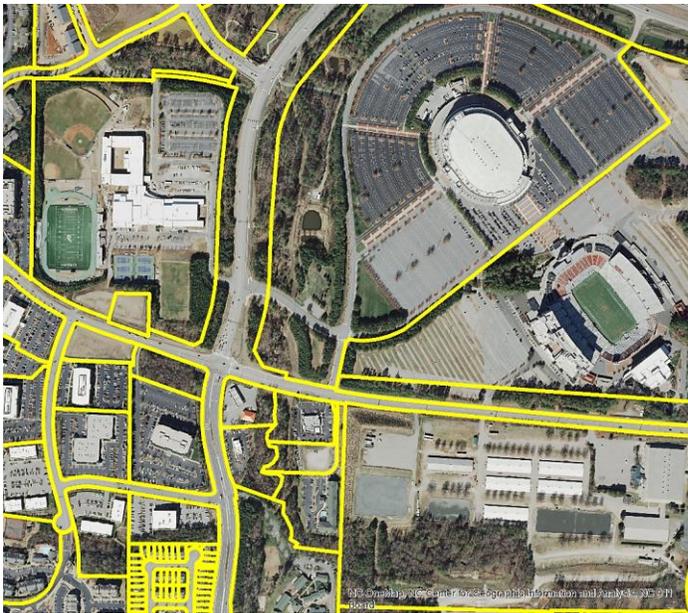
Displaying parcels indicates patterns of land ownership as in Figure 1 that shows parcel boundaries over statewide aerial imagery in a Raleigh location. Consistent, complete, current, accessible parcel boundaries with information about location, use, size and value saves time and money for public and private business processes. As always, counties are the authoritative sources of the most current and detailed parcel data. For detailed research on specific properties, data consumers are directed to online county map viewers and/or county geographic information system (GIS) contacts.

Figure 1. Parcel Boundaries over Orthoimagery, NC State University Campus

Collaboration in Action for Imagery Quality and Efficiency

Accomplishment: The Statewide Orthoimagery Program completed phase 3 of 4 and acquired phase 4 imagery, funded by the NC 911 Board.

Plan: Complete phase 4 of 4 in the first cycle of updates, and begin a new four-year cycle to refresh statewide imagery.

Each year, a project team of partnering state agencies and contracted vendors carries out a systematic work flow that results in high resolution orthoimagery with consistent visual quality and accuracy on the ground. The NC 911 Board approved another four-year cycle of orthoimagery. Planning for Phase 1 of 4 is underway for imagery acquisition in winter 2016 covering 27 counties in the Coastal region (see Figure 2 and an example of imagery in Figure 3).
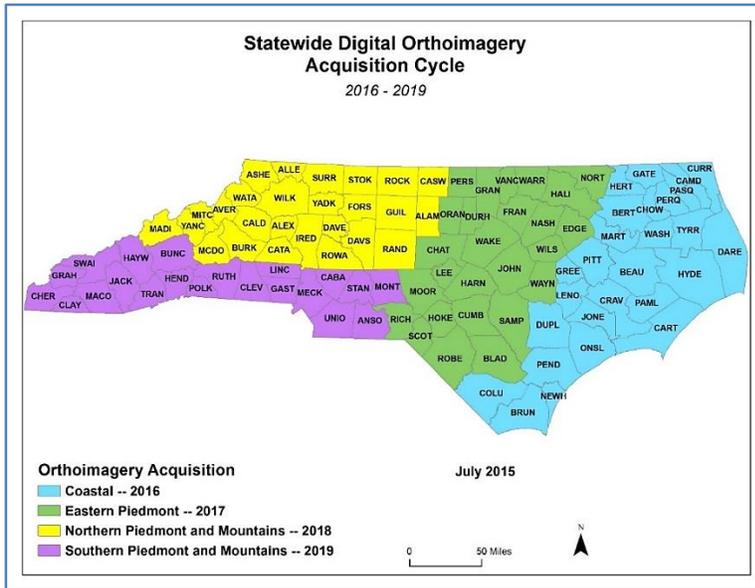
Figure 2. The Next Four-Phase Imagery Acquisition

What makes statewide orthoimagery so valuable?
Statewide imagery—a complete, consistent, current visual reference—adds value in 911 Communication Centers across the state and is vital for Next Generation 911 systems' cross-jurisdictional efficiency. The program has completed two statewide collections and archived 18.6 terabytes of imagery with State Archives to insure future generations will have a complete historic picture of the state.

Figure 3. NC Orthoimagery Example in Spruce Pine, 2014

Prior to the statewide effort, the Board had received $24 million in requests annually from local governments for orthoimagery projects. Based on project experience 2012-2015, the four-year statewide approach will cost approximately $14.1 million, saving as much as $82 million for statewide acquisition. About 75 percent of the cost is for services by private contractors. The project contributes to the state's economic vitality by sustaining private jobs in photogrammetric services throughout the year.

Invaluable to a wide range of users, the imagery is available to state, local, federal and regional government agencies; the private sector; the academic community and private citizens as map services and downloadable files from *NC OneMap*. Benefits include: saving time in locating and responding to emergencies; saving time informing business decisions; and avoiding the cost of erroneous information from out-of-date imagery and map features. The NC 911 Board recognizes the value of the imagery, not only for emergency response, but also for other uses and applications by the private sector and government agencies.

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The project team collaborated with local 911 Public Safety Answering Points and GIS professionals to provide online training for visual quality control, achieve coordinated state and local imagery review early in the process and hold regional meetings for product delivery.

Collaboration for Public Access to Geographic Information

Accomplishment: CGIA managed a database of statewide geographic data, and provided reliable online access to the public from secure, replicated servers; CGIA and collaborating agencies updated and expanded the content of NC OneMap Geospatial Portal.

Plan: Expand the content and improve the usability of NC OneMap.

NC OneMap is a primary initiative of the Council, managed by CGIA, that ensures that public investment in geospatial data and services will continue to generate benefits for a wide range of public and private purposes. Through the *NC OneMap* Geospatial Portal users can discover relevant datasets, determine their suitability and download data or stream data through a web service directly into a desktop or web application. Keyword searches and searches by spatial extent make it easy to find content in a user's area of interest.

How do state government agencies provide their collective geographic information online? Where can consumers search for, discover, and get access to the best available statewide resources?

The State Chief Information Officer's *Geographic Information Systems, Report to the Joint Legislative Oversight Committee on Information Technology* (December 2014) explained that:

> "A focal point for the GICC is NC OneMap, a first-stop website where consumers of North Carolina data and web services can locate, discover and use statewide geospatial resources. This organized effort originated in 2003 as a GICC initiative in partnership with county, municipal, state and federal data providers, with a formal implementation plan. The NC OneMap vision promotes geospatial data standards; data currency, maintenance and accessibility; and data documentation (metadata)" (GIS Report, p.3).

The GIS report included 10 recommendations (p. 16), two directly related to NC OneMap:

- **"The NC OneMap initiative should be fully funded to expand capability and hosting for all 37 priority datasets that could be made centrally available to anyone who requires the data."**
- **"There are opportunities for better shared and more central use of funding. Enterprise initiatives such as NC OneMap and AddressNC, along with other**

NC OneMap and Statewide Imagery

"*The NC 911 Board has looked at the orthoimagery project as one of its crown jewels. Next Generation 911 will involve geographic data including statewide orthoimagery.*"

Richard Taylor
Executive Director
NC 911 Board

Courthouse, Lincolnton, NC

opportunities identified by the GICC, need to be given recurring funding to maintain critical shared datasets within the state."

NC OneMap is effective because of its extensive content (283 datasets and 136 live map services) and collaboration with other agencies to deliver data to consumers. As data moves from desktops to smart phones and tablets, consumption of geographic data continues to grow. Significant investments have been made in North Carolina's geographic data at the local and state levels to serve the business needs of government. In 2014-2015, the Council's *NC OneMap* Governance Committee continued to monitor the status of priority datasets for *NC OneMap* and their respective action plans to support quantity and quality. *NC OneMap* Geospatial Portal, shown in Figure 4, includes datasets stored and managed by CGIA, datasets stored by other public agencies linked to the Portal and map services hosted by CGIA and other public agencies, which are accessible through this one-stop online location for North Carolina information.

In 2014-15, new datasets and web services added to the portal included 2014 imagery for the 26 counties in the Northern Piedmont and Mountains project area, standardized land parcels for 100 counties and statewide address points for 2014. The Council and CGIA will continue to work to achieve quick and easy discovery of geospatial data and develop 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.
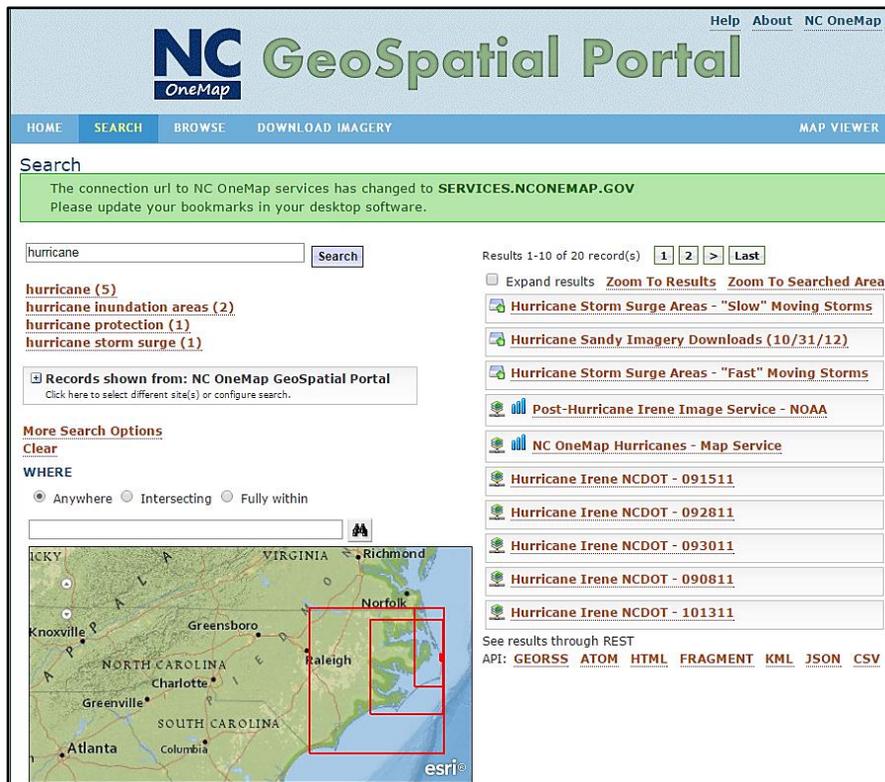
Figure 4. NC OneMap Geospatial Portal, Word Search Example, September 2015, http://data.nconemap.gov

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Collaboration in Action for Locations

Accomplishment: Completed statewide address points.
Plan: Specify a business case for maintaining statewide addresses.

Accurate geographic data representing locations of homes, businesses and public buildings are vital for emergency communications, broadband services, real estate, transportation planning, vehicle routing and more. An accurate count of population in 2020 will be valuable to North Carolina for fair congressional representation and fair distribution of federal funds based on population. Getting a complete count depends in large part on residential addresses.

Second, and no less important, are the addresses associated with business and industrial entities for identifying points of sale for tax collection, based on business locations and jurisdiction boundaries, and tax distribution based on point-of-sale and residential population.

Where are address locations across the state?
A Council initiative managed by CGIA and completed this fiscal year—the AddressNC database (October 2014)—relied on state-local collaboration to create a foundational statewide layer for complete population counts and comprehensive locations. The project successfully integrated county authoritative data into standardized statewide resource. Next Generation 911 is but one example of business processes that will benefit. Advice and guidance by the Council and its stakeholders were essential for quality and timely completion.

A business plan for addresses will document roles for stewardship of the dataset and operational costs for ongoing maintenance for AddressNC. It will also establish the benefits and metrics for demonstrating the return on investment for maintenance funding. CGIA is working with the Government Data Analytics Center (GDAC) to align AddressNC outputs to improve the accuracy and efficiency of business analytics across the enterprise of state government.

Collaboration in Action for Consistency

Accomplishment: The Council developed and adopted a new standard for metadata, adopted a revised set of specifications for orthoimagery, and developed technical documents to guide local government acquisition of oblique imagery and compression of orthoimagery.
Plan: Apply the new metadata standard through training state and local data managers, update state standards for parcel data content and street centerlines and promote all Council adopted standards and practices.

Consistency and documentation are on the top of the list of data quality factors, in addition to completeness, currency and reliable online access. The Council and its collaborators agree on the data—priority datasets with the most value—and document the data to inform consumers. Documentation of geospatial data is called "metadata." In 2014 the Council adopted a new State and Local Government Metadata Profile based on new ISO standards as a first phase in achieving consistent documentation of published state and local GIS data. As a leading state in metadata, NC is getting attention from federal and state experts. The next phase of metadata,

in progress, will engage, train and encourage state and local GIS data managers to put the standard into practice and improve data quality across the state, thereby building integrity in data access by public and private interests.

How does the Council promote data consistency and effective use of geospatial data?
Up to date standards and recommended practices continue to be valuable for GIS data managers in state and local governments. The revised technical specifications for orthoimagery, led by the Department of the Secretary of State, take into account new technology and lessons learned in the Statewide Orthoimagery Program. Revisions to data content standards for parcels and roads will benefit from the practical application of standards in respective statewide projects.

How are geographic features such as streams officially named or renamed?
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 to be used on federal products and are adopted by other non-federal organizations for use in mapping projects and databases. Official names are managed in the Geographic Names Information System (GNIS), a searchable database, acknowledged by the Council as the official North Carolina names repository.

Governance for Geographic Information

> *Accomplishment:* The Council met regularly, engaged committees and working groups in carrying out initiatives and contributed to the GIS Report to the General Assembly.
> *Plan:* Continue to be the focal point for engagement in consolidation and collaboration opportunities, as envisioned by the General Assembly.

The Council, CGIA and NC OneMap provide a coordination structure for governance of geographic information that engages stakeholders from state, local, regional, and federal government; educational systems; and private business. Producers and consumers of geographic information are represented in committees and working groups that inform plans, strategies, policies, priorities and initiatives related to geographic data and GIS technology. In addition, the GIS Report by the SCIO recommended that the Council "review consolidation opportunities that may arise as a result of IT Restructuring initiatives," and "coordinate with the Government Data Analytics Center (GDAC) within the framework of the GDAC's overall data responsibilities" (GIS Report, p.16). The Council will continue to emphasize data standards, data sharing and data quality to support analytics where location and revision date are key factors.

Sharing Information and Knowledge

Accomplishment: Built a technical knowledge base, held a successful 14th NC GIS Conference and communicated with professional organizations and consumers.

Plan: Continue to be the focal point for knowledge sharing and communication for the GIS community.

Quarterly Council meetings feature a technical presentation to inform Council members about investments in and applications of geographic data and technology. Recent presentations to the Council included:

- NC Parcels Project and statewide data sharing
- GO!NC online mapping for NCDOT
- Open Space Prioritization tools, Wake County
- LiDAR data updates and advances in technology
- The Value of GIS, statements by Council members

In addition, the Council's standing committees build the GIS community's knowledge base by hosting technical presentations that demonstrate tools and techniques and convey strategies and lessons learned in support of public business processes.

The 14th biannual NC GIS Conference again provided a valuable forum for education and networking, achieving a true sense of community and collaboration among GIS professionals across North Carolina. With a theme "Mobile and Global," the conference took place February 25-27, 2015 at the Raleigh Convention Center (Figure 5). The conference's focus on the use of GIS and related technologies in government, business and education drew more than 800 people, including government officials at all levels, members of the business community and academic and education professionals. Planning for the 15th NC GIS Conference (2017) will begin in 2015.
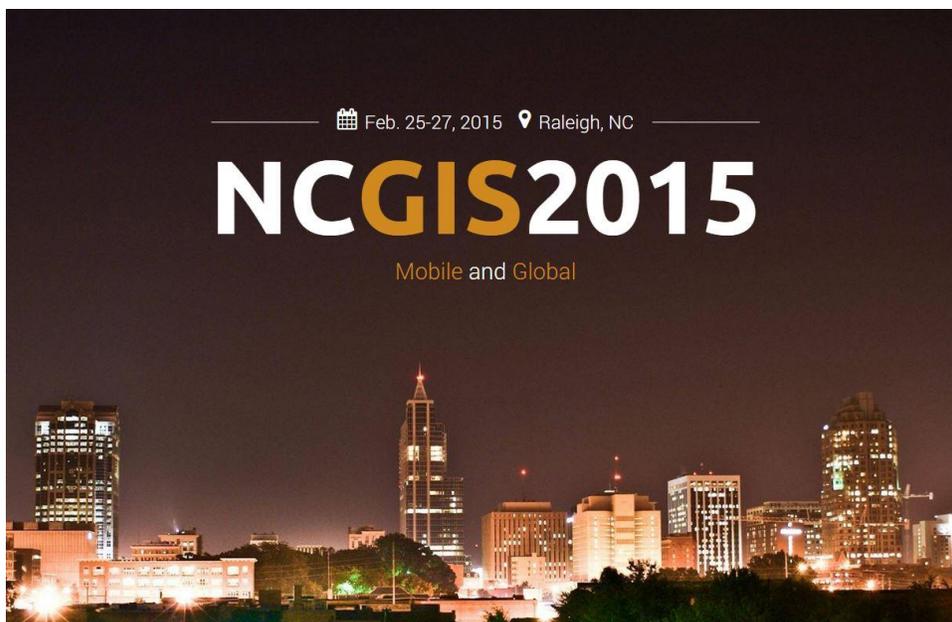
Figure 5. Home Page for the NC GIS Conference 2015

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, NC Property Mappers Association, NC Society of Surveyors, Mountain Region GIS Alliance and NC Arc Users Group. Council members participated in meetings of the North Carolina–South Carolina Joint Boundary Commission. Nationally, the Council and committee members were among North Carolina participants in the Esri International Users Conference, and CGIA represents North Carolina in National States Geographic Information Council activities.

The Council (www.ncgicc.org) and *NC OneMap* (www.nconemap.gov) 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*.

The GIS Report referenced in this report: Chris Estes, State Chief Information Officer, *Geographic Information Systems, Report to the Joint Legislative Oversight Committee on Information Technology*, December 2014, http://www.ncleg.net/DocumentSites/committees/JLOCIT/Reports%20to%20the%20General%20Assembly/GIS%20Legislative%20Report%2012.22.14.pdf.

For more information, contact Stan C. Duncan, Chair, stan.duncan2016@gmail.com and Tim Johnson, CGIA Director, tim.johnson@nc.gov.